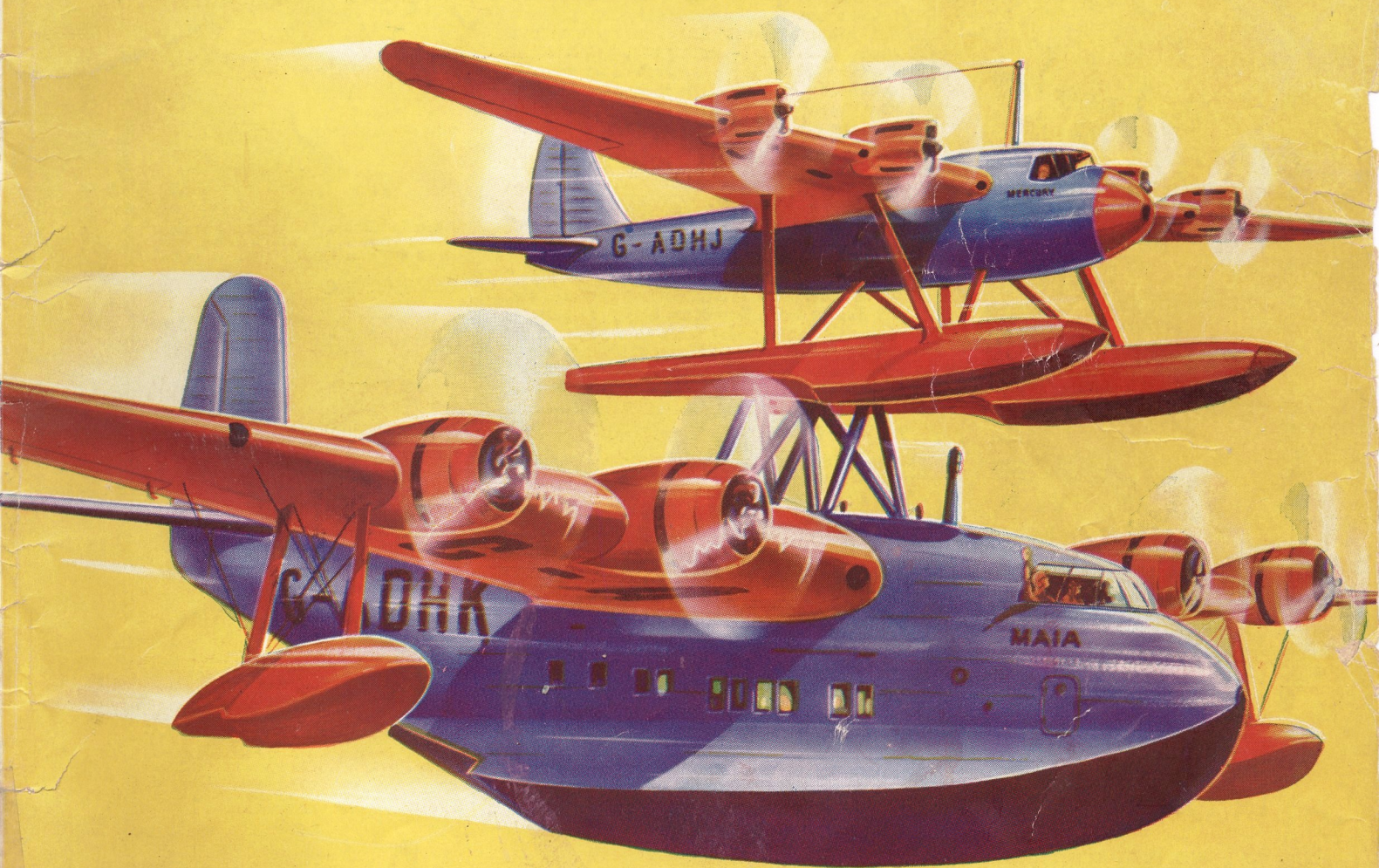


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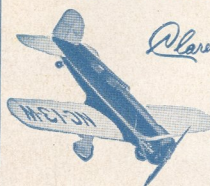
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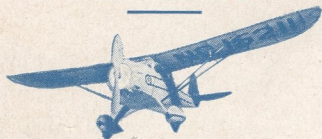
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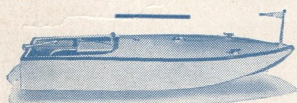
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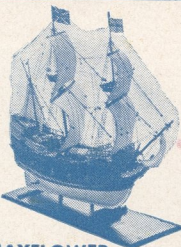
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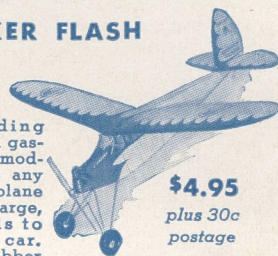
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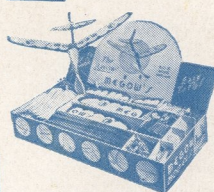
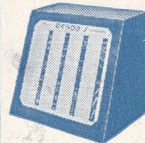


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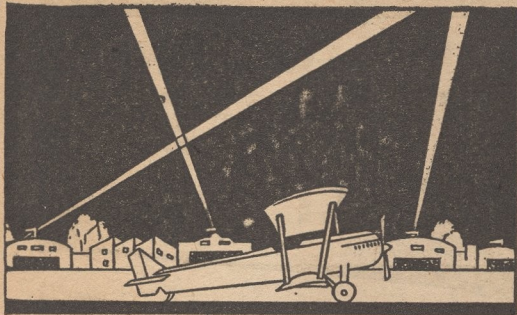
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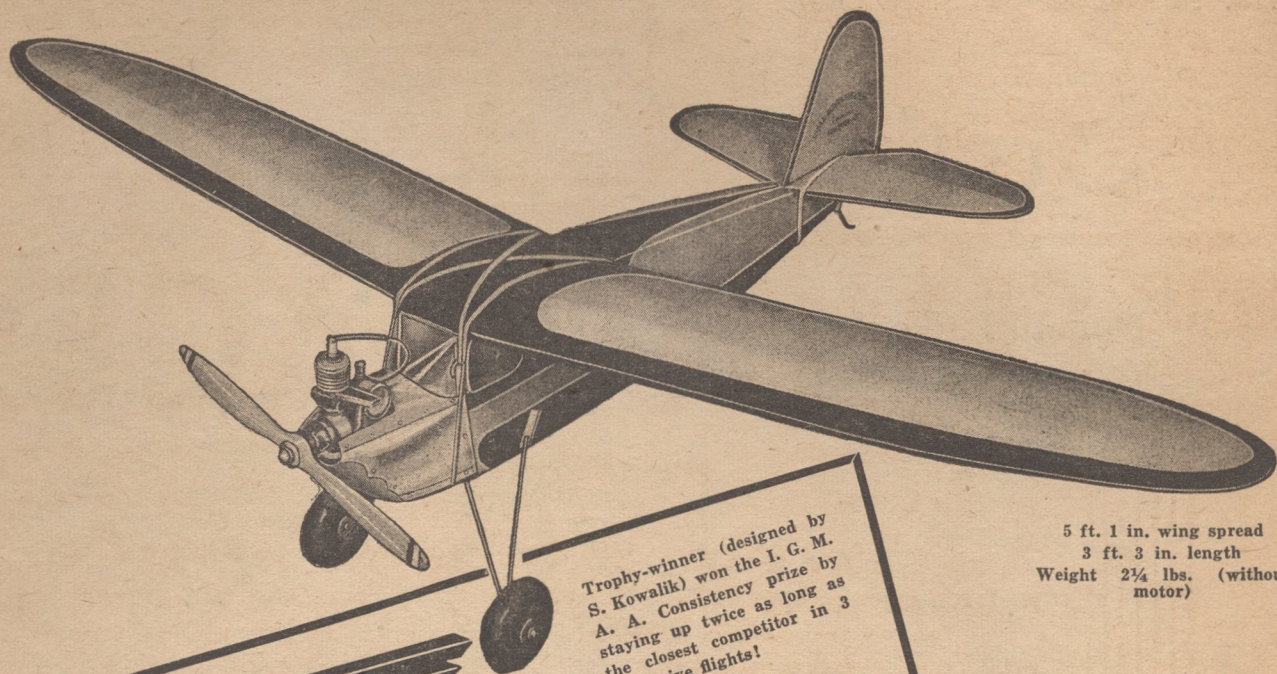
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By Donald E. Keyhoe

Author of "Aces of Death,"
"Skeleton From the Sky," etc.

CHAPTER I

FLYING BUTCHER

BEHIND that thundering Spad, the sun was a ball of crimson fire. Its red rays slanted across the packed clouds which hid the Vosges Mountains, drenched the back of the tall, lean-faced pilot, and bathed the dial and the mirror on the cowl. Captain Philip Strange stared at the instruments, then turned and with narrowed eyes searched the sky.

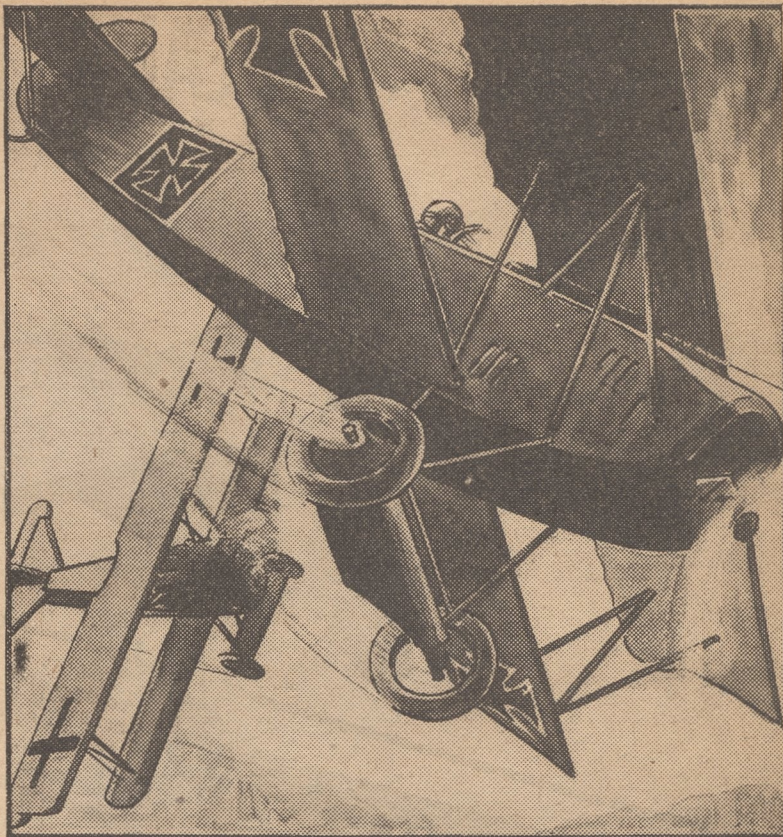
He was flying into the quietest part of the whole Western Front, a section to which both ground and air outfits were sent for rest. His specific destination, the 49th Pursuit Squadron, A.E.F., had moved in but twenty-four hours ago, locating in an area so completely devoid of activity that the French *escadrille* formerly occupying it had abandoned the drome eight months ago. There was not, apparently, the slightest reason to expect trouble. But in Strange's mind the disturbing code message from Colonel Jordan, Chief of G-2, was still repeating itself. It had read:

Drop Bar-le-duc case. Get to 49th Pursuit as fast as possible. Now located eighteen kilometers northeast Essenville, at former rest-drome of French 185th. Assume command under name Captain John Neville. Put down mutiny. If necessary, order attempted deserters shot. Under no circumstances must story spread. Communicate with me only in new F-Code.

The Bar-le-duc affair in itself had been important. That, added to the last part of Jordan's message, brought a grim look to the G-2 captain's eyes. The words had a sinister, desperate note. In addition, he would have to take command from Capt. Bill "Tex" Taylor, sixth ranking ace in the A.E.F.—a genial Texan he had known and liked since early in '17. He shook his head as he thought of "Tex" Taylor's fighting face and powerful figure. It was hard to conceive of a mutiny getting far with Tex. But he would soon know what had happened.

He glanced at his strap-watch, waited three minutes, nosed

Ugly and gruesome was that blood-stained box—but more hideous still was the gory object that weltered within it. "Eine!" the Headsman had grinned when he hurled that ghastly relic from his vanishing Fokker. And already victims "Zwei" and "Drei" stared down with glassy, unseeing eyes upon the tarmac of the terrorized Forty-Ninth. It was toward this death-cursed drome that Philip Strange winged his way—and the Headsman was waiting!



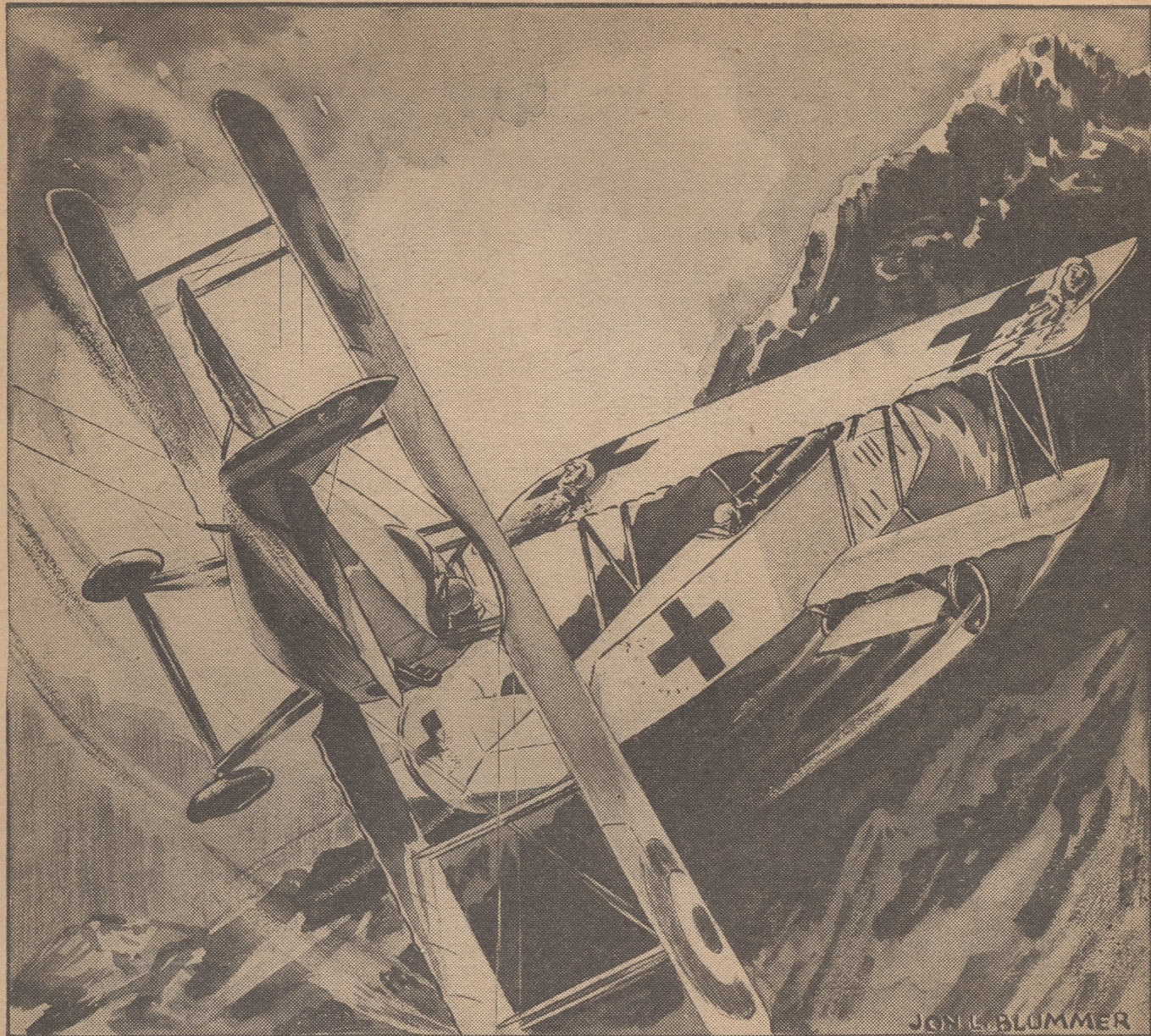
down through the red-lit clouds. The Spad plunged into the drifting mists, bored down for a thousand feet and abruptly came into clear air. Strange leveled out, banked westward. The wind had evidently freshened; for he had come out ten kilometers east of the field, over a desolate, rugged area where frowning peaks made a natural barrier between the French and the German lines.

With throttle "half-cracked," he nosed into a long power glide. The setting sun was beginning to pierce the clouds on the western horizon, and its bright glow shone into his eyes. He put up one hand to shield them, then stiffened. Two ships were hurtling straight toward him out of that fiery red ball!

He jerked the Spad into a swift climbing turn, pumped at his C.C. gear. The leading ship had swerved a trifle as he zoomed, and a crimson light shone from its tilted wings. It was a Fokker D-7. For a second he thought it was painted red, then it flattened out, and he saw it was a glistening white that reflected the glare of the sun. Two round objects showed indistinctly on the tips of the top wings.

The ship behind was a Nieuport with the scorpion insignia of the 49th. Its guns were blazing, but the range was too long and the tracers were going wide. Strange stood his Spad on its nose, sent it howling down at the Fokker. Like lightning, the white ship reversed, pulled up in an Immelmann as he yanked out of the dive. The Nieuport overshot, and for an instant the white plane's wings were clearly visible. Strange jumped half-erect in his cockpit, an icy chill shooting down his spine.

The round objects on the Fokker's wing tips were *helmeted heads!* The G-2 ace felt sick.



A cry of horror burst from Strange's throat. "Tex!" The name gritted through his clenched teeth as he recognized that ghastly head on the white plane's right wing-tip. Then deadly phosphorous lines spat across the reddened sky. Two coal-black Fokkers were on his tail!

FROM the stumps of the severed necks, gory streaks had blown back over the wings. One of the helmets was flapping in the wind, and the goggles had been blown away. As the Boche ship whipped around, the sunlight fell squarely on its right wing—on a face ghastly white and with eyes set in a terrible stare. A cry of horror burst from Strange's throat.

"Tex! Oh, my Lord!"

Stunned by that frightful discovery, he almost failed to see two coal-black Fokkers which had dived out of the east. Phosphorous lines lanced over his head, dipped, and a crooked trail of bullet-holes appeared in his left wing. He kicked aside, hurled the Spad around tightly as the white Fokker banked and plunged at him. The Nieuport flung into a vertical bank, guns blasting at the first black ship. The second one drilled in at Strange, its Spandaus winking fiercely.

Strange crouched over the stick, horror suddenly merged with a cold fury. Whatever came, that monster in the white Fokker was his!

His Vickers thrashed savagely, spat two red streams over the white ship's tail. But before he could boot the rudder to rake the man at the stick, the Fokker whirled into a split. Strange swore through gritted teeth. Whoever that devil was, he knew how to fly. Then he realized the cause of that downward maneuver. The pilot had raised up against his belt, was signaling both of the black-ship pilots to dive at Strange.

It was only a moment that his shoulders and chest could be seen above the rim of his cockpit, but Strange saw the queer garb he wore. For the second time in as many minutes, a cold hand seemed to touch his spine.

The man in the white death-ship wore the black costume of a medieval headsman, and a black mask hid the upper part of his face.

As the pilot dropped back into his seat, Spandau lead hammered across the Spad's tail. Strange back-sticked, corkscrewed between the two black ships. The white Fokker zoomed after him, guns pounding. The cowl-mirror flew to pieces and tracers left smoking

A STIRRING PHILIP STRANGE WAR-SKY MYSTERY

tracks between the Vickers mounts. Strange rolled, caught a black-painted tail in his sights. Fabric flew from the Boche ship's fuselage as he shoved on the rudder. The pilot ducked, wildly threw his plane to one side. Tri-colored cocardes swam into view before the Vickers, and Strange had to whirl to the left to miss the Nieuport.

The pilot of the Yankee ship was bareheaded, and his glaring face was now as pale as the blood-drained heads on the white Fokker's wing. With a furious gesture to Strange, he pitched down at the winged headsman. The white ship pulled up, its tail straight before the Nieuport's spouting guns. Tracers struck the turtleback, ricocheted into space. The headsman had crouched low, was for the moment invisible.

Like flitting shadows, the dark Fokkers dropped on the Nieuport. Strange's turn had taken him well to one side. He cut back, Vickers snarling. The burst ripped into the black side of the nearer ship, and the Boche frantically kicked away from his guns. He rocked the rudder, eyes glued to his sights, saw the white plane jump. Smoke puffed back from its cowl, but only for a second. Down whipped the Fokker's nose, and at terrific speed it hurtled toward the rugged slopes beneath.

The Nieuport was after it in a flash. Strange rammed his stick to the fire-wall, but the two black ships charged in desperately and forced him to sheer out. He snapped into a chandelle, wings screeching, spun around in a sudden renversement. One of the black Fokkers was so close he saw the terror that leaped into the man's face. He clamped the trips, and the German's riddled body fell sidewise in the pit. The pilotless ship skidded, whiplashed and plunged for the ground.

As Strange twisted back toward the other Boche, he had a split-second glimpse of the headsman's ship and the Nieuport. The white Fokker was partly out of its dive, but was charging straight at the side of a mountain. Strange guessed that the Boche was trying to shake off the Yank pilot by that perilous maneuver, but the Nieuport did not turn.

A vicious attack from the remaining Boche took his attention for a moment. He half-rolled, completed the turn as the dark ship overshoot. His ammo belts were almost empty, and he knew the German's must be nearly finished. He held his fire, darted in as the Fokker twisted around. The German shot into an Immelman, tried furiously to rake the Spad as Strange followed. The tracers missed by a hundred feet, and the blazing Spandaus abruptly ceased to chatter.

The pilot cast a look at his ammunition boxes, zoomed for the clouds. Strange hammered a final burst after him, gazed down as the black ship fled northward. His eyes widened in astonishment.

The Nieuport was a mass of wreckage tumbling down the side of the mountain, and the winged headsman's ship had vanished!

THE G-2 ace circled, stared in all directions, but there was no trace of the grim white Fokker. Watching the clouds, he spiraled down and took a hasty scrutiny of the wrecked plane. Its pieces were strewn for three hundred feet down the mountainside, the main part having landed in a small canyon. He knew it was impossible that the pilot could have survived that bat-

tering fall, even if the first crash had not killed him. He climbed a few hundred feet, gazed around the steep slope for some sign of the white Fokker.

There were a few scraggly trees and bushes, and he could tell where the Nieuport had struck, for two of the trees were broken, and the wreckage had torn away some brush. Nowhere could he see a trace of another crash, and there was nothing to hide the wreck of the shining white ship. The only other thing beside the patch of trees and brush was a mountain cabin perched precipitously near where the Nieuport had crashed.

A sputter from the Hispano warned him that his main tank was empty. He switched to the reserve, raced into the west just as the red tip of the sun slid below the horizon. It was only a few minutes before the canvas hangars and portable barracks of the 49th came in sight. The field was located on top of a small, wedge-shaped plateau—the only landing-field for some fifteen miles in the Allied "quiet sector." Except by air, the only access to it was by a winding road down into a valley that ran southwest. Nestling in the distant foothills was the tiny hamlet of Essenville.

Strange landed swiftly, cut off the Hispano. A little knot of men had watched him glide in, and beyond them he saw two second lieutenants by a Hotchkiss gun mounted to command the road. Armed non-coms and another officer paced back and forth near one of the portable barracks. As the engine went silent, a stout little officer with first lieutenant's bars ran to the side of the battle-marked Spad. His plump face was a sickly gray, and he looked as though he had not slept for forty-eight hours.

"Captain Neville?" he said hoarsely. Before Strange could answer, the man gripped his arm with shaking fingers. "What happened? We heard a fight—"

"Take it easy," said Strange. "You're senior man here?"

"Yes—now." The man gulped. "I'm Pete Miller—I was leader of B Flight until—" he stopped, blood-shot eyes fixed on the G-2 captain's face. "You—did you see him?"

Strange took off his gloves, looked around at the group of pilots. All had the same sick and terrified look, all were obviously on the ragged edge. He saw one of the young lieutenants by the Hotchkiss slip a flask from his pocket, furtively lift it to his lips. He walked across to him.

"I'll take that—until you're off duty."

The youngster's eyes filled with a sudden, savage light. "To hell with you!" he screamed. "Wait till you've been here—seen those hea—"

"I've already seen them," Strange broke in. He reached out, took the flask. "Lieutenant Miller, return this to him when he comes off watch."

Miller mechanically took the bottle, his haggard eyes bulging at Strange.

"You—saw him? And you're here?" he whispered.

Strange looked around at the staring faces. These men were ready to clutch at any hope.

"I ran into a white Fokker," he said quietly. "The pilot escaped."

"Escaped!" Miller's mouth sagged. "Good Heavens, man—you're the one who escaped! That was the Headsman!"

A big, raw-boned pilot shoved past him. Strange saw that his doubled fists were trembling. "What about Becket?" he snarled. "Where's Jim Becket?"

"There was a Nieuport," Strange said slowly. "It crashed—against a mountain."

"You hear?" screeched the big pilot, lunging at Miller. "Jim's gone—he's dead! That devil did it—he'll get us all!"

"Wait a minute," said Strange.



The big man wheeled, a mad glare in his eyes. "No, I'm through waiting! I'm gettin' out of here—and damned if you or anybody else is going to stop me!"

A chorus of yells came from the windows of the guarded barracks. Strange stood silent until the clamor had ended.

"Bill Taylor was a friend of mine," he said grimly. "Nobody's leaving here until he's been avenged and this thing licked."

The big pilot snatched a .45 from his holster.

"Grogan!" Miller cried. "This man's from the G.H.Q.—he's the C.O."

"I don't give a hoot if he's Pershing!" rasped the other man. "I'm getting out of here!"

Strange took a step forward. Grogan jammed the .45 against his ribs. The G-2 ace smiled. One hand shot to the big man's wrist, twisted. The heavy gun fell to the ground. Grogan jumped back, lips flat. He swung with his weight behind the blow.

Strange flicked his head, and his left crashed on Grogan's jaw. The big pilot stumbled back, swung again, wildly. With cool precision, Strange landed a right cross, followed it with a piston-like left. The smack cut through the sudden silence that had fallen. A bewildered look came into Grogan's homely face. His knees buckled and he started to fall. Strange caught him, jerked him upright, and for an instant that was all that kept the other man there. Then the befuddled look went out of Grogan's eyes.

"You've a hard jaw, Grogan," Strange said. "I darn near broke my hand."

The other man stared at him without a word. Strange released his grip.

"I'm asking you to stay—for Bill Taylor. Somewhere there's an inhuman butcher that needs killing. Are you with me?"

For fully ten seconds there was not a sound. Then Grogan thrust out his hand.

"I'm with you!" he said.

CHAPTER II

DEATH RIDES AN ALBATROS

STRANGE gripped his big paw, stooped and handed Grogan his .45. "I'll be in the office with Miller," he said. "After you get things straightened here, I'd like to talk with you."

Grogan threw back his shoulders, looked around at the rest of the group.

"Come on, you birds—get back on the job. Th' show's over."

A few of the tense faces relaxed slightly, but Strange heard the muttering of voices as he went to the office with Miller.

"I'm afraid we can't hold that crowd in the barracks much longer," Miller said nervously. "That is—without bloodshed. And I hate to think—"

"I know," interrupted Strange. "It's hard to shoot your own men when you feel like doing the same thing."

Miller's plump, haggard face flushed. "I'm not a coward," he muttered. "But when you've seen your men disappear—and their heads on that devil's ship. . ."

"Begin at the beginning," said Strange, as they entered the C.O.'s sanctum. He winced as he saw Bill Taylor's familiar meerschaum pipe on the field-desk. He turned his back, took off his flying-gear.

Miller wet his lips, stared at the squadron safe in one corner.

"It started two hours after we landed here. The trucks had come ahead, and the hangars and shacks were up. We had chow, and then Bill—he sent three of the boys across. You know—routine. The sector's been quiet for

a year. We thought it'd be a picnic here. But—they didn't come back."

His eyes went again to the safe, seemed to pierce inside it.

"Was it dropped from a plane?" Strange said gently, guessing the other man's thoughts.

Miller started, jerked his head. "I didn't know they'd told you. Colonel Jordan said—"

"Whose head was it?" Strange asked.

"Ralph Henderson's." Miller's face was wet with sweat, and his voice was almost inaudible. "He—he was in my flight. When they didn't come back, Bill and I warmed up our ships to go look. Then the Headsman—the white Fokker—dived and dropped a big sack with a red streamer. There was a lot of straw in the sack, so the box wouldn't break."

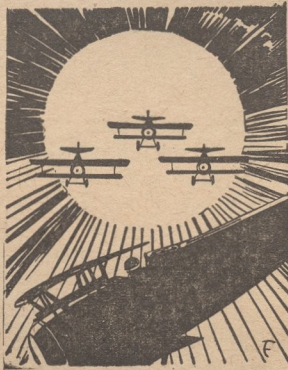
"The box is in the safe?" said Strange.

Miller nodded, lit a cigarette with shaking fingers.

"You can see it—but I couldn't stand to look again. It's a queer box. Old, with dark stains. I think it was used in executions a long time ago."

"I'll look later. Was there any message in the box?"

"No. It was tied to the streamer." Miller opened a drawer, brought out a crumpled paper. At the top a sinister figure with a black mask and a headsman's axe



had been expertly inked. Underneath were four words in German script:

Eine: Leutnant Ralph Henderson

Beneath was a signature in a flowing hand:

The Headsman

"After he dropped this, what happened?" queried Strange.

"He raced toward the north before we could take off. After Bill saw what was in the sack, he ordered us all grounded, then he took off and went north, over the lines. While he was gone, the Headsman came back from the southeast and dived over the field. He had the heads of the two other pilots on his wings, and he dropped another message like the first."

"Calling the two pilots *Zwei* and *Drei*?" the G-2 ace asked. Miller nodded dully, and Strange went on: "How many others since then?"

"One more—besides Bill and Jim Becket. That was a kid named Groves; he was Henderson's bunk-mate and they'd been together since Kelly Field. He grabbed a ship last night before anybody could stop him. You see, he knew German, and I think he had some crazy idea of landing behind the lines and finding out who the Headsman was. He didn't come back, but the Headsman hasn't dropped any note with his name. Maybe he isn't dead."

The door opened, and Grogan appeared, halted uncertainly.

"Come in, Grogan," Strange said. He held out a pack of cigarettes. Grogan took one, looked at Strange's knuckles.

"If your mitt feels like my jaw, cap'n—" he stopped, his eyes on the empty chair at the desk. "Forgot for a second," he mumbled.

"When did Bill disappear?" said Strange.

Grogan looked at Miller. "Around midnight, wasn't it, Pete? We heard a Mercedes motor somewhere, and he hopped into his crate—told us if anybody tried to follow him he'd shoot him down. I—we waited a little . . ."

"Grogan went after him as soon as he could get an en-

gine started," Miller said. "He saw some queer lights, but they went out before he got close. And that's the last we saw of Bill."

"What kind of lights?" Strange asked Grogan.

The big pilot exhaled a lungful of smoke. "The first I saw, there was a couple of 'em. They were on a ship, I know that." He paused, lips grim, then stared at Strange. "By Heaven, I've been so near crackin' I never thought—they must've been on the white Fokker—"

"To spotlight the heads?" said Strange.

Grogan nodded savagely. "Must have been. I saw two white flashes, with something—" he grimaced.

"What about the other lights?"

"That was queer, too. They both came at once. One was blue and the other sort of reddish-orange. I thought I saw a ship pass across 'em and I went after it and blame near smacked a mountain."

Strange walked to the window, drew aside the burlap. It was still light from the afterglow. He turned back. "I'd like to see—the box."

Miller got up hastily. "The safe's unlocked." He started out, but Strange stopped him.

"Have you any idea what's back of this, Miller?"

The stout lieutenant looked blank. "Back of it? Good Lord, isn't it enough, our losing all those men—having them butchered—the morale of the whole outfit shot to hell?"

"Yes," said Strange. "It's enough. But I can't believe it's the right answer."

HE turned to the safe, and Miller quickly departed. Grogan ground his cigarette under his heel. Strange looked at him, but the big man shook his head.

"A while ago, it 'had me.' But that jolt sort of brought me back to myself. And seein' it again will instill me with even more of an eagerness to wreak vengeance on that flying devil."

Strange removed the box. It was about a foot square, with a dark and badly scratched silver plate on one side. An ugly looking stain covered part of the silver. Strange raised the lid, and for a minute neither he nor Grogan spoke. Then he quietly lowered the lid and put the box back in the safe.

"Did you ever see a man beheaded by a professional executioner?" he asked the big pilot.

Grogan wiped the perspiration from his suddenly ashen face. "No," he mumbled. "No, thank the Lord."

"I saw a German 'Blue-beard' beheaded in Mannheim just before the war. It wasn't—like that."

"What are you driving at?" said Grogan.

"Would you know where you saw the blue and orange flashes?" asked Strange.

"No. You know how it is in the dark. Besides, if they were on the white Fokker—" Grogan stopped. "You think they weren't on the ship?"

"I don't know." Strange turned to a wall-map. "Who marked that green check on the side?"

"Tex did. I forgot to tell you that on his first trip when he went after the Headsman, he circled back and made a check of the Boche lines. He said their layout was still similar to ours—a few machine-gun posts scattered in the hills, and a couple of rest-dromes. Not a thing changed, he said."

The G-2 ace gazed at the map almost a full minute, then wheeled and picked up the phone.

"No soap," said Grogan. "We hooked onto the wires th' Frogs left—but they must be down somewhere. Miller phoned G.H.Q. from Essenville."

"What about the squadron radio?"

"The truck's back in Essenville. Seems the crew stopped there for chow and ate something that made 'em sick, so they—" Grogan broke off, staring at Strange. "You don't think . . . ?"

"I think we're going to the mess and see if supplies have come from Essenville today."

"The mess-sergeant brought some stuff out this afternoon. Nobody's eaten since then."

"We'll eat nothing tonight but canned food that was already on hand. They're probably desperate enough to poison the whole outfit."

"They?" said Grogan. "You think there's more than one Headsman?"

"No, but back of him—"

Both men jumped as they heard the faint thunder of motors and the slightly sharper pound of guns. Strange threw open the office door, hurried out. Grogan jabbed a finger at the graying western sky.

"There they are—five of 'em!"

He spun around toward the ships on the line, but Strange caught his arm.

"My tank's empty—and you couldn't warm up another ship fast enough. Sound raid alarm."

Grogan dashed into the office, and a siren howled. Men were already running toward the machine-guns, and the Hotchkiss guns by the road were tilting skyward. Two Spads came streaking down toward the field, three black Fokkers behind them. Abruptly, one of the Spads zoomed, skidded in a wild chandelle. The first Fokker whipped out of the way as the skidding plane came into its path. The Spad's guns blazed, missed the Fokker which followed. Then the Allied ship stalled, fell into a spin.

Ground-guns were hammering fiercely at the Boche ships. One of the Fokkers nosed down, crashed a burst at a gun-crew, pulled up swiftly. The second Spad was a hundred feet from the ground, but its pilot suddenly opened his throttle and shot up after the German. The first Spad came out of the spin, barely missed the top of a hangar. The two Hotchkiss guns roared in unison as a black ship darted down at the wobbling fighter. A ragged hole appeared in the Fokker's right wing. It sheered out, sent up a signal rocket which burst redly above the field. The other Fokkers instantly fled after the leader, zigzagging to throw off the ground-guns' aim. In a minute they disappeared in the haze that covered the hills to the north.

THE two Spads landed, the first one bouncing twice and groundlooping to a stop. The second one came in too fast, rolled within a hundred feet of the office. Strange went to the side of the nearer plane as the pilot cut off the engine and climbed out.

"Replacement?" he said.

"Y-yes, sir," stammered the pilot. His hands shook, and his face was so white that his pale blue eyes seemed bright by comparison. He looked at Strange's silver bars, saluted. "Second Lieutenant Smith, sir, reporting. My b-buddy, Lieutenant Carson, has our orders."

The other pilot would have been swarthy but for the faint pallor that made his face gray. He had lighted a cigarette, and his swagger was an obvious attempt to hide shaken nerves. Several of the 49th's pilots had gone out to his ship, were following him toward the office.

"Where's Captain Neville?" Strange heard him mumble. Miller pointed, and the new pilot threw away his cigarette, exhaled through flared nostrils.

"Lieutenant Carson?" said Strange, before he had

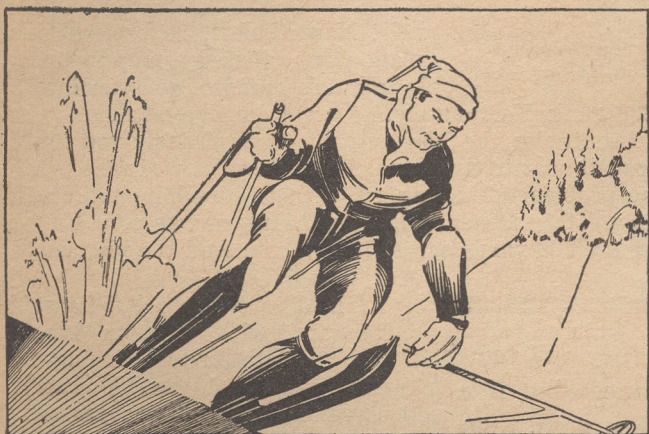
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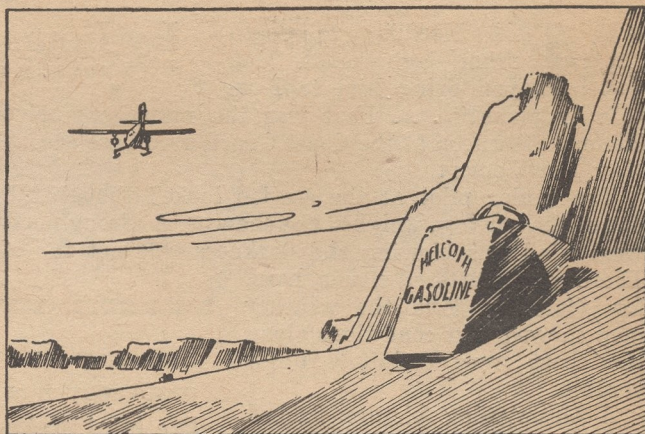
They Had What It Takes

XIII—BERNT BALCHEN—VIKING OF THE SKIES

By ALDEN McWILLIAMS



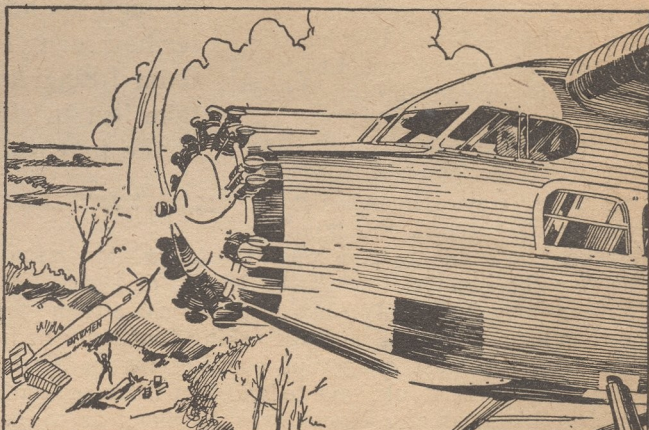
1—Bernt Balchen was born in Norway in 1899. After taking an engineering degree at Sweden's University of Haermirand, he became active in sports, winning Norway's amateur middle-weight boxing crown and some thirty ski meets as well. Then aviation called, and from 1918 until 1926 he flew with the Norwegian Air Service, attaining the rank of Flight-Lieutenant.



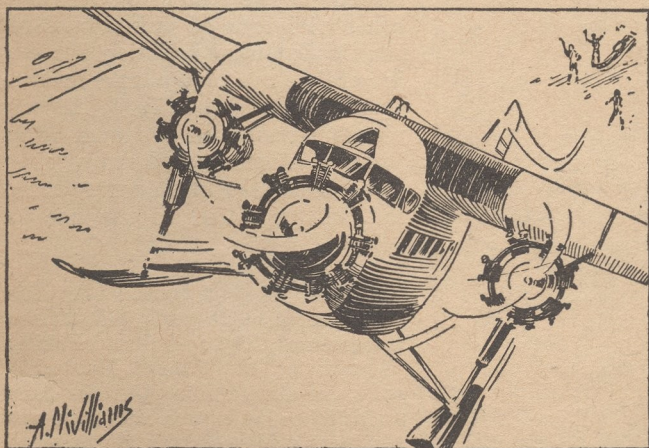
2—In 1925, this skyman of the north was a member of the party which searched for the then-lost dirigible *Norge* carrying Amundsen, Ellsworth, and Nobile over the North Pole. The following year, Balchen won world acclaim when he piloted Richard Byrd to the Pole. On this dash he ingeniously blazed his route for the return journey by dropping red-painted gas cans.



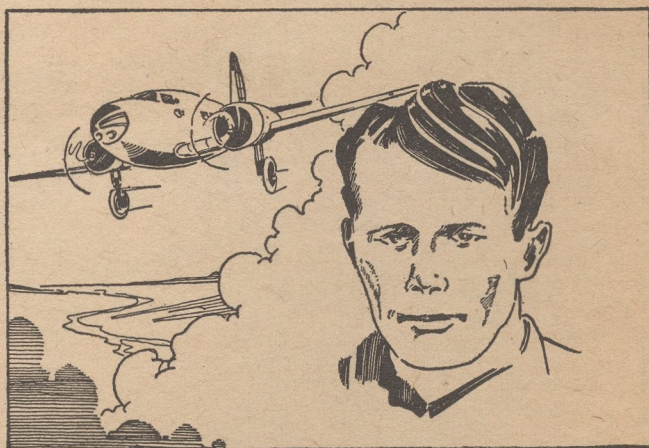
3—It was Balchen who did the lion's share of the piloting when in 1927 he flew with Byrd, Acosta, and Noville from New York to France in the *Fokker America*. On gaining the other side, the flyers circled blindly through dense fog. Then, off Ver sur Mer, France, there came a sudden glimpse of whitecaps—and they crashed into the water. Luckily all were saved.



4—Again Balchen's name made news when in 1928 Kohl, Fitzmaurice, and von Huenefeld completed the first westward crossing of the North Atlantic in the *Junkers Bremen*. After the plane was forced down in wild Labrador, Fitzmaurice fought his way to civilization. Then, with this intrepid Irish airman as his guide, Balchen flew north and rescued the two Germans.



5—Next the expert Scandinavian flyer went to Antarctica with Byrd, and in November 1928 he piloted the famed explorer over the South Pole after skilfully hurdling a 15,000-foot mountain range. Only the jettisoning of weighty supplies enabled the Ford plane to clear the lofty ridge. Then, after returning to America, Balchen became active in commercial aviation.



6—A master aero mechanic as well as a top-notch flyer, Bernt Balchen has won international renown as a first-rank all-around airman. Hailed as the "Viking of the Skies," he has been awarded the Cross of St. Olaf by the King of Norway—an honor equivalent to knighthood. And now America proudly claims this Norseman as her own, for he had become a U.S. Citizen.

They Stick Their Necks Out!

DEATH DODGING EXPLOITS OF THE FLYING COAST GUARD

"MAN bleeding to death from leg wound. Can you bring him to Norfolk by plane?" . . . That was the message received late one afternoon at the Coast Guard aero base at Cape May, New Jersey.

The senior pilot at the station looked thoughtfully out of the window, weighed the chances. A strong north-west wind was blowing and darkness was not far off. There were scattered clouds, haze, low visibility. And the weather map showed that conditions along the coast were definitely unfavorable.

A threatening picture flashed in the pilot's mind. "That'll be a mighty ticklish job," he frowned. "To get that fellow off that boat means a landing must be made in a swampy, shallow, log-strewn lagoon." He was thoroughly acquainted with the menacing layout, realized full well how hazardous the undertaking would be.

But the motto of the Coast Guard is "Ever Ready!"

Within forty minutes after the receipt of the message the pilot was under way. Somewhat later, roaring on through the blinding darkness he suddenly came upon the tall white shaft of the Wright Memorial at Kitty Hawk, only managed to clear it by inches. And more apprehensive than ever he then flashed a radio message asking that lanterns be placed on the most dangerous obstructions in the lagoon on which he would have to land. But when he finally reached his goal, the lagoon was as black as a coal

By Louis E. Reichard

With U. S. Coast Guard Photos

Seas may lash with fury and tempests may howl defiance—but if a life is at stake it takes more than the angry elements to faze the stout-hearted airmen of our Coast Guard. They're off to the rescue the minute distress calls flash through the heavens. And no matter how many fast rounds with the Grim Reaper are thrown in, they take 'em in stride. Yes, theirs is the toughest job in the sky!

hole. Nevertheless, he brought his plane down, missed a mooring post by a hair's breadth, and ran into a mud bank. Fortunately, no great damage was done.

Eventually the bleeding man was transferred from a small boat to the plane. Then the pilot was faced with the problem of taking off without wrecking his craft. As a safety measure, a lighted lantern was placed upon a buoy 500 yards across the lagoon. And the pilot made for that light.

"I held so close to it," he said afterward with a grim laugh, "that a boat's crew standing by went overboard as I barely cleared them. That was just one more of the close shaves Fate chalked up that night."

Contending with fine rain and zero visibility, the Coast Guardsman kept his plane barely above the storm-tossed waters, using the white combers as a guide to altitude. Finally he reached Norfolk, and here the injured man was turned over to a doctor waiting in an ambulance. For six hours that officer, his radioman, and his mechanic had fought all sorts of hazards—and won!

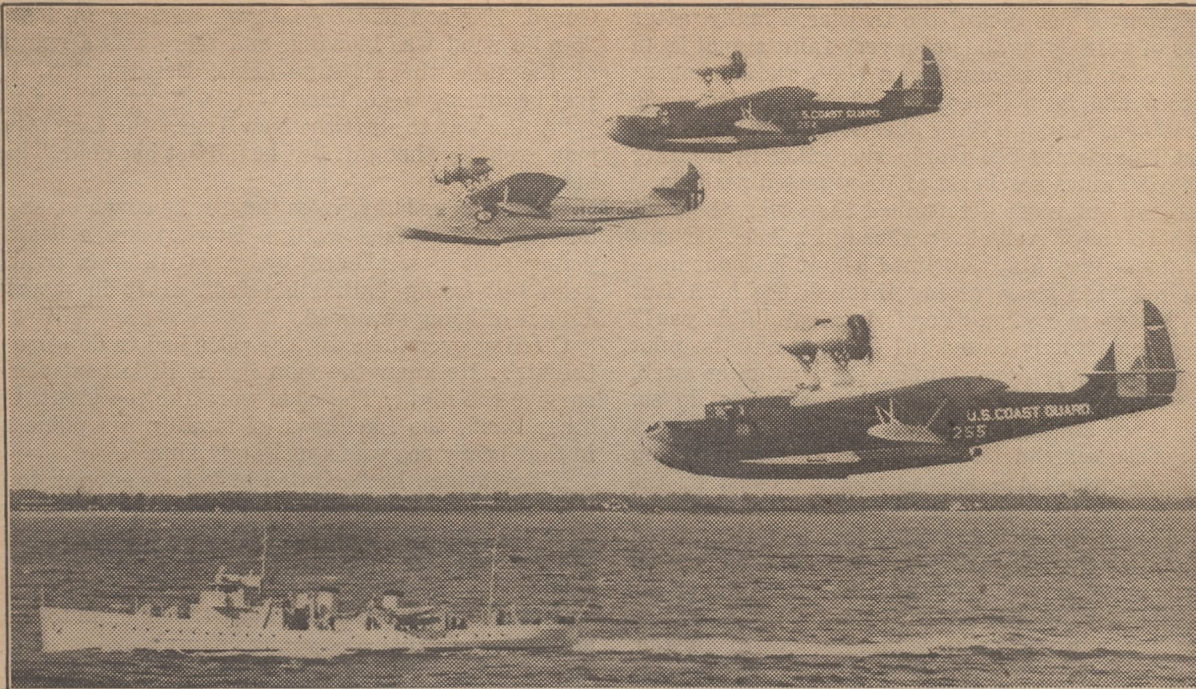
THEY use a homely expression in the Coast Guard service—an expression that tells a story in itself. "You've got to stick your neck out in this business," they say grimly. Then they shrug their shoulders and grin, "That's our job."

Of course, men in various branches of the Coast Guard have been "sticking their necks out" for a great many years. Everyone knows about their ice patrol off the Grand Banks of Newfoundland, about the spectacular rescues they've effected at sea, about their risky, sensational running fights with smugglers and other violators of our laws. But the Coast Guard Aviation Section is hardly more than a lusty infant.

As recently as 1932, fifteen planes constituted the sum total flying equipment of the sky-going Coast Guard—and they were craft not wholly suited to the use to

Safe and in good hands! As this "stretcher case" is gently lifted from the cabin of the Coast Guard Fokker "Altair" at the Salem, Massachusetts, air station, the pilot sits back and catches his breath. His task was saving this injured man at sea—and his task is done. But at any moment a new distress call may be flashed through the air to send him roaring this PJ-1 Fokker over raging ocean wastes once more—for another duel with Death.





Hurting in review over the Patrol Boat "Pandora," three of our coastal air service planes display their impressive lines of stamina and efficiency. Based at Miami, these planes are (top to bottom) the Fokker PJ-1 "Acamar," the Douglas Dolphin RD-1 "Sirius," and the Fokker PJ-1 "Arcturus."

which they were to be put. Today that little flock has grown to 51, consisting of General Aviation flying boats especially developed for the Coast Guard, Douglas RD-4 amphibians, Grumman JF-2 amphibians, a Lockheed Electra, a Northrop, and a Vought Corsair, Fairchild J2K-1 land planes, and a Waco J2W-1. In addition, contracts have been let for two more Fairchild land planes and seven Hall PH-2 flying boats.

The flying officers come from the Pensacola Naval Air School, which has long been renowned for its excellent aviation training. There they were required to log 300 flight hours. On a cold-blooded dollars-and-cents basis alone their value to the Government is considerable, since the cost of training each man is \$30 an hour. Whenever one of these service men crashes, Uncle Sam loses a \$9,000 investment—not to mention the matter of the wrecked plane.

DRAMATIC feats of skill and daring by these flying Coast Guardsmen have become so numerous that it now requires something particularly spectacular to excite more than passing comment. Month after month these hardy airmen render heroic services that are recorded only in terse reports. We must read between the lines to get the real pictures of their courage and daring. Questioned about their exploits, the men merely toss out an expressive, "What the heck! It's all in a day's work."

Well, here are some examples of "a day's work":

One morning a Coast Guard pilot took off from Gloucester, Massachusetts, in a Douglas amphibian

Douglas Dolphins of the RD-4 type have lately been put in service by the Coast Guard Aviation Section. Here's a striking view of the tail group of one of them. Note the narrow, faired member that "bridges" the engine nacelles.

and headed for Washington, D.C. But he had barely gotten under way when he intercepted a distress call. The *Wild Goose*, a trawler, was radioing that a seriously injured man was aboard.

True, the pilot could have ignored the message and gone on to Washington. But instead he radioed for authority to go to the assistance of the injured man. He was over Providence, Rhode Island, when permission came. Immediately he changed his course, roared out to sea to search for the *Wild Goose*, reported to be about 125 miles southeast of Cape Ann.

Almost at once, perverse Mother Nature began flashing red lights in the flyer's face. The first danger signal was in the form of a sea fog that lay low over the broad wastes of the ocean. Bedeviled by this fog, the Coast Guardsman asked various Navy radio-compass stations to listen in and, if possible, obtain bearings on the elusive *Wild Goose*.

But repeated calls were in vain. It began to look like a "wild goose" chase in the more commonly accepted sense of the term.

Relying upon the information given by the vessel in its first call, the pilot set about flying back and forth



over the reported position of the trawler. Finally, after two hours of vain flying, he got a very faint signal from the *Wild Goose*. And meanwhile, a Navy radio-compass station that had been listening in had obtained some vague bearings. Through these questionable bits of data, the Coast Guardsmen ultimately succeeded in locating the trawler 30 miles northeast of its reported position.

Encouraged and more determined than ever, the pilot circled above the fog. At last, through a hole, he saw the *Wild Goose* very dimly outlined below. Without hesitation he sent his plane diving through the hole. But then—as if it were saying, “You flying fool, I’ll fix you!”—the fog immediately closed in! That meant the pilot had to set his plane down blindly on a running swell. Nevertheless, by some miracle he managed to do so. Then he groped his way to the *Wild Goose*.

The luckless seaman he had come for was suffering from a badly mangled hand and was weakened by the loss of blood. There was no time to be lost. Quickly he was put aboard the Douglas. The final test then faced the pilot—the take-off. With jaws set and a prayer on his lips that no fishing boat would be in the line of his speeding plane, he roared away.

For fifteen minutes he flew blindly toward Boston. Presently he heaved a sigh of relief—for he was out of the fog belt! A successful flight assured, he radioed for an ambulance, to which his passenger was immediately transferred upon arrival at the Boston Airport.

ON a New Year’s Day, when the Florida sunshine was celebrating by laying off, a frantic mother’s appeal reached the Miami Air Station of the Coast

Guard. Her son had been blown offshore in a skiff. A 25-mile wind was blowing, and there was a rain squall at the time the message came. Besides that, it was just beginning to get dark.

“A fine way to start the New Year,” the Coast Guardsman probably thought. But he did not back out. This was his job.

Half an hour later, from the air, he saw a black object on the storm-tossed waters. Down there a despairing young fellow, weakened by exposure, was fighting a grim but losing battle, his frail craft in momentary danger of being swamped.

Circling over the skiff, the pilot had to do some quick thinking. He knew the man in the little boat could not survive the night. The odds were far too great. On the other hand, the likelihood of landing his plane safely in that heavy sea was appallingly slim.

Nevertheless, he hesitated only long enough to check the wind; then he brought his ship down onto waves that were running 15 feet high. As if incensed at such interference, the seas crashed upon that plane and tossed it about. But it withstood the onslaught, and with rare skill and courage the pilot finally taxied close to the skiff and took the exhausted young chap aboard.

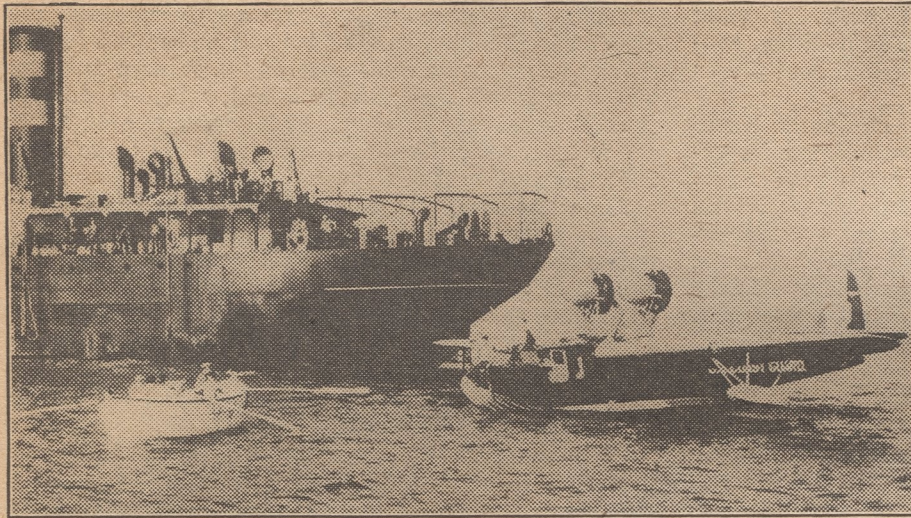
The fight, however, had only begun—for when this intrepid flyer attempted to take off he discovered that a wing and one of the wing-tip floats were seriously damaged. True, the plane momentarily lifted from the heavy sea—but it flopped right back again.

Then when the pilot attempted to taxi to shore, the wind howled “No!” Desperation! Still, the game wasn’t up. A makeshift sea anchor was manufactured from a couple of buckets and rigged to the plane. Then she drifted down wind. And after working through three lines of surf, the flyer managed to beach her safely.

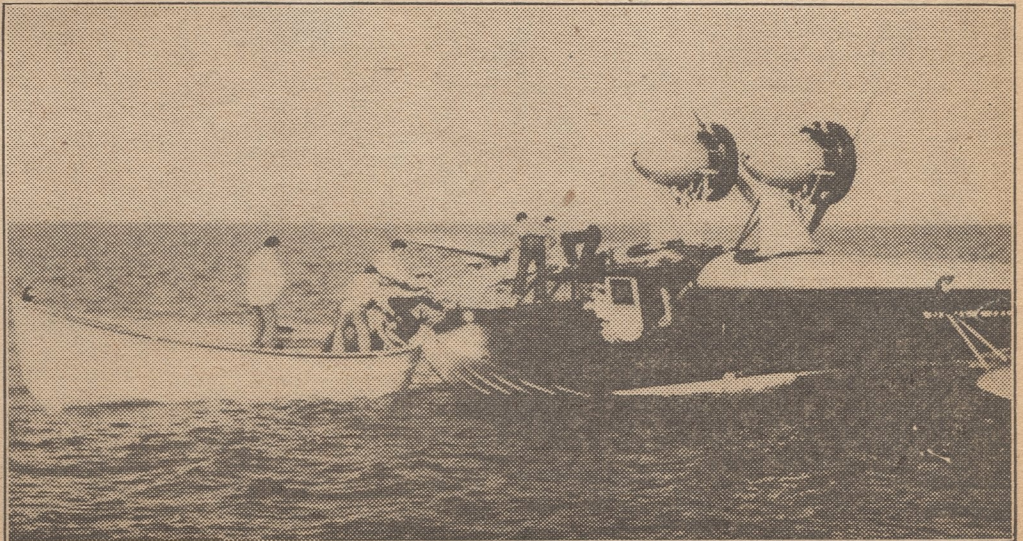
The sea had virtually wrecked that plane—but a grateful mother’s joy over having her son restored to her made the daring exploit well worth while.

Every summer defective equipment, carelessness, and downright foolishness take a toll among the pleasure seekers in small boats along the Atlantic Coast. Almost any summer day a message is likely to reach a Coast Guard station that a small powerboat is on fire. Minutes are precious then—if

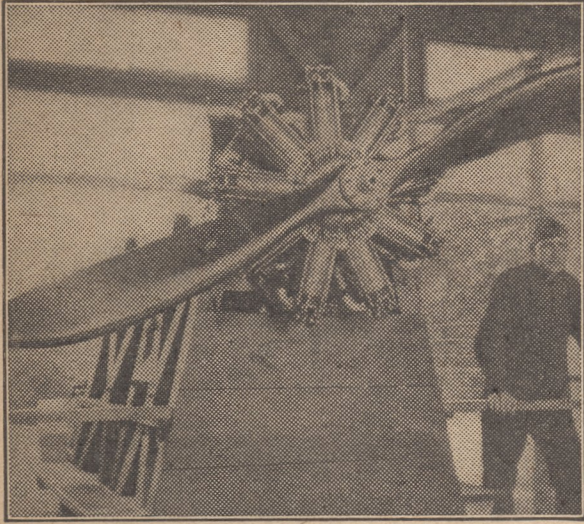
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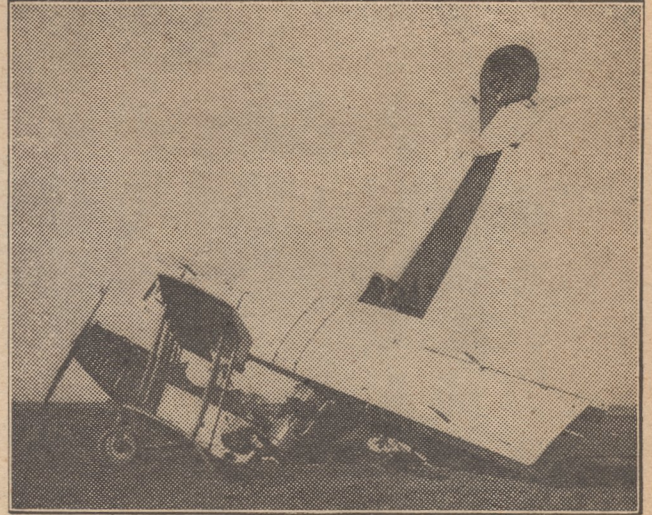
Above: Here's action! "Man aboard seriously burned. Must have aid," came the frantic call from the "S.S. Samuel Q. Brown." Quickly a Guardsman pilot sped the Fokker "Antares" out over the sea, located the steamer, and landed in its lee. In this shot, the life boat carrying the stricken seaman has just been dropped from the vessel's davits. It is being rowed to the rescue plane. Right: And now we see the transfer being made. As the seamen from the freighter hold the life boat tight to the Fokker's nose, trained Guardsmen lift the stretcher-borne injured man onto the plane.



Snapshots of the War



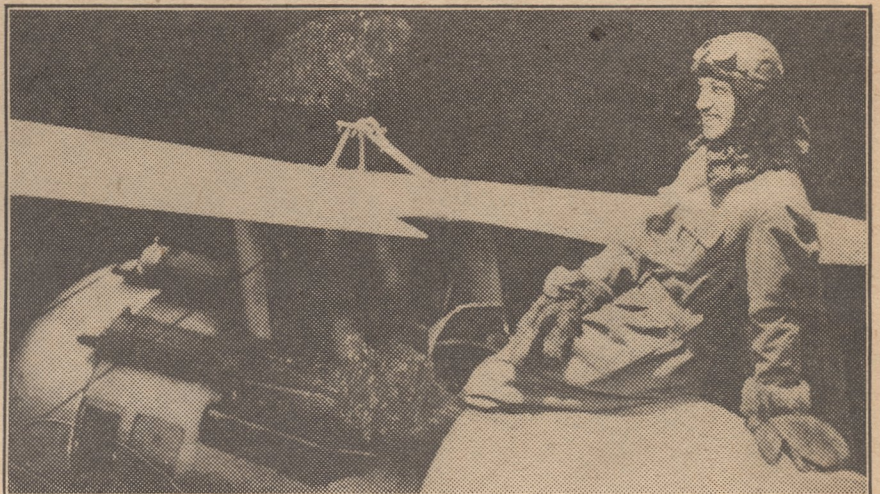
"Step right up," the wartime instructor, above, is about to bellow, "and I'll show you lughead cadets what makes the Bentley rotary tick." It was this famed nine-cylinder plant that made the Camels and Sopwith Snipes the great ships they were. With set-ups like that shown in the picture, tyro war flyers also learned how to swing props.



How's this for a freak training school crash? The stude who figured in this one overshot while landing his Jenny and ran up the tail of another JN which was about to take off. As far as we know, no one was injured—but was that cadet mortified! He shoulda carried the four-leaf rather than the three-leaf clover for an insignia.



Captain James A. Healy, also of the 147th, is shown here in the pit of his ship. He was one of our aces, having officially downed five German aircraft. Note the insignia of the 147th—a Scotch terrier with the inscription, "Who Said Rats?"



Here's an interesting study in wartime censorship. Although several of these planes had already fallen into the hands of the enemy, nevertheless you will note that the U.S. censors painted out the details of the top-wing Lewis gun as well as the breech of one of the cowl Vickers. The smiling pilot—Lieutenant John H. Stevens, of the 147th—was killed in action on July 16, 1918. He was officially credited with one victory.



You've heard a lot about Operations shacks in stories of the War. Well, here's an actual photo of one taken on the Marne in July, 1918. Really a tent, as you can see, this one was the office of the aforementioned 147th Aero Squadron of our first Pursuit Group. We see Lieutenant Bronson about to play the latest ragtime record on the outfit's phonograph. Sergeant Muller, Operations clerk, is watching him in the background. Then in the foreground, Lieutenant Walker, the Operations officer, is interviewing Lieutenant Harman. Observe the flight records on the easel, the bulletin board behind Bronson, and the row of enemy plane photos used for identification.

Hardly had the silk-saved Phineas bounced off the short ribs of the big Kraut cigar when—WHAM-M-M! His Spad hit the Zep like a red hot rivet smacking an Idaho baked potatoe.



Cat's Spad-jamas

PHINEAS PINKHAM, Lieutenant, U. S. Flying Corps, was looking over his mail in his hut on the airdrome of the Ninth Pursuit Squadron near Bar-le-Duc. His Aunt Tillie Luscom had sent him the last three issues of a magazine that the family back in Boonetown, Iowa, had subscribed to for years—*Frink's Fact, Fancy & Fiction Weekly*.

After thumbing through a few pages, the freckled-faced sky fighter put the magazines aside and ripped open another package that had arrived much the worse for wear. The little bottle he found inside it was intact, however, and Phineas was intrigued by the label. It read: **UNDERBY'S UN-DYE.**

In smaller print the manufacturers announced: *Anybody can dye. Underby's magic formula shows you how*

to un-dye. Often we dye our hair or a dress or a pair of shoes. But just put Underby's Un-Dye on anything and it will restore natural color. One crystal will make a gallon of Un-Dye. Works instantaneously or your money back. Large bottle fifty cents.

"Haw-w-w-w," Phineas chuckled, "always git the latest stuff that's on the market an' be up with the times! That's me."

"Oh yeah?" sniffed Bump Gillis as he came into the Nisson. "I haven't seen you git *Herr Hauptmann* von Heinz yet, you great big smart aleck! In fact, he almost got you the last time out. That tracer pretty near boiled an ear off you, Carbuncle Pinkham. It looks like you ought to just give up."

Phineas bristled like a porcupine. "You will eat them words, Bump Gillis," he snorted, putting the bottle of un-dye into his pocket. "I have figured out a way to knock that limberger-eatin' owl right out of his tight pants. I will go out after mess, if Sergeant Casey has got

• PHINEAS PINKHAM IN A FRENZIED FELINE FUSS •

By Joe Archibald

Author of "Flight Team Flight!" "Yankee Doodling," etc.

With Illustrations by the Author

my crate all fixed up." The sleight-of-hand artist plunged his hand into a paper bag at his elbow, felt around a bit, and brought out a chocolate the shape of a beehive. He popped it into his ample oral cavity, chewed lustily.

"Thanks for offerin' me one, ya tight-fisted bum," Bump cracked. "I will not wait to be asked. I ain't always so lucky as to catch you with bon-bons before you git a chance to put arsenic in 'em!" The Scotch-American reached into the bag, pulled out a sweetmeat, dropped it into his mouth, and exerted pressure. Instantly his eyes bulged and his face became the color of a bullfrog's vest. He made a dive for the canvas wash basin, reached for a glass that was standing there half filled with something that looked for all the world like water. But it was Epsom Salts. Bump Gillis had swallowed a lot of gooey Frog mud mixed with red pepper, and now he'd gone berserk.

"I didn't give it to ya!" Phineas yipped as he leaped up on his cot and held a chair out in front of him to ward off the bric-a-brac that Bump was tossing at him. "You're just a hog, Bump Gillis! Haw-w-w! Didn't that mud look just like real chocolate fillin', huh? You was lucky not to git the one I filled with auto grease."

That made Bump Gillis feel a little weak and his giblets went into an Immelmann. He fled the hut and taxied fast to the medico's shack, leaving Phineas Pinkham to slick himself up before trekking over to the Frog farmhouse for mess.

THERE were a couple of brass hats as guests—and the pilot from Boonetown, Iowa, knew what they would be squawking about even before he took his place at the table. *Hauptmann* von Heinz, who had been dishing out fifty-seven varieties of hell, would have to be stopped.

"Haven't you any flyers who dare to go out after dark, Garrity?" asked a colonel with high sarcasm in his voice.

"You are lookin' right now at the flyer who works while others sleep," Phineas cut in before the Major could answer. "Haw-w-w! I had an uncle once who could read the date on a dime at twenty paces at the bottom of a coal mine at midnight with no lights on!"

"Will you shut up?" asked the skipper. "Don't mind him, gentlemen," he said, turning to the brass hats. "We are making an experiment tonight. With things as they are now, you know very well that there isn't a flyer on the whole Allied front

* * *

All the Allied Brass Hats were frantic. For *Hauptmann* von Heinz—the "Owl of the Ozone"—was raising fifty-seven varieties of Cain along the Western Front, and something had to be done before he perpetrated the fifty-eighth. Yes, it was a job for the famed Pinkham. But when the Boonetown Bam tried to snare the Kraut killer into a dog fight, somebody let the cat out of the bag. And from then on it was cats-as-cats-can!

who is supposed to fly at night. Pinkham is going to try it because he's the only pilot who is crazy enough to do it."

Colonel Meany looked toward Phineas, and since there was a mirror behind the Yankee lieutenant, he caught his own reflection. He threw up his hands with horror and exclaimed: "Gad, Major, I'm filthy! I'll have to wash up before I start to eat. Is there a place handy?"

"I'll show the Colonel, sir," Phineas volunteered to Garrity. "Just outside the door there—Goomer'll give you a dish an' clean towel. Right this way,

sir. Be careful of the step, sir."

"Thank you, thank you, Lieutenant," Meany said pompously, following the Boonetown trickster across the big room.

"Dang funny," muttered Garrity, "for him to get polite all of a sudden. Somethin's wrong around here."

But Phineas came back to his chair with Colonel Meany at his heels. The brass hat was running a wet comb through his black hair. And now he sat down—to see the pilots of the Ninth stiffening in their seats as if they had each swallowed a bucket of starch. Meany's black hair was turning gray right before their eyes! The Old Man choked on a chunk of beef and Bump Gillis and Captain Howell almost had to cave his backbone in to dislodge the small portion of cow that had lodged in his windpipe.

"What's the matter here?" Meany asked testily after a moment. "Have you all gone—" The brass hat broke off in the middle of his query, for he had caught another flash of his dome in the mirror. He looked as if he were on the verge of a fit.



Every mouse-sniper in Bar-le-Duc was following Phineas.

"Why—er—Colonel," Phineas yipped, "you cheated the U. S. Government. I bet you was a Civil War vet an' dyed your hair to—"

"Pinkham," Meany roared, "I—I'll make somebody sweat for this. What did you put in that water out there, huh? Speak up before I push my fist down your throat and—"

"I haven't the faintest idea what you're talkin' about," the culprit said innocently. "Goomer must've put some washin' soda in the water an'—well, I'll never forget this to my dye-in' day. Haw-w-w-w!"

The brass hat got very unreasonable then and quit the mess, promising Major Garrity in a loud voice that something would happen to him in the near future and that it would not be a promotion.

"Pinkham," the Old Man of the Ninth stormed after the brass hat's jalopi had left the drome, "I don't know how you did it, but you did—I know that. I— Ha! Ha! Ha! That's the first thing you ever did that I thought was funny. Dyed his hair, did he? He won't dare open his yap about it. Ha! Ha! Ha!"

"Haw-w-w-w!" chimed in the miracle man from Iowa. "Now I will go an' see how the Spad looks. I hope Casey got them crowbars fixed on tight. Adoo for awhile."

Ten minutes later the Pinkham Spad was being trundled out of the hangar. On each side of the snout a heavy crowbar had been wired and there was something attached to the center of the top wing that looked like a big cylinder-shaped laundry basket lying on its side.

"He gets nuttier every day," Captain Howell sniffed. "He won't make more than fifty miles an hour with all that weight. If he gets up to three thousand feet, he'll be lucky. What's the big idea, Major?"

"How should I know?" sputtered the Old Man. "They want night flying—and I'd let a guy who got tagged for a bat patrol do anythin' he wanted with his crate. That thing on his wing looks like a balloon chute to me. Yeah, he's got ropes hitched to him, too, the half-wit. Well, he's on his way—if he ever gets off the ground!"

Crowbars were never constructed to aid and abet buoyancy. The Pinkham Spad just cleared the top of a tree on the edge of the field, and a mother oriole called the Yankee pilot everything she could think of in her own bird language as her hangar went into gyrations and curdled potential worm snipers in their shells.

BEFORE we go any further, however, we must let you in on a lot of skullduggery that was being hatched in other parts of the war-tormented Western Front. *Herr Hauptmann* Adolph August von Heinz—he who was known as the "Owl of the Ozone"—was getting into a black Albatross on a drome near Ars. Von Heinz was something such as you used to read about in *Grimm's Fairy Tales*. The Kraut bat flyer could not do

anything in the daytime. In fact, he had been born right in the middle of the Black Forest. Before the war he worked night shift in a clock factory and in our modern times he would have been said to be allergic to sunshine. Once, the story went, Adolph got in the sun when he was about two years old—and he immediately broke out with hives.

Seated in his nocturnal war chariot, *Herr Hauptmann* von Heinz beamed upon his comrades. Adolph's eyes looked like those of an owl, and when he had his hat off the two cowlicks of hair that stood up on his bullet-shaped head completed the effect. He was round-shouldered, too, and even in Germany it was believed that his ancient ancestors had feathers. Yes, *Herr Hauptmann* von Heinz was a rare bird, and he was raising more havoc after dark than a pair of minks in a henhouse.

"Ach! Always *Ich bin* so lonesome. Nobody flies mit night yedt, *und das ist* vhen *der fun ist* droppink *der bombs und bullets* down by *der verdammt* Yangkees in *der dark*. Ha! Now if *das* Pingham—"

SEVENTY MILES away, high in the sky, a great cigar shaped object seemed to be grazing the invert-

ed dome of heaven and scraping stars off it. The great snout split filmy clouds apart and scooted on, its motors purring like so many leopards after gorging on a dusky Ubangi belle in a dark corner of a jungle. It was one of the Kaiser's Zeps flying high over *La Belle France* after a vist to London, and in the control room a Kraut *Kommandant* who would have made Simon Legree look like a sissy was waiting for word from the hanging observation cockpit that had been reeled out below the big Zep's belly. Standing near the winch that held the little car was a small-sized *Schnapps* punisher holding a mouse-colored tomcat in his arms. The Teuton's knees were knocking together and he looked like anybody but Nathan Hale.

"Shtop idt *der shagink vunce*," the Zep's boss snapped. "Katzenheimer, you haff idt *der parazhoot*, *hein?* Ach, *Gott!* When it giffs *der vord ve* are ofer *Vaubecourt*, you yoomp mit *der Katz*, *ja*. *Deutschland uber Alles!* For

der Vaterland, Dumkopf!"

"Ja wohl!" Katzenheimer nodded. "Budt vat if *der zhute* opens *nodt?*"

"Den you go right quick to *der Wilhelmstrasse* und complain about idt," chuckled the Zep skipper. "But it vill open, *mein Freund*. *Der Katz* shouldt haff to gedt down, as zo much *ist* by *der stake*, *ja*. *Der Allied Intelligenz der sharp eyes haben*. *Der little plans* showink all *der important spots* behind *der Amerikaner* lines should readty yedt be, *und vunce* it cooms by *Chermany und der High Kommand*—poof! Mit von Heinz knowink *vhre ist* he shouldt drop idt *der small bombs und der Gothas der gross vuns*, *ach der Tag idt cooms!* *Das ist der komical Katz*, *ja*. He's afraid uf *der ride* by *der air*—"

(Continued on page 84)



Pinkham's latest arch-enemy! *Hauptmann* Adolph August von Heinz—he who was known as "The Owl."

Now Comes—

The “Flying Catapult”!

OUR COVER PAINTING TELLS A DRAMATIC STORY

FOR years we of FLYING ACES have scouted the world's fountain-heads of aviation in order to depict striking aero events on our covers before they actually occur. We've done that to let you readers in on the ground floor—or I guess we should say hangar floor—of aero history in the making.

Well, fellows, this trip we're taking another shot at that sort of thing. For though at this writing the revolutionary Short-Mayo Composite aircraft has not yet flown, nevertheless our artist, Mr. Schomburg, has pieced out the story from the meager information and photographs offered by foreign newspapers and magazines. And working with this sparse data he has brought you a fine detailed illustration showing the *Mercury*, or upper component of this astonishing double sky-goer, taking off from the *Maia*, or lower component, in mid-air.

Few, outside of the well-informed circle, realize or understand just what this “Flying Catapult” business means. To many, it appears only as a gigantic and costly venture in useless publicity. To others, it seems to be a ridiculously dangerous experiment, crude in manipulation and backed by faulty logic. On the other hand, those who believe in this amazing scheme call it one of the greatest steps forward in conquering the problems of long-distance commercial flight. They think this contrivance will go down in aero history alongside the gyro-compass and the airway radio beam.

Who's right? Will the composite scheme be a success—or will it turn out to be only a pathetic and ghastly mistake, putting a blot on the record of aviation?

To understand the full significance of all this, let us try to explain the basic idea. First off, the attempt to catapult one ship from the back of another is not a stunt in the publicity sense of the word; rather, it is a carefully planned effort to overcome one of the greatest obstacles in the path of trans-oceanic air commerce—that of getting a heavily weighted seaplane clear of the enormous suction of water acting on the under sides of its hull and/or pontoons. You see, in big ships tremendous power is required to break the grip of suction and pull the hull or pontoons away from the water for a take-off.

For years aircraft designers have conferred with nautical designers in an effort to devise a hull or pontoon that would lift easily from the water. They have employed a series of “steps” on the bottoms of these units to help break up the flow of suction and allow air to slip through. But there is a limit to how many such

steps successfully can be incorporated in an aero float.

Now, with the coming of the great international race for trans-oceanic supremacy, the nation that can conquer these problems will be in the van. Incidentally, most countries involved are focussing their attentions on the problem from the mail-carrying point of view. Passengers and express freight are all very well in their place, but it's always been the revenue derived from mail carriage that has built up the world's transport lines, and for this reason, most trans-oceanic flights have been devised with the mail contract as the primary goal.

Great Britain realized the value of this first, and it was her experiments and experiences gained in linking up her far-flung colonies that brought success to Imperial Airways and their renowned Empire flying boats. So well has she done this that all first-class English mail is now carried by air wherever the sky routes afford the most direct, economic transport.

When the international race for the trans-Atlantic air trade first began, British operators studied various seaplanes in order to draft out a seaplane capable of high speed, long range, and offering a suitable pay load for Atlantic round trips. But once they had figured out the size and details of the craft, they immediately sensed that the weighty ship they had in mind would never be able to get off the water by ordinary means when fully fueled. Thus they hit upon the idea of a special large and powerful ship fitted to carry the real trans-ocean plane in pick-a-back fashion. You might term it a mother-and-offspring combination. And “offspring” is decided-

ly the right word—for once the mother ship took the air, the offspring would spring off!

And so, after figuring for months, they built some wind-tunnel models and satisfied themselves that the trick could be accomplished. Then they went ahead and built the mother ship *Maia* and the offspring *Mercury*.

MANY believe that the catapult plane *Maia* is a redesigned Short Empire boat. This is not true. The *Maia* was down on blue-prints months before the Empire boats were really considered. And if the truth were known, it is more than likely that the Empire boats were designed from the original lines of the *Maia*. Actually, the *Maia* has a greater beam for lateral stability on the water, and she has 1,750 sq. ft. of wing surface as compared to the 1,500 of the Empire boats. The *Maia*'s Pegasus engines, moreover, were placed farther out from the hull to afford room for the upper plane

(Continued on page 92)

That astounding aero brain-child—the composite aircraft—is about to be actually tested by Short-Mayo engineers. And the whole aeronautical world anxiously awaits the result. For experts have asked piercing questions: “Will this revolutionary contrivance really prove a great forward step in the field of trans-ocean flight? Or will it only be a pathetic and ghastly mistake—a blot on the record of aviation?”



Chalk Up a Couple For the Studes!

By George Lyle

Transport Pilot and Flying Instructor
Author of "Jammed Controls!"

YARNS about "dumb" flying students are always tossed around profusely and with great zest when the "hangar flyers" get together for their aero bull sessions. "That boob, Jones," one pilot will begin. "You'd swear a guy couldn't be so wacky, but believe it or not he did thus and so!" Then after the raucous laughter has subsided, other airmen will chime in to recount the goofy sky gyrations of "that lack-wit novice, Smith" or "crack-brained Brown."

And they're off!

Well, far be it from me to deny the existence of that stumbling specie, the dumb tyro. But it gripes me no end that the other side of the stude story is rarely, if ever, presented.

So right here I'd like to relate a couple of tales where-in the blue ribbon was hung up on the stude's side of the ledger. First off, take—

THE CASE OF TED PETERS

ONE day, Lee Miles—the same Miles who, sad to say, was killed at the last National Air Races when a wing buckled during a pylon turn—came into Clover Field and propositioned the boys to take part in an air meet which was to be held at Brea the following Saturday. It seemed that Lee had persuaded the Brea Chamber of Commerce to lay out an airport, and now they wanted



First off, we present some of the airmen who played roles in the stirring "Drama of Brea." They are, left to right, George Hoyt, the author, Fred Hoyt—and that shining light of sky training, Student Ted Peters. As Mr. Lyle explains in no uncertain terms, the first three named were only supporting characters. For the star of the show was Peters, and the Jenny you see here was his trusty mount.

to dedicate the new field with some races and whatnot. There was some prize money up, and so, since Brea was just about a half-hour trip southeast of Santa Monica where Clover Field is located, most of the boys decided to go.

Fred Hoyt and I had just got in from Wichita with two Travel Airs for which make of plane we had been appointed dealers. These were the first ships of that class brought to the Pacific Coast and naturally we jumped at the chance to show them off in contrast to the War surplus crates that were being buzzed around at the time in the Pacific Coast states.

Now, speaking of War crates, Fred and I had a Jenny ourselves. We used it for instruction work, and we were just then checking out a solo student on it. His name was Ted Peters.

Ted had about five solo hours to his credit—and when he heard about the air meet he wanted us to let him take the Jenny over.

Hoyt immediately vetoed the idea on the grounds that Ted had never flown out of sight of the airport and probably couldn't find Brea.

"But, Mr. Hoyt," Ted wheedled, pointing to Frank Clarke. "I could follow him—he's going in his Canuck."

Fred shook his head. "You couldn't

Another shot of the surprising Ted Peters. "I can't remember," says Mr. Lyle, "just why he rode that particular animal into the picture—unless it was to emphasize the fact that he'd made jackasses of us." The Travel Air the author flew to Brea may be seen in the background.



• ANOTHER ROUSING ROUND OF "HANGAR FLYING" •

keep up with him any more than you could tail our fast Travel Airs. That's a 180 Hiss in Frank's crate."

But Peters didn't give up that easily. He was back in a half hour with a mile-wide grin on his mug.

"It's all fixed," he exulted. "Art Goebel's flying to Brea in an OX Jenny just like this one—and he says I can follow along right behind his ship."

I checked with Goebel, and he verified the arrangement.

"Sure, it's all right," Art said. "The kid can tag along. I'll lead him in."

And so it was that Ted Peters, the student, phenagled permission to fly the Jenny to Brea.

ON the day of the meet, Hoyt and I took off in our Travel Airs a bit early, since we had arranged to make some demonstrations before things got started. We were still busy at this when the boys began to arrive, Goebel, with Ted on his tail, straggling in just before the first event of the afternoon.

Along about four-thirty in the afternoon when there were still a couple of events to be run off, the loud speakers roared out an announcement:

Attention, Clover Field pilots! We have just received a call from your airport. A heavy, low-lying fog is beginning to sweep in from the ocean. It is expected to reach and cover the flying field within an hour, so if you fellows from Clover want to get your planes back tonight, you'd better scat!

Well, those coastal fogs are plenty nasty. They come a rollin' in right on the ground. And the fact that they have a tendency to raise as they move inland is not much help when you're trying to get into Clover, because Clover is just about three miles from the beach—too close to be materially benefited by any "lift".

As a consequence, we made preparations to 'scat'.

Hoyt and I, as had most of the gang, had carried passengers to the meet, and we had a little difficulty in rounding up ours for the return hop. Therefore, most of the flyers from Clover Field had taken off before we were ready. Finally, however, we got organized. And then up walked Ted Peters, and his face was very long.

"I can't get the motor started in the Jenny. Must have flooded it."

"Hell!" exclaimed Hoyt. "I'd forgotten all about you. Where in the devil is Goebel?"

"Art's gone already," came back Ted. "He didn't want to wait any longer. Anyhow, he said if he had to do any hedge-hoppin' to get in, he didn't want to have me to worry

With a WHOOSH, the trainer whipped into a nerve-jangling spin—whereupon the grinning Navy cadet simply dropped the stick and shrugged his shoulders perplexedly.

Now it was up to Sour Puss!

about. So will you fellas gimme a hand with the old OX?"

"Now, look here, Ted," Hoyt reasoned with him paternally. "If it weren't for the possibility of things being fogged in back at Clover, we'd help you get started. Under normal conditions you probably could find your way back all right. But the way things are, you'd better stay right here. I'll send someone over for you with a

car as soon as I get in." He smiled at Ted persuasively. "Then tomorrow I'll fly you back here and you can take the Jenny home by yourself. How's that?"

Ted shifted his weight uneasily from one foot to the other. His face had grown even longer.

"But I gotta date in a coupla hours," he said in a harried sort of voice.

Hearing that, I popped off to remind him we hadn't been in favor of him coming in the first place.

"Yeah, I know. But I gotta date!"

"Listen, Ted," Hoyt stated with an air of finality, "you 'gotta date'. We know that—and we'll

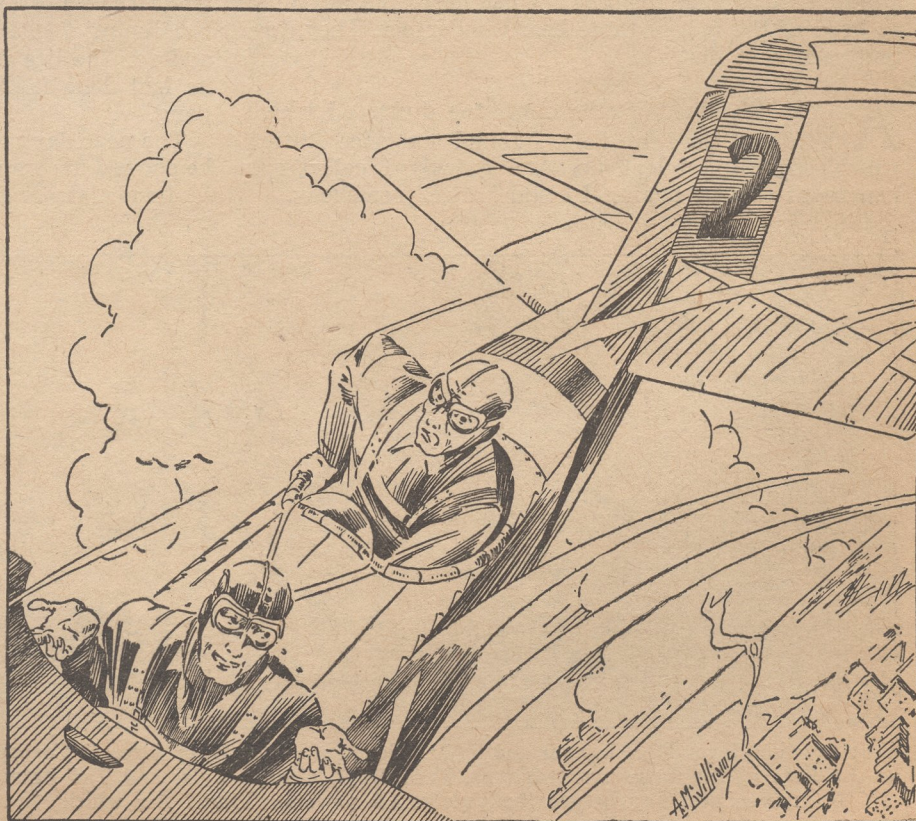
get you back home as soon as we can. But now you can just take it easy and wait. I'll start someone out with a car the minute we get in."

"That'll take hours!" grumbled Ted. And turning, he trudged off dejectedly.

Hoyt looked at me and shrugged. "Too bad he hasn't had more time," he said. "Well, anyhow, we better get going."

WHOEVER estimated that we had an hour before the fog would cover Clover Field was a bum guesser—because we ran into the soup before we were half

Do "dumb" studes always hold the bag when things go screwy at the training fields? Judging by the brand of banter that the hot stove pilots palaver, you'd certainly think so. "But," says that veteran skyman George Lyle, "there's another side to the story!" And in this fast-moving article he proves it with a spirited brace of cases in which the tyros had the last laugh—and how!



way back. However, at that stage of the journey it had raised some and there seemed to be about a five hundred foot ceiling underneath it. So, I dropped below it and altered my course to the south; for the direct trip would have taken us over the center of Los Angeles, and if I had to fly low, I wanted to do it over open country. My plan was to swing wide of the city and come into Clover from the south. Several times previously I had got in this way when the ceiling was extremely low.

For awhile I could see Hoyt scooting along ahead of me in the other Travel Air. But as his was a faster plane I soon lost track of him.

As long as I flew south, paralleling the coast line about ten miles inland, I was able to hold an altitude of four hundred feet. But as soon as I turned west I was forced to drop down, foot by foot, to keep under a constantly lowering stratum of fog.

This was mighty tough going, and it wasn't long before we were flying so low that I had to hoik my ship to clear a row of eucalyptus trees that suddenly materialized in front of me.

Of course, pulling up, put me back in the fog. Then when I eased down again I broke into the clear again with the spine-tingling impression that something had just whizzed by my left wingtip. While I was wondering whether or not it was imagination, something darn well did whip by on my right—and that settled the question quite definitely against the imaginative hypothesis. This time it was something recognizable and entirely tangible—an oil derrick!

On that instant, I lost all interest in getting home. I wanted to *land and land quick!* Craning my neck, I spotted a bean field ahead. It was small, yes. But being practically a zero approach, I cut the gun and slipped into it.

I told my passengers to sit tight; I'd look up a phone and get somebody to come after us. They didn't seem to mind the delay or the change in the mode of travel a bit. No, indeed! They were grinning at each other and stomping around as though they had never felt anything so good as the feel of those beans underfoot. They, too, had seen that derrick.

ANYHOW, about a mile down the dirt road which bordered the bean field, I found a service station which boasted a telephone. And quickly I called our hangar at Clover, hoping I could "raise" somebody.

A voice vaguely familiar, but one which I couldn't place, answered with a monotone, "Hello."

"Hoyt there?" I asked.

"No. He just called in. Said he was caught in the fog and forced down out near Vail Field somewhere."

I wasn't exactly sorry to hear that. I didn't want to be the only guy who guessed wrong and didn't get in. And when my informant went on to tell me that phone calls had come in from Clarke, Goebel, and Roy Wilson, and that all of 'em had been forced down somewhere along the route, I was guilty of a dog-in-the-manger sort of satisfaction.

"Well," I said chuckling, "this is Lyle. Yep, I'm down, too. Is there any one there who can come and get us?"

"Yes. Mrs. Lyle's here with the car."

"That's fine. Now, listen . . ." And I told him just where she could pick us up. Then, I was just about to hang up when I heard the man at the other end of the wire say something else.

"What's that?" I cracked.

"I wanted to know," replied the vaguely familiar voice, "if I should put the Jenny away and lock up the hangar?"

For a minute it didn't sink in. It just wasn't possible, that's all.

"Who—who is this?" I stammered.

"Why, Ted—Ted Peters," was the reply.

Well, you could have smacked me over with a wind sock. But wait—Ted was still talking:

"I'm sorry about flying home when you and Fred told me not to," he said apologetically. "But after you left, Lee Miles helped me start the Jenny and . . . and you see I had a date . . . and so I just sort of come on home. Y-you aren't mad, are you?"

MAD? Hell no—I was dumbfounded! To think of Goebel, Clarke, Hoyt, Wilson—all those veteran pilots forced down because the weather was too tough. To think of those guys sitting around out in the sticks waiting for someone to come and get 'em in a car—while Ted Peters, the student, had flown on through with the Jenny! *That's* something to paste in your hat band, and for the life of me I couldn't figure how the devil he had done it. Neither could any of the rest of the gang.

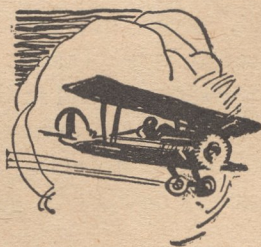
The next day we all were waiting for Ted. And when he showed up, we pounced on him *en masse* and demanded immediate and thorough enlightenment.

Ted didn't seem to realize what jackasses he had made of all of us. He appeared embarrassed by the attention he was getting, and in a decidedly penitent manner he explained:

"Well, I don't know my way around in the air very well, fellas, but I guess I know the roads and streets around here pretty good. So when I left Brea, I picked up Whittier Boulevard, followed it into town, then cut down Main to Pico, and out Pico until I got a coupla blocks from here. Then I could see the hangars."

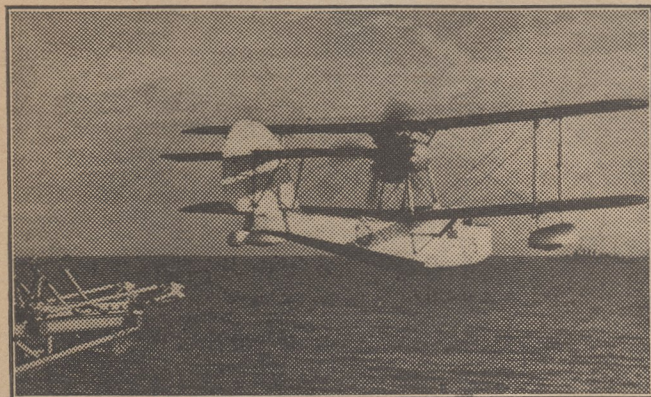
When he finished, there was absolute silence for a moment. Then Hoyt gulped a few times and said: "Y-you flew that Jenny right across town?"

(Continued on page 83)



Here are the Clover Field hangar and flight office of the Lyle-Hoyt Aircraft Corporation at the time of the Brea extravaganza. Fred Hoyt, George Lyle, and Ted Peters are seen standing before the Curtiss C6 powered Travel Air which Hoyt piloted to the field dedication.

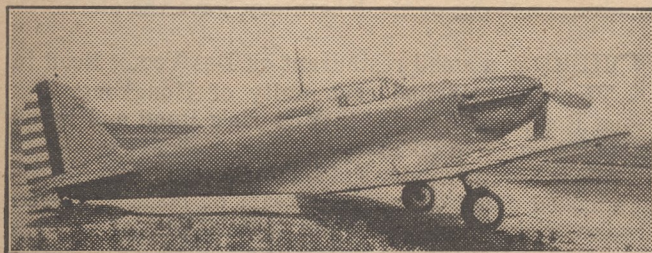
Through the Aero Lens



Here's a fine foreign shot that's a real rarity, considering all the present-day hush-hush. It shows an Australian Royal Flying Corps Supermarine Seagull just leaving the catapult of an Anzac Navy cruiser. The Seagull ships are used for naval reconnaissance. Note the details of the cradle on the business end of the catapult. (Photo by Robert Powell, H.M.A.S. "Australia.")



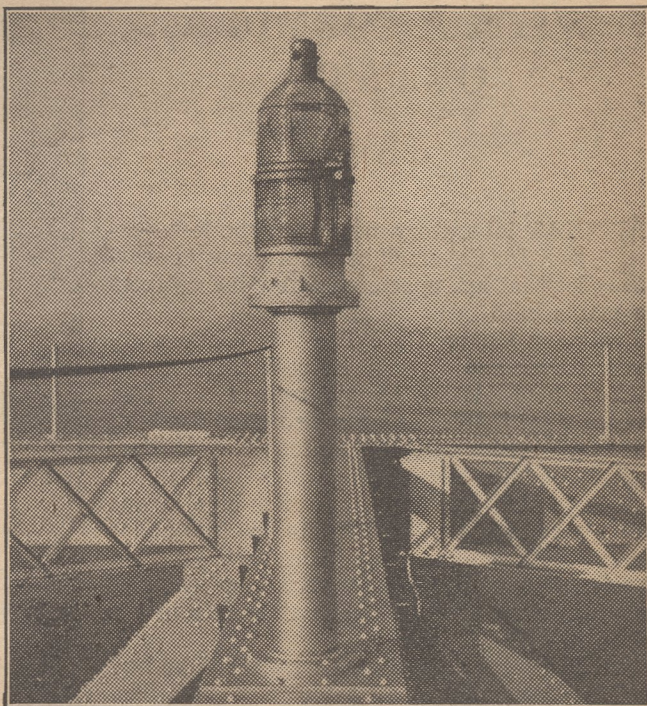
Now they've put Benny Howard's DGA-8 on floats. And they're usin' 'em on the Mackenzie Air Service line up in Canada, where they know a good ship when they see one. The DGA-8 mounts a 320-h.p. Wright Whirlwind power plant.



This is the new Consolidated PB-2A special long-range pursuit-bomber. Designed to strengthen our Army Air Corps, this sleek job is reported to pack plenty of speed. It employs a geared and supercharged Curtiss Conqueror engine rated at 735 h.p. (Robt. C. Morrison photo.)



The Vought SBU-2's bomb release "crutch" is shown in this interesting undercarriage close-up. Note the clean streamlining about the metal fittings of the landing gear legs. All military plane parts must be both staunch and trim.



A striking view of one of the airway beacons mounted high on the new San Francisco-Oakland Bridge. Because of the loftiness of the massive structure, it would be a great menace to airmen if it did not carry aero lights. By means of a special electric clock fitted with an astronomical dial, the beacons light up automatically at sunset and switch off at sunrise.



Much secrecy was maintained when they turned out this craft—the second of several Douglas DF flying boats ordered by Soviet Russia. But during a test of the huge job, a floating log stove a hole in the hull and she had to be quickly beached. And so, as you see above, a lot of curious people got a good look at her. (Robt. C. Morrison photo.)



These sky nurses are ready to dash to a scene of disaster at a moment's notice. They're members of the new Aerial Nurses Corps of America, an organization divided into companies comprising specialized medical units. Thus far, they have two ambulance ships, one of which is shown in the background. Yes, it's a Lockheed.

Death Flies to Fukien

WITH A FORMULA OF FATE

THAT laboratory floor was spotless—except for the small brilliant drops of scarlet that had spattered a few inches from the man's head.

Professor Huang Chai Tao was dead—murdered. Never again would he peer through his thick-rimmed glasses at his retorts and test tubes. He lay there, one leg curled up under him, his heavily embroidered Canton coat thrown back across his knees.

In spite of the widening greenish-blue bruise that marked his forehead, Professor Tao's face was not distorted. It simply bore an expression of utter dismay—the dismay of a man who had seen his whole life's effort snatched from his hands.

One hand was partially clenched as if he had been holding some small priceless object. The other was flat, back down to the floor.

Beyond that, all was peaceful in Professor Huang Chai Tao's laboratory on the second floor of the University of Hongkong. Nothing was broken, nothing moved. There was no evidence of any great struggle.

Suddenly a door opened from the far end of the room and a young man in a white smock sauntered in with three ledgers under his arm. But something stopped him as he made his way along the row of enamel-topped tables. He drew in his breath, peered about, finally sent his gaze toward a stand-up desk near the center of the room. On it was a small lacquered box, a jade ink well, and a strange, broad-nibbed pen.

"Professor Tao?" the newcomer called. "*Professor TAO!*" his voice ran up the scale as his heart thumped madly. In his three years of association with the famous Chinese chemistry professor, nothing had ever broken the normal routine of their work.

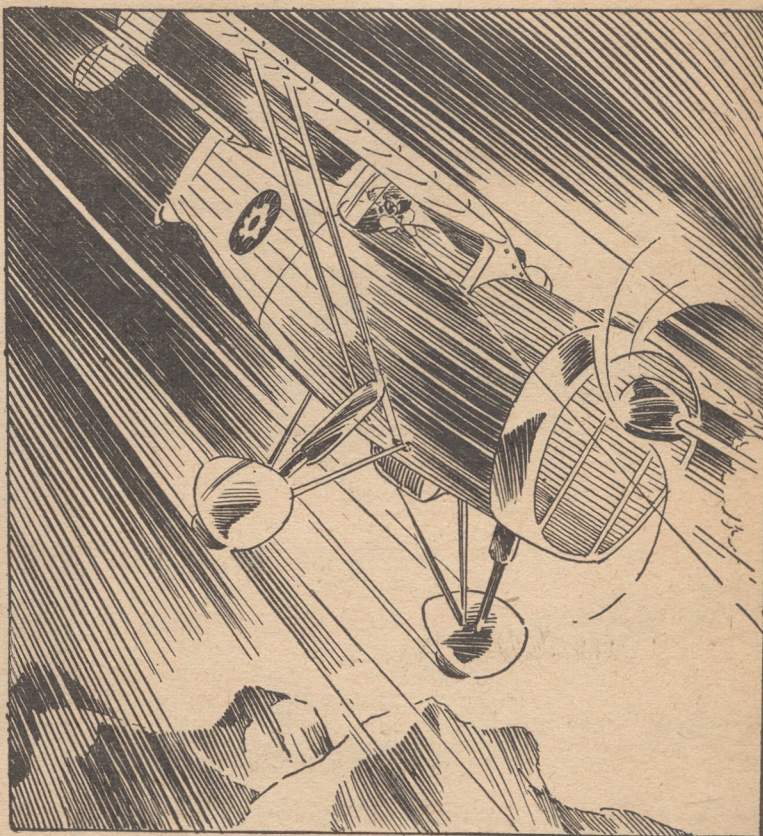
At 3 o'clock every afternoon he had arrived on the dot with the complete daily entries made in his ledgers. And he had always found the bland-faced Professor just closing a small book and reaching for the lacquered box.

"PROFESSOR TAO!" Bud Humphries called louder than ever.

Then he darted through an opening in the line of tables and started to call again. But abruptly he fell back. The shock of seeing the prostrate figure of the Chinese constricted every cord in his throat. He simply made a queer gurgling noise and dropped to one knee beside the fallen man.

Then the full realization of the tragedy struck him. Gasping, he stood up, reached for the lacquer box. It was open—and empty!

He made a hurried search of



the floor, but the small book he sought was nowhere to be found. The book, in which Professor Tao daily wrote in that queer Yunnan chirography, was missing.

Placing the ledgers on the stand-up desk, Bud Humphries hurried out of the laboratory, gave the alarm.

THERE is a small restaurant on Des Veoux Road in Victoria, principal community of Hongkong. Des Veoux Road runs parallel to Victoria's Bund and is the main shopping and business street.

From the front windows of the restaurant, two Americans looked down on a mild stream of black enameled bicycles, rickshaws, and white topees. One of them—Alton Bishop—spoke up:

"Are we going to do it? You know what I mean; go back to Shanghai?"

Tug Hardwick glanced over at his stout companion. "With that Ushio Arita mess still hanging fire? We are not!"

"But you didn't shoot him. It was that Countess Jane, wasn't it?" Bish asked painfully.

"Sure, but how can I prove it? Those Jap dicks have got to nail some one for it."

"But we can get that Mureaux job. It's just across the river at the Whampoa field. I saw it this morning, and it's a beaut!"

"Okay. You fly it up. And how are you going to get past the Jap lines, into Nanking, and then back to Shanghai?"

Bish let out a low moan, then lit a cigarette: "You know I can't

Those two-hawks, Tug Hardwick and Beansie Bishop, knew where they could find Old Man Trouble if they wanted him. Shanghai was the place—for the welcome they'd get there would be a rousing one profusely punctuated with bullets! But meanwhile, Old Man Trouble had grown tired of waiting for them. That was something those two Yanks didn't know—until a man fell at their feet with a knife in his back!

ANOTHER SMASHING TUG HARDWICK SKY NOVELET

By Arch Whitehouse

Author of "Griffon's Nemesis," "Shanghai Snare," etc.

Illustrated by Alden McWilliams



Mercilessly the Mureaux dived upon them, spitting a hail of death from both machine gun and motor cannon. Frantically Hardwick kicked rudder to escape—then he gasped in horror. For a sickening trail of fiery smoke was billowing from their helpless Bellanca!

fly a bus like that. But say, what's happened to the Countess? We haven't seen her for days."

Hardwick said nothing for some time. He just stared out of the windows. But he, too, wondered about Countess Astrid Khitrovo, the girl with the straw-colored hair and the primrose perfume. Was he slipping? Was he falling for that girl?

"I don't know where she is, and I don't care," the American news correspondent finally snapped. But now he lowered his voice as a young man came in, sat down, near them, and spread a copy of the *Hongkong Gazette* before him.

Hardwick studied the man for several minutes until Bishop was unable to stand it any longer: "Know him?" he whispered.

Without answering, Hardwick got up, went over to the man, who looked up slowly.

"My name's Hardwick," Tug said openly. "Isn't your

name Humphries? Didn't you go to M.I.T.—weren't you that bug in chemistry?"

"Tug Hardwick, by all that's holy!" the man gasped, standing up. "What the devil are you doing in Hongkong? I thought you were in aviation—test piloting, or something."

"I was. But no more. Meet my side-kick, Bish—"

"Call me Beansie," broke in Bish. "We are—or were—with the Amalgamated News Service. We're running away from the law just at present. More fun!"

"Shut up!" snapped Hardwick. Then he spotted the headlines of the *Gazette*.

"Holy Smoke! Look at that!" he barked.

"News correspondents, eh?" said Humphries, with a slight smirk. "Here's a story for you. Professor Tao was my boss!"

"Whew!" whistled Bishop. "And murdered without a trace of evidence as to who did it!"

CHAPTER II

HARDWICK sat down. "Okay. Let's have it," he cracked. "Take the notes, Bish."

"Call me Beansie," said Bishop, snapping out a wad of copy paper and a pencil.

"I'll begin from the beginning," explained Humphries, calling for three drinks, "that's the only way you'll get it straight."

"Make it fast if you've got something hot, for we may be able to make the 'Frisco deadline," said Hardwick as he read the meager and somewhat disjointed details given by the *Gazette*.

Humphries began: "Professor Huang Chai Tao was once a penniless student in the United States. But he was a brilliant fellow, and he connected up with my father and assisted him in perfecting a formula known as Humphries Hexite, a modern explosive."

"Your father is president of the Humphries Arms Company, isn't he?"

"Right. Anyhow, the old gent was so grateful to Tao that he financed him through an American and a German university and then saw to it that he was securely fixed for the rest of his life. Tao has been the holder of the Chemistry Chair here at the University of Hongkong for many years, and the old gent sent me out here to work with him on a new formula."

"An explosive?"

"Well, in a way. I can give you the dope on that—but it must not be published."

Hardwick nodded.

"Professor Tao has just perfected a formula for an explosive which requires no nitrates," said Humphries.

"No nitrates!" both Bish and Tug gagged together. "But how can that be done?"

"It's somewhat complicated—but it's a fact. No nitrates of any sort are required in what we've called, for the want of a better name, 'No-nite'. It is four times more effective than tri-nitro-toluol—TNT—and it could be manufactured from materials which are generally considered worthless."

"But Good Lord, Humphries," Hardwick sputtered excitedly, "any one who has that secret can be independent of all nitrates in case of a war. What wouldn't Japan give for that?"

"There's the story," agreed Humphries. "But it wasn't a Jap who killed Professor Tao—of that I am sure."

"But there's nothing here in the story about any one being under suspicion," Bishop broke in.

"No, you see I've kept my suspicions quiet. The University authorities still feel that he was murdered by a Japanese agent. And meanwhile the Hongkong police are working in their usual slow methodical manner. But they do not know what I know."

"Aren't you taking an awful chance on withholding evidence?"

"Perhaps. But I'd like to nail that bird myself. That is, I'd like to get my hands on—that girl!"

"Girl?" both Bish and Tug snapped.

"That's right. I have every reason to believe Professor Tao was murdered by a girl—a girl who took his formula from his lacquer box." And Humphries stopped a minute and let that sink in.

"The formula is missing?"

"Every word of it. It was inscribed in a small silk-

bound book. But that she-devil will have a hell of a time reading it."

"Why? Is it in code?"

"Might just as well be. It's in the old Yunnan writing, and there aren't half a dozen men in the world who can read it. Even I do not know the details of the real formula. I only worked on several stages of the early experiments and presented my findings to the Professor."

"Old Yunnan! Let's see, that was the language used by the priests in their communications during the First Ming Dynasty, isn't it?"

"Right! It has been saved by a handful of Yunnanese chemists. They use it as the modern medical profession uses Latin to write out medical formulas."

"Yeah, but what about this girl?" broke in Bish. "How do you know it was a girl?"

"Here's the inside dope. And maybe you can help me. A few days ago, a girl—a darned pretty girl—attempted to see the Professor on some gag or other. She gave some phoney Russian name. Since the Professor was busy, I shooed her off. But when I discovered the Professor dead this afternoon, I found this handkerchief under one of the tables near the door of the laboratory."

HUMPHRIES threw a tiny handkerchief across the table, and both Bish and Hardwick reached for it.

"Of course neither of us know anyone in this town," Tug said pointedly with a glance at Bish. "But do you remember the name she gave? I see the initial 'K' here in one corner." Then Tug sniffed lightly at the 'kerchief, caught a trace of primrose perfume.

"I don't remember," Humphries answered pensively. "But I do not believe her surname began with a 'K.' I think it was something like Velore, Velan, or something."

"Maybe Velox," said Bish, without seeming to be aware he was saying anything.

"That's it! Miss Velox! I remember now—like photographic paper. But how did you know?"

"I met a jane with a goofy name like that once," Bish said with no particular stress on the phrase.

"Sure—in Ceylon when you were on that world tour, wasn't it?" Tug broke in. "You told me about her once."

"Maybe," said Bish, "only I never was in Ceylon. Forget it."

"Yeah?" quizzed Humphries. "Well, if either of you know her—"

Tug broke in: "What the devil would a girl who you say is Russian be doing swiping explosive formulas? Russia has plenty of nitrates. I'm swinging with the Jap idea." And he turned to stare out of the window.

"She could sell it to the Japs, couldn't she?" said Humphries.

"And translate that Yunnan for them?" came back Tug.

"They'll probably find some one, somewhere who can translate it," the chemistry assistant said pointedly. That idea had seemingly just dawned on him.

"But there's only about six guys in the world who can translate it," said Bish. "Why not check up on them—and then sling out a dragnet?"

"This is China, not the state of Illinois," barked Humphries.

"Still, it's an idea," agreed Tug. "It's not *my* idea, of course; I would look for a Jap."

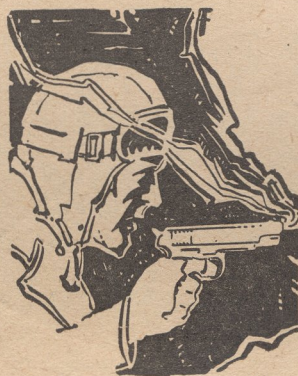
"What about the girl?" demanded Humphries.

"She's yours. I wouldn't trespass."

Humphries eyed Hardwick coldly for several seconds. He couldn't figure Hardwick.

"What does this book look like?" Tug broke in to shatter Humphries' visual interrogation.

"Just a book of rice paper of fairly heavy texture."



It is bound in leather, which in turn is covered with a fine Shantung silk bearing an old Canton junk design. It is about a quarter of an inch in thickness and about four by six in size."

Bish was taking wads of notes, but Hardwick could not get his mind off the girl, Countess Astrid Khitrovo, who had played such an amazing, and yet somewhat questionable, part in the mystery of the Japanese aircraft factory on Quelport Island and the kidnapping of General Ling Kai Ching. What was her tie-up in this new mystery? Why had she called on Professor Tao and how had she come to leave such an obvious item of evidence against herself in the laboratory of the University of Hongkong?

"So you suspect no one but this girl?" Tug suddenly asked the young American chemist. "You really don't believe a Jap could have taken the book and cleared out?"

Humphries hesitated, then said: "Well, I *still* say it was the girl. Professor Tao lived at the University. He had but few friends. And as far I know, no one in Hongkong but myself knew what he was actually working on."

Hardwick finished his drink. Then he started to turn in his seat, for there was a sudden scuffle somewhere down the room—a jangle of Chinese voices and the pad-pad of felt-covered slippers. A young coolie, mouth agape, eyes flaming with fear, and arms raised in mute supplication, tottered out of the circle of black-coated waiters who had attempted to bar his way.

"Mist' Hardwick! . . . Mist' . . . Hardwick!" the coolie boy managed to get out. He was having great difficulty in speaking.

"What is it?" cried Tug, jumping up.

The coolie boy took more steps forward. Then with a wheezy gasp he fell flat on his face.

"Good Lord! Look!" gasped Humphries.

"A knife—a foot long!" added Hardwick.

"Right in the middle of his back!" completed Bish.

They dropped beside the boy, who was now struggling to get his face around. Hardwick reached for the knife handle, but then realized that to attempt to withdraw it now would only complete what the assassin had started.

"What's it all about? He asked for you," Humphries whispered as the excited waiters crowded around. "Look, in his right hand."

The coolie boy was true to his trust, whatever it was. He struggled again and hit the floor with his clenched right hand. Hardwick reached down, turned the fingers back. There was a small cream colored note there, carefully folded. He took it out, stepped back to read it.

Again he got that unmistakable scent of primrose. He gave Bish a quick glance, and the pudgy newspaperman, quickly catching his cue, directed Humphries' gaze back to the knife.

"They must have chased him to prevent him from getting here," he barked at Humphries. "What sort of a knife is that?"

"Horrible thing!" cried Humphries.

"Let's get out of here," Hardwick suddenly broke in.

"But you can't go until the Police arrive," argued Humphries. "What about that note he was carrying?"

"That's it. I can't waste any more time. This is important."

"But you . . . you can't leave me here like this," bleated Humphries.

"Sorry. Got to get off a story. Come on, Bish!"

"Call me Beansie!" insisted Bish as they hurried away.

IN three minutes, Bish and Hardwick were being trundled down Queen Street in two rickshaws. Finally, Hardwick barked sharply and the two runners turned into a wharf entrance.

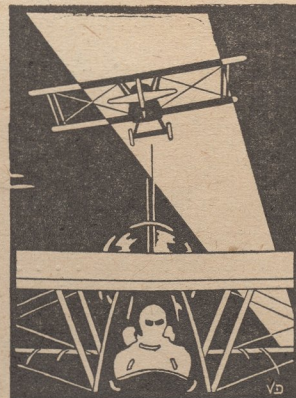
They paid their toll, darted inside, and hurried past pungent bales of copra, casks of oil, and stacks of oakum until they reached the gang plank of a small canvas-topped steamer.

"Mr. Hardwick!" a voice called. "Over here, Mr. Hardwick."

"It's the Countess!" Bish said excitedly. "What the devil!"

They dashed onto the boat, hurried to the girl, who was sitting on the long bench that ran along the side of the engine room superstructure. She was pale and plainly tired, but she had not lost the aura of aristocratic beauty that had been on Hardwick's mind ever since he encountered her in the Astor Hotel in Shanghai two weeks before.

"I'm so glad you have come. You can get me to Shanghai, can't you?" she asked pleadingly.



"Can all three of us get aboard that Mureaux at Whampoa?" Tug hurled at Bish. "Sure we can," he snapped, answering his own question. "You two can squeeze in the back if we take no bombs. And now what's it all about?" he said, turning back to the girl.

"I've got to get to Shanghai!" the girl said, wringing her hands.

"What about Professor Tao?" Tug came back, watching the deckhands throw off

the head-line of the little coastal steamer.

For a moment the girl was stunned. No words came from her throat.

"Come on. We know all about the Professor and his little book—but you pulled one boner, sweetheart. You left your handkerchief on the floor there. Here it is—Yours, eh?"

The girl took the dainty piece of cambric, clenched it tightly in her fine fingers. "I was too late. He was dead—murdered—when I got there to warn him. The book was gone, too. That's what I went to warn him about."

"How did you know about the book?"

"It was Taro Yoshida, General Nagano's secretary. I spotted him disguised as a Malay gardener in the University grounds."

"But no one knew what Professor Tao was working on," Hardwick charged. "You'd better get *this* story straight."

"That fool young Humphries let it out one day when he allowed Yoshida to accompany him on a trip to Kowloon. Yoshida went along as his Number 1 boy, and you know how men will talk when they get off on their own."

"But what was Yoshida doing there in disguise in the first place?"

"Tokyo knew Professor Tao was working on something important. He had too much outside assistance and backing to be just an ordinary University professor—so they put Yoshida on his trail."

"And Humphries spilled the beans?" mused Tug staring out at the muddy water. "Still," he jerked around, "that does not explain how *you* knew about it."

"My brother—he's recovered now from the injuries he received in Shanghai—went to visit Professor Tao, who was a great friend of my father's back in the better days. It was while he was visiting the Professor that he spotted Yoshida. But not being certain of him, he asked me to drop around. I recognized him and immediately tried to see the Professor and warn him. When I did get there on a ruse, it was too late."

"You got there on a ruse, you say?"

"Yes, I had Ching Let, one of our agents, get Mr. Humphries away on a false errand."

"That the lad you sent with the note?" asked Bish.

"Yes, that was Ching Let."

"Well, you sent him on his last errand," said Tug.

"They got him, somehow, just before he arrived." And he explained the tragic ending to the China boy's errand. The girl burst into tears, and the two Americans walked up the deck for a few minutes.

"We've got to nail this Yoshida bird before he gets away with that formula," husked Hardwick. "Got any ideas?"

"The book's no good without some one to translate it," reminded Bish.

"That's right. But if this guy Yoshida has the book, he'll try to finish the job by getting hold of some one who can dope it out."

Hardwick hurried back to the girl. She was now composed again.

"Look here, Countess," he half-whispered sitting down beside her. "Do you know anyone—who knows the Yunnan tongue? This is important, so think fast."

"Yunnan tongue?"

Hardwick explained hurriedly.

"Well," replied the girl, "we had a Chinese professor who was familiar with Yunnan formulate, a secret code for the White Brigade some years ago. Let me see It was a Buddhist priest by the name of Fa Hein who was at the Vinaya Monastery outside Shaowu. As a matter of fact, I went to Shaowu and got the code. I know the section well."

"Shaowu is about halfway between here and Shanghai, isn't it? Somewhere east of the Bohea Range near the end of the Min River?"

"That's right."

"Then we'll have to break up your trip to Shanghai, eh?"

"You seem to have *my* plans fitting perfectly into yours, don't you?" the girl said with a wry smile.

For the rest of the trip across the bay to the mainland, they sat and made sketchy plans. The night began to fall fast now, and they tried to guess the actual movements of Taro Yoshida. Would he race to Shanghai, or would he seek refuge on the island of Formosa where he could be picked up by a Japanese war vessel and hurried to Japan?

They got their answer when they arrived at the Whampoa aerodrome.



WHAMPOA'S tiny field sat in a swamp a few miles north of the old city. It buzzed with a strange tang of activity unlike that experienced at any other airport. There were three frowsy canvas-covered hangars that groaned in the light wind. A bleary light tried its best to illuminate the tarmac, but it only managed to bring out the worst in the layout.

Hardwick had hired a wheezy motor car of uncertain vintage and make. It clanked them up to the hangar door, deposited them near a drab circle of clacking Chinese mechanics. From the group strode a Chinese officer, complete with sword, belt, and holster in which was rammed a monstrous monkey-wrench. He recognized Bish at once and began the usual line of "Honorable Sirs," after illuminating his greeting with a number of profound bows to the girl.

"Where's the Mureaux?" demanded Bish, shading his eyes and peering into the dim confines of the first hangar.

"But, sir," expostulated the Chinese, "the Russian gentleman and his Number 1 boy have taken it—but a few minutes ago."

"Taken it?" gasped Bish and Tug together. "By what authority?"

"The Russian gentleman had credentials from the 19th Route Army to deliver the plane to General Ting Chao at Nanking. I saw the papers myself."

"And he had a number 1 boy with him?" asked the girl. "What sort of a boy?"

"I not look, miss. I am occupied with the Russian gentleman. I have been very busy with getting these French planes through to our fronts."

Hardwick spat, walked up and down. They were stuck now—and they'd have to like it.

"Didn't I tell you," Bish spluttered, "that Mr. Hardwick would come for it tonight?"

"But we have wait—and you no come," the Chinese explained. "But Captain Borgroffo, come with suitable papers."

"Captain Borgroffo?" Countess Khitrovo cried. "Captain Borgroffo?"

The Chinese looked even dumber, whereupon Tug stepped in with: "You know this Captain Borgroffo, Countess?"

She drew him away: "He's the man who suggested that Fa Hein, the Buddhist priest, draw up our White Brigade code. He knows Fa Hein very well."

"There's the story," muttered Tug. "He's in on it with the Japs—probably getting a sweet cut. And Shaowu is about 450 miles away. Swell!"

"There's no other plane here?" asked the girl of Bishop.

"That was the last one of the consignment. No more for about a month, even if then. They wanted me to fly it up. What the hell did you want to go to Shanghai for, anyway?"

"I thought Yoshida would report with the book to the Japanese officials there. I hoped to head him off."

"Well, I must say you have more than your share of nerve," said Tug, "Considering how the Japanese must love you after that last mess."

"Isn't there something we can use to get to Shaowu? Something—anything that will fly?" pleaded the girl.

"Sure there is," whispered Bish. "There's an American Bellanca Pacemaker in the other hangar. It belongs to the National Geographic Society's exploration crowd. They're working out of here seeking for some ancient ruins."

"What's the plane look like?" demanded Tug out of one corner of his mouth. "Does she appear as if she can take it—if she has to?"

"Pretty good. I saw it this morning. No armament but a rifle or so—but there's no other ship here now."

"All right. We'll take that."

"How?"

Hardwick did not answer. He simply pulled his wallet out of his pocket and extracted a card. Then he carelessly strode across to the Chinese officer and presented it.

"We will take the National Geographic Society's Bellanca. Will you see that it is properly fueled?"

The Chinese squinted at the card, gulped once, saluted, then bellowed a tangle of clacky orders which sent the gaping mechanics scampering toward the closed hangar.

"What did that?" asked the amazed Bish.

Hardwick handed over the card with grave solemnity. Across it printed in impressive type Bish found:

(Continued on page 74)



WISCRACK-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 WISCRACK-UPS.



"So HERE'S where you've been spending all your evenings!"

HAD ENOUGH

Clerk (displaying new razor): Yes sir! It'll give you the closest shaves you ever had.

Flyer: Say, brother, I've had all o' them I want already. I'm a test pilot.

PEACE OF MIND

Instructor: What ya got that bucket of dirt for?

Nervous student: I'm taking it up in the plane with me—so that I can keep one foot on the ground.

HURRAH!

Lieutenant Spriggs was full of pride as he set his Spad down on the drome after his first trip over the Lines. Hadn't he just shot down a Kraut plane? And now just look at that mob there cheering their lungs out. He was being received like a hero!

"Great, huh?" beamed Spriggs throwing his chest out and eyeing the crowd as he climbed out of his ship.

"Sure is!" agreed his mechanic. "Everybody's celebratin'. We just got word the War's over!"

SARCASM

An auto skidded to a stop on the driveway at Newark Airport, and a man jumped out of it, ran through the field gate, and raced out on the runway toward a taxiing plane. But before he'd gone fifty yards, the ship had taken the air.

At the fence lolled a bystander puffing a corn cob pipe. "I say," he spoke up as the man came walking back, "were you trying to catch that plane, mister?"

The man eyed him for a moment, obviously having difficulty in holding himself in. "Hell no!" he finally replied. "I just didn't like the looks of it—so I chased it off the field!"

AERATING THE MASTERS

Oh, I must go down to the port again,
To the port of the ships of the sky.
And all I ask is a Taylor Cub
And a compass to steer her by.

Yes, all I need do is cry "Contact!"
Then with plenty of gas and oil,
A ceiling high and a clear blue sky,
I'll spurn this cumbrous soil.



"There goes Whipple now. He insisted on starting at the bottom and working his way to the top."

HANGAR FLYING

"Night had fallen, and for some hours the spit-and-argue club had been in full session around the stove back in Hangar 6.

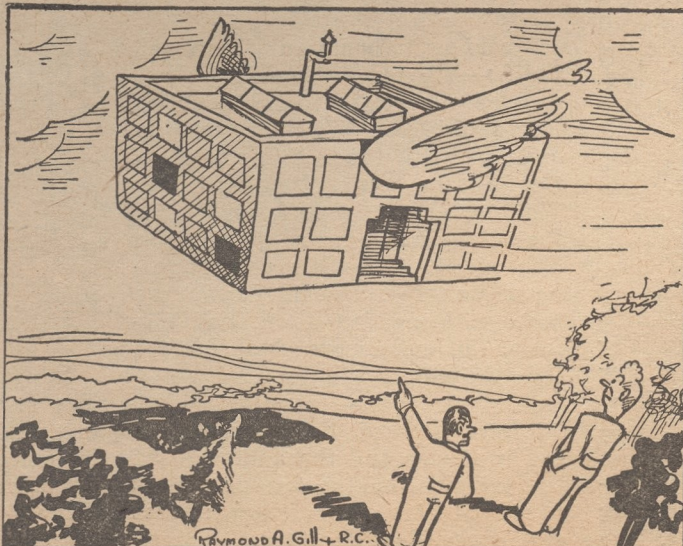
Throughout it all, one old vet hadn't said a thing. But he finally spoke up when a fledgling flyer began to brag that his plane was the world's slowest.

"If you think your plane's slow," he barked, "you're nuts! You shoulda seen the Jenny I had back in the War. Why, one day I was ahead-in' right into a hangar with the dang thing outa control. Well, the grease monkeys jus' sauntered out, took down the hangar, smoked a coupla cigs while I went by, and then put the hangar back up again!"

MISUNDERSTANDING

Airport manager (incensed): What in the devil is that dog house doing on the field?

Amateur pilot (apologetically): B-b-but that's my Flying Flea hangar.



"What is it you don't understand, Tisdale? You've heard of flying schools, haven't you?"

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.

C. L. Hall, Washington, D. C.:—I do not believe that any modern aircraft motor could be scaled down to gas model size and be practical. The idea is very good, but when you consider the number of parts to be duplicated in miniature, you can see that it would be a very delicate job. Besides, such a model would cost a great deal of money.

N. Pluxton, Victoria, B. C. Canada:—If you are in the Canadian Scottish regiment, you should be able to purchase many books on machine guns. You can get a full list by writing to H. M. Stationary Office, Adastral House, Kingsway, London, W.C.2, England, by applying on Army form L-1372. Check this with your commanding officer.

David E. Hamsch, Baltimore:—We do not sell separate plans of models. You can get official U.S. Signal Corps pictures for fifteen cents each. Write to the Signal Corps Headquarters in Washington, D. C.

Billy Read, Beaumont, Texas:—No, the Phineas stories have not been put into book form. I believe you will see big things in the improvement of the Air Force within the next few months.

Bob Dodds, Stratford, Canada:—The United States had forty-five squadrons on the Western Front at the end of the War. This would be about 675 planes. The British had 199 active service squadrons on all fronts. The British destroyed 7,908 enemy planes and lost 2,810, according to British figures. United States files from April 1918 to the end of the War recorded 781 planes and 73 balloons destroyed and 289 planes and 49 balloons lost. I cannot give you any more figures than these.

H. W. Swath, Lincoln, Ill.:—Altimeters for automobiles are usually sold at good oculist stores. Try Meyrowitz on Fifth Avenue, New York City.

Melvin Michael, Davis, Calif.:—Your question concerning Boeing and T.W.A. is not at all clear. I do not know the speed of the new Boe-

ing Clipper. Performance figures on the XB-15 have not been given out.

C. G. Ware, Cranwell, England:—Many thanks for your kind letter. Please remember me to my old friend, Mr. Wright. I do not recall the Rev. J. Denis de Vitre. Cranwell has many fond memories for me, hence I was happy to get your letter.

Ted Miller, New York City:—No real model plans of Kerry Keen's *Black Bullet* have been drawn, but a three-view layout was presented in our November 1936 issue, and from it many readers made up their own plans.

Bill Addison, Fort Lauderdale, Fla.:—There is no cost for Bureau of Air Commerce reports. Write to the Department of Commerce, Bureau of Air Commerce, tell them what you want, and they will send it on to you. Ask particularly for Bulletin No. 26.

R. G. Nutt, Jr.,:—History shows that the Wrights have been given credit for the first heavier-than-air flight. The Gustave Whitehead flights, supposed to have been made in 1899 and 1901, seem to have been seen by some, but unfortunately, no one has yet proved that actual flight took place. I know no more than you concerning the Whitehead flight. I read the same article, but I have been able to find no other evidence anywhere.

Junior Thompson, Lynwood, Calif.:—Yes, the Sopwith Snipe's speed at 15,000 was 110. But at sea level it did 132 with a Bentley rotary and 154 with the A.B.C. radial. A few S.E.5's were fitted with the Wolseley Viper engine, and when that plane was hard to get, Hissos. The speed of the Nieuport Night-hawk was 151. The S.E.5a was an S.E.5 with a geared-down Hissos motor of 150 h.p., a more advanced type than the one used in the S.E.5.

James Howard, Beardstown, Ill.:—The names and the addresses of the principal engine manufacturers in this country are as follows: Pratt & Whitney, East Hartford, Connecticut; Continental Motors, Muskegon,

Mich.; Kinner Airplane and Motor Corporation, 635 W. Colorado Boulevard, Glendale, Calif.; Menasco Manufacturing Company, 6714 McKinley Avenue, Los Angeles, California.; Ranger Engineering Corporation, Farmingdale, Long Island, N.Y.; and Wright Aeronautical Corporation, Paterson, New Jersey.

Ray Harrington, Buffalo:—To settle your gigantic argument, Captain Eddie Rickenbacker, with 25 victories, was the American ace of aces.

Joe Allen, Hood River, Ore.:—I have no record of the former war-time flyer Walter E. Case, who was killed in a mail plane crash near Hood River in 1931. Perhaps some of our readers knew of Case and can help you out.

Bob Patman, Cobleskill, N.Y.:—You cannot get into the Army or Navy Air Service if you have an eyesight defect. Manufacturers give out photographs of their planes to credited parties, and in a few instances photos are obtainable from the public relations bureau of the Army and Navy Air Corps.

Manning Sweeney, New York City:—The Douglas shown on the catalog you sent to me is the DC-2 used by the Swiss Air Lines. The one in the lower portion of the picture is the De Havilland Express Air Liner which uses four 200 h.p. Gypsy-Six engines.

Al Manley, Washington, D. C.:—How does Coffin Kirk sight his guns? Well, the guns are supposed to be hidden away, but that does not mean that he has to squint along the gun itself. He can use anything for a sight, as long as they line up with the correct line of flight. I'm sorry, but I cannot disclose all the secrets as to how Kerry Keen gets his ammunition.

Rowland Hein, Minneapolis:—The story you refer to is true in every respect, otherwise it wouldn't have been printed. I had to show the actual facts before it was accepted. The OJ-2 is from all indications the old Berliner-Joyce observation ship. The FF-1 is the Grumman two-seat-

er fighting biplane. I only know of the purchase of the 210 Curtiss pursuit ships, but if you read of that in a reliable newspaper or magazine, it must be so. Don't you believe *anything*? I do not know the true speed of the PB-2A.

William Wojicka, 4025 Hough Avenue, Cleveland, Ohio:—You have a copy of Hamilton's *Complete Model Aircraft Manual* which you would like to trade for a good Sky Chief, Laird Super-Solution, or Curtiss Goshawk model? How about it, readers?

Waldo Wenham, Feilding, New Zealand:—Yes, one of the Boeing bombers did crash during a test flight when a pilot attempted to take off with the controls locked. That must be the news-reel picture you saw. There are two models of the Electra, the 10-B and the 10-E. The former has a top speed of 200 m.p.h., and the latter does 195. They are made at the Lockheed Aircraft Corporation, of Burbank, California. That address will reach the firm. Fokker was building Fokker planes for his own personal use long before the war. I do not believe Holland had access to any Fokker planes during the war.

Thelma Walter, Alliance, Ohio:—No, Thelma, a tri-motored plane must have three motors, they wouldn't let the manufacturer call it a tri-motored ship if it didn't. Once upon a time there was a tri-motor with *two* engines—but that was after one of the engines fell off. No one was hurt, but the pilot felt very foolish. So they soon put a stop to that sort of monkey business. So will we—for here's another question we must answer—

Norman Stanford, Melbourne, Australia:—To obtain the sterling silver F.A.C. ring you must send us an International Money Order for five shillings and six pence to cover the cost of mailing.

Philip Bayless, Muncie, Indiana:—The Hawker Fury which does about 240 m.p.h. is the fastest service ship in the Royal Canadian Air Service.

Jeremiah S. Sherman, Frazer, Pennsylvania:—The story of the coastal motor boats has never been fully told. I was acquainted with them during the war and have collected considerable information on them since. Much of this information may be obtained from *Jane's Fighting Ships* put out every year by the British publishers of *All the World's Air-*

craft. The book may be ordered through any good bookseller and will cost about \$16.00.

Walter King Robbins, Carlisle, Ky.:—I've never heard that model gas jobs use any particular formula for fuel, but I am sure the manufacturer will advise you just what to use in his type motor if some special gasoline is called for.

Westley E. Matters, Oak Park:—The Boeing F4B-4 (the carrier fighter) has a top speed of 187 m.p.h. The Grumman F2F-1 is said to do 265 m.p.h. top.

Hugh Ryan, Sydney, Australia:—You can purchase anything you wish in the way of model supplies in this country. All you have to do is to go to your Post Office and make out an International Money Order for the amount of the article you desire.

Bob Connor, Weiman, Calif.:—The ship *Snuffy*, to which you refer, was built to individual order and is not in any sense a production job. We cannot tell you any more about it than has already been published. As a matter of fact, we do not know whether it has been flown.

Jimmy Ringer, Watseka, Ill.:—The plane you inquire about is a Hawker *Audax*, a two-seater Army co-operation ship powered with a Rolls Royce Kestrel engine. It is an adaptation

twelve cylinders—six in each row. Below the prop boss line are twelve more set opposite the twelve above. The prop shaft is set in the center, so when you look at the engine toward the prop boss, it has the general shape of the letter "H". There are two crankshafts, one for each side, and they are geared to the prop shaft. This system offers a large engine with small frontal area.

Walter Johnson, Biggs, Calif.:—The home address of Pan American Airways is the Chrysler Building, East 42nd. Street, New York City.

John Wright, Mathis, Texas:—The Beechcraft firm only offers cruising speeds in their catalogs. The C17R is said to cruise at 202 m.p.h. at 68 percent throttle. Other sources claim it does 211 m.p.h. top. It carries fuel for 700 miles range, but we have no details on actual fuel consumption. Yes, if you have the money you can purchase a Seversky P-35. The Fairchild with either the Ranger or the Super-Scarab does 130 m.p.h. top. I know of no plane that resembles Kerry Keen's . . . sh-h-h-h! I mean the Griffon's *Black Bullet*.

Jack McInnes, East Falls Church, Va.:—Yes, Mr. Martin will be glad to answer your questions if you will address him care this magazine.

Stewart Meyer, Lowville, N.Y.:—Signal pistols may be purchased at Marine equipment stores. I do not believe you need a license for them. That gag of your's about the one-bladed propeller? Well, it is still a blade set at a suitable pitch, isn't it?

Don Allen, Lima, Ohio:—I suggest that you write to the Model Aircraft Stores, 133 Richmond Park Road, Bournemouth, England, for full information and details on the British Comet model-aero engine. A. E. Brooks, designer of the Comet, is a member of this firm.

J. Bryan Crawford, Christchurch, N.Z.:—The Immelman turn was a quick reverse carried out by pulling the nose up sharply, almost to a stall, and then suddenly shoving rudder. When the maneuver was properly carried out, the ship turned on a "tanner," so-to-speak (English for "on a dime").

William Kurtz, Pittsburgh, Pa.:—I am sorry I cannot give out the addresses of famous flyers. But you can check on them if you read the newspapers closely. For instance,
(Continued on page 72)

And Now We'll Ask You a Few

- 1—What was *Vieux Charles*?
- 2—What is the meaning of the word "burburle"?
- 3—What was a flaming onion?
- 4—If you were aboard a bomber and you pulled a toggle, what would happen?
- 5—What were Prieur rockets?
- 6—During the War the 94th Aero Squadron had the Hat-in-the-Ring insignia. Does the 94th Pursuit Squadron still use that insignia?
- 7—Was Tony Fokker the first to build a successful triplane fighter?
- 8—Who was the Mad Major?
- 9—Who was Canada's youngest V.C. airman?
- 10—Who really planned and organized the German Circus staffs?

(Answers on page 96)

of the *Hart* with a lot more military equipment aboard. With a top speed of 152 m.p.h., it is practically a training machine today.

Raymond Wagner, East Cleveland, Ohio:—The H-type engine has four rows of cylinders. For instance, the *Napier Dagger* is a twenty-four cylindered job. On top, in two rows, are

Modern Planes Album



CONTINENTAL AERONCA

THE CONTINENTAL AERONCA
OUR light plane fans will be interested in this new mount being turned out by the Aeronca firm. Already a few of 'em have appeared at the better-known airports.

The new job takes its name from its A-40 Continental motor, which gives the ship a top speed of 93 m.p.h. She cruises between 80 and 85 m.p.h., and her 10-gallon fuel tank assures a range of 250 miles. She's called the

Aeronca KC in the aeronautical trade listings.

The cockpit and conveniences aboard this ship are particularly pleasing. Seats are set side-by-side, and their cushions are removable in case parachute seat-packs are desired. The cabin is completely upholstered. The new up-to-date oval instrument panel carries tachometer, oil temperature and pressure gauges, airspeed indicator, and altimeter, and

the gas shut-off, throttle, and primer pump are conveniently located in the center of the cockpit. Two burnished aluminum control wheels are furnished.

The control system has been simplified, but no important features have been eliminated. Friction has been removed by the use of Oltite bearings in the ailerons and double ball-bearings in the control column. Checking of the control system in the wings and fuselage has been made easy by the use of transparent inspection windows. The ailerons are of the Frieze type, which insures effective lateral control and quicker response to the wheel.

An elevator trimming tab, conveniently located overhead, may be used to trim the ship while in flight. The undercarriage has a 70-inch base which is particularly suitable for the rough service demands of flying school work. Large Goodyear roller-bearing airwheels are employed on the plane.

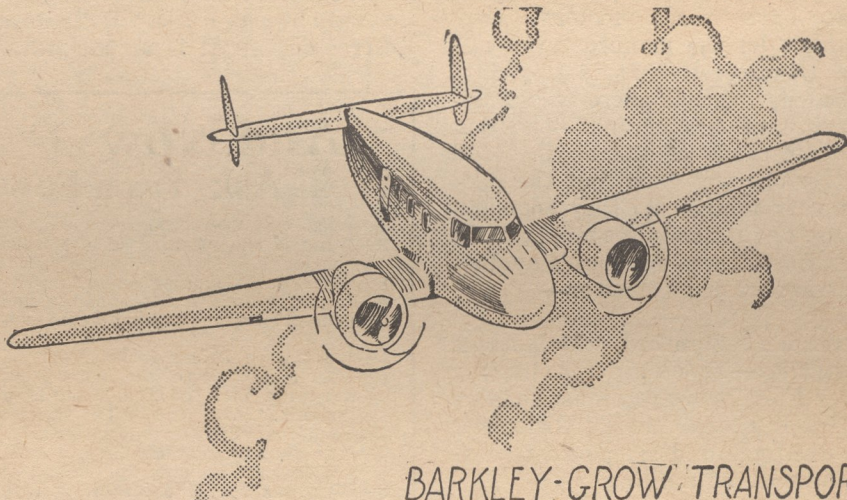
All in all, this new model should be very popular with the present-day light-plane pilots.

THE BARKLEY-GROW TRANSPORT
THIS new Detroit concern is starting off with a bang. It not only makes this Barkley-Grow transport plane but now plans to develop a new bomber from it.

The transport shown herewith, is a rather light job designed for feeder lines, corporation executives, de luxe air cruiser buyers, and aerial ambulance outfits. Carrying a gross load of 8,000 lbs. and using two Wasp Junior engines, it has a maximum speed of 214 m.p.h. at sea level and 224 at 5,000 feet. It cruises at 9,600 feet at 216 m.p.h., and with 120 gallons of fuel it has a normal cruising range of 510 miles.

In general, the Barkley-Grow is an all-metal monoplane adaptable for many uses. As a transport she seats six passengers and carries a crew of two. The spacious cabin is insulated against sound. The chairs are large and comfortable, and there is plenty of head- and leg-room. The fuselage is of semi-monocoque construction comprising aluminum alloy rings and longitudinal stringers and is covered with Alclad sheet. There is one heavy bulkhead just aft of the pilot's compartment and two more bulkheads aft of the main cabin.

An outstanding feature of the



BARKLEY-GROW TRANSPORT

Barkley-Grow wing structure is its multi-spar system and stressed-skin covering. This makes for a particularly rigid airfoil. The center-section portion is part of the fuselage; the outer portions are bolted on, and the wing-tip sections are removable. It is believed that this type of wing-design is especially staunch against machine-gun fire.

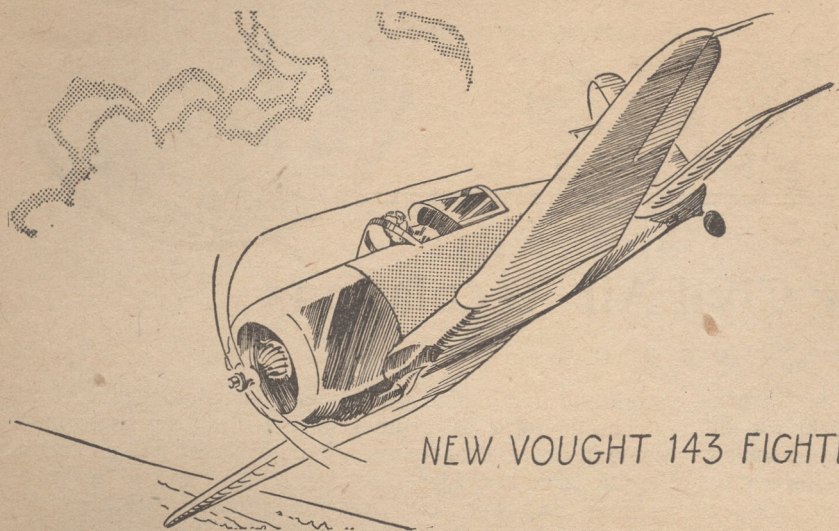
The company has already re-drafted the ship's interior as a modern high-speed bomber. In this form, the plane will carry a crew of four and will have internal racks carrying

eighteen 30-pound fragmentation bombs and external racks for six 50-pound bombs. An American Armament Company air cannon will be mounted in the nose, and an ordinary movable M.G. will be set under a covered turret near the tail.

The fact that this transport can be so easily revamped into a bomber strongly reflects the world's present state of unrest. Indeed every great power is busy checking its commercial aircraft in order to determine their suitability for use in war work in event of an emergency.

NEW SKY CRAFT FROM MILITARY AND CIVIL TARMACS

Our selection this month brings you a new Aeronca, the striking Barkley-Grow transport-bomber, a trim Vought export fighter, and a neat British low-wing trainer.



NEW VOUGHT 143 FIGHTER

THE VOUGHT V-143
HERE is an interesting American fighter whose history illustrates some of the complications of military plane manufacture.

This craft, now made by the Vought firm, was originally developed by the Northrop company as a Navy ship-board fighter. But somehow the design never got far beyond the experimental stage and it was

eventually shelved. Then later it was turned over to Vought, presumably to be groomed as an Army fighter.

Actually Vought makes *two* of these jobs. One is a first-line U.S. service ship. The other, mounting a "slightly different" engine, is the V-143 which is now available for export to any non-warring foreign power that cares to purchase them.

Here are the performance figures

we have on the export ship: Top speed—250 m.p.h. at 8,000 feet; Cruising speed—220 at three-quarters throttle at the same height; Landing speed when fully loaded—60 m.p.h.; Rate of climb up to 8,000 feet—2,100 feet per minute; Range using 75 percent of its power—770 miles; Range with the power output lowered to 50 percent—1,070 miles.

The V-143 export job uses the 750 h.p. Twin-Wasp Junior engine. Normal armament is made up either of two .30 caliber or two .50 caliber Browning guns, the same type used on regular U.S. service craft. Racks mounted under the wings will take 300 pounds of bombs.

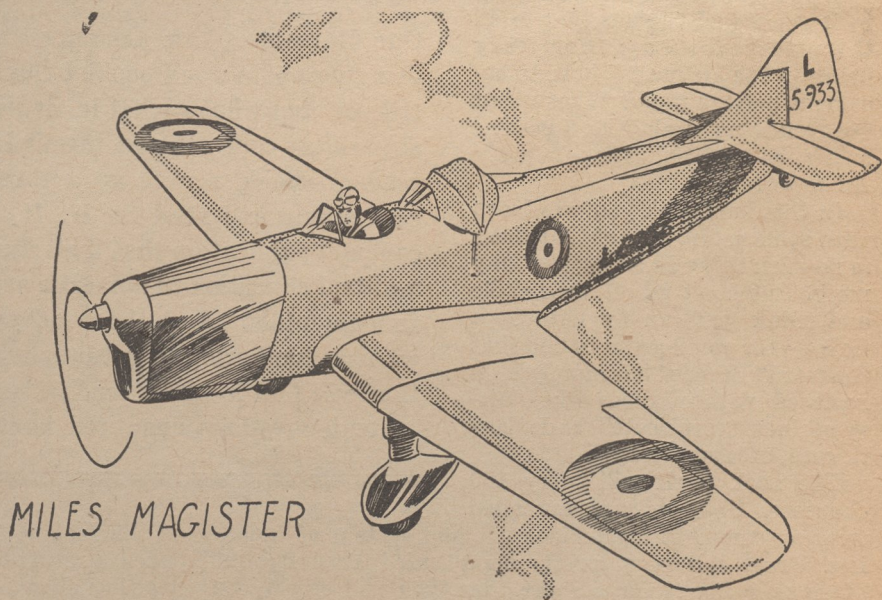
This, then, indicates that there is no difference between the export craft and the *other* Vought which is modern service equipment in this country and which is supposed to be on the secret list for two years!

The V-143 is metal throughout in structure, but the tail surfaces are covered with fabric. A metal control-pitch prop is standard equipment, but it is reported that increased performance can be obtained with a constant speed propeller.

THE MILES MAGISTER
JUST what the word "Magister" means, we have no idea. But the British Miles firm has been going great guns since Lindbergh purchased his Miles Mohawk, and now the latest Miles is this two-place trainer designed for special work in the R.A.F.—and regardless of what it means, "Magister" is the name it bears.

In general, it's a typical Miles product, a two-seater which can be flown with one cockpit completely covered to make it a single-seater. It's a low-wing job utilizing the D.H. Gypsy Major inverted engine. The undercarriage, consisting of two well-faired legs enclosing oleo shock-absorbing units, employs Dunlop air-wheels and brakes. The wheels carry streamlined spats.

It is obvious that the Magister is little more than an earlier type Miles Hawk which has been improved for advanced training work. The wings are built on two box-spars of the ring-type and are bolted to the center-section portions, which are integral with the fuselage. The wings are covered with plywood. Complete wooden ailerons and split, trailing-edge flaps are featured.



MILES MAGISTER

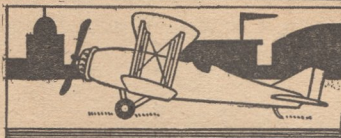
The 130-h.p. Gypsy Major engine is one of the most popular and efficient plants of its type in Europe. It gives the Magister a top speed of 180 and a range of about 415 miles. The fuel tanks, set in the wing roots, have a capacity of 32 gallons. As far as we know, armament has been omitted on this ship, hence we must presume that it is designed for aero-

batics, cross-country work, and certain aviation training. Except for its undercarriage, the Miles Magister is similar to the Sparrowhawk in many ways.

The popularity of the Miles ships with the Royal Air Force may be understood when we realize that it is the only monoplane allowed by the Air Ministry for R.A.F. instruction.

HAPPY LANDINGS

BY ARCH WHITEHOUSE



Those New Civil Air Regulations

HERE'S some mighty good news! The Government Printing Office has started to knock out the new Bureau of Air Commerce booklets which will contain all the civil air rules in their recently re-drafted form. And we can promise you that this new book of *Civil Air Regulations* will constitute one of the greatest steps forward in the progress of American aviation. So our advice to every real sky fan is: Send in for your free copy as soon as you can raise the dough for a three-cent stamp.

All you have to do is to address a letter to the Bureau of Air Commerce, Department of Commerce, Washington, D. C., saying you want them to mail you a copy of the new *Civil Air Regulations*. They will send you one free.

The new booklet comprises one hundred pages, and it's been written by men who know how to draft laws which leave no loopholes for those who would "chisel." Just don't let the legal verbiage stun you. It's got all the stuff. And in it you'll find the answers to all those stock questions: "How many hours in the air must I have to become a private pilot? What about my eyes being weak? Can I become an airline pilot if I'm flat-footed?" *Ad infinitum.*

In this handbook you will learn with some astonishment that there is no such thing as a "license" any more. But don't go off the handle and think you can fly without a ticket—for you'll go on to find that the word "license" has simply been replaced with phrases like "airworthiness certificate" and "certificate of competency".

The book itself will carry 100 chapters. Subjects are arranged with a somewhat mysterious decimal system of indexing. True, it'll seem pretty complicated at first; but after studying it for a short time, you will quickly be able to select a subject, find the chapter, and then the exact item in the chapter concerning the question involved.

For instance, each chapter will be assigned some number between 00. and 99. Thus Chapter 04. will cover aircraft airworthiness and requirements. Then numbers after the decimal point will indicate specific sub-divisions of the chapter subject. For example, 04.4 might refer to regulations on detail design, then 04.43 might cover the design of control systems, and so on. Yes, it may blister you at first—but you'll find that it works out

swell and will enable you to find just what you're after.

The business of commercial markings seems to have come in for several changes, too. Airplanes will no longer be "licensed and identified". Instead, they will be "registered" and then "certificated" as to airworthiness. All American aircraft will be identified with marks beginning with the letter "N" and followed by such letters as "C", "R", or "X", as in the past. But each marking now carries a bar or dash which simplifies identification of the ship according to the group in which it is classified. Airworthiness certificates will also bear classifications according to the operations in which the ship is engaged, such as 1—non-airline carrier, 2—airline freight carrier, 3—airline passenger, 4—visual contact flying, 5—instrument flying, 6—day flying, 7—night flying, 8—no passengers at any time, 9—flights only within 100 miles of its base, and 10—special industrial.

Our Bureau of Air Commerce is bringing out a swell booklet that'll tell you just what's what in civilian sky rules—and all you airminded readers should scrape up a three-cent stamp and send for it. It's a compact publication that'll give you a liberal education in domestic aero fundamentals. And those of you who are hankering to get into aviation will find a whole scad of pertinent questions answered in it.

RULES concerning the various types of certificates for pilots have also been clarified. For instance, all student pilots must now take a minimum of 8 hours dual control before they are allowed to go solo. This will end the old game of "I went solo in twenty-six minutes"—a sort of thing that was always a risky business.

Incidentally, there is no minimum requirement for aeronautical knowledge nor any minimum for what is termed "aeronautical experience". That leads us to believe that at last they are coming to the realization that a man might wish to fly simply for the fun of it without having to become a walking encyclopedia.

Another new interesting point is the fact no foreigner may own an American registered aircraft—a ruling that may play hob with those visiting alien airmen who scoot all over the country in American planes and grab a lot of easy cash giving exhibitions which could be put on equally as well by American airmen. It may also interfere, however, with wealthy Canadians and Mexicans who wish to come into this country and learn to fly in their own American aircraft. It will mean that they will not be able to own an American registered plane until they have been in the country five years; that is, long enough to take out citizenship papers.

The new *Civil Air Regulations* also defines the difference between a student pilot and a private pilot. A pri-

vate pilot will have to pass a written test covering practical aviation problems and the forecasting of weather. He will have had to have 35 hours of solo flying and at least five hours of cross-country flying. In addition, there is a requirement specifying that to receive ranking as a solo-pilot a flyer must have five hours of solo flight time, three of which shall have been logged during the preceding 60 days. He must also pass a written test in a few fundamental aeronautical subjects.

To get another well-worn question settled, listen to this: No one may apply for a student-pilot's rating until he is sixteen years of age.

The chapters from 20 to 29 carry all the information you can possibly desire on airmen, pilot ratings, and mechanical certificates. I'd say that you should read all these carefully. All the details are there in plain English—worded in such a way that there is no chance of finding any loopholes. So don't try to find any.

The physical tests are much the same, and again we advise you first to see a registered Department of Commerce physician before you spend any good money on flight training. He is the only man who can tell you whether your ringworms, dandruff, or hang-nails will prevent you from becoming a flyer. I grant that you do *not* have to take a physical examination until you are ready to solo, but it will then be too late to get your money back if they turn you down.

You may get something of a shock when you go over the requirements for certification as an airline dispatcher. Perhaps you've thought that all he has to do is sit in a glassed-in tower, take reports from incoming airliners, signal the pilots which runways are clear, and keep a look out for the sheep grazing near the southeast take-off strip.

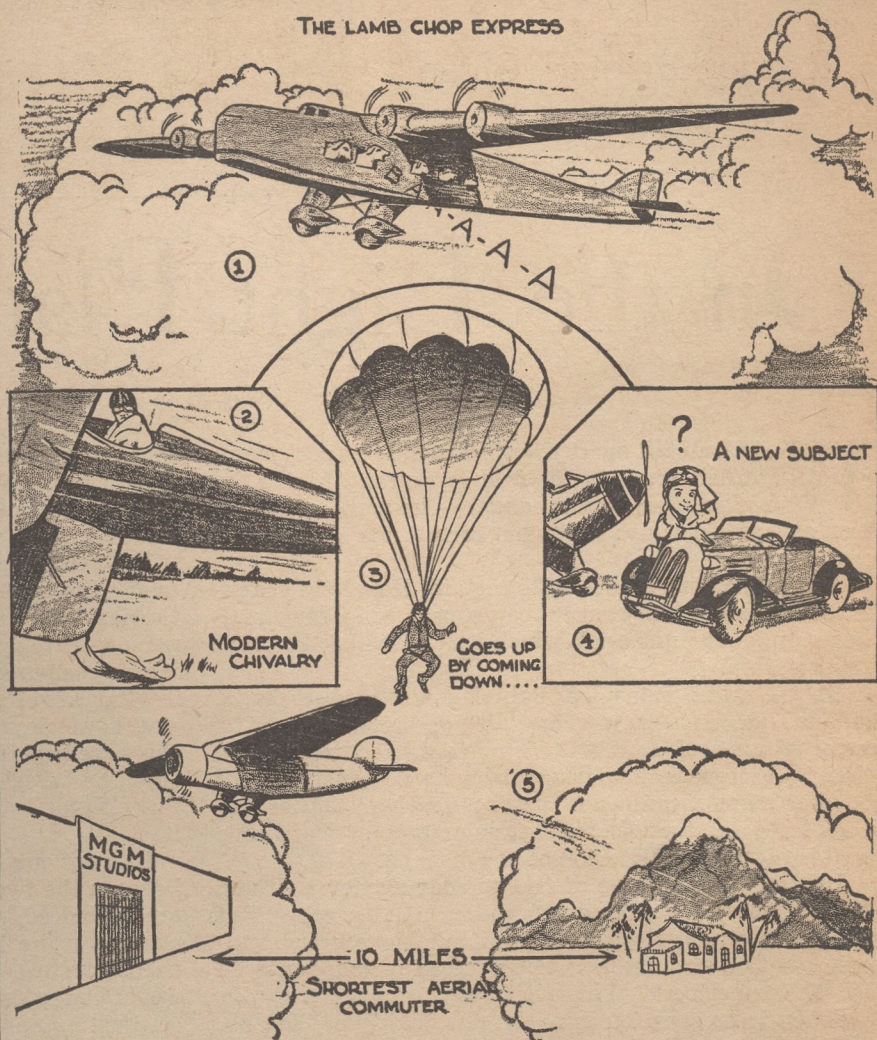
Well, fans, there's a heck of a lot more to it than that, as you'll realize when you read the requirements. A dispatcher must be able to read, write, and speak the English language—and I mean speak it with the enunciation and modulation necessary to make himself clear over the radio and not mess up the two-way microphone conversation. He must know the pertinent characteristics and features of at least one make of airliner. He must know the general system of weather collection and dissemination. He must pass an examination in weather maps, together with the abbreviations, symbols, and nomenclature of weather forecasting and the general principles of modern methods of weather analysis.

He must know the influence of the
(Continued on page 73)

PILOTOPICS

By ROY HUMPHRIES

THE LAMB CHOP EXPRESS



Stories Back of the Above Pictures

1—ALWAYS devising new uses for aircraft, the Soviet Government now plans to transport 10,000 sheep from Ashkhabad to Tashuaz by air. Huge planes will make the 300-mile sky haul in three hours, and two months will be required to move the tremendous flock.

Those Russkys'll soon be eating air-minded lamb chops!

2—PROOF that knighthood is still in flower is offered by that veteran stuntman, Milo Burcham. For if a lady drops her handkerchief on the airport, he'll chivalrously pick it up with a wire hook fitted to his wing-tip!

Better go easy, Milo—or they'll be pickin' YOU up.

3—BARRY MARGOLIN, movie property man with Grand National, "stepped down—to go up"! To lighten the load of an over-laden plane, he courageously bailed out at 3,000 feet. Whereupon he "went up"—for as a reward, director Conrad Nagel immediately promoted him to an assistantship.

Why not try it at 6,000 feet and become president?

4—AUTOS are a decidedly new subject to Joe Park, of Los Angeles. For though this 19-year-old youth has been piloting a plane since he was 16, he's never driven a car in his life!

Just call him a "highway kiwi."

5—ONLY a mere ten miles separates actor Leif Erikson's San Fernando Valley home from the Metro movie lot. Yet this flicker man regularly flicks off the wee distance in an airplane—and that makes him the short-hop champ in sky commuting.

Get aboard, Mr. Erikson—we're about to land!

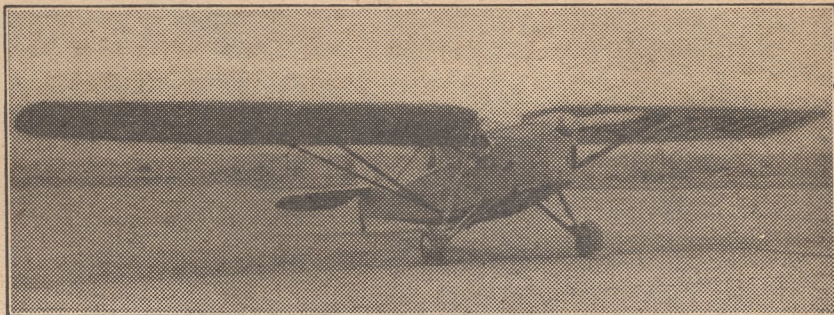
★ ★ ★

Just What IS a Good Light Plane?

Reader Brietz's Close Shave

★ ★ ★

This trim skyster—the Gypsy-powered DeHavilland Puss Moth—is a typical British flying club job. Staunchly built to withstand the rugged handling of vivacious sport flying groups, it's won great popularity abroad. The P.M.'s top speed is 109 m.p.h.



On the Light Plane Tarmac

★ ★ ★

WHEREVER sport flyers or would-be sport flyers gather—be it in the field restaurant, beside the runway, or in the hangar—the same old question always comes up: Just what constitutes a good light plane?

You see, no one seems quite certain. Hence the manufacturers can be excused if they appear to be continually turning out light craft which look just like the other fellows' ship.

Do we want monoplanes, biplanes, closed cockpits, side-by-side seating, tandem seating, radial engines or inverted air-cooled plants? Few flyers have emphasized their preferences. And those who have, generally fail to offer many meaningful reasons for their choices. Incidentally, the fact that a particular type of plane sells well is not a true criterion of the demand.

Let us take the case of the popular Taylor Cub and the Taylorcraft. The Cubs are selling like hot cakes. But information we've gleaned from reliable sources indicates that no such carnival sales record is being enjoyed by the competing Taylorcraft firm.

There is no question as to the fine quality of the Cub. It is a first-class ship, one of the best in the world for the money. It has been popular for years; and we now hear that the Taylor firm is selling on an average of about three a day.

Now let us consider the Taylorcraft. Designed by C. G. Taylor, who was formerly with the Taylor Cub firm and who actually designed the original Taylor Cub, this plane has been offered to the buyers as a quite similar ship powered with the same engine. In addition, how-

ever, it provided a side-by-side cockpit equipped with a dual control-wheel system. Also this Taylorcraft was stressed-up to take an engine of 50 h.p. should the purchaser require such a power plant.

Do the sales records give us the true answer? We were under the impression that the modern light-plane enthusiasts were keen for side-by-side cockpits. Many have personally told us that they preferred side-by-side seating as compared to the tandem arrangement. But when Taylorcraft offered one, it didn't seem to click. We will say, however, that those who own and fly Taylorcraft ships are loud in their praise of them, though they admit that the wheel-control system was a little strange at first. Nevertheless, they liked it once they got used to it.

It is not our intention to make a technical comparison between the two planes and give one the "call" over the other. Indeed, were we setting out tomorrow to purchase a plane in that price bracket, we would have a hard time selecting between the two. On one hand we would find ourselves offered a highwing monoplane powered with a 38-h.p. Continental engine—a plane that for years has been a stand-by with light-plane owners both here and abroad. This is the Taylor Cub (J-2) with a top speed of 85 m.p.h., a cruising speed of 72, and a stalling speed of 38.

In the Taylorcraft, which costs about \$225 more, we would have an up-to-date wheel-control system, side-by-side seating which is pleasant for both pilot and passenger on long flights, a top speed of 91 m.p.h., a cruising speed of 80, and a stalling speed of 35.

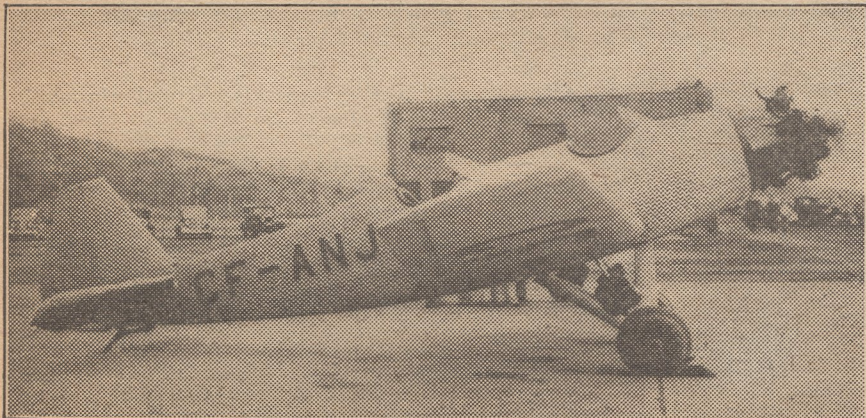
Thus we see that for an additional \$225 we would get a ship with a lower stalling speed which should assure safer landing, a higher cruising speed, and what many people consider a more comfortable cockpit.

Take your pick, dollar for value.

Of course many light plane pilots have been trained on Cubs, and it is quite understandable when they purchase a like ship for their own private flying. "Perhaps," you say, "the cheaper price has a lot to do with it, too."

But has it? Consider the Aeronca-K. That's a plane with a 36-h.p. engine, a top speed of 93, a stalling speed of 35, and a sales tag reading \$1,590 at the factory, or about \$95

(Continued on page 73)



German amateur pilots go strong for this Junkers Junior. Nor can you blame 'em—for such a neat dual-control two-placer would "rate" on any man's light plane tarmac. An all-metal low-wing, it employs the 85-h.p. Siemens-Halske radial. Yes, its striking pursuit-ship lines remind us of our own dashing Ryan S-T.

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. Scaroni	Major G. A. Vaughn, Jr.
Major von Schleich	Willy Coppens
Lieut.-Col. Pinsard	General Balbo
G. M. Bellanca	Walter H. Beech
Capt. B. Sergievsky	Frankie Thomas
John K. Northrop	Dwane L. Wallace
Colonel Roscoe Turner	Josef Veltjens
Charles W. A. Scott	Frank Hawks
Richard C. DuPont	Donald W. Douglas
Maj. A. W. Stevens	Capt. Edwin C. Musiek
Capt. O. A. Anderson	Clarence D. Chamberlin
Major Fred Lord	Mrs. Charles S. Baylies
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). [28]

Do Your Full Share to Advance Aviation

No Dues—No Red Tape

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.

The Highest Awards

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.

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 is done.

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.

Flying Aces Escadrille

Any member who has reached the rank of Ace is eligible for membership in the **FLYING ACES ESCADRILLE**, an advanced organization which supplants the former G-2 unit and opens the way for participation in a definite program contributing to the forward movement of aviation. The popular and attractive **FLYING ACES** awards may be won by Escadrille members who qualify. To enroll, an Ace must apply direct to Escadrille Headquarters, care of **FLYING ACES CLUB**, giving his name, age, address, rank, and highest award already won in the Club, and enclosing a self-addressed, stamped return envelope. If he is approved for membership his assignments will be mailed. At present Escadrille membership is only open to Americans and Canadians.

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.

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.



The
Beautiful
F. A. C.
Ring

The official F.A.C. club ring is a beauty and should be worn by all members. It is self-adjustable, to insure a perfect fit. It is finished in antique silver. Sent postpaid anywhere in the U. S. and possessions for only 50c. It will be sent postpaid to foreign countries for three shillings. A similar Sterling Silver ring can be had for \$1.00, or 6/- overseas.

February Membership Coupon

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 [28]

Street

City State

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

Sky fans, here's a view from that startling movie, "Lost Horizon," a film we hope you didn't pass up. Starring Ronald Colman and a host of other top-notchers, this fantastic yarn of a hidden valley in Tibet will have you sittin' on the edge of your seat. And you'll live a long time, I'll bet, before you'll find air shots and other scenics finer than those which go to make this great Columbia production.



Flying Aces Club News

Pitch your helmets into the locker, skysters, and pull up your chairs to our F.A.C. "holiday dinner." We'll admit there isn't much food for the inner man in these pages, of course, for there aren't any goats reading old F.A. But these generous servings of news taken from reports of F.A.C. activities all over the world make mighty good food for the aeronautical mind. Help yourselves!

★ ★ ★

By Clint Randall

National Adjutant, Flying Aces Club

CHRISTMAS AGAIN! Man, how these years do roll around! No sooner do we get a new hole worn in the toe of the sock we hung up over the family fireplace last year, than we have to get it all darned up again for still another visit from that warm-hearted old gink in red.

Incidentally, they now say Santa has traded his reindeer in for a plane. Well, what kind of a plane? Do they mean one of those invisible crates that Arch Whitehouse talked about awhile back in his "Happy Landings" column?

Whatever the ship, I trust that Mr. C. sets 'er down on your tarmac.

By the way, fellows, what would you do if you had *two* Christmases to celebrate, one right after another? I had that experience once—believe it or not. You see, on our voyage out to China, we "lost" a day because of the time zone changes. We went to bed on the 13th of

the month—and awakened eight hours later on the 15th.

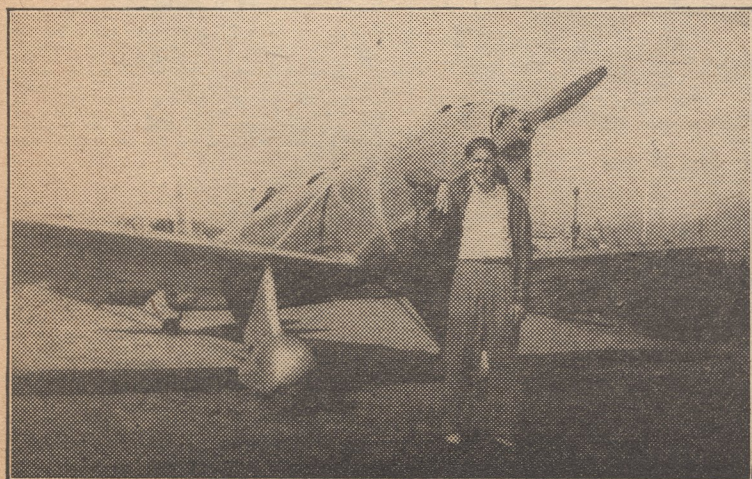
But on the return trip some years later, it happened that we recrossed the International Date Line right on Christmas Day—and so the next day was also December 25th and Christmas Day all over again! My main objection in the matter was that the chef wouldn't serve two successive roast turkey dinners. On the second Christmas Day we had turkey hash served under a high-sounding French name.

Enough of that, though, Clubsters. Let's get down to some of *your* activities instead. Here's a chap who's an F.A.C. all the way through, for not only does he carry our card, but he works with an aircraft concern whose initials are F.A.C. also!

He is Jack Russell, of Salford, England. And Jack's an "aircraft erector" on the Fairey "Battle" planes with the Fairey Aviation Company of England. And Jack says that with such a job as his, it is quite evident that he should be interested in carrying out the F.A.C.'s creed of *Furthering Aviation's Cause*. He's been in the aeronautical industry for some years now, and he likes it enough to build the rest of his life around it.

Say, have you heard about the big Air Show being planned in connection with the forthcoming Golden Gate International Exposition at San Francisco next year? I hear that it's going to be quite a show, with robot planes, rockets, and Diesel craft, and up-to-the-minute ships of every other description on display.

One feature is to be a new four-motored Douglas stratosphere transport which is expected to be in transcontinental service soon. It will,



From San Francisco comes this swell shot of F.A.C. member and model department contributor Ellis D. Weiner. He's caressing the prop of the Fleet that he flew after 7½ hours of instruction. Be sure that switch is off, Ellis—or maybe you won't be flying any more with that Fillmore outfit you're connected with at Oakland.

manding officer of our Filipino units. One report concerns a chap who's an F. A. C. all the way through—Major Pedro Villezoa, F. A. C., of Balungao. Pedro recently joined the Philippine Army at Cabanatuan, and hadn't been "turned to duty" more than a few weeks before he'd organized an entire All-Army squadron of the F. A. C. in his outfit! Good work, Major!

Another up-an'-at-'em member in the Islands in Carlina S. Ordinia, of Bayombong, Nueva Viscaya. Carlina recently spent her vacation on Mindoro Island and organized two new

squadrons of the Club. Real missionary work! And, incidentally, Carlina suggests that F. A. C.'s in America who do not file their copies of FLYING ACES, might like to send them to members in the Philippines. A splendid idea, this, but you chaps who wish to follow it should contact Colonel Guerrero through the magazine before sending any out.

OUR PAL, Ross Smyth, of Toronto, is sort of flooding us these days with his letters of acceptance from new Honorary Members of the Flying Aces Club. One that came

from him today was signed by none other than Rudy Kling, the "backyard aeronaut" who startled the whole country by defeating the nation's best flyers at the 1937 Nationals. We're mighty proud to have Rudy with us, and assure him that our entire organization is back of him in his future flying activities.

Another honorary introduced by Ross is C. C. Moseley, president of Aircraft Industries, Inc., of Glendale, Calif. Member Moseley's firm, you know, turns out those Baby Cyclones for gas modelers, and also operates
(Continued on page 74)

The Airmail Pals

HERE'S WISHING each and every one of you airmail pals and all other readers an honest-to-goodness Merry Christmas and a Happy New Year. And may every new holiday period grow increasingly enjoyable for you!

And judging by the pen pal letters in the pouches this month, old Santa Claus could easily recruit some mighty satisfactory helpers from among our crowd. For we seem to have run into a whole slew of heavyweights and giants who'd have no trouble at all in handling big bags full of Christmas gifts.

Take Frank Toshack, for instance, who's a sports' desk man on the Vancouver *News-Herald*. Frank's just 20, but nevertheless he already weighs a mere matter of 250 pounds for his 6 ft. 4½ in. in height! Sizeable chap, wouldn't you say? We coupled him up with our old friend Leonore Marble, of Fitchburg, Mass.

Frank, incidentally, challenged us to find a bigger air mail pal than he. Well, we couldn't—quite. But we have a couple of chaps who might give him a merry tussle in a friendly scrap. Jack Fitzpatrick is one of the pair. He hails from Plainfield, N.J., is the same age as Frank, weighs 175 pounds, and is 6 ft. 2 in. tall.

His long-distance "partner in size" is Jennings Ledbetter, of Sacramento, Calif., who's five years younger, half-an-inch shorter, and tips the scales at the same 175 pounds. Better look out for *your* laurels, Sports-

writer Toshack, since Jen shows signs of getting even bigger yet!

And here's a chap who wants to exchange airplane photos with anyone and everyone who has them to trade. He's Theodore Bullockus, of 2405 Fenton Ave., New York City. Ted says that if he gets more pictures than he can handle he'll turn the surplus over to a picture-popping pal of his who lives just down the block.

SAY, we've just discovered a rival for ourselves—a chap who rates the title of "Right Honorable Pal Returner!" He's Ed Bonnette, of Nashua, N. H., who writes:

"Imagine my surprise when, upon opening my reply from the Airmail Pals, letters from three (3) (*trois*) foreign pals dropped out—and since I had read in a recent issue of F.A. that you were short of foreign pals, you could have knocked me over with a toothpick! So, believing there's an error somewhere, I'm returning two of them—but only after a bitter struggle with my conscience."

Thanks a lot for returning them, Ed. But there really wasn't a mistake at all. You see, one month we'll be short of Americans wanting foreign pals, and another month we'll be short of foreign pals wanting Americans to write to. So to keep from having to hold the extra letters over too long, I sort of even up the distributing business by dropping an extra letter from the "too many" pile into the envelopes from the "too few" assortment.

Now here's a chap we've been wanting to tell you about for some time. He's Nick Cruger, of New York City, and he's very much interested in buying or trading 16 m.m. movie films. Write him in care of the R.H.P.D.

This month quite a few real pilots' letters have passed over my desk. One of the most interesting was written by Chuck Mathews, Jr., an ex-Army pilot who's now with an aeronautical manufacturer out on the West Coast. His specialty is aerial photography, and he's made thousands of "shots" from upstairs. He used to fly with Western Air Express until an accident sort of "stopped" him. Chuck also has a pile of professional stunting to his credit.

Since he wanted an English correspondent, we fixed him up with a letter from another Chuck—Charles Wilson, of John Bull's Air Force, who's also an air photographer and a radio-op. Seems as if these chaps should get along mighty well together. What say?

And I'd better be getting along myself now, too! G'bye, please! And again—*Merry Christmas!*

—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.

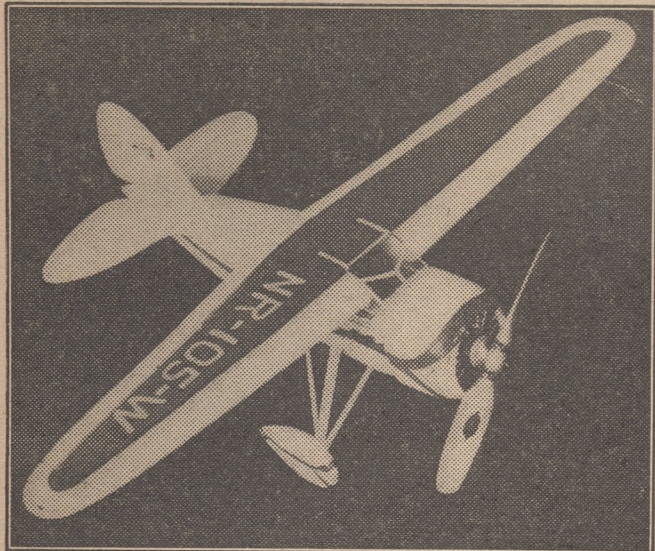
REGARDING FOREIGN PEN PALS

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.

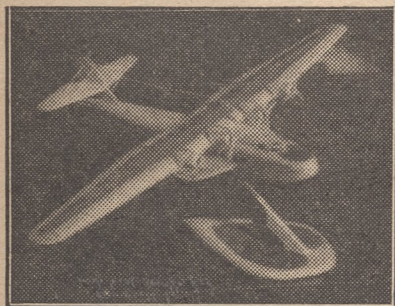
If you are an American who wants a foreign pal do not write a pen pal letter. Instead send us a short note telling in a general way what kind of a chap you are, and what kind of a foreign pal you seek. Enclose a self-addressed, stamped envelope. A foreign writer's letter will be sent to you, then you 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.

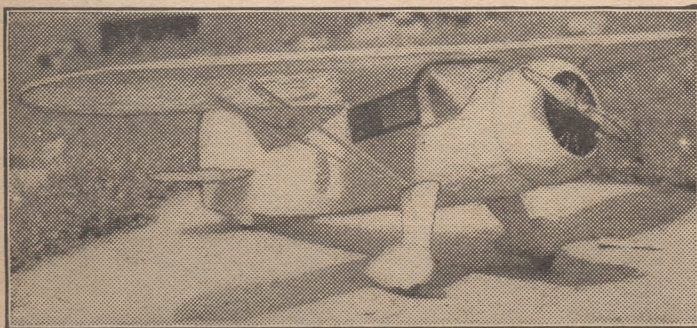
With the Model Builders



Here's a really fine shot, fellows, and the model itself isn't any jalopie, either. It's Wiley Post's "Winnie Mae," which won second prize in a recent detailed-scale model meet in Toronto. Malcolm Inglis, Jr., is the Canadian lad who made model and picture both. Male posed the ship on a black velvet covered table, making a short time exposure with a 100-watt bulb for lighting.

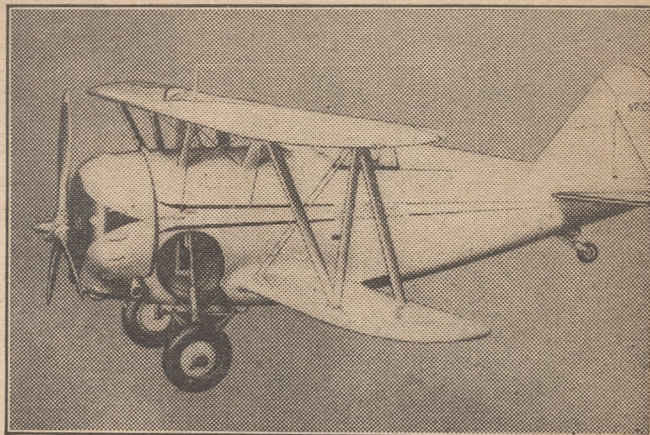
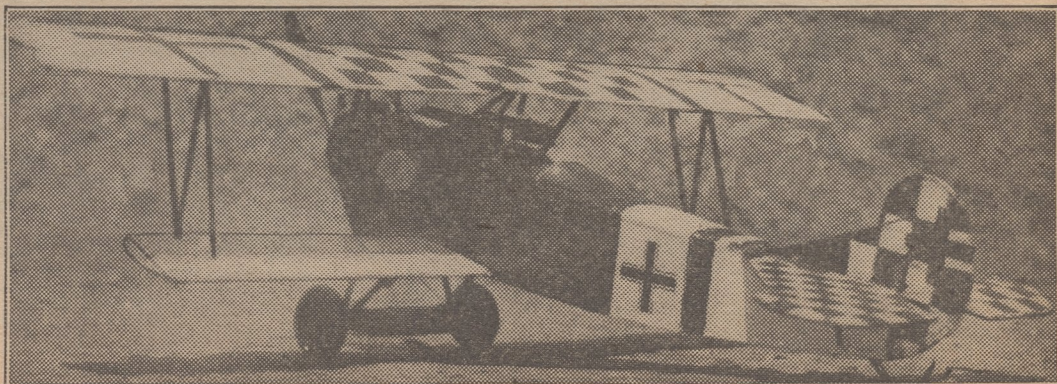


Left: In a recent model-building feature in F.A., Nick Limber made suggestions about the use of display stands for models. So here's a swell solid "China Clipper" and a stand of original design, both built by Ernie Alves, of Half Moon Bay, Calif. Excellent work, we'd say! Ernie built the ship from an F.A.-advertised kit. It has an 18" span and all the details that can be put into a job of that size.

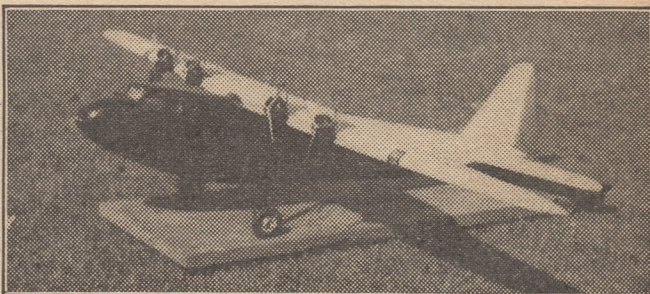


"I had no safety valve on this ship—so she was blown into 100,000,000 pieces!" That's the sad news that Walt Juranic, of Red Hook, N. Y., sent with this swell picture of his steam-powered 5-foot wing-spanned "Mr. Mulligan." The model had made many successful ten-minute flights, but the boiler grew temperamental on the last one. Moral: Bigger and better safety valves in future!

Even as "Mr. Mulligan" in the picture directly above, the Fokker D-7 shown at the right is another job that's now in the experimental models' heaven. Bob Freda, of Roxbury, Mass., built the Fokker, powered it with a home-made compressed-air engine, watched it make a few swell flights. Then came a "beautiful spin" from a hundred feet—and she crashed into jigsaw puzzle pieces. Too bad, Bob!



From Chicago, comes this shot of 16-year-old Arthur Hardt's realistic model of Major Al Williams' Grumman "Gulphawk," built from a highly detailed F.A.-advertised construction kit. Judging by the absolute perfection of Arthur's handiwork, we'd guess that he has a mighty good chance at one of those Junior Aviator's "Gulphawk" contest prizes that we told you about last month.

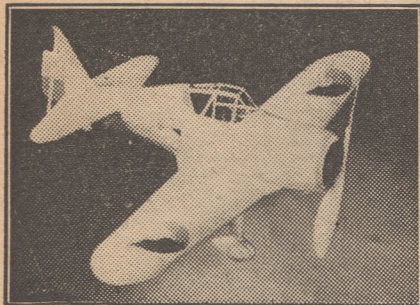


Built from plans in our February 1937 issue, this neat solid Fokker D-36 four-engine transport took a handsome prize in a recent Seattle contest. Ted Enticknap, who built and photographed it, says the eight-pound job would have sunk into the grass if he hadn't used that board underneath. The ship's span is four feet, and Ted has 40 other models running from 5 inches to as many feet. Wonder where he keeps 'em all?



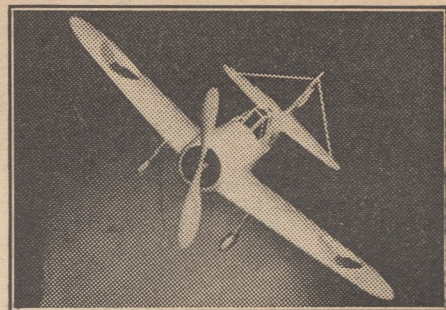
So natural in appearance is this Douglas O-38 that we almost shunted the picture into our regular aviation files. We just discovered in time that it was a model, built and photographed in partnership by D. H. Bodger and his brother Mike, of Loughton, England. It's a solid job, complete even to upholstered seats and wire rigging.

Except for the dead prop, you might easily mistake our realistic D-21 model for the real thing, cruising along at 200 m.p.h. plus. The model was made from the plans that accompany this article.



You've already modeled many of Tony Fokker's airplanes, fellows, but here's a natty new one we'll bet you haven't tried yet! It's the Fokker D-21, a neat export low-wing now under construction in the Dutch designer's shops. With Herb Weiss's excellent pictures and plans as given here, you'll find the D-21 a simple model to make.

So you want another view eh? Well, here she is back again. But you'd find a real ship in this position a pretty tough target, presenting as she would an almost knife-like edge toward your sights.



Fly the Fokker D-21

By Herb Weiss

ONE of the latest creations of Anthony Fokker, the sleek D-21 Fokker low-wing proves that the noted Dutch designer is still keeping somewhat ahead of the rest of the world, even as he did when he "sprung" the vicious little D-7 "biplane" of World War fame.

For the D-21 is a sturdy, efficient little craft. She's modern in every respect except for the fact that her landing gear isn't retractable. But in this connection it must be remembered that the ship is being built for export, and her ultimate destination in many cases may be regions where standard servicing facilities are either limited or entirely non-existent. So for such a ship, the fixed type of landing gear is by far the best.

Powered with a Bristol Mercury engine, the D-21 will do 250 m.p.h. And with a Hispano-Suiza, she'll reach 266 m.p.h.

Incidentally, it is of interest to note that the D-21 is quite similar in many respects to the latest Curtiss export Hawk. You'll be able to pick out these similarities as you become familiar with the ship's design through modeling it.

If built with care, and the plans and pictures accompanying this article are followed throughout, your model of the D-21 will give you many long, stable and satisfying flights. So Rule Number One is—keep your eyes on the plans!

Since in this case the center section of the wing is used as a construction jig for the fuselage, the wing

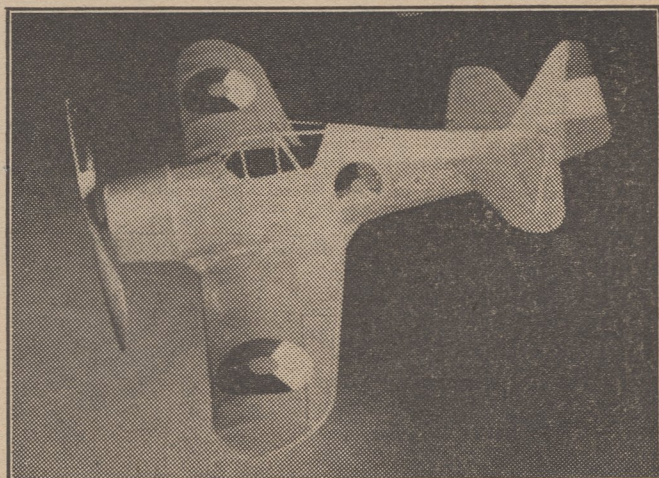
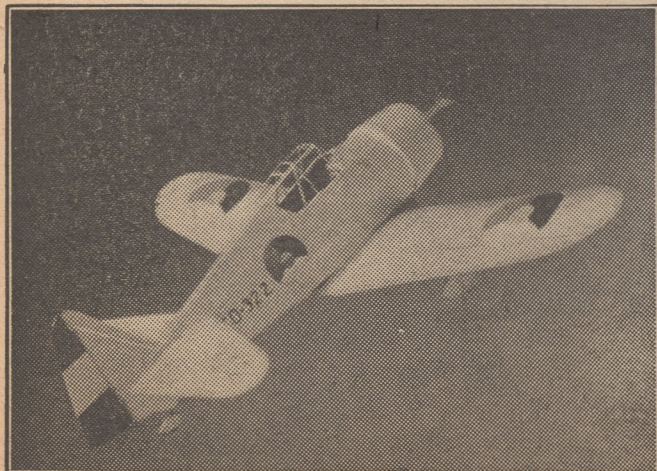
should be built first. You'll find the details and full measurements on Plates 2 and 4.

The drawings as given are for the right wing. To make a layout for the left wing, place a blank sheet of paper underneath the complete plan, and underneath the paper place a carbon sheet, coated side up. Trace the wing layout with a sharp-pointed, hard pencil, and the reversed plan will appear on the underside of the blank sheet.

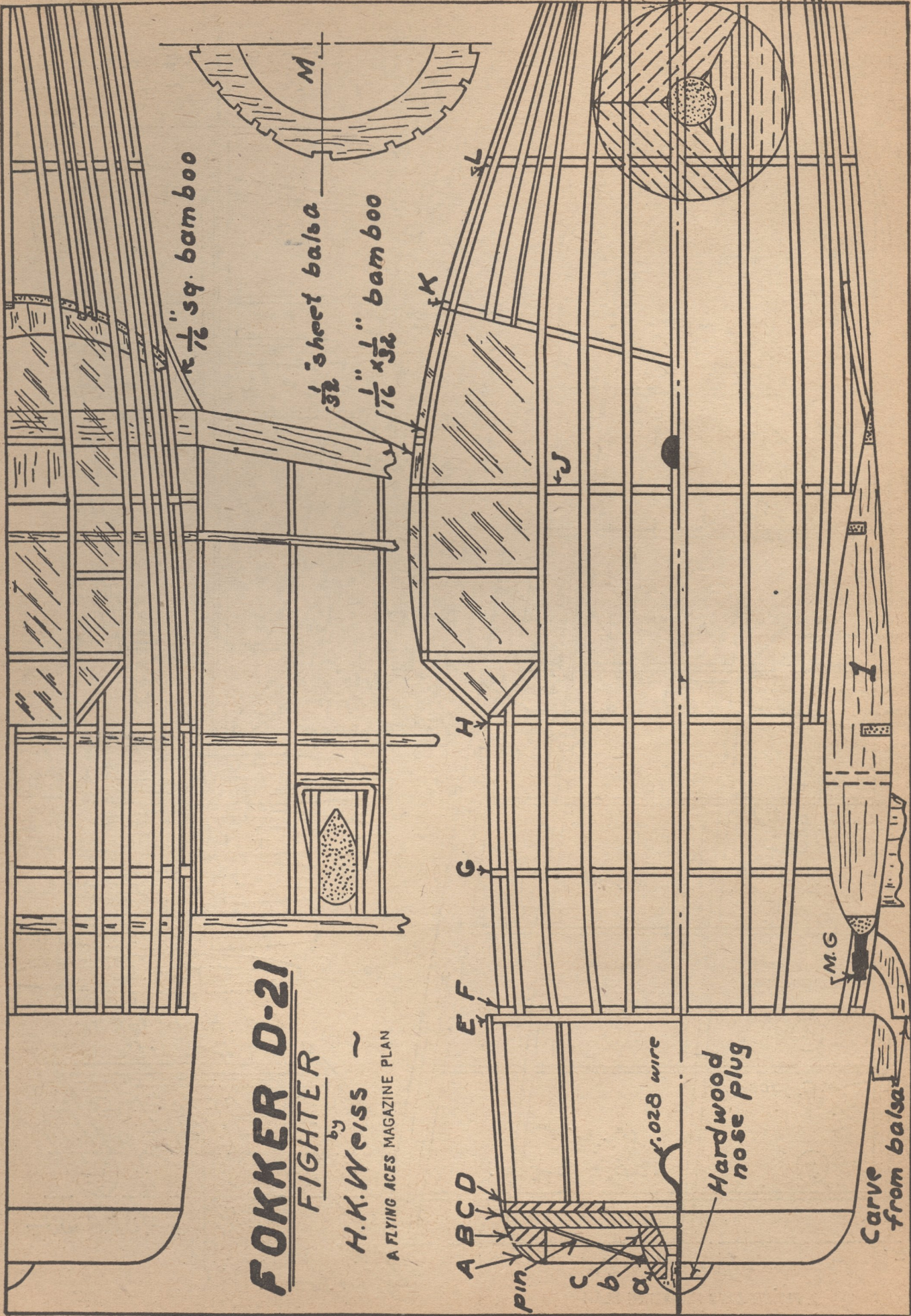
Cut the wing spars, edges and tips from balsa of the sizes indicated on the plans. Cut the ribs from 1/32" sheet balsa. You'll find the outline for Rib 1 on Plate 1, for Ribs 2 to 5 inclusive on Plate 4, and for Ribs 6 to 10 inclusive on Plate 2. When the ribs are ready, assemble the wing, using plenty of cement and paying close attention to the plans. Allow 1 3/4" dihedral, measured at the wing tips.

If you intend to build your ship as a light flying model, omit the ailerons. If you wish to include them, attach them with small aluminum hinges as shown on Plate 2. Note that a smooth junction between the wing proper and the leading edge of the aileron is obtained by cementing a strip of balsa under the rear spar and sanding it down to fit the wing contour. The balsa should be about 1/16" by 3/32".

(Continued on page 91)



Obligingly enough, our D-21 in these two pictures shows the start and finish of a neat Immelmann turn. At the left she's just beginning her loop, and when she's upside down at the top she'll flip right side over and be heading back in the direction from which she came, as shown in the second shot, directly above. And while we have her in these positions, take a squint at the authentic Dutch insignia on her wing, fuselage, and rudder.

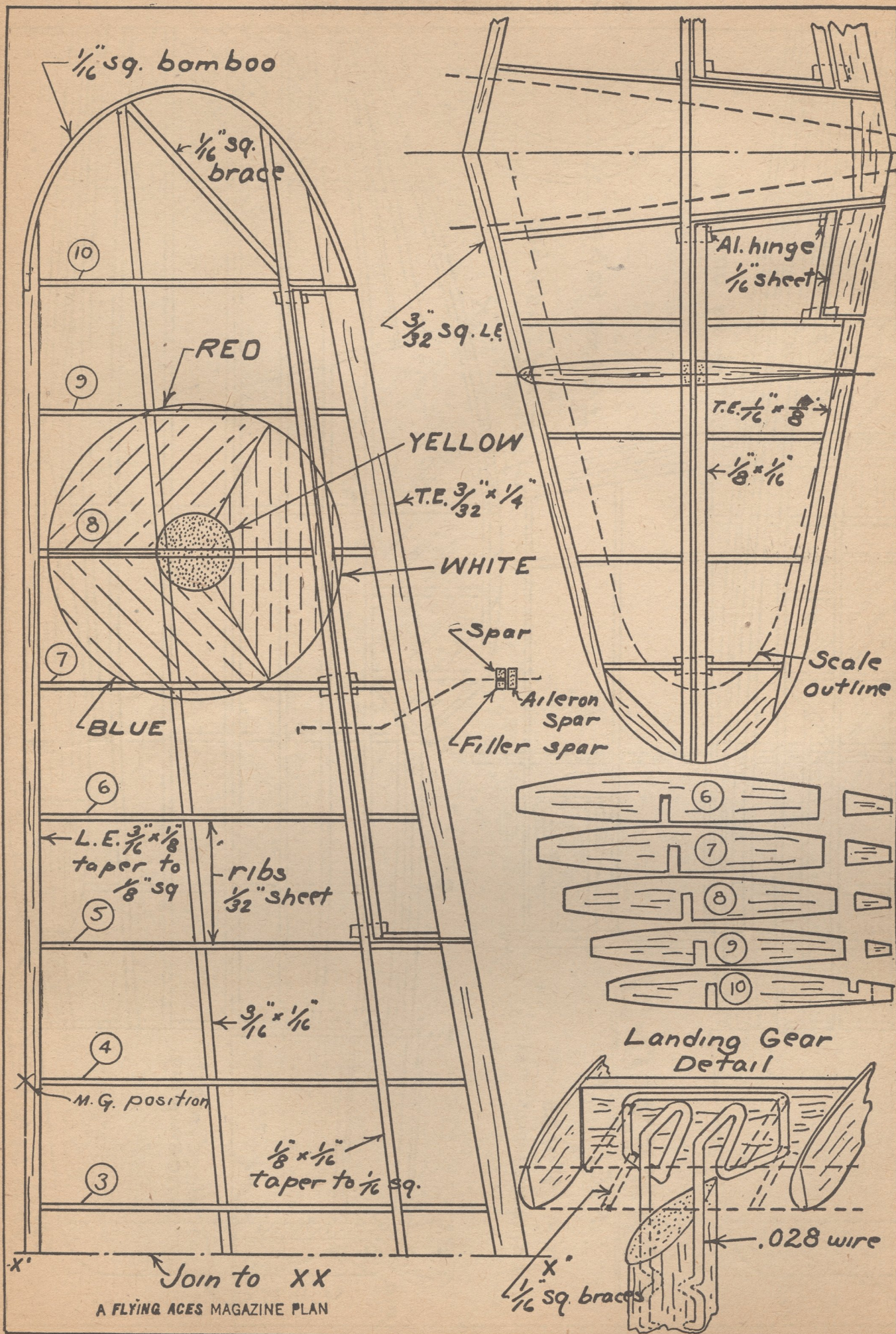


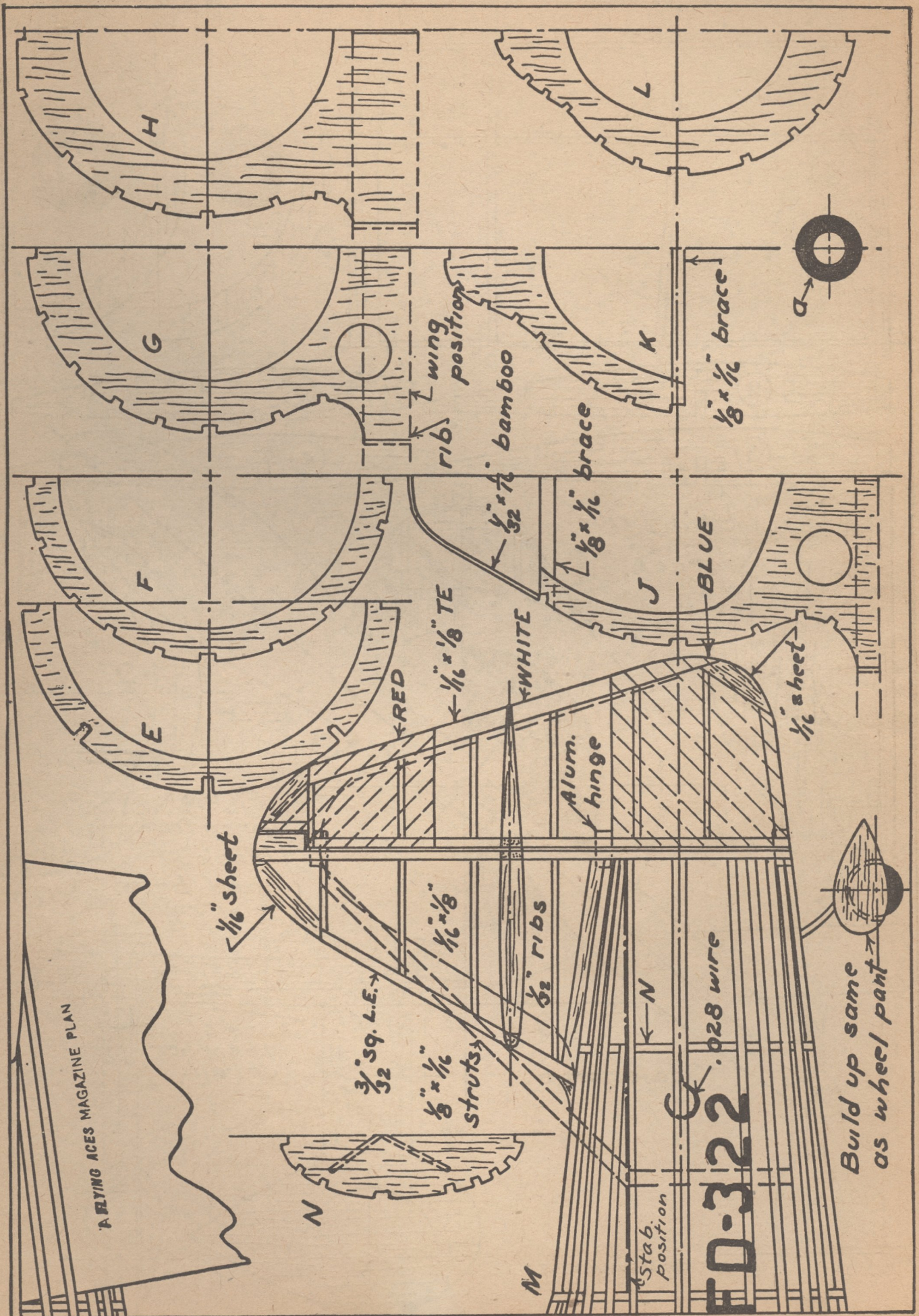
FOKKER D-21

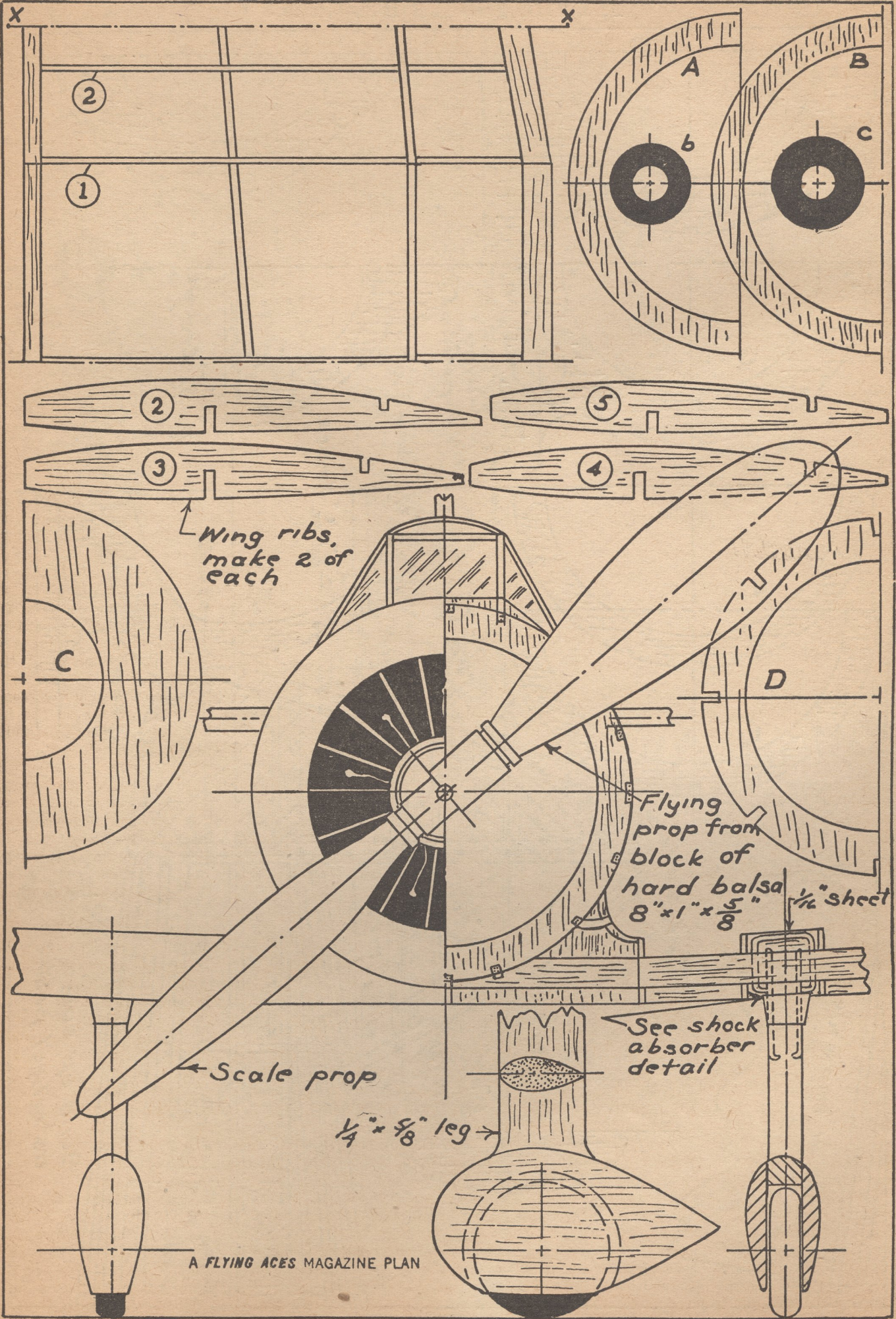
FIGHTER

by
H.K. Weiss

A FLYING ACES MAGAZINE PLAN







From the Model Builder's Workbench

* * *

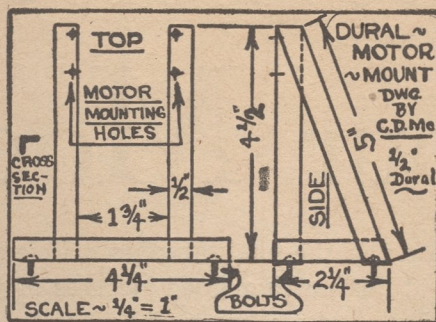
FOOLPROOF MOTOR MOUNT

THE gas modeler often finds it hard to construct a suitable motor mount that will withstand the wear and vibration of a powerful little gas "kicker." The type of motor mount that I have found to be the strongest and most efficient is constructed entirely of dural angle.

First look at the accompanying sketch and draw full size top and side views on heavy cardboard. All dimensions necessary are given, though it may be necessary to change the mounting dimensions slightly for different motors.

Cut three pieces of $\frac{1}{2}$ " dural angle to the correct size, and duplicate for the opposite side. Make the two sides separately, using the same process as for fuselage construction. Solder or weld all connections heavily.

When both sides have been completed, lay the mount, top down, on the top view. Take a 4" piece of angle and solder it securely to the top and



back of the two sides. Solder another piece of the same length to the bottom and back. This piece will have to be bent to a more acute angle to fit the bottom bracers. Make sure that about 1" protrudes on each side of the mount, on both the top and bottom back cross-pieces.

On these "extra" pieces at each corner drill holes to accommodate machine screws of 8-32 or similar size. In the last bulkhead of the model drill holes to coincide with those in the mount. Run screws through

the four holes, bolt tightly, and you have a motor mount that is easily removable and yet will stand enormous shocks without breaking.

—CLAUDE D. MCCULLOUGH

MISCELLANEOUS POINTERS

WEIGH all parts of a model during assembly and keep an accurate record of them together with the sizes of the parts involved. This record will prove of great value to you in connection with estimating in advance the weight of designs.

When you have a number of aeronautical or other magazines which you use for constant reference, you can often save hours of time by keeping an index of the major articles and stories instead of having to search through the whole pile every time you want certain material.

To get a glider to fly higher, add weight at the center of gravity. This will also lengthen the glide and, of course, the endurance.

When covering a model and no dope is available for adhesive, try thinned-out library paste. This requires more care in using, but produces a very strong joint since it sinks deeply into the pores of the wood and paper.

Gelatin capsules, cut into streamlined shape and painted on the inside, make realistic wing-tip lights.

An easy way to finish a glider is as follows: sand parts to shape, rub in a coat of library paste, cross-grain, and let dry. Sand well with 10-0 paper, apply another coat of paste, sand again, and then give three coats of dope of glider polish, finishing off by a brisk rubbing with waxed paper.

—WARREN OBERHAUS

TEMPLATE TIME SAVER

IN making models where many ribs of the same size and cross-section are used, I have found it a good plan to first cut an accurate cross-section template from cigar-box or harder wood. Then I roughly shape the required number of rib blanks of the correct thickness, pin several of them at a time to the template, and trim them down to shape all at the same time.

And another trick that will add to the life of display models in particular, is to take them down from the shelf or case every once in a while and give them their "routine baths." With lemon oil or floor wax and a wad of cotton, I work over the entire model, wiping off fingerprints and accumulated dust and adding a new lustre to the model's finish.

—ALBERT DISTEFANO

Logging the Model Market

* * *

Since the field of model aeronautics has attracted so many new manufacturers and supply houses to its ranks during recent months and so many of the older model firms have contributed products that are new, FLYING ACES Magazine offers this department in order to help its readers keep abreast of all these developments:

Comet Model Airplane and Supply Co., Inc., 2509 West Cermak Rd., Chicago. William Bibichkow, chief of the design staff, has called attention to several new developments at Comet. This company has secured sole manufacturing rights for all kits (excepting gas models) designed and formerly produced by Paul Lindbergh.

Among the ships featured in this new kit group are the Monocoupe D-145 with a wingspan of 20 in. and which retails at \$1.75; Boeing P-26A, with 17 $\frac{1}{2}$ in. wing-span and which is priced at \$1.95; and the Ryan ST, of 18 $\frac{3}{4}$ in. wing-span, which sells for \$1.50.

Comet's latest kit is an exact scale model (1" equals 1') of Major Al Williams' Grumman *Gulphawk*. The job features movable controls, retractable landing gear, swiveling tail wheel, and lighting system. Both Major Williams and his personal mechanic, Frank Tye, assisted in de-

signing this kit, which, while planned primarily for advanced modelers, may also be used by those of less experience, since the detail work may be minimized.

The Grumman kit includes all needed liquids such as cement and paint. Its retail price is \$3.95.

The **Pack-O-Stix** is another Comet innovation which comprises 1/16 in. square balsa strips in sheet form, the sheet being sliced almost, but not quite, to the end. The manufacturer states that each pack contains more than 500 in. of square balsa. The price is 5c. Your local dealer should have a supply of these, and also of the new kits mentioned above, by the time you receive this copy of FLYING ACES.

South Bend Lathe Works, Inc., 425 East Madison St., South Bend, Ind. Of interest to advanced modelers is the news that this company has now released a new design in back-gear, screw-cutting precision lathes in the Pedestal Adjustable Motor Drive type. The new lathe is available in five sizes—9 in., 11 in., 13 in., 15 in., and 16 in. swings, and in bed lengths of from 3 in. to 12 in.

The company has also issued a series of new bulletins describing each of these lathes. Well illustrated with actual photographs of shop and

(Continued on page 72)

How to Photograph Your Models

At last, camera hounds, we're giving you the photographic article you've been asking for. You'll find there's nothing difficult about the art of making good pictures of your favorite models, for it all boils down to following a few simple rules. And we know of no one better qualified to tell you about them than our old picture-making friends, the Urquhart's—Jim Junior and Jim Senior. For not only do they know photography, but they know the modeler's angles, too!

* * *

By the Camera-Totin' Urquharts

"SAY! That's swell! I'll bet the chap who made *that* picture was a sure-enough professional photographer!"

How many times have you made that comment concerning the splendid model pictures that have appeared in *FLYING ACES* Magazine? And how many times have you envied the full-time photographer his skill and equipment?

Probably many times! And probably many times you've been wrong, too, since the chances are that the

chap who shot the picture evoking your admiration wasn't a "pro" at all, but just an everyday fellow with a simple and inexpensive box camera. For it really isn't difficult to make excellent pictures with 'most any kind of a "picture box," if you'll only think before you shoot.

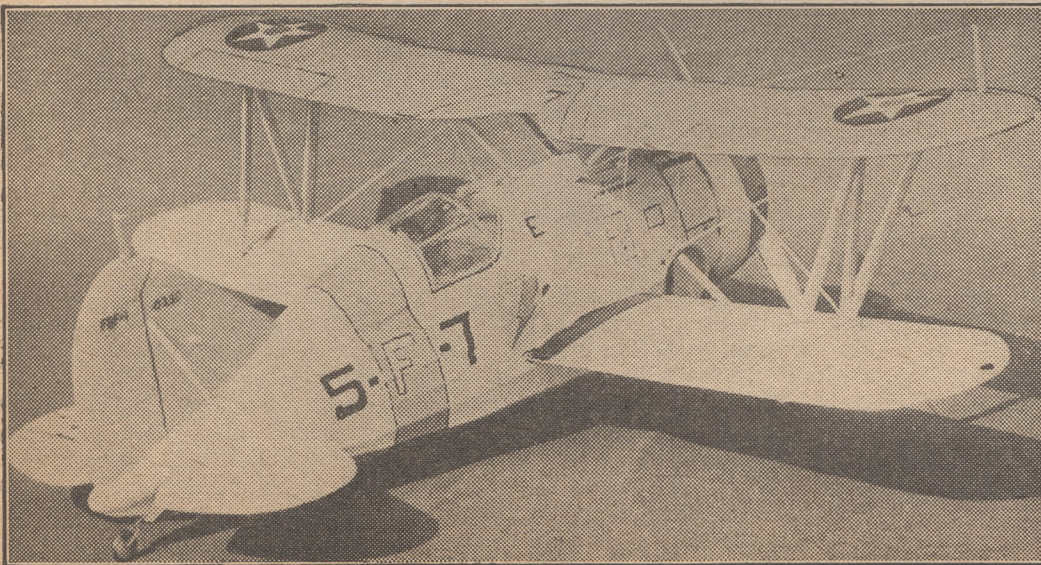
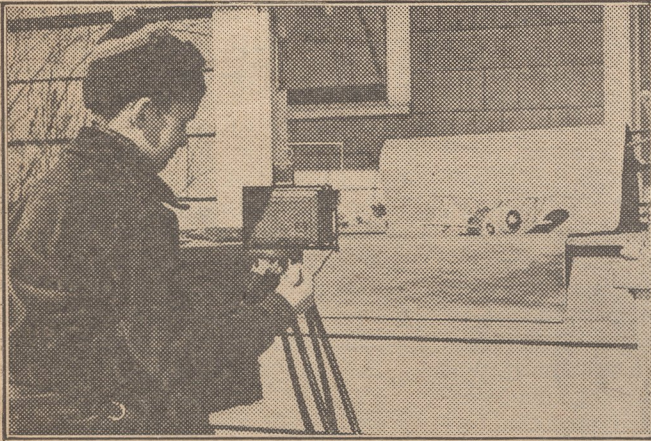
Now the authors of this article are not professional photographers. We're just a "dad and his lad" who pair up together on picture and model hobbying. And we've gotten some good results in each field.

As a matter of fact, it was some of our pictures sent in to the editor of the Model Builder's Page in *FLYING ACES* that really started us on this article. For Ye Ed liked the shots and was kind enough to ask how they were made. So if you don't like the hints we give here, blame the editor—he asked for 'em!

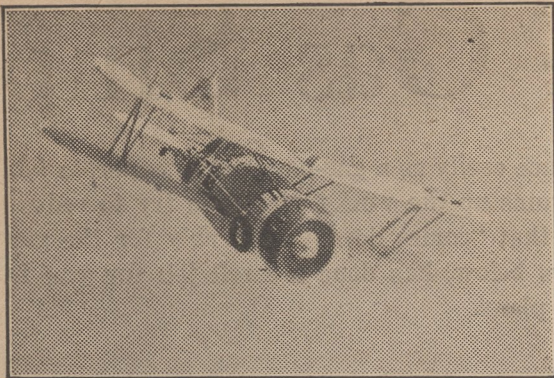
And now to business. Remember that it isn't necessarily your skill that counts for success in picture shooting. It's the care and thought you put into the job before you press the trigger. So we're sure that if you'll follow the hints as given here, you can turn out some mighty realistic photos.

And incidentally, we've found it a good idea to keep a careful record of picture making experiments—lighting, exposure, diaphragm opening, and the like. So that if a shot shouldn't turn out a hundred percent successful, you can easily go over the data relative to that particular picture and figure out what your error was.

Of course, the most important thing about photography, whether you're making airplane photos or people's is the camera. We have already said that you don't need an expensive one. Some of the best pictures we've ever seen or taken have been made with the common



To photo your own models in the same way as the Grumman Fighter F3F-1 shown at the left, your best bet is to work out a set-up such as Jim Junior is using in the top picture. A good "ground" effect is supplied by the use of an old windowshade behind and beneath the model. And the camera, correctly placed and adjusted as described in the accompanying article, will take care of the rest.



Are these real ships in screaming power dives? No! They're just "action poses" of the Urquhart's model Grumman Fighter. The whirring prop effect is obtained by substituting a disc of celluloid for the regular airscrew. And then the ship is hung in diving position on a length of grey thread strung over a clothes line. You'll find full details for making pictures like these in the accompanying article.

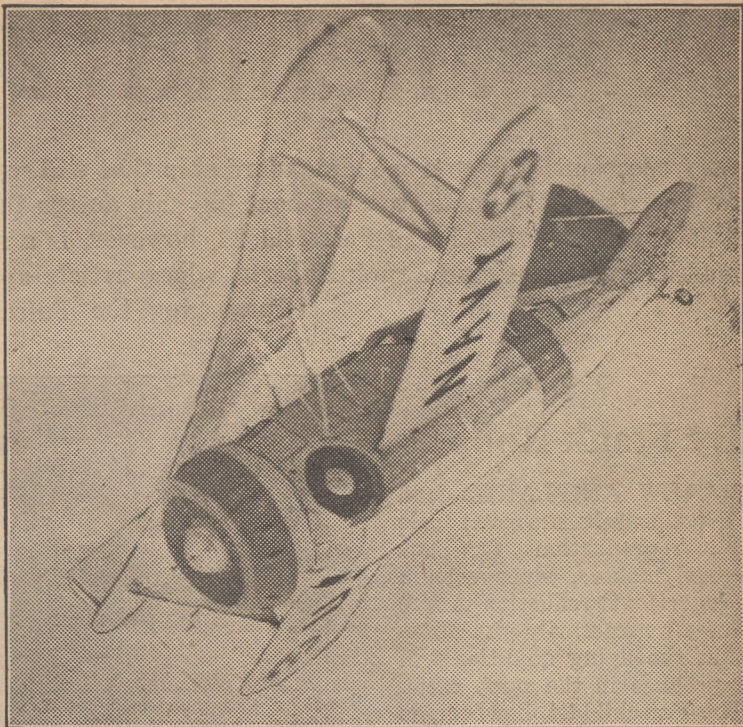
box type. But the main thing is, *know* your camera. Make a pal of it, and use it often enough to really get acquainted with its possibilities.

With most cameras you will be unable to get closer than six feet to your model unless you use a portrait attachment. This is a supplementary lens that snaps over your present camera lens, and enables you to "sneak up on your subject" as near as thirty inches or so. This of course gives you a much larger image in your finished print.

The attachment will cost you from fifty cents upward depending upon the kind of camera you use. Complete instructions for use will come with it, of course. But be sure of your distances—don't guess. Use a tape-line or other measure when preparing to take pictures with it.

Also when using a portrait attachment, do not attempt to aim your camera in the usual way; that is, don't aim by centering your subject in the little ground glass window. For this will throw you many inches out of your way at short distances. Instead sight by eye along an imaginary line running through from the center of the rear of the camera, right through the lens, and square onto the middle of your subject. Of course, if you're using a camera that has a ground glass focusing plate in the back; you're "all set" no matter at what distance you may be working.

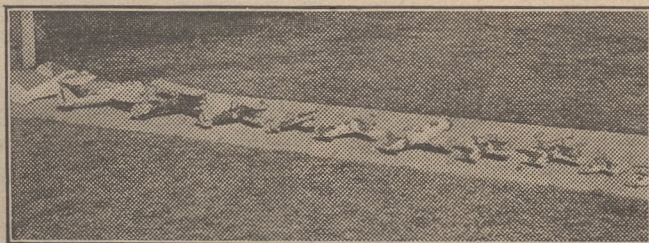
Most cameras are



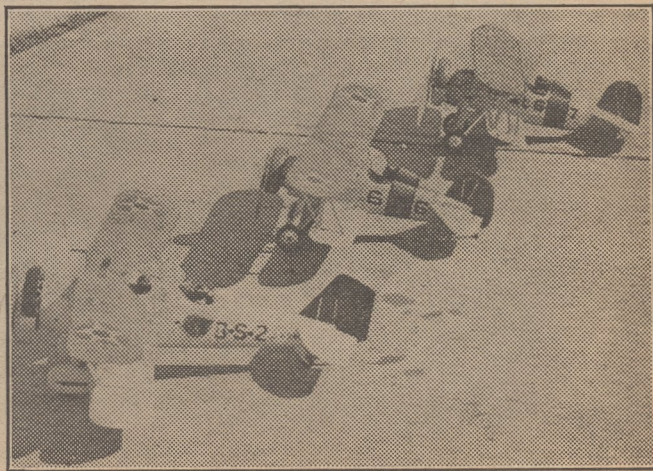
equipped with a diaphragm or slide for reducing the size of the opening through which the picture "enters the camera." You should learn how to use this, especially for close-up work. For you are operating so close to your model that parts of it may be out of focus or blurred in appearance if you're not careful. To prevent this you "stop down" your diaphragm to F.11, F.16, or F.22. This increases the "depth of focus" of the camera so that all parts of the ship will be equally sharp in focus.

To compensate for the smaller amount of light that reaches the negative through the smaller aperture, you must increase the length of exposure. So ordinarily you won't be able to make a regular "snapshot" of the usual 1/25 sec. exposure. Therefore you cannot hold the camera in your hands, but must use a tripod or other support for it. Even the regular beat of the pulse during an exposure longer than a snapshot

(Continued on page 95)



And here's the way NOT to make your model photos. Too many ships in a picture make it difficult to identify any of the models, since they "come up" far too small.



Left: This photo gives an idea of the Urquharts' general set-up for snapping ships "on the line." At the right, you see the result. To catch insignia and other details that might be hidden by the wings, shoot from a slightly rear ward position. The foremost ship here, by the way, is a Curtiss Navy job. The two at the rear are Boeing F4B's, the Pratt and Whitney powered fighters so popular with modelers.

A Fairchild 24 Gas Ship

Only occasionally do you see a standard ship that will reproduce easily as a gas-powered flying scale job, for there's usually some feature about big ship design that gums up the works when you try to reduce it in exact proportion. The Fairchild 24, however, is a ship that "comes down" admirably for the gas modeler's purpose. And Frank Roberts, whose article appears below, has done a swell job for you in preparing the Fairchild plans.

By Frank Roberts

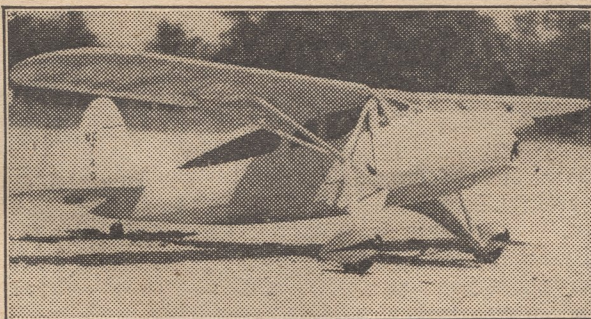
FEW AIRPLANES lend themselves to exact scale reproduction for gas model makers, since even a proportional reduction in size doesn't necessarily guarantee that the flying qualities will reproduce in the same ratio. The Fairchild 24, however, is one of the exceptions, for its simple construction and stable qualities as a full-sized ship "come down" quite creditably for the construction of a six-foot wing-span gas power model.

The original ship is equipped with the Ranger six-cylinder in-line engine, and our model is designed to fly with a Bunch "Mighty Midget" model motor. Any other motor of similar size and similar power may of course be used.

Except for some slight enlargement in the tail surfaces and the omission of the Fairchild 24's wheel pants, the model is strictly to scale in every respect. Even the rib and stringer spacing follows the proportioning of the big ship.

You'll find the drawings accompanying this article quite complete, and a modeler of fair experience should have no difficulty whatsoever in using them to perfection. Except where otherwise indicated, the scale is $\frac{1}{4}$ " to the inch, the model being $69\frac{1}{4}$ " in span. When enlarging the drawings, it is only necessary to enlarge those outline portions which are actually used for shaping or building.

Some slight differences may be noticed between the photographs and drawings. This is because the photographs are of the original model which was especially built for FLYING ACES, and the drawings incorporate



Yes sir! She's a "fair child" indeed, this Fairchild 24 gas model pictured above. She's as realistic a model as you could build and a swell scale flyer. Incidentally, the wheel-pants are included here for appearance only, since Roberts prefers to omit them for lightness.

such changes as were indicated when that model was tested. So while the photographs are reliable for general reference, follow the drawings for absolute accuracy.

CONSTRUCTION

BEGIN the model by first making a full-size drawing of the fuselage sides. It is only necessary, however, to enlarge the portion of the frame shown by heavy lines on the side view of the fuselage on Plate 2. The fuselage

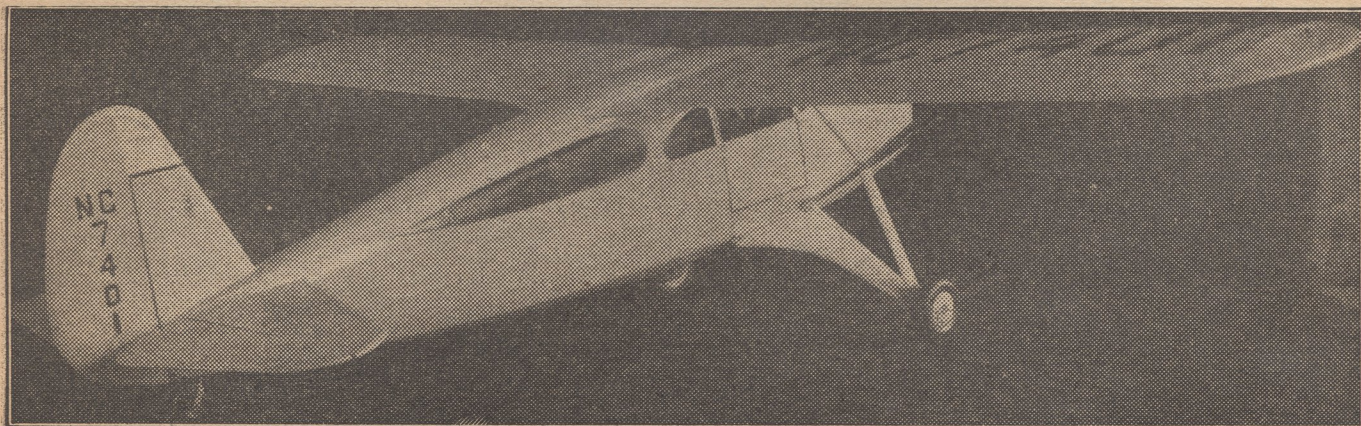
sides are made from $\frac{1}{4}$ " square spruce longerons with $\frac{1}{4}$ " square hard balsa uprights and diagonals. Build two fuselage sides as indicated by the shaded portions on the drawing, exactly alike.

Cement plywood Formers Nos. 1 and 2 (Plate 3) in place. Small brads may also be used to help hold these joints tightly. The fuselage frame is completed by cementing the top and bottom cross-pieces in place, starting at Station 3 and working toward the rear. The respective lengths of these cross-members are obtained from the top view of fuselage (Plate 1) and are also indicated in full-size on the top and bottom former patterns (Plate 4).

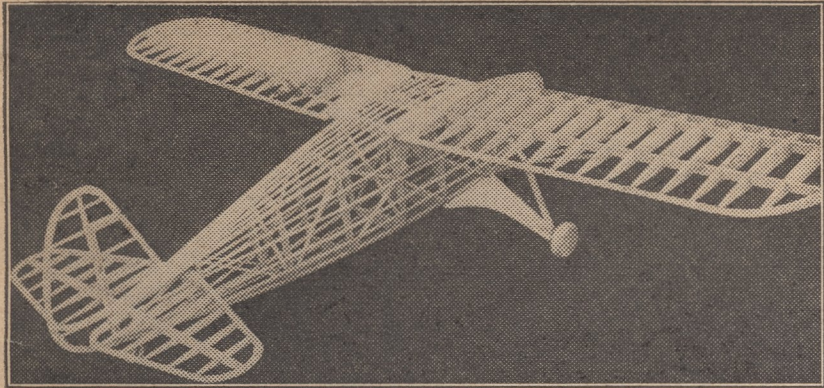
Rubber bands may be used to hold the front and rear of the fuselage securely while cementing the cross-pieces in place.

Now check the fuselage frame for squareness and for true curve on each side, and place the X-braces at former Stations 3, 5, and 7. Be generous with cement at these and all other joints.

Former patterns may be traced directly on the $\frac{3}{32}$ " balsa by means of carbon paper, or the patterns may be cemented to light cardboard, cut out and used as templates. Do not cut the notches at this time, but mark the



Designed to fly with a Bunch "Mighty Midget" motor—instead of the six-cylinder in-line Ranger of the original Fairchild 24—this nifty gas model is built strictly to scale except for a slight enlargement of the tail surfaces, which are shown to such good advantage in this picture. Roberts' model was colored bright yellow, with black numbers and dark blue fuselage panels.



Before receiving its final covering, your model of the Fairchild 24 should look like this. Notice, however, that the wing-ribs here are solid ones cut from sheet balsa, while those shown on Plate 3 are built-up. Take your choice. But remember that the solid ribs are somewhat heavier and not quite so strong as the built up ones would be.

for the covering of the model's fuselage.

The nose to No. 2 former may be filled in with balsa or covered with aluminum.

The nose block and hood (Plates 1 and 2) are carved from solid balsa blocks and hollowed out. The hood may be fastened by screws, or it may have small hinges and a catch.

WINGS

CUT-OUT ribs are shown in the photographs, but later tests have shown that the built-up type of wing-ribs are much better for this ship, besides being lighter. And spars of the built-up type, too, are as strong as the solid type. They are also lighter and have the added advantage of being less apt to warp under the

places they should come. Check for accuracy when ready to assemble stringers.

A small length of hacksaw blade is handy for cutting the notches on the assembled frame. As formers are cut out they may be cemented to their respective uprights and top and bottom cross-braces. See drawing for correct placement.

The stringers can now be cemented in place. First line up the notches previously marked, and cut them out for the 3/32" by 3/16" stringers. Cement the stringers securely in place.

The 1/16" sheet balsa window pieces may be cemented in place, also the 1/4" wing pin dowels and the tail wheel brace block (Plate 4). The wing pin dowels are made from hardwood pieces 10" long and 1/4" square, cemented across the fuselage under the main longerons as shown.

Round off the portion of dowel that extends from the No. 1 rib on fuselage. This end goes into the butt of the wing spars, where a pin is pushed down through spar and dowel to make a secure connection for the wings.

A piece of balsa 1/2" by 3/4" is cemented across the front of the No. 3 former, and a piece of 1/8" by 1/2" stock is then glued to the rear of this piece to form the front curve of the fuselage top. The top stringers butt against the rear of this piece. Sandpaper to shape. Note that the top portion of the fuselage between the outside stringer and No. 1 rib allows for sandpapering a smooth fillet.

DOORS AND LANDING GEAR

DOORS may be built separately or right in the fuselage. The latter method is to be preferred, since a better fit may be obtained. The real Fairchild 24 has a door on each side, but for our model one door is enough to allow access to the battery in the cabin. The hinges may be made from sheet brass or aluminum and the catch of music wire.

You may use either of two types of landing gear, the first being the rigid type depending on airwheels to take the shock of landings (Plate 2) and the second being the hinged type with a spring shock strut (Plate 1). Since there is much to be said in favor of either type, it is left to the builder to make his choice.

Before covering the fuselage, sandpaper it well. Use silk or heavy paper

Construction Plans

for this swell flying scale gas model of the Fairchild 24 will be found on the following pages. You'll find 'em very easy to follow in making your model.

strain of the doped wing-covering. So while you may use the solid ribs and spars if you wish, it is better to follow the drawings here and build them up.

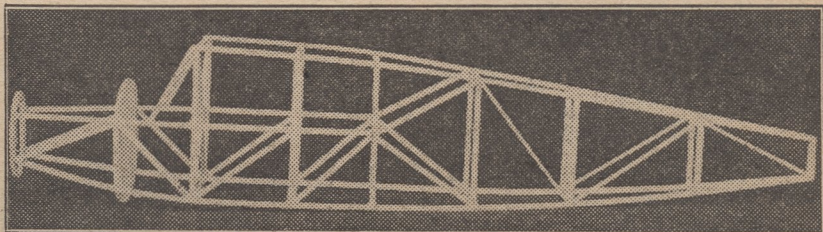
Ribs are completed one at a time in a jig made by placing the rib drawing (Plate 3) on a smooth board, covering it with waxed paper, and driving headless nails into the spots marked on the drawing by dots. Balsa 3/32" square is used for the ribs. Each piece should be cut out accurately, cemented in place, and allowed to dry thoroughly before removing from the jig. Twenty-six ribs are made in this manner.

Wing tips are cut from 1/2" flat balsa and are cemented firmly as indicated on Plate 2. Ribs No. 1 and 1A, that fit against the center section of the wing, are cut from 3/32" balsa (Plate 3) and the space between them is filled in with 1/16" sheet balsa at top and bottom surface.

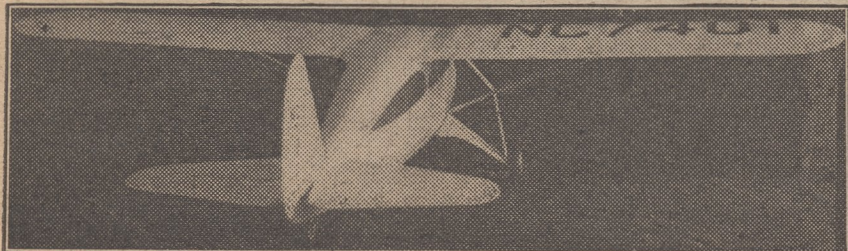
Dashed lines in the wing plan on Plate 2 show positions of the 3/32" square drag-bracing which runs from front to rear spars at the center line. Ribs marked "C"

have a 1/16" by 3/16" piece cemented on each side of

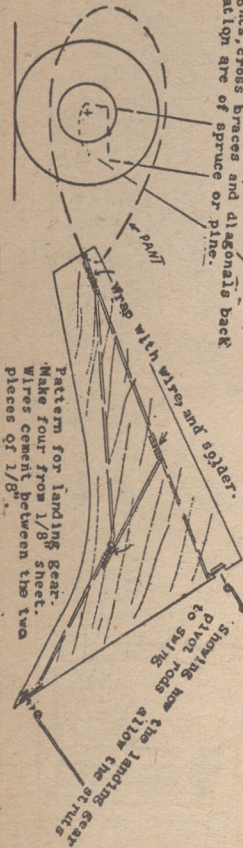
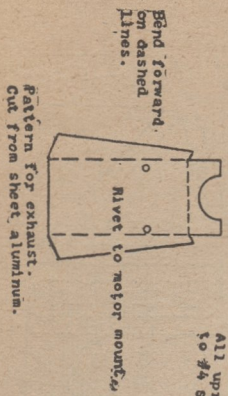
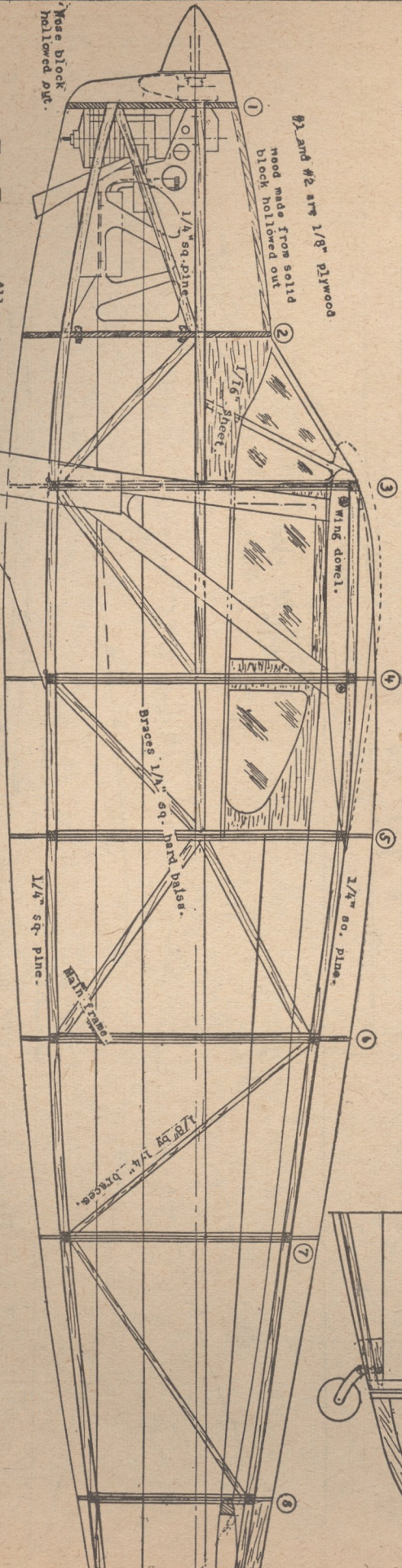
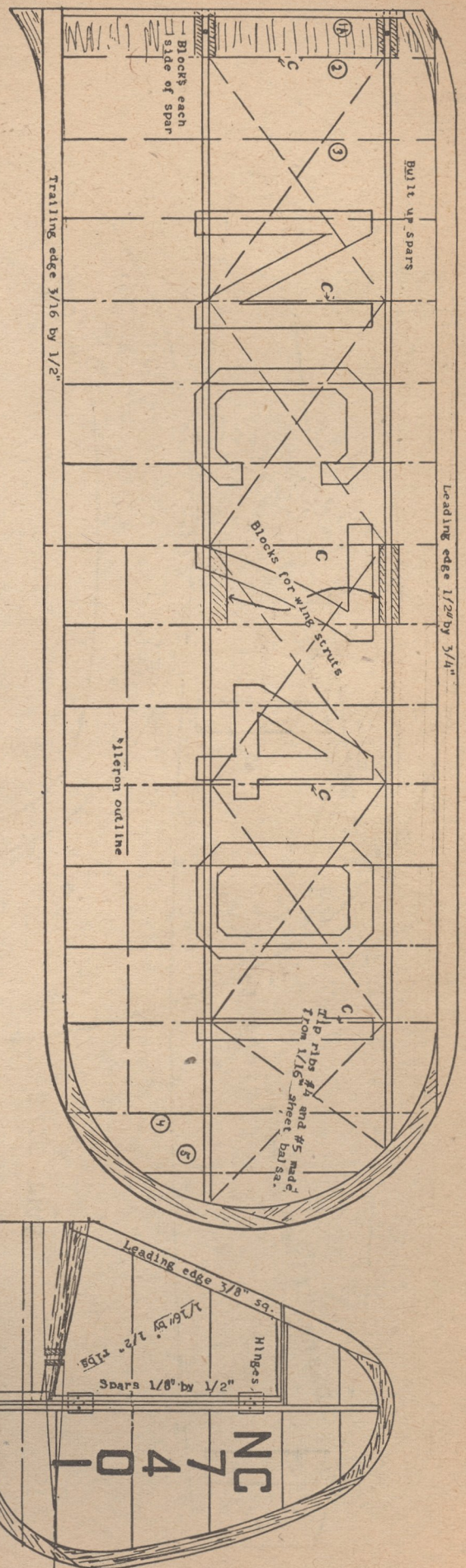
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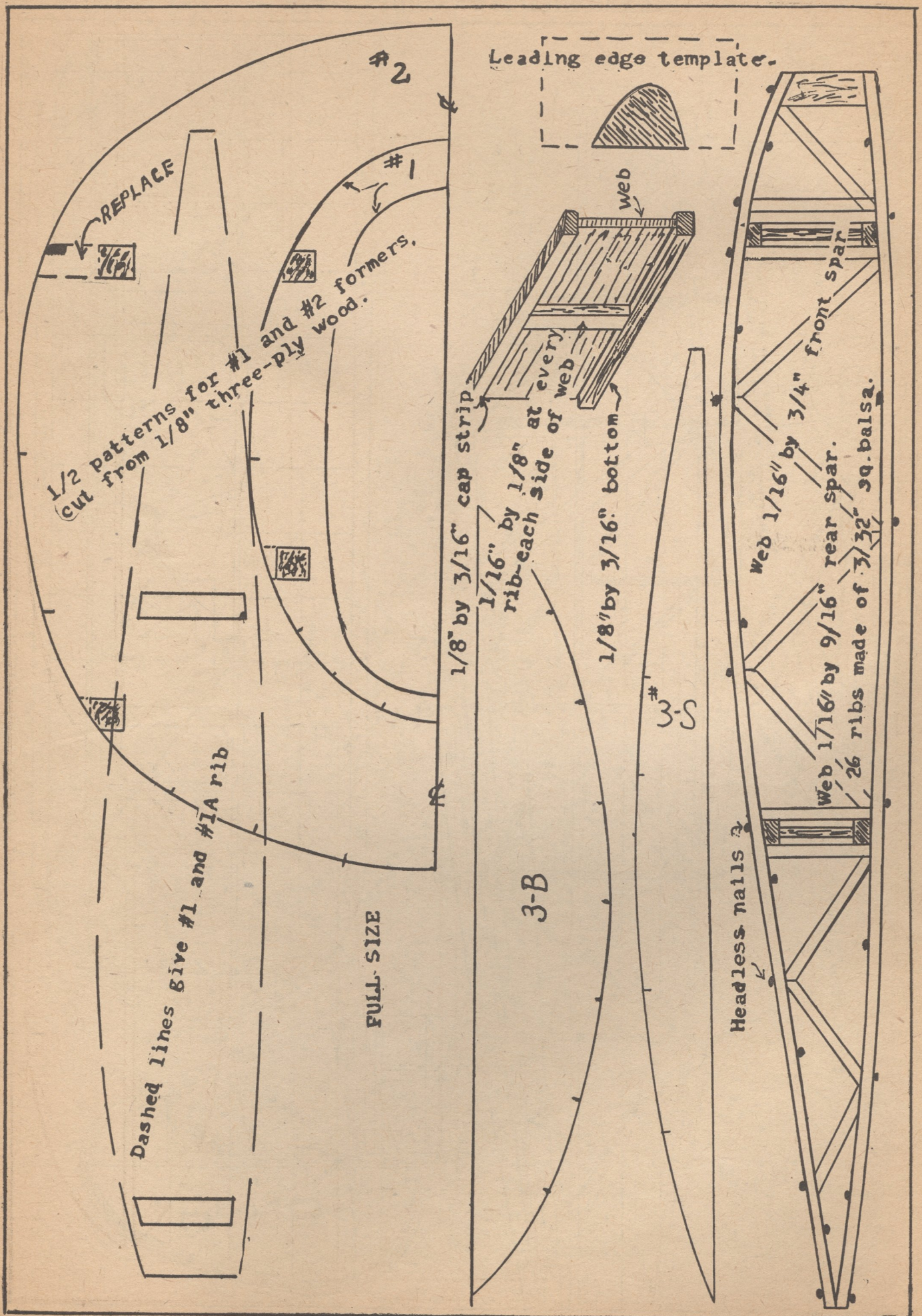
Above you see the main frame of the fuselage just as yours should be before the supplementary stringers and cross-pieces are added. Where the fuselage sides are fitted to plywood formers Nos. 1 and 2 at the nose of the ship, small brads may be used to help the cemented joints bear the engine weight.

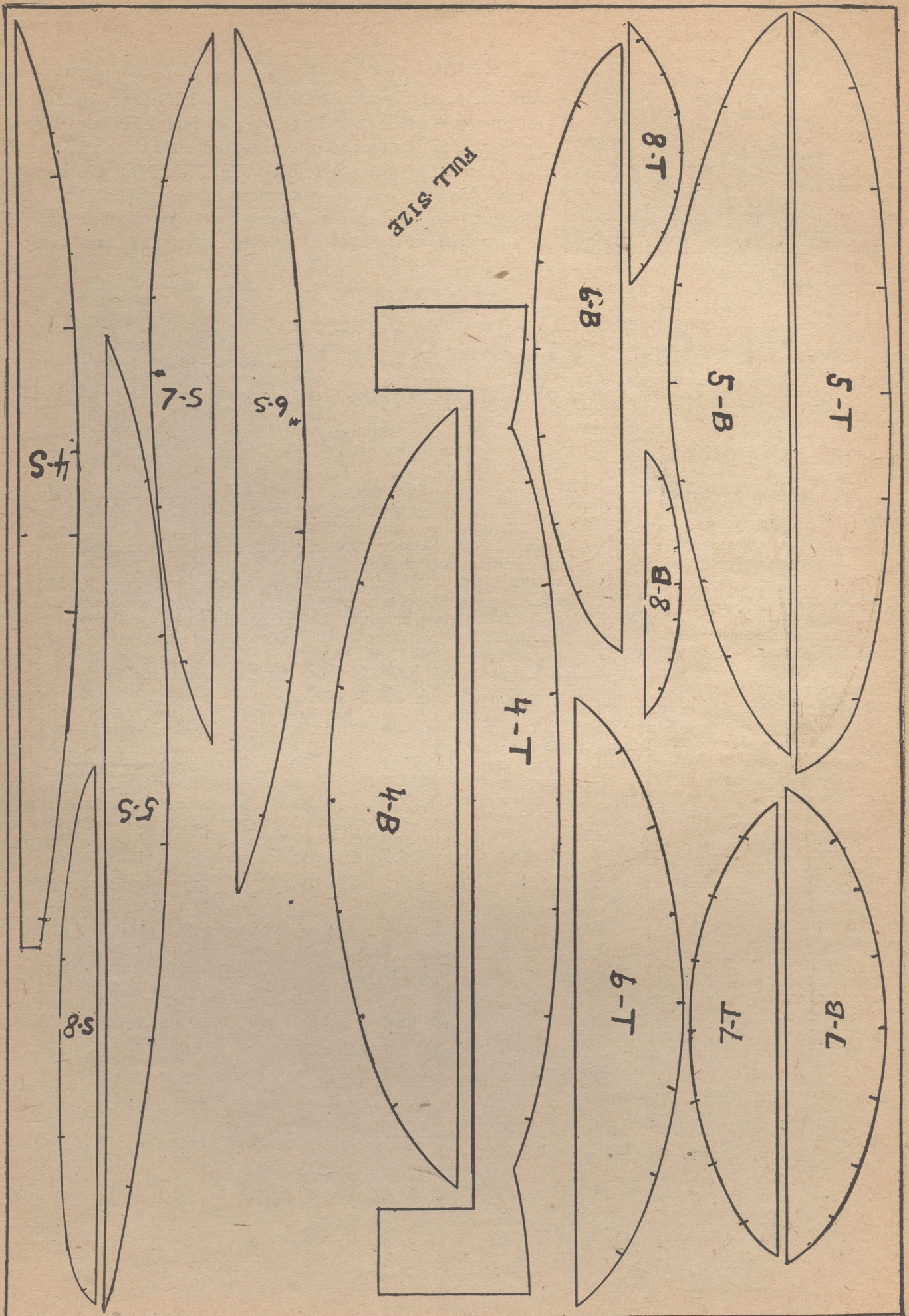


Left: And here's how your Fairchild 24 model should look to you when she's starting away from you on a record flight. Such control adjustments as are necessary can of course be made after you've given your ship several glide tests.

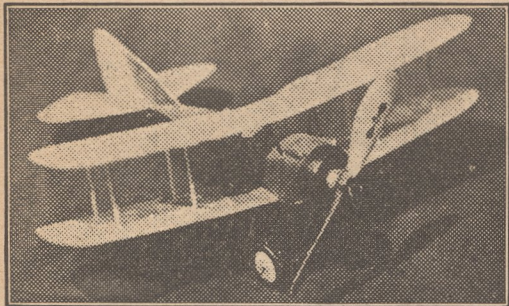


A FLYING ACES Magazine Plan





While this might be taken for a picture of a war-time Spad XIII, it's actually a swell snapshot of our 12½" model built by Henry Struck. And below, Henry tells how you can build a similar ship for yourself.



Famed Fighter of the World War!

Rickenbacker! Fonck! Guynemer! Luke! These are but four of the many World War aces who rode to triumph in the cockpit of a Spad. And it was partly to these ships that the pilots owed their fame, for these sturdy little "bipes" would stay in the fight as long as a scrap of tracer-scorched fabric would stick to their frames. And now, readers, Henry Struck gives you his model "ship of the heroes." So get out your balsa and—

Build the Spad XIII

TRAIL BLAZERS OF THE AIR—NO. 8

By Henry Struck

TWO QUALITIES were responsible for the outstanding success of the Spad as a pursuit ship during the World War. For few other ships at the time could dive as fast as the Spad or absorb as much punishment and still be able to fly home.

So it is little wonder that the Spad became the favorite sky-horse of American and French flyers. And the combination of these dependable little planes and daring pilots helped make the exact type of action that fiction writers love. Accordingly, almost every story hero of the "war in the air" jockeys a Spad!

But not all the mighty deeds of the Spad were performed on the printed page. For such great French aces as Rene Fonck, Pere Dorme, and Georges Guynemer chalked up many victories while flying Spads. And from our own tarmacs, Eddie Rickenbacker and his "Hat in the Ring" squadron added to the prestige of the Spad.

The first Spad XIII—after which our current model is patterned—came out late in 1916. It was an immediate success, and in that latter half of the War held its place as a first line pursuit job until the end.

With a wing-span of scarcely twenty-six feet, the Spad XIII was constructed entirely of wood with fabric covering. The trailing edges of the wing and tail surfaces were of wire, which caused a scalloped

effect when the covering was shrunk. The landing gear was placed well forward and its sturdy shock-absorbing construction helped considerably in reducing the hazards of setting down a ship on the makeshift aerodromes of the War.

The 220 h.p. Hispano-Suiza motor with which the Spad was equipped permitted efficient streamlining of the nose, which added greatly to the appearance and performance of the entire job. And on the ground the Spad seemed ever eager for a quick spring into the air.

And if you'll follow the instructions I give here for building a model of the Spad XIII, you'll find your job will have that same air of being always "on the alert." So let's get alert ourselves, and start work on—

MODEL CONSTRUCTION

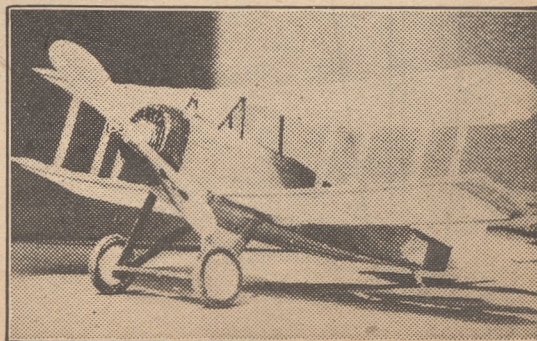
CUT two sides of 1/16" soft sheet balsa to the pattern given in full size on the Plate 2. The formers are also cut from 1/16" sheet. Join the sides at the top by Formers 1 and 3 and on the bottom by Formers 5 and 7. After the cement has dried pull the sides together at the rear. The rest of the formers may then be added.

Five stringers of 1/16" sq. balsa are cemented on the top and bottom to maintain the shape of the fuselage; note however that the top of the fuselage from Formers 1 to 3 and the bottom from 5 to 6, are covered with soft 1/16" sheet balsa.

(Continued on page 93)



Above: Ready for the Dawn Patrol! You can almost sense the tenseness in the chill morning air as the ship awaits the ackemman's twist of her prop. But here again, the ship shown is only our model. To the right and left are other pictures proving how truly realistic a model plane can be. It's attention to detail that does it, you know. And you'll find a careful study of these pictures will be of great help in building your own model Spad XIII



SPAD XIII
1916

COLOR (OPTIONAL)

ALL SURFACES ~ KHAKI

NOSE & STRUTS ~ RED

DETAILS ~ BLACK

SPECIFICATIONS

SPAN ~ 25'6"

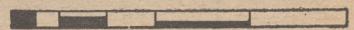
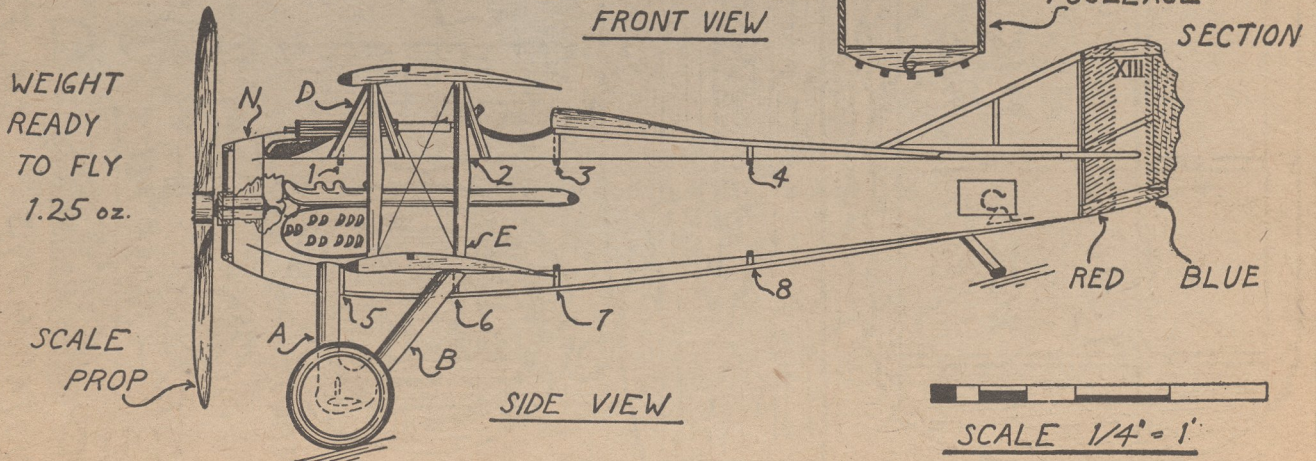
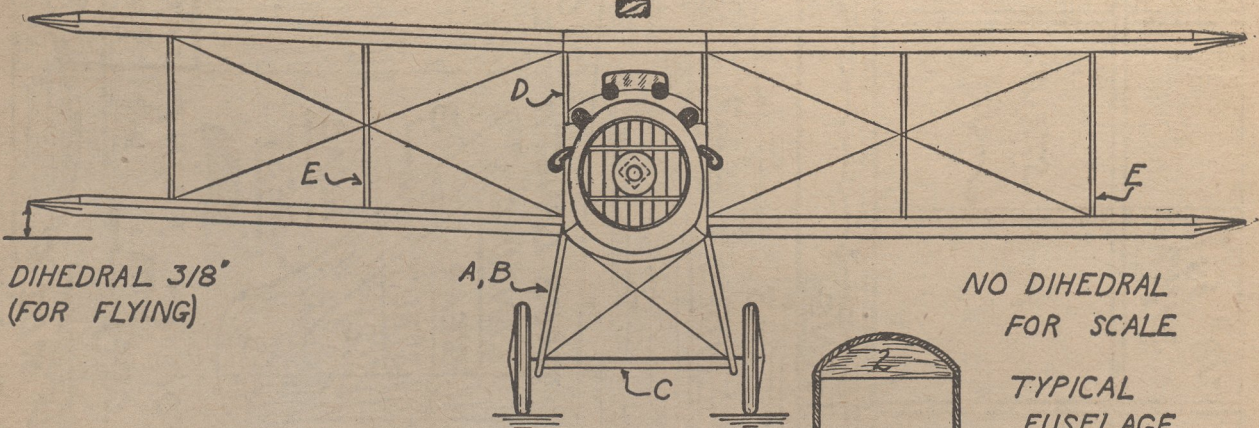
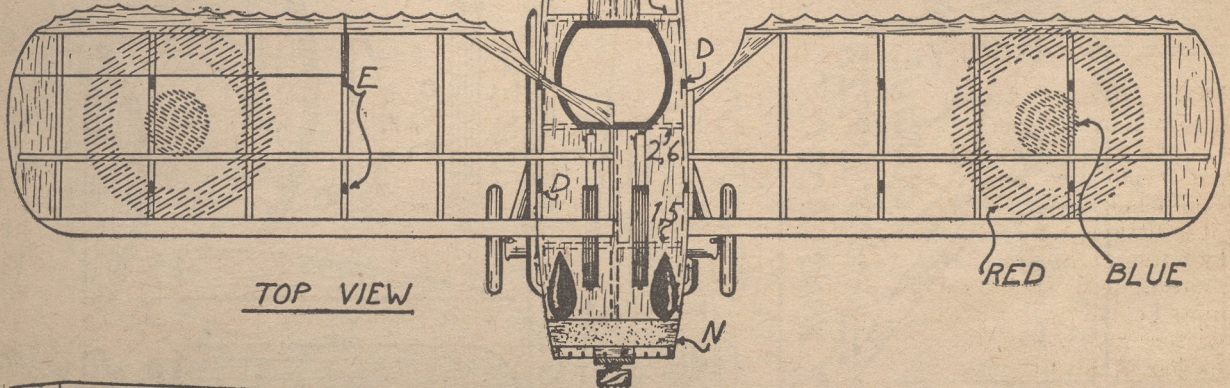
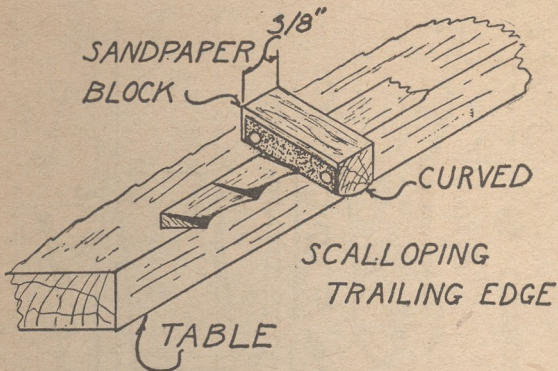
LENGTH ~ 20'

HEIGHT ~ 7'6"

SPEED ~ 120 M.P.H.

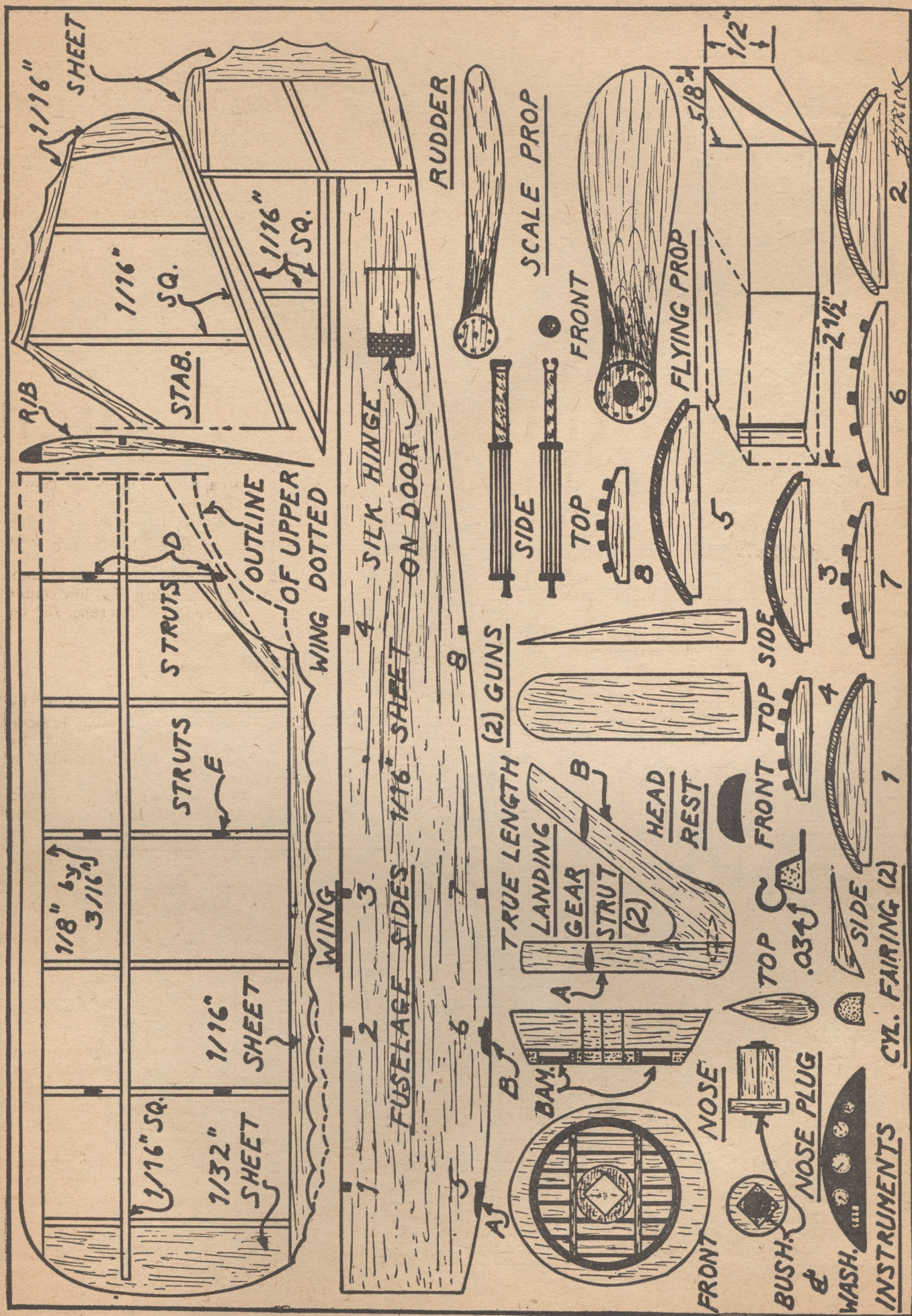
MOTOR ~ 220 H.P.

HISPANO SUIZA



SCALE 1/4" = 1'

SPARK



Fun Galore With This Novelty Job!

More! And still more! That's what most readers asked for in answer to the recent argument concerning novelty jobs. So here's another freak for you—an ornithopter. And it's even crazier than the rest! An ornithopter, you know, is a wing-flapping flyer on the order of a bird. And you'll find that this strange trickster, easily made from scrap model material, is really a bird of a flyer!

Now Make

A Stunting Ornithopter

DOWN through the ages, Man has always been envious of the lazy, graceful glide of the gulls, the hawks, and the eagles, and ever has he tried to emulate the birds in their flight.

Every schoolboy knows the story of Daedalus and his son Icarus, who sought to fly with the wings of the birds.

And every newspaper reader knows the story of our modern Icarus—Clem Sohn, the "Bat Man," who built for himself a strong structure of steel and canvas which enabled him to loop and glide like a bird. But Clem's envy of the birds was his death warrant, for not long ago the parachute with which he landed after stunting in the air failed to open—and the Bat Man's sensational career was ended.

Ornithopteral flight, then, has always been a subject of much interest. And while man-made machines now fly faster, farther, and higher than the birds, we still haven't made practical a machine that will fly as the birds fly. We still have far to go before we can reproduce the complex mechanism of the bird's wing and the bird's internal control of its center of gravity.

However, while our present project doesn't exactly look as graceful as a sea-gull, nevertheless it's a simple type of mechanical ornithopter which we know will bring you a barrel of fun if you'll only build and fly it.

There's hardly any stunt this ornithopter can't perform! And due to the large area and the automatic setting of its wings, its glide is slow and flat.

This ornithopter is not fully developed in design, so it gives the builder a splendid opportunity to experiment and improve on it. As an example, the wing may be enlarged in length or width to give

By Joseph Ledman
and Alan Orthof

added area, the motor stick might be lengthened, or the power increased. Even the leverage of the wing stroke may be changed if a faster or slower "flap speed" is desired.

When wound full, this ornithopter has a rapid climb. The gull-wing insures stability because of a low center of gravity. The ship can be made from scraps, for no special parts are needed.

MOTOR STICK AND TAIL

USE a piece of medium grade balsa 6" by 3/16" by 1/4" for the motor stick. The thrust bearing is made from a piece of hard balsa 5/8" high by 1/2" wide by 3/16" thick. Cement the two pieces securely together in the position shown on Plate 2.

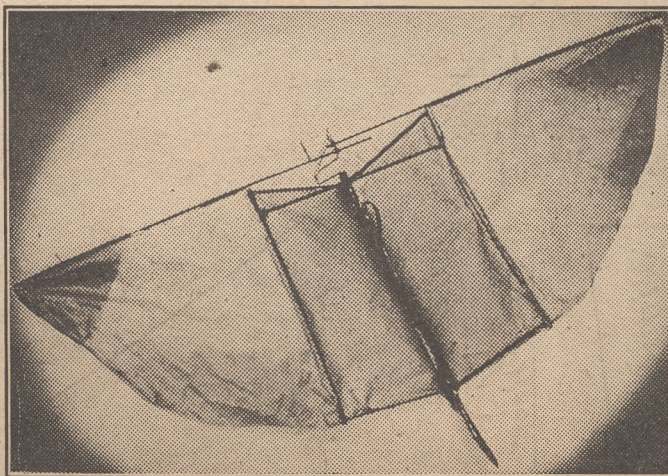
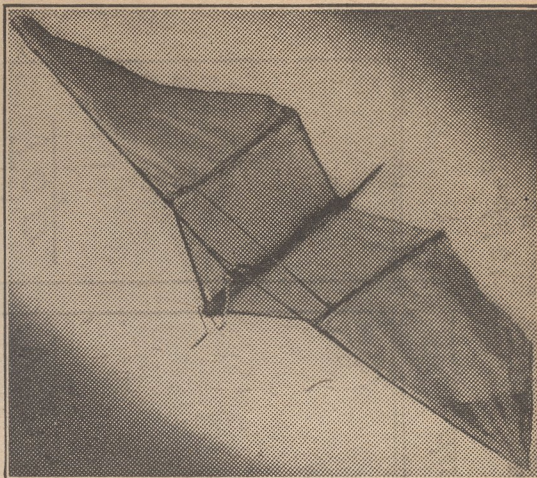
A piece of 1/16" aluminum or brass tubing is placed along the top of the thrust bearing. It should project about 1/16" beyond the front of the bearing to allow for the rotation of the crankshaft. The tubing is first glued on the mount, then U pins are placed over the tubing and pushed into the wood to hold it more securely.

The wire shaft is inserted into the tubing and then bent according to the outline on Plate 1. The extra bend in front of the connecting rod is used for hand-winding and to keep the connecting rod in position.

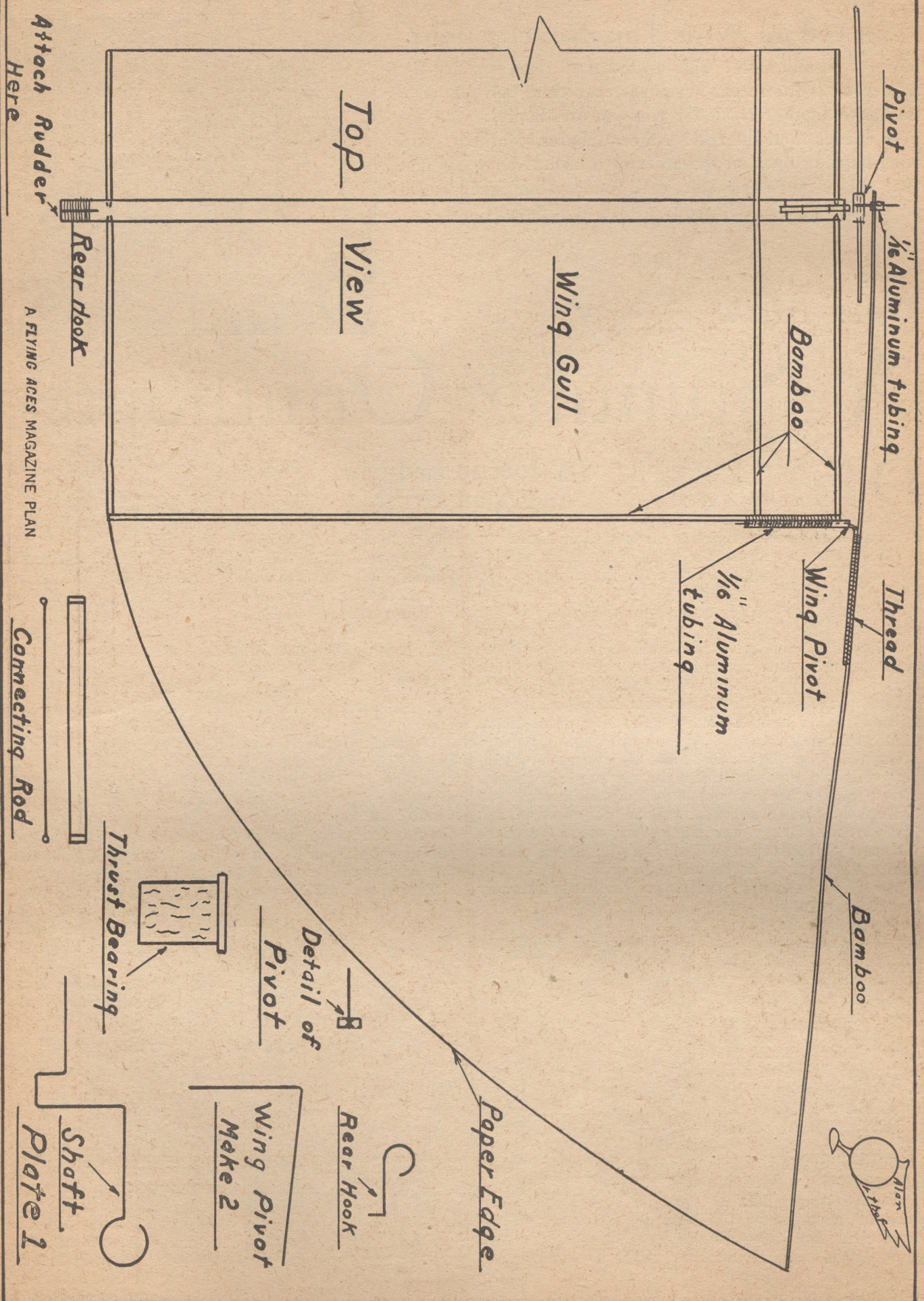
The rear hook is merely a looped L inserted into the body and wrapped with thread. The rudder is bent from a piece of 1/32" square bamboo, the ends of which are inserted into the tail end of the motor stick and cemented in place.

One-sixteenth inch square bamboo is used for the gull and wing frame. The gull struts are barbed. (Continued on page 94)

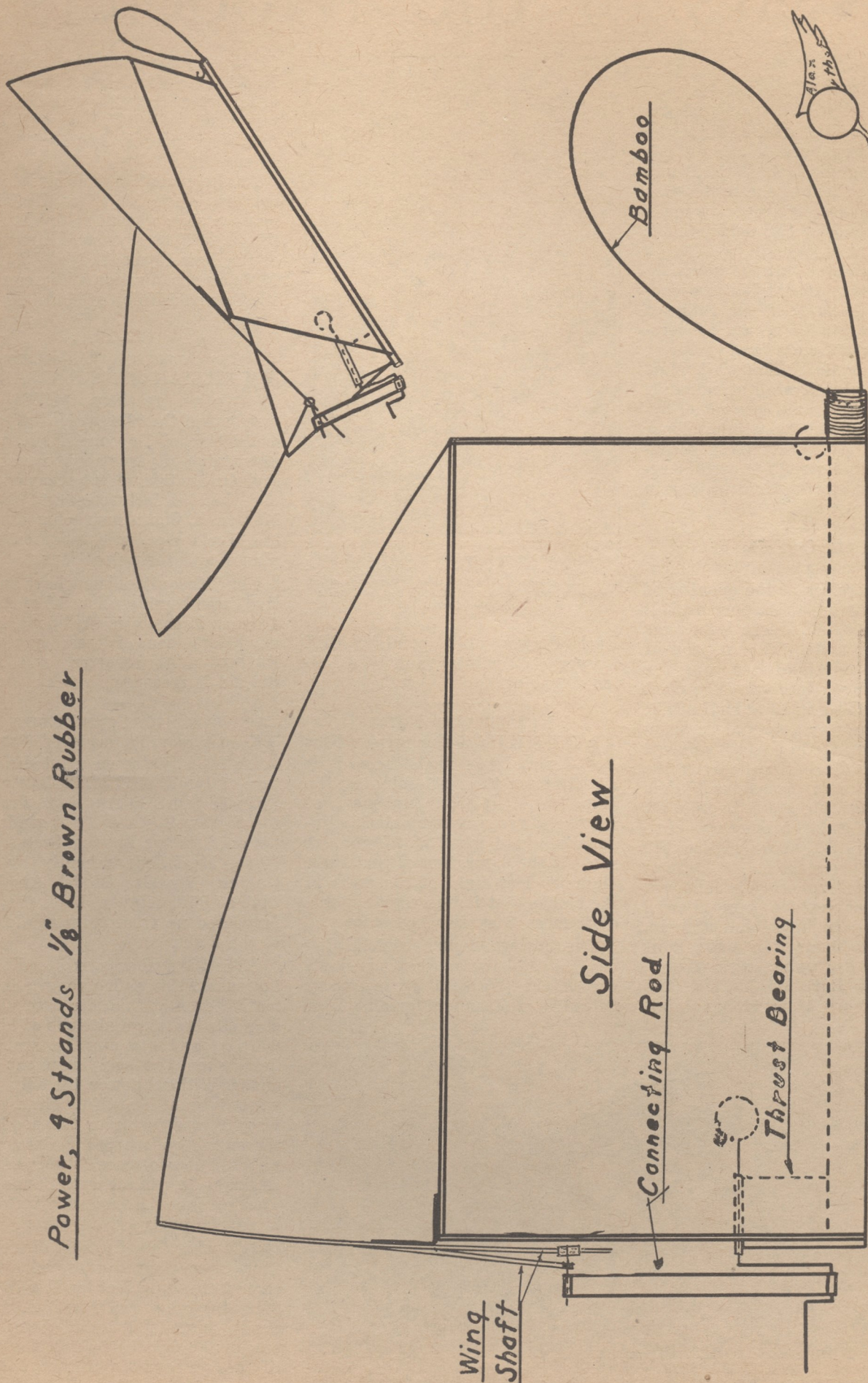
No, this isn't a bat. It's another kind of blind flip-flop critter that stages more stunts than any bat could put on—even with a bun on. The picture, a front-quarter shot, gives a good idea of this novelty experimental ornithopter in flight.



Where's the prop? you ask. Well, there isn't any! For while this peculiar Ledman-Orthof device uses rubber for power, the motor actuates the wings instead of an air-screw. Notice here how simply the framework is built. Ordinary tissue is the covering.



Power, 4 Strands $\frac{1}{8}$ " Brown Rubber



News of the Modelers

GAS MODELER BROADCASTS

DEFENDING the value of gas models and discussing the present Massachusetts ban on gas model flying in that state, Bruno Marchi, president of the Boston Gas Modelplane Society, recently made a public broadcast through the mike at radio station WLOE.

Marchi pointed out the astonishing increase of interest in gas modeling as a hobby and the value of such interest with regard to aeronautical experimentation.

He further stated that while Massachusetts modelers all strenuously objected to the state gas model flying ban imposed by Commissioner Goodwin, they nevertheless recognize a definite need for certain restrictions and regulations leading to greater safety.

SALT LAKE CITY GAS-FEST

STAGED as a part of the dedication exercises at the opening of the new Municipal Airport at Salt Lake City, Utah, recently, a gas model meet under the direction of J. Gilbert, adult adviser, was the source of much interest. The meet was the club's second annual affair.

Since this was a special occasion the manager of the airport allowed the use of the entire field by the petroleers, with occasional "time outs" for the big ships to take off or land. All model testing was completed by 8 A.M., at which time the contest proper started.

"Precision" rules were followed, with each contestant being allowed two flights each of 35 sec. motor run.

When the finals were over, Walt Staff, with 213 points, was winner. Then came Burt De Marais (155 points), Harry Mori (139 points),



"Mister Mulligan" again! But this time it's a five-foot wing-span gas job built by Paul Gass, of Decatur, Ill. The ship showed fine performance with steep climbs and speedy landings when entered in a recent N.A.A. meet in Paul's home town.

Earl Player (132 points), Cliff Cooper (102 points), and Wes Keller (96 points).

NEW ZEALAND NOTES

BREAKING the former New Zealand gas model record by a little more than two minutes, the ship flown by Mr. Mahoney, of Pukekohe, recently completed an unusual flight clocked at 27 min. 41 sec. At the expiration of that time, Mahoney lost sight of his craft in the clouds, but it was reported still aloft more than two hours later.

The ship was found the following day at Pukewaka, having flown across the Waikato River, many miles from the launching point. This

flight was made at the Auckland Model Aero Club's meet at Harrisville, where another good record was made when N. Dobson's five-foot span gas job flew for 14 min. 40 sec.

At the recent annual model contest in Australia, New Zealand's leading ship was flown by L. Colinson, of New Plymouth, a member of the New Plymouth Model Flying Club, an organization affiliated with the Taranaki Union of Model Flying Clubs.

HAWKS ADDRESSES "MOSQUITOES"

WILLIAM HAWKS, U.S. Navy pilot, recently thrilled the members of the "Jersey Mosquitoes" model club of Bayonne, N. J., with an evening of yarns about naval flying. On another recent occasion the club had as lecturer-guest Walter Mercer, a flight instructor during the World War, who spoke on war planes and their functions.

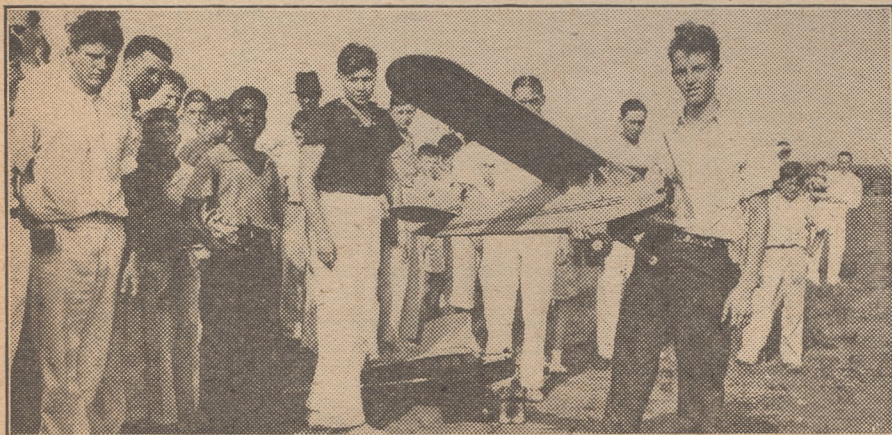
The "Mosquitoes" now have an active membership list of fifteen. Thomas Esposito is president, Barney Monteleone is secretary and FLYING ACES reporter, and Don Bidgud is treasurer.

NOVEL STUNT GAS FLIGHT

IN last month's issue of FLYING ACES Magazine we printed a picture of Joe Kapral, of Philadelphia, Pa., who won a FLYING ACES Trophy for the swell stunt flight made by his entry in the Eastern States Gas Model Meet held recently by the Quaker City Gas Model Airplane Club at Philadelphia. Lack of space prevented us from printing details of the flight.

Since the feat was extraordinary, however, we're giving you the information even at this late date. Joe's ship climbed to an altitude of about 300 feet and was circling over the field when the self-timer cut the motor. Without power, the ship then went into a beautiful glide, and when it was just over the heads of the spectators wooden gliders were released at two-second intervals until six gliders in all were in the air. They dropped harmlessly into the highly enthusiastic crowd.

Following this, the ship circled to "sort of see that all was well," then came in for a perfect landing in full view of the spectators. A swell flight, this, and it entailed no little amount of detail work on the part of Joe and his twin brother, Joseph. Congratulations, Joe—and we know



Modelers, here's Bill Dunlevy, of Lincoln, Ill., with his six-foot span gas model of a Taylor Cub, built from a Peerless kit and powered with an inverted Gwin Aero engine, the ship has been trailed several times by a real Cub—once at 2100 feet!

you liked the FLYING ACES Trophy.

Other winners of F. A. prizes in the same meet were Gerald Ob-schlager and Walter Eggert, Jr., both of Philadelphia, and A. Swasey, of Upper Darby, Pa. They each received a year's subscription to FLYING ACES, the first two, respectively, for fourth places in the endurance and best looking model events, and Swasey for second place in the "lucky time" endurance event.

BIG AIR SHOW CONTEST

SHARING INTEREST with the biggest and newest airplanes in the world on display at the International Air Show in Chicago, January 28 to February 6, will be the best products of American model builders.

For announcement has been made of a special contest for non-flying scale models. The contest will be sponsored jointly by the National Aeronautic Association and the International Air Show, Inc.

Scale models of any man-carrying airplanes may be entered, the single restriction being that models must be built to accurate scale with wingspreads not less than eighteen inches and not more than thirty-six. Any type of ship is eligible—military, commercial, modern, historic, racing—or in fact any ship that either exists now or has existed at any time in the history of aviation.

Models will be exhibited throughout the run of the show and will then be returned to their builders. All entries must be received (express prepaid) by Pat Sweeney, contest director, International Air-Show, International Amphitheatre, Chicago, before January 24.

Full details concerning the model

contest can be obtained from Mr. Sweeney or from William Enyart, contest chairman, N.A.A., Dupont Circle, Washington, D.C.

Prizes in the contest will include trophies, cash awards, air line trips, and merchandise. In addition, contest winners who reside outside the Chicago area will be given free air transportation on major air lines all the way from the nearest airport right to the International Air Show.

PORT HURON ACTIVITIES

ORIGINALLY scheduled as an outdoor event, but postponed because of gusty weather and finally held in the school gym, the recent fall contest of the Port Huron (Mich.) High School Aeronautics Association proved a great success.

A novelty event in which entries were judged on design and stability was won by Robert Fraser-Lee, an
(Continued on page 73)

What Do You Say?

AND STILL THEY COME!

Editor, FLYING ACES:

I think that although the gas model jobs are all right and ought to be published, we should have more rubber models like the Keane Ace. And I agree with Wallace Fry—nix on "super-super" stuff.

ROSCOE GOODWIN,
Tilton, N.H.

Editor, FLYING ACES:

I am a regular reader of FLYING ACES and think that it is a swell magazine, but you haven't heard from me before since I've always thought you've been getting along quite well without my advice. Now, though, it seems as if some of the other readers want to spoil the mag.

Despite what these other chaps say, I think you should continue printing the "dream" or unorthodox ships and not limit yourself to the standard designs. I like to make models of my own design much better than I like to copy other ships, and I think also that if the professional designers through the years had al-

ways stuck to the orthodox styles the aviation industry would never have reached its present stage of development.

So I hope that our mag keeps up its present good work, and that all its readers may become "peelots" some day.

DAVID LARSON
LaGrande, Ore.

Editor, FLYING ACES:

About Wally Fry's note in objection to "super-super" and dream ships—I think Wally's a pretty poor aviation enthusiast.

Where would aviation be if it weren't for the Wright brothers' and Curtiss' dreams of flying? And the modern planes—Boeing, Douglas, Seversky, and other ships—where would they be if their designers hadn't had dreams?

So go on, Mr. Editor, and keep on printing the "future" ships once in awhile.

BOB WILLIAMS,
Chicago, Ill.

HERE'S THE "FLIGHT PLAN"

For

THE NEXT BIG FLYING ACES



SPECIAL!—A sensational article revealing how leading aero experts answer that vital question—"If war struck tomorrow, would America be ready to defend herself in the air?"

FICTION!—Richard Knight in another action-packed Oriental sky mystery.

"Eclipse of the Hun"—Joe Archibald's newest Phineas roar.

And an ace-high "Griffon" yarn relating "the crime of Drury Lang."

Fact Features!—"Wings Against Death," the vivid sky drama of an amazing battle for life in the stark, frozen North.

Plus other top-notch features.

MODEL BUILDING!—Plans for a great flying model of the Seversky P-35.

A striking, top-flight gas job—The Dragon Fly.

How to build a "solid" of Boeing's huge Atlantic Clipper.

The Current Catcher—ace of stick models.

IN MARCH FLYING ACES

ON SALE JANUARY 25th

(Continued from page 8)

time to introduce himself.

"Yes, sir." The man looked surprised. "Did Colonel Jordan telephone?"

"No, your friend gave your name. Sorry you had such an abrupt christening."

Carson rubbed his beaked nose, grinned.

"I guess we showed those Jerries, at that. I sure put a hole in one Fokker's wing."

"That was a ground-gun, you fool!" snorted the irritated Grogan. "You're lucky to be alive, both of you."

Carson's dark face flushed. He took a step toward the big pilot, dropped his hand to his side. Strange intervened.

"Smith, I want to see you and Carson in the office. Grogan, will you tell the mess sergeant and the officers' mess attendants to hurry chow?"

Grogan strode away, and Strange led the new men into the office. It was getting dark in the building, so he lighted an oil lamp. Carson gave them their orders, and he glanced at them briefly.

"Any more men coming?"

Smith looked at Carson, and Carson shook his head. "I don't know, captain. They just rushed us out here."

"Then Colonel Jordan didn't tell you anything?"

"No, he just said to report to you."

Smith's faded-blue eyes looked frightened. "Is—is something wrong, sir? I thought this was a quiet sector."

STRANGE turned, opened the safe and took out the executioner's box. Deliberately, he set it on the desk, lifted the lid. Carson jumped back with an oath, and Smith stood frozen, his face slowly turning a greenish hue. Strange dropped the lid, kicked a chair toward the half-fainting pilot.

"Sit down, Smith. You, too, Carson."

The swarthy replacement stood with his black eyes riveted on the box.

"My Lord!" he exclaimed hoarsely. "What—who did it?"

"I had to let you know this," said the G-2 captain. "And it's not the kind of thing you can break gently. That's what may happen to you—or any of us."

Smith sprang to his feet, but Strange pushed him back into his chair.

"You're here now—and you'll have

to stay. If this story got out it might start a panic in other squadrons. But I forgot—you don't know the details."

Tersely, he explained, showed them the Headsman's first message.

"Eine," muttered Carson. "What's that mean?"

"It means 'one,'" said Strange.

"Six have vanished, altogether. The heads of four have been seen—including the one you saw. I'm telling you this, so you won't try any wild flights across the lines—unless you want your heads on the wings of that white Fokker."

"The Headsman!" whispered Carson. "He must be stark mad. And they say madmen are damnably clever."

"I thought of that," Strange said slowly. "He might have a vengeance complex—might have had some relative or close friend decapitated in the war, perhaps even a brother-pilot who was killed by a member of the 49th. That would explain the Headsman's concentrating on this squadron, after waiting until it was in an isolated spot. But whoever he is, he's not working alone. Those black Fokkers prove that."

Smith finally dragged his pale eyes from the box.

"Maybe you've killed the Headsman," he said huskily. "You said you didn't see his ship again. Maybe it



crashed down in the mountains where you couldn't see it."

"Let's hope so," said Strange as he put the box away. Then he motioned toward the door. "Time for mess. I want you two to help me with the rest of the pilots. They've gone through hell."

"I couldn't eat anything, captain," Smith moaned. "I keep seeing that—that face."

"Well, you can put on an act. And a stiff drink won't hurt you. Let's go."

The number of sentries about the improvised guard-house had been doubled. Grogan met Strange and the two replacements at the door of the mess, which stood opposite.

"There won't be much trouble over chow—" he began, then stopped, peering up into the dusky sky. "Lis-

ten! There's a ship gliding in with a dead stick."

The faint whine of the plane's wings grew louder, and in a moment the ship could vaguely be seen spiraling down in the gloom.

"Train your guns on it!" Strange rapped at the Hotchkiss crews. As he spoke, the ship dipped into a fast forward slip, howled in over the hangars. It was an Albatros with checkered wings.

"He's lost a wheel!" shouted Grogan. He whirled and ran toward the crash-truck. Strange stopped one of the pilots who started to run out onto the field.

"Tell the gunners to stay at their posts. This may be a trick. There may be other ships sneaking in for a strafe."

The man sped away, and Strange followed the throng. The Albatros was landing, wing lowered. For a second he thought the pilot would succeed, then the crippled side dropped and the wing dug into the ground. The ship careened, went on to its nose, fell crookedly on its back.

The crash-truck rolled up a moment later. Strange pushed his way through the crowd, saw men holding up the wing. The pilot lay halfway out of the cockpit. He was groaning feebly. Suddenly Grogan gave a wild yell.

"It's Jack—Jack Groves! He's alive!"

He flipped the truck spotlight directly onto the pilot. Strange had leaped forward. As the light fell on the man, he went rigid.

A German trench-knife was buried almost to the hilt in the pilot's back!

CHAPTER III

MOUNTAIN OF MYSTERY

FOR a second no one moved in that grim tableau. Strange was the first to recover. "First-aid kit!" he clipped at Grogan, then knelt by the crumpled figure. Groves twisted his head a few inches, and Strange saw the blood on his lips, the glazed look in his eyes.

"No . . . use," the dying man whispered. "Almost . . . gone . . ."

A spasm racked his body, and red foam came to his lips. His eyes twitched unseeingly past Strange, then fixed in a frenzied glare.

"The Headsman!" he screamed. "There behind—" he thrust a trembling hand upward. Strange turned, saw that the dying man's finger was pointing into the sky above Grogan's shoulder. Grogan held out the first-aid kit. Strange laid it on the ground,

bent over the gasping figure. The frenzied look faded from Groves' eyes, and as Strange leaned down the pilot clutched feebly at his hand. His lips jerked out faint words.

"German base . . . von Goare . . . the white Fokker . . ."

"Where?" Strange queried swiftly as the dying man's eyes started to close. "Where is the base? How does the Fokker vanish?"

For a last second Groves' agonized face looked up at him.

"The cabin . . . on . . . Thieves Mountain."

He tried to add something, but the word died into a silence. Strange looked down at the still fingers in his hand, slowly rose to his feet.

"Why didn't you try to save him?" Grogan said harshly.

"He was too far gone. Pulling out that knife would only have been unnecessary agony."

"Th' captain's right," muttered a medical corps sergeant who had just reached the scene. "How he managed to fly that ship is beyond me."

"He couldn't have come far," said Strange. "He must have been stabbed just as he took off from some place near here."

Grogan looked down, his savage eyes filmed. "Poor kid. He had more real nerve than any of us. But what did he mean by 'Thieves Mountain'?"

"He said something about a cabin there. Do you know any mountain by that name?"

Grogan shook his head. But Miller, the plump first lieutenant, broke in.

"Yes, it's almost due east—a small mountain between a couple of jagged peaks. The French gave us some oblique and mosaic photos of the whole area, and I happened to notice Thieves Mountain because of the odd name."

"I think I saw it today," said Strange. "It rises almost vertically, the side toward us. There is a cabin up on the cliff. But I don't see how anything short of a mountain goat could reach it."

Grogan stared eastward into the twilight. "Maybe there's a trail to it that leads over the top. The Headsman could have somebody hidin' there, watching the field with a telescope."

"And tipping him off when to strike!" exclaimed Miller. Then his face fell. "But that doesn't help us much. It doesn't explain how that white ship disappeared after Captain Neville hit it."

"If there's any way up that cliff, I'm going to find it!" grated Grogan. "If not, I'll blast hell out of that cabin with my guns!"

"That will have to wait for daylight," said Strange. "But there might be another lead. Search Groves

while I look at those photographs."

"Not me," mumbled Grogan. "Pick somebody that didn't know him."

Strange beckoned to Smith. The replacement pilot cringed back, but Carson stepped forward.

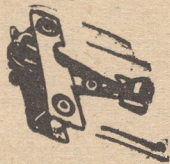
"I'll do it," he said gruffly. "I'm afraid Harry hasn't got over what you showed him in the office."

Strange nodded, turned to Miller. "Have the body taken to the dispensary afterward. I'll meet you in the mess, in twenty minutes."

A mutter ran around the crowd, and Miller looked incredulously at Strange.

"You think anybody feels like eating—after this?"

"If they don't eat, they'll be crazy drunk in an hour," Strange said pa-



tiently, "and what good will a drunken squadron be against the Headsman?"

WITHOUT waiting for an answer, he motioned to Grogan and strode toward the office. Just inside he halted. "Grogan, how good an actor are you?"

"Huh?" said the big pilot. "Why, I guess I can put on a front. What's up?"

"I want you to go over to the line as soon as I'm in the office. Pretend you're trying to put one over on me. You're planning to sneak away from the mess and have your own look at the cabin on Thieves Mountain. That's what you're to tell the mechanics. Don't try to hide what you're doing. But if Miller or anyone else says he'll tell me, threaten to—"

"I can handle that," Grogan broke in, "but what's the idea?"

"No time to explain, and my hunch may be wrong. Tell the mechs to load your guns, but after they've finished be sure to loosen the Bowden grips so the guns can't be fired. Meantime, while they're working on your ship, get hold of one good mechanic who can be absolutely trusted to keep his mouth shut. Tell him I want my ship refueled and guns loaded—but not until everybody but the guard detail is in at mess."

"Okay," said Grogan.

"One other thing—or two, rather. Have the man be sure that the cockpit control for my special wingtip lights is working right. After that, I want a flashlight with a good battery securely tied onto the horizontal stabilizer of your ship, pointing

backward. Tell him to switch it on, but cover the lens with folded cloth or heavy paper so the light won't shine through. Have him fasten it so that it won't blow off until the full prop-blast hits it."

"What are you up to?" demanded Grogan.

"I'm going after the Headsman."

"Then I'm going with you!"

"No, you stay put. If I'm not back here by midnight, you'll find a sealed envelope in the safe. Read the message to Miller. And then one of you take it to Colonel Jordan at Chaumont while the other holds the fort."

Grogan's lips jerked in a sour grin. "You're just as stubborn as Tex, captain." The grin faded. "Queer, I keep forgetting he's dead."

"I know," Strange said grimly. "It's hard to realize, even after seeing—" he stopped. "Better hurry, Grogan. Tell the man who works on my ship not to start the engine. It will be warm enough. But ten minutes after we've gone into mess he's to start up your engine and let it idle after it's warm."

"You're the skipper," said the big pilot. "But I wish you'd cut me in on it."

Strange shook his head, and Grogan turned, lumbered out. The G-2 captain went into the next room, found the photographs and studied them for a few moments. Then he sat down, began to write. When he finished, he put the message in an envelope, placed it in the safe. He paused, and a hard lump came into his throat as he looked at the empty chair.

A bugle waveringly sounded mess-call, and he went out onto the darkened field. The ships were almost invisible on the line. Two messmen were taking a big kettle into the guarded barracks, and several enlisted men were straggling into the mess-hall. Strange went over to the officer in charge of the special guard.

"Some peculiar things may happen here in the next fifteen minutes. Two ships may be started. The guard is not to interfere, even if one of the pilots should attempt to seize a plane and desert. Is that clear?"

"Yes, sir," the officer said, puzzled. "I'll pass the word along."

Strange crossed to the dispensary. When he emerged, a minute later, he was thrusting his .45 back into his holster. He went over to the officers' barracks, entered the section partitioned off for the mess. There was an abrupt silence. Only a few of the pilots were seated, among them Miller and the new men, Carson and Smith. The others were gathered around a small bar in one corner. For a moment no one moved, then the youngster from whom Strange had

taken the flask defiantly lifted his glass. Strange waited until he had finished the drink.

"Sit down, gentlemen," he said calmly. "There'll be plenty of time for drinking later."

EIGHT of the pilots sullenly took their seats. Strange glanced at the C.O.'s chair, deliberately sat down midway of the table, next to Miller. Three men remained standing. Strange looked up at them coolly, but before he could speak Grogan entered. The tallest of the trio stared at a bruise on Grogan's jaw. Scowling, the latter took his chair, and his companions did the same. Grogan sat down across from Strange, between Carson and Smith. The mess attendants brought in steaming bowls of stew, and from Grogan's quick glance at him Strange knew it had been prepared from canned goods as he had ordered.

Strange helped himself, took some bread. Miller almost angrily shook his head, and Smith hastily averted his eyes from the food. Grogan took some, choked down a few mouthfuls, stopped eating. Most of the others had done the same. In the hush, the only sound was the hiss of the overhead acetylene lamps. Strange stole a glance at his wrist-watch, laid down his fork.

"Gentlemen, my real purpose was to get you here for a conference."

"Then why make us go through this farce?" rasped one of the pilots.

"It was not a farce," said Strange. He went on crisply: "As you men may have guessed, I'm from G-2. I was sent to find out what's wrong here. My personal feeling for Tex Taylor blinded me at first to certain things. But it's obvious now that there is more than vengeance back of this affair of the Headsman."

"Then what is it?" demanded Miller.

"I don't know. But I've been trying to put myself in the place of the man back of the whole business. If I were a German strategist, trying desperately to work some scheme against an enemy squadron, I'd want to know how my plans were progressing. And there's nothing like first-hand information."

"What do you mean?" snapped the plump lieutenant.

"Miller," said Strange, "if you were a German spy—"

The other man jumped up, his haggard face suddenly red. "By heavens, nobody's going to call me—"

"Sit down!" said Strange. "I'm trying to work out a problem. Since you're so touchy, I'll choose some one else for my hypothetical spy. Grogan, let's assume for a moment that you're a Boche agent."

Grogan's mouth opened and closed. "All right, go ahead," he growled.

"You've been planted in this squadron well ahead of the time you'd be needed," said Strange. "The 49th moves here—and the action starts. You see that it is going all right, and when the C.O. takes off in the dark you follow as quickly as possible. You shoot him down, drop a message across the lines, return with a fantastic story of queer lights—"

"That's a lie!" Grogan snarled. He



lunged up, fists clenched. Strange flipped the barrel of his .45 over the edge of the table.

"Carson, take his gun—lay it over here. Now, Grogan, take your seat."

Grogan obeyed as though hypnotized, his eyes never leaving those of the G-2 captain. The room was deathly quiet for a moment, then Strange went on:

"When I landed here, you attempted to desert. I ordered you to remain, and you tried to shoot me. You pretended to recover your senses, and agreed to work with me—after you saw I did not suspect you."

Grogan's jaw muscles twitched convulsively. He did not speak. Strange continued in the same level voice.

"When Smith and Carson were being attacked, you tried to get into the air—in my opinion to shoot them down while pretending to help them. You were afraid they might also be G-2 agents—and smarter than I was."

Out on the field, an engine sputtered, settled into a steady drone. Grogan turned pale, and Strange nodded.

"You see, I learned about your scheme to slip away. It was clever, pretending that you were going to investigate that cabin—"

"You dirty rat!" howled Grogan. "You framed this on me! Miller, for the love of Heaven—"

"You killed Groves!" Strange was on his feet. "You knew no Boche would be landing here—you guessed it was Groves, the kid who knew German, who went across to find out the secret! You grabbed that truck to get there first—and you stabbed him!"

"You're crazy!" shouted Grogan. "He was stabbed before he landed. You said so yourself when—"

"I was trying to trap you! I knew he couldn't have flown that ship—and the medical corps sergeant just con-

firmed it. Groves was killed *after* he landed."

Grogan's huge hands clenched, and both Smith and Carson edged away apprehensively.

"I wasn't there first," the big pilot groaned. "By all that's holy, you birds that know me—"

HE stopped, for the pantry door had burst open. The medical-corps sergeant and a white-faced mechanic plunged into the room.

"This man knows, captain!" the sergeant said hoarsely. "He knows who was first at the wreck. It was—"

With a wild cry, Smith leaped to his feet.

"Von Goare! They've caught us!"

Black fury blazed in the eyes of the other replacement. His right hand shot to the .45 Strange had laid down. Strange snatched at Grogan's gun. The man called von Goare hurled himself back, blasted a slug at the light. The lamp crashed down, and the mess was instantly plunged into darkness. Above the tumult of shouts and crashing of chairs, Strange heard von Goare's furious voice.

"Shoot, *Dumkopf!* This gun is empty!"

"I can't see, Furth!" came the other spy's frantic answer from across the room. There was a savage thud, and his words ended in a groan.

A pistol thundered, and the red flash lit the room. Strange, half-way to the pantry, saw von Goare plunge through the doorway. His companion was crumpling to the floor with a bullet from Miller's smoking automatic.

The gun-flash lasted only a split-second, but Strange saw Grogan dash for the pantry door. He sprang through the doorway first, raced past two frightened messmen. Out on the line yellow and purple flames marked the exhaust stacks of the idling Nieuport. He ran at top speed to his Spad. A mechanic darted out from the shadows of a hangar, his face a gray blur in the gloom.

"The switch is on, captain, and she's primed!"

"Good man!" said Strange. He vaulted into the pit. "Contact!"

The Nieuport roared away as the Spad's engine caught. He saw a spot of white light appear on the Nieuport's tail. He shouted at the ackema, and the man pulled the chocks. With the half-warm motor partly open, he taxied swiftly onto the field. In a few seconds the Hisso picked up, and he eased the throttle open. A gun blazed at one side, flamed again, and a third time. He bent over the stick, swore to himself as a machine-gun spat pinkish tracers past the right wing. Some one had counter-

manded his orders—but perhaps it was better this way. That fiend in the Nieuport would never guess it had been a frameup, even by one man.

Lights flashed on as the Spad lifted, and a searchlight on a truck probed up into the night. It missed the Spad, flitted sidewise and caught the tail of the Nieuport. Ground-gun tracers smoked up parallel with the beam. The Nieuport renversed, dived headlong at the searchlight. Strange pitched after von Goare, tripped his Vickers. It was no part of his plan that the German be shot down by the ground-gunners.

The Nieuport whipped out of the beam even before his tracers came close enough to force the Boche aside. Strange smiled grimly as he pictured the infuriated spy futilely clenching the Bowdens. His smile vanished as he saw two hastily started Nieuports dart out from the line. He flung the Spad after the Nieuport as it raced eastward. The blur of the other ship's stacks soon was lost, but the white spot of light on its tail made it easy to follow.

For three minutes the fleeing spy held to an arrow-like course. Strange eyed his compass. They were heading straight east. He sat up quickly as the white spot of light whipped to one side. He sent the Spad after it, but the spot was now shooting up, twisting crazily. Suddenly he knew what had happened. Von Goare had seen the flashlight, was stunting furiously to shake it off. Even as the thought went through his mind, the flashlight came tumbling down in front of him. He kicked aside, felt for the wingtip lights' control. The lights went on. He banked, trying to spot the stolen Nieuport.

A rocket streaked up in the darkness, burst into four blue stars. As they faded, a faint bluish glow appeared, lower and to the right of where the rocket had burst. Strange kicked around, and his tilted lights crossed the Nieuport's wings. Von Goare was racing straight toward the faint blue light.

Strange twitched the light-control knob, and the white beams probed past the Nieuport. His hand went taut on the stick. The Prussian was plunging toward the cabin on Thieves Mountain!

CHAPTER IV

SECRET OF THE CABIN

VON GOARE zoomed steeply as the Spad's lights flooded the cabin. Strange renversed, missing a jagged ledge by less than fifty feet. From the corner of his eye he saw a blue light in one of the cabin windows abruptly go out.

Guns suddenly blazed from a spot at one side of the cabin. The Spad shook under a beating of lead, and Strange jerked the stick to his belt. He was hastily reaching for the light switch, when from off at his left the fiery eyes of two cowl-guns winked at him. Tracers smoked above his head as he ducked over the controls. He tripped his guns, hurled a burst at the other ship.

Then his lights swept over the other man's cockpit—and with a jolt he recognized Grogan!

He booted the rudder, let go the trips. Grogan whipped into a vertical bank, raked the Spad's tail. Strange switched off his lights, dived, pulled up quickly. In the sudden blackness he had lost his sense of direction. He flicked on the lights for a moment to be sure he was not heading toward the rocks. A speeding ship flashed diagonally before him, and he saw the beak-nosed profile of Furth von Goare. The spy was again headed toward the cabin. Strange swung to follow, but another ship hurtled past on the tail of the German.

At the same instant, the blue light flickered in one of the cabin windows. Von Goare ruddered sharply to the right. A bright orange light appeared at the other cabin window, then in a fraction of a second it became a dazzling glare. Strange threw one hand before his eyes, pulled into a tight chandelle.

The rocky wall of the precipice swam before his wingtip lights, then a scraggly tree appeared straight ahead of the Spad's left wing. He stood on the rudder. A faint quiver went through the ship, and he saw a broken branch caught in the outer-bay wires.

A dull crash came through the roar of the Hisso, and the next second bright flame lit up the night. He



stared back as the Spad thundered away from the rocks. Another Spad, now blazing wreckage, was tumbling down at the foot of the precipice. The lights in the cabin had gone out, and von Goare's Nieuport had disappeared.

For the second time in as many hours, Strange circled before Thieves Mountain and looked for a vanished ship. The glare of the flamer made the night as bright as day. He could see Grogan's ship, also circling, the big pilot looking in all directions. Nearby, but higher, was the other

Nieuport which had taken off from the 49th. The only other plane in sight was the burning Spad, which he knew must have been one of the two flown by the false replacements. Evidently another pilot of the 49th had followed Grogan and the man in the second Nieuport.

Grogan's ship abruptly nosed down, and with Vickers pounding the big pilot dived at the cabin. His tracers were smoking into the brush at one side when machine-guns blazed furiously from both windows. Strange had curved in, trying to head off Grogan's mad attack. The big pilot whirled his ship, and with fabric streaming from his wings charged in at the Spad. The other Nieuport raced in from the other side.

Strange zoomed, almost rolled his wheels on the face of the cliffs. The guns from the cabin tilted to hurl a fusillade after him. One of the Nieuports shot through the storm of bullets, twisted away with its prop shot off. Strange switched on his lights again, dived parallel with the crippled ship, spotting the ground ahead. Grogan had cut back for another blast at the men hidden in the cabin. The man in the other Nieuport stared across at Strange, and the G-2 captain saw it was Miller.

The lights picked out a less rocky spot five hundred feet below as Strange twisted the knob back and forth. Miller made a swift gesture of thanks, slipped to a hundred feet, stalled in. The Nieuport bounced, ran a few yards, hooked the right wing against a scrub-pine, and cartwheeled to a stop. Miller climbed out uninjured and Strange circled low, flicking his lights back toward the drome. There was no time to tell whether Miller understood, for Grogan's ship came thundering down. Strange snapped the lights to shine back over the tail and blind the big Irishman a moment. It was obvious that Grogan had decided he was a German spy. Seeing Miller's crashed ship, Grogan probably thought the G-2 ace had shot down the plump lieutenant.

STRANGE left the lights on only a few seconds, then jerked the switch and zoomed into a climbing turn. He carefully kept away from the glare cast by the burning Spad, though the flames were beginning to die. He saw Grogan flying in a huge circle, knew the big pilot had lost him. He climbed up to five thousand feet, swung eastward over Thieves Mountain. All was solidly black beneath. He flew for five minutes, climbing until he ran into clouds. Not a light broke the darkness for miles

beyond. He turned back, nosed into a power glide.

Only fitful flames came from the crashed Spad as he passed above the precipice. The cabin was dark. He peered down at the face of the cliff. There was not the slightest trace of a path or other means for reaching the shelf on which the cabin stood. The shelf itself was about a hundred feet long, extending inward fifteen feet to form a recess at the base of another almost sheer rise. To have descended from the nearest ledge above would have required a rope at least two hundred feet long, and to reach the higher ledge from the German lines would call for a perilous crossing over several miles of jagged rocks.

Strange flew down by the lower ledge again, alert for the first sign of attack. As he swung away he was convinced of one thing. The cabin could not have been built without a scaffolding rising three hundred feet from the comparatively level ground below. There must have been a more gradual slope at one time. A landslide would account for the present cliff and also for the tumbled rocks at the foot. But how had the Germans reached the cabin with their—

He sat up with a start. A plane had slid in from the gloom. He zoomed for the darkness, then saw it was Grogan's Nieuport. The big Irish pilot was gliding flatly toward Miller's wrecked ship, apparently intending to land near it. Strange guessed that Grogan had not seen Miller climb out, was planning to crash his own ship alongside and see if Miller were alive. He was nosing down to signal Grogan, when a beam of orange light shot from the right window of the cabin.

The glow fell upon the Spad. Strange swept the stick back, and Grogan zoomed at the same instant. The light had come broadside at the Spad, and Strange was blinded only a second or two. He twisted around, shading his eyes, then his heart gave a mighty leap.

The Headsman's white Fokker was plunging straight at him!

Guns blazed on the white ship's cowl, and a hail of slugs ripped the Spad's wings as he frantically hurtled aside. The Headsman reversed with amazing swiftness, and in the bright orange light Strange saw the head on the lowered wingtip. The ashen face of Tex Taylor seemed to stare up at him from the blood-drenched wing.

Strange's cold hand clenched the trips, and with a savage kick at the rudder he raked the banking Fokker. The masked Headsman threw himself low in his cockpit, and the sparkling tracers shot above him. Strange snapped off his wingtip

lights and followed as the Headsman chandelled. The orange glow had faded, was dying out. But he could see the white Fokker silhouetted against the embers of the burned Spad beneath.

Grogan was charging in from the other side, Vickers flaming. The Headsman pulled up in a lightning zoom, and at the same moment three checkered Albatroses dropped out of the night. Strange kicked to the left, dived under the white Fokker, and the first Albatros was forced to turn hastily to avoid collision. Two dim patches of light appeared on the Fokker's upper wing, and as Strange shot into an Immelmann, he saw that the spots came from two tiny, recessed lights secured in the same position as his own wingtip lights. Apparently, the Headsman had flicked them on to mark his ship so that the other Boche pilots would not hit him.

Criss-crossed tracer lines lanced redly below Strange. He dived, one hand on the stick, the other on the light switch. The two white beams speared through the gloom, caught a flashing checkered wing. His fingers clamped the trips as the Boche pilot tried to shear out from his plunge at Grogan. The tail of the Albatros whipped straight before the clattering Vickers. Like a knife, the slug-torrent cut through, and the now-tailless fighter pitched onto its nose. It struck within a hundred feet of Miller's ship, burst into flames.

The other checkered ships came racing in at Strange. Grogan's Nieuport hurdled the Headsman's pivoting Fokker, and two cherry-red streams poured into one Albatros. The pilot slumped forward, tried to



sit up, met another crashing burst. The Albatros yawed wildly, rolled over, and dived against the base of the cliff. Strange had whirled toward the other checkered ship. The pilot flung into a frantic turn, away from the bright-lit scene.

As Strange cut back toward the white Fokker, he saw the broken branch which was tangled in his outerbay wires. In the glare from the blazing Albatros, it had an unreal look. He saw a fragment of cloth whip loose, exposing a piece of twisted metal.

With a sudden exultation, he drove in at the Headsman. The white Fokker was dropping steeply at Grogan's Nieuport, but as Strange's tracers shot through the wings, the Heads-

man reversed his grim ship. Grogan whirled back at the Fokker, but Strange was ahead of him by three hundred feet.

The white ship was headed straight for the precipice, its wing-lights blinking swiftly. A blue light flashed in the left window of the cabin. Strange threw his free hand before his eyes, just as the bright orange glow came from the right window.

BETWEEN his fingers, Strange saw a sudden, fantastic picture. The cabin and a section of the rocky wall behind it appeared to be sliding swiftly to the left. With a furious shove at the rudder, he sent the Spad to the right. The Fokker made the same lightning turn, straightened.

Eyes slitted, Strange clung desperately to the tail of the Fokker. For an instant it seemed that both ships would plunge headlong against the cliff. Then the Spad shot out of the dazzling orange light. A huge black rectangle, one hundred feet wide and fifty feet high, leaped out at the thundering fighter. The speeding Fokker was framed directly in the center, stark white against the darkness.

Though Strange now knew it was a gigantic opening in the precipice, every nerve screamed for him to turn back. But his hand went rigid on the stick—and his Spad hurtled through with the Hiss still wide open.

From his left came a flash of light. As the Spad roared by he had a flitting glimpse of men on a platform behind the open shell of a dummy cabin. A dizzy picture of a lighted switchboard, of a huge winch with cables running to a gigantic sliding door, swam beside him and was gone. A machine-gun pounded—was left a hundred yards behind.

On the right, a string of green lights led straight ahead, paralleled by a red string on the left. Overhead, faint blue lights showed at intervals of about two hundred feet. And a hundred feet below was another line of dim blue bulbs. Through this lighted lane the Headsman's ship was racing, straight as an arrow. Strange glued his eyes to the white wings, now only a pale blur. He could have riddled the Fokker with one burst—but he held his fire.

From a point below, near one of the blue lights, a white beam shot up as he passed. The Spad thundered on before the light could blind him, but the rays threw a weird picture into relief ahead and above. A gigantic wooden truss-work, braced with wires and steel rods, was visible overhead. He could see in the hasty glance he took that this amazing structure

CHAPTER V

"THEY ALL—MUST DIE!"

supported an elaborate layout of camouflage built to resemble jagged rocks. Steel towers and poles raised on platforms elevated this strange roof almost three hundred feet.

Underneath, a veritable avenue had been created, lined with boxes, field-guns, stacks of shells, and other equipment. The shifting searchlight which was following the Spad reflected from gleaming bayonets, and Strange saw hundreds of staring faces upturned to watch the two roaring ships. Once rifles spurted tiny blobs of fire up at the Spad as it passed.

Half a mile ahead, the lighted lane made a gradual curve to the left. Nerves almost cracking, Strange hung to the tail of the Fokker. The Headsman would try to trick him, he knew, and the Germans would probably sacrifice the Headsman himself to keep the secret of this amazing route into France. And, Strange reflected, one couldn't blame them if they did.

The red and green lights widened, but the blue lights came closer together until they seemed less than fifty feet above and below the Spad. Strange crouched with eyes riveted to the white ship. It seemed to be descending. . . .

Abruptly, all the lights went out. Though he had expected it, an eternity seemed to pass before he could switch on his wingtip lights. A round black hole yawned ahead with a vaguely lighter space beyond. The Headsman's ship had disappeared from sight.

The Spad was a hundred feet from the hole when through the top of the opening he saw a few stars through broken clouds. A swift premonition jerked his fingers, and the wing lights went out. A second later the fighter emerged in open space.

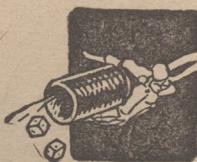
Instantly, two searchlights blazed crosswise at the exit, and ground-guns crashed furiously. Strange backsticked, rammed the nose down again. The searchlights tilted skyward, lost him for a moment, but two smaller beams lanced down from above and flooded the Spad.

The Headsman was now squarely on his tail!

A scorching blast tore through the flippers, leaped forward to the cockpit. Strange rolled at a hundred feet, and the Fokker pulled up. Ahead, gloomy rocks shut out the few stars. He banked, wings almost scraping the ground. One of the ground searchlights swerved, caught him, and a Maxim chattered above the bellows of motors. There was a crash, a screech, and the Spad's prop burst to pieces. With an oath, Strange cut the switch, and helplessly leveled off.

THE ship landed down-wind. He turned on the lights, groaned. At least a hundred men in field-gray uniforms were running toward the ship. Beyond them he could see rows of black Fokkers and checkered Albatros fighters hidden beneath camouflage nets. Tents, shacks, supply sheds, cars and tractor-guns were massed under another stretch of camouflage nets on the right. The open area was a small field on which stood a single hangar, two small barracks, and a few nondescript Boche planes.

As the Spad stopped, a score of armed Germans dashed in. Strange lifted his hands, climbed out. A bul-



let-headed *Unter-Leutnant* took his .45, motioned two soldiers to hold him. The white Fokker was landing. It stopped nearby, and the Headsman climbed out. His helmet and mask were black, but instead of the executioner's garb he had previously worn he now wore the uniform of a Yankee second lieutenant, with pilot's wings on his breast.

Several Boche officers hurried toward him as he stepped from his ship.

"Kreider, have those searchlights turned off!" he rasped at a moon-faced captain.

"Yes, *Herr Major*!" said Kreider. He ran toward the trucks. The Headsman glared through his mask at Strange.

"Take that swine into headquarters!" he snapped at the *Unter-Leutnant*. "Tell General von Bulow I'll be there at once."

The *Leutnant* saluted, primly gestured to the soldiers. Thereupon Strange was marched under the camouflage nets to a long, low building with its back against a cliff like that on the other end of Thieves Mountain. A group of pilots glowered at him as he was hustled past.

His guards were taking him toward a door at one end, when two sentries there quickly stood aside and came to attention. Two officers appeared, one with big white mustaches, a scowling deep-lined face, and a hulking figure. A row of medals adorned his *Feldgrau* tunic.

Strange instantly recognized General von Bulow from G-2 photo-

graphs. The other man was a stiff-backed major with the insignia of a Staff aide.

"So—another American pilot!" the general said in a rumbling voice. "How did he happen to land here at night?"

"He came through the lighted route, *mein Herr General*," the *Unter Leutnant* said nervously. The aide jumped, and von Bulow turned purple.

"*Du lieber Gott!* Then they have learned the whole secret!"

"No, *Excellenz*—just this one man," a somewhat breathless voice said. The masked Headsman stepped past Strange. "I waited before reporting to be sure this *Schwein's* wrecked ship and the Fokker were being taken under the nets. Unfortunately, there is one more of those devils flying around somewhere—"

"Then your plan did not succeed?" grated von Bulow.

"In part, no," muttered the Headsman. He looked savagely at Strange.

The G-2 captain calmly returned his stare. "It was not an overly brilliant plan, von Goare."

The other man lunged at him, but the general stopped him curtly.

"Enough of that! Explain what happened."

VON GOARE sullenly took off his mask—revealed himself as "Carson." "We landed at the field," he said, "after the Fokkers pretended to attack us, and everything seemed to go as intended. This *verdammt* Captain Neville was the one who crippled my ship this afternoon, but he did not see the camouflage section with the cabin slide open." He related briefly what had occurred up to the mechanic's accusation in the mess. "Everything seemed perfect. They had no idea of the secret, and this *Hund* was sure that the pilot Grogan was one of our agents. But for that stupid mechanic—"

"Imbecile!" the aide broke in. "You were tricked into betraying yourself. This man's name is not Neville—he is Captain Strange, the senior agent of American Intelligence!" Von Goare's jaw fell, and von Bulow stared at Strange.

"Are you sure?" he said to the aide.

"Positive, *mein General*. I was with the Crown Prince when this devil performed that daring trick at Montfaucon. Yes, he is the Brain-Devil. Obviously he suspected Schmidt and von Goare from the start. I told von Goare it was not a wise scheme—"

"There's no time to talk of that," rasped von Bulow. "Von Goare, how

did this spy learn the secret of the lighted way?"

"By sheer accident, *Herr General*." And the Headsman explained how Strange had followed him. "The other pilot did not see the opening. But this *Teufel* forced him aside to follow me."

"And where will he think you two went?" demanded the aide. "Surely by now he will be back at his field warning the rest of his squadron—"

"Listen!" broke in von Goare. "I can hear his motor. He is still looking for the two ships. If some of the pilots take off quickly, they can shoot him down."

Von Bulow jerked his head at the aide, and the Boche officer wheeled toward the group of pilots Strange had seen. Three of them ran toward their ships. The drone of the Nieuport's engine became louder, and suddenly a diffused glow shone through the camouflage nets.

"*Himmel!*" gasped the *Unter-Leutnant*. "He has dropped a flare—it will set the nets on fire!"

A machine-gun broke into staccato song at the edge of the clearing. It was answered by the pound of Grogan's guns, and Strange saw the Irishman's tracers probe steeply down at the Maxim crew. The field beyond the nets was now bathed in a white radiance. The Germans under the camouflage were milling around wildly.

The flare hit the nets two hundred yards from the headquarters building, burned through, and dropped to the ground. A fire-squad dashed toward the spot, and streams of chemicals swished up at the flaming canvas.

Through the hole, Strange saw the Nieuport pitch by, Vickers blasting at the Maxim gunners. An answering burst blazed up at the Nieuport, and the Hispano's thunder broke into a ragged beat. A shout went up from the crowd of Germans as Grogan's ship nosed down and plumped its wheels to the ground. Gray-clad figures raced toward the Nieuport, and in less than a minute the big Irishman was brought before the Boche general, two burly Germans hanging onto his arms and a third with a gun at his back. Grogan had a beaten look, but it changed in a flash as he saw Strange.

"You damned Heinie!" he snarled. With a furious jerk, he pulled one arm free and swung. Strange stumbled back, a livid bruise above one eye. Von Goare guffawed, and the rest of the Germans, seeing the general's sour visage relaxing in a grin, roared with laughter.

Grogan looked around blankly, then saw the two guards covering

Strange. His face turned a dull red. "Don't tell me you were on the level?" he mumbled.

"*Leutnant* Hamm, search these two," ordered von Bulow before Strange could answer. "All the rest but the guards and von Goare resume your duties."

His aide returned as the crowd melted. And the *Unter-Leutnant* began searching Strange.

"We can have that hole repaired in an hour," the aide reported. "But what about the rest of that *verfluchte* American squadron? It will be another twenty-four hours before we



are ready for the drive. And if they should guess the truth before then it would wreck everything."

"The drive must be launched sooner," von Bulow replied in a grim voice. "I will order—" He stopped. "What is that?"

LEUTNANT HAMM was excitedly looking at a paper taken from the G-2 ace—the message from Colonel Jordan to Strange. "A code message, *Herr General!*"

Von Goare snatched at the paper, stepped close to a blue light on a nearby pole. In a moment he turned to the general.

"It's in the Yankee 'F' code which we just broke, *Excellenz!*" He read the message, smirked at Strange. "This is a great help, *mein Freund*."

"How?" barked von Bulow.

"I suggest, *mein General*," said von Goare, "that we flash word in our own code to the secret agents who are 'guarding' the air squadron's radio truck. They can send a message in this 'F' code to Chaumont, telling the American Intelligence colonel that everything is under control and no help needed at the 49th. They will sign it 'Neville'—which seems to be the pseudonym for Captain Strange. If any bearing is taken on the sending station, it will be proper for it to come from Essenville, otherwise we could send it from here."

"*Sehr gut*," growled von Bulow. "But what of the pilots left over there? Even if the drillers get through that last rock shell by midnight, I can hardly start the drive before dawn. If we could be sure of silencing that whole squadron, we could wait until tomorrow evening and advance to the Essenville rail-

way during the night, as first planned."

"May I suggest, General," said von Goare, "that my original idea of a three-squadron strafe would insure silence. Three squadrons, with flares, could gain altitude behind our lines, cross over, dive and strafe the field before they could get a ship into the air. We might lose a few planes and men—"

"And I still say it would be reported from Essenville to the American 7th Corps Headquarters," cut in the aide. "The raid might even be heard up there."

"The wind is the wrong way," von Goare retorted. "As for Essenville, if our agents could intercept the telephone conversation from Lieutenant Miller to Colonel Jordan, they can certainly prevent an alarm from being sent. We can instruct them by radio to destroy the bridge, so no one could leave the village. Our agents can falsify a few routine calls through the day so that no suspicion will be aroused—or they can report trouble with the wires and then keep the wires dead."

"It has its risks," muttered von Bulow, "but it is more dangerous to leave that squadron free tomorrow—since that young pilot who tricked Captain Seitz of the Albatros squadron mentioned the cabin before he died—"

"I tried to kill him instantly," said von Goare, "but I had no time to strike a second blow."

"At least, he did not tell the important part. But they might try firing at the cabin tomorrow. And if they get too close they may see that the whole section is only camouflage. Yes—they must die."

"I will have the *staffels* prepare for the raid at once," said von Goare.

"You lousy butcher!" Grogan burst out fiercely.

The blood rushed into von Goare's swarthy face. He snatched a Luger from his belt. But then he sullenly holstered it at a curt word from the general.

"Lock up the prisoners," he ordered *Leutnant* Hamm. Strange saw a significant look pass between the two men.

"And the heads, *Herr Major*?" said the *Unter-Leutnant*, eagerly.

Grogan paled, and Strange saw von Goare look at the big pilot. An ugly grin touched the Prussian's lips.

"Not yet," he said. "We'll take care of that later."

THE two prisoners were taken to a windowless shed built of stout planks. An iron bar was padlocked across the door, and a sentry stood guard with a Mauser rifle. Grogan

looked at Strange as the sentry was unlocking the padlock. Under a sickly blue light suspended near the door, his perspiring face looked ghastly.

"You heard what he said about—later?" he whispered.

One of the guards gave him a vicious jab with a pistol. The door swung open, and he was shoved inside. Strange's guards sent him stumbling to his knees, and the door banged behind him.

"Well, shoot me for a rattler!" bawled a voice.

Strange jumped to his feet. A brawny man in olive-drab had leaped up from a cot. Grogan stood paralyzed, mouth open.

"Tex!" Strange cried. "Thank Heaven!"

Grogan put out a shaking hand, touched the prisoner's arm.

"Tex!" he whispered. "I thought you were dead!"

"I'm shore glad yuh thought wrong," said Tex Taylor. He gripped Grogan's hand, wheeled to Strange. "Phil, how in the devil did those or-nery hounds ever get a rope on you?"

"It's a sad story," said the G-2 captain.

Grogan was still dazedly standing in the center of the room. "But I saw—we all saw you—your head!" he said hoarsely.

"Yuh mean th' molds that dirty coyote put on th' Fokker?" said Tex Taylor. He pointed across the room. "See that blasted operatin' table and all the gear on th' shelf? Well, it shore gave me a turn when they tossed me in here. I thought it was good-by head—especially when I saw those two beauties on th' shelf."

Strange went across quickly, peered at the two molded heads. One he recognized as a duplicate of the head that had been on one wing of the Fokker. The mold had cracked along the neck. The second head had a broken nose.

"That first one was made of Bill Mead," grunted Tex. "They cracked it and made another—left that one here."

"And the other's Middleton!" exclaimed Grogan. "Then—they're both alive?"

"Yep! The damn' Huns hauled 'em off to a prison camp," lamented Tex. "They kept me here, tryin' to make me spill some dope on what we're doin' in Sector Three. But never mind me—what's happened back at th' field? How'd they grab off you two?"

"Wait a minute," muttered Strange. He bent over the assortment of mold-covers, wax, paints, and brushes. "If they'd only left the heater in here—"

"What'd you say?" rumbled Tex. "A heater?"

"Not so loud," whispered Strange. "I was hoping they'd left their stove here—or whatever they used. They must have heated the stuff some way to make it plastic."

"Yep, they had an outfit of some kind. Strapped me on that table. We had a little ruckus first, and then—say, here are matches. Boche by name of Hamm—th' bird that makes th' molds—said he guessed I could smoke—"

"Let's have them," Strange said quickly. He tiptoed to the door, came back. "Do you two want to take a ten-to-one gamble?"

"I'm on," said Tex. "Say, which one of those Heinies hung th' crape on yore eye, Phil?"

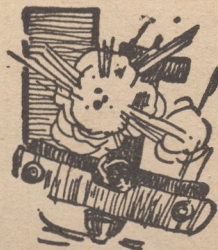
Strange looked at Grogan, grinned. "I guess we're about even."

The big Irishman flushed. "Sorry, Neville, I made that mistake—"

"Neville?" boomed Tex Taylor. "Say, Phil, what's th' idea of runnin' under false colors?"

"G-2 business—and I had to pretend to suspect Grogan here in order to trap von Goare."

Strange was now breaking off a piece of wax, setting paints on the operating table. He began to heat the wax in a small metal paint-bowl, holding matches underneath. He looked across at Grogan. "You see, I knew Jordan would never send raw replacements—he'd have sent G-2 pilots, if any. I was pretty sure it was a trick fight with the Fokkers, for von Goare pulled out of that low spin too expertly. I had to act as though I thought you were guilty in order to get von Goare and the other man off-guard. I knew it would take a jolt, for I tested them. I showed them Henderson's head—which was the real thing—and they



didn't give themselves away. The man called Smith got sick, but that was natural. By the way, I think it was an accident about Henderson's head in the first place—it wasn't a clean cut."

"It wasn't any accident," Tex Taylor said grimly. "Von Goare doped out th' whole headsman stunt before we moved in. Seems the Germans have been workin' at this secret drive business ever since th' Frogs moved off that field. The Boche found out why it's called Thieves Mountain. There was a big cave over at the

other end, with an openin' midway of th' mountain. Seems a long time ago some robbers used th' caves, an' dug a hole in th' cliff so they could see over the valley and all around. Some bright Heinie figured they could use it to spy on th' Frog outfit when it was there. There was an old cabin th' robbers had built on a ledge, luggin' th' wood through th' cave from back—to cover their peep-hole, I reckon."

"I know about that cabin," said Strange, "but it's a dummy, now." He explained hurriedly about his flight through the opening and along the lighted lane.

"So that's how you disappeared!" said Grogan. "But how the devil could they build up all that camouflage without anybody seeing them?"

"I can tell yuh that," said Tex Taylor. "When th' spies got to prowlin' around this mountain they found a couple of smaller caves on this side, and they got th' idea of hookin' 'em up with a road to th' big cave, and then cuttin' through the base of that cliff so troops could pile right into France where nobody would be expectin' 'em. But the rock's mostly limestone and it started breakin'. In fact, the whole roof of th' big cave fell in when they were blastin' to get a level road. That was after th' Frogs pulled out and nobody was flyin' this area. Then they got a regiment of camoufleurs down here and covered over th' hole—made it look like it did before, with rocks made out of papier-maché or canvas on light wood frames. This Heinie named Hamm sounded off how smart the Germans are and told me how they'd never have let th' Allies put over anything like that."

Tex stopped, looked blankly at Strange, who was cautiously removing the tin reflector back of the electric light bulb.

"What are you up to?" he demanded.

Strange threw him a warning glance. "Keep talking," he whispered. "If they get suspicious, we'll be sunk."

CHAPTER VI

WAXEN RUSE

IN a louder tone, he said, "It was a clever job, at that. And there's nothing in the world to stop them from ploughing right through into France."

Grogan stiffened. "Hell! Seeing Tex here, I almost forgot. Tex, that rat von Goare is sending three 'staffels to mow down the 49th!"

Tex Taylor sprang up from the cot, but Strange stopped his fierce lunge at the door.

"Sit down!" he said in a loud voice. "There's nothing under Heaven we can do about it."

In an undertone, he went on rapidly. "We've got to keep talking. The whole thing depends on fooling them until we're ready."

"Them?" Tex muttered.

"That sentry's not alone." Strange whispered. "I saw von Goare signal Hamm, and I'm positive they're listening out there to see how much we know—so talk!"

Tex blinked, took his cue. "I guess you're right," he said in a hopeless voice. "They've got us hog-tied."

Strange rubbed a piece of wax between his hands, propped up the tin reflector on the operating table.

"Von Goare must have plenty of nerve," he said. "Flying between those lights isn't my idea of a picnic. And every time he tried to lure somebody against those rocks at the left of the cabin he took a chance of being shot in the back."

"That yellow skunk?" snorted Tex. "He wasn't takin' much chance—th' Fokker's got an armored cockpit an' double control-wires if some gets shot away. Th' motor's got armor around it, and he's usin' a special steel prop."

"Then I must have hit the motor by accident," said Strange. "Anyway, the man has a grim sort of courage, and he can certainly put on a good bluff." He sat down on the edge of the cot with his back toward the two men, began to set out brushes and cans of tinting-paint. "You haven't heard about Jack Groves. He came back—"

"I know about it," Tex said harshly. "Von Bulow's aide was in here tryin' to make me talk when von Goare landed in that Nieuport. Jack shot down a Boche, took his uniform, and passed himself off as a Kraut. He got away before th' Heinies spotted the trick, but he lost a wheel on th' take-off. Just before you arrived, von Goare came in here, told th' aide that he knifed Jack, and that he was goin' back under th' camouflage to get rid of two Yanks that followed him here. Th' aide sent some ships up over th' top to help him."

Suddenly there was a faint scuffling outside. Strange tensed, raised his voice, while his fingers swiftly molded the wax.

"There's one thing they don't know, and it may wreck their whole scheme. Von Bulow made a mistake when he thought of the Headsman trick."

"It wasn't von Bulow," interrupted Tex. "Von Goare thought up th' whole business. Seems some ancient Junker grand-daddy of his was important enough to have his own private head-chopper, and von Goare

kept th' guy's outfit—axe, clothes, and everything. It was his idea to have some of his pilots force down a couple of our men, shoot 'em, then cut off their heads and put 'em on the Fokker's wings.

"Anyhow, th' Boche staff officers were afraid Hindenburg would kick, so they doped out th' mold idea. But when they tried to force down those first three men, Henderson got killed, so von Goare took a chance and—well, you both saw that box. He figured one real head would 'do th' work—then nobody'd question th' others bein' real. I guess he got Henderson's name off his uniform label, same as he did mine."

Strange spilled a few drops of brown paint in a bowl, dashed in some



turpentine to dilute it, and poured the mixture on his hands. As he smeared it on his face, the low rumble of a Mercedes engine came from the direction of the clearing. Grogan put his ear against the door. Strange cast a swift glance into the reflector, snatched up a brush, and dipped it into black paint.

Grogan tiptoed across to the operating table. "I can hear somebody talking—" he stopped, as he saw Strange's reflection. "Holy jumping mackerel!"

"Keep quiet!" Strange whispered. "Tex, ask what it is that may wreck von Bulow's scheme. Quick!"

Tex stared at him, gulped, then boomed: "Say, you said there was one thing th' Krauts didn't know—and that it might upset th' apple-cart—"

"Right!" said the G-2 captain. "And if they knew it, they'd be damned careful sending those ships to strafe the 49th."

"What're yuh drivin' at?" exclaimed Tex.

STRANGE flicked the brush across his eyebrows, looked into the reflector. It was a crude job of make-up—but in a dim light he could pass for the swarthy, beak-nosed Prussian, von Goare.

"I mean this," he said loudly. He stood up. "I've a message hidden in my right boot—it came from Colonel Jordan after that other one, and—" he lowered his voice as the padlock rattled. "Don't try to jump them un-

til they're all inside—wait until I straighten up."

He seized the half-filled can of black paint, bent over as though removing something from the top of his boot. Grogan stepped to one side, thrust his hand toward the table, and Tex sprang across the room as the iron bar clanked.

The door burst open, and von Goare leaped into the room, a Luger in his hand. Behind him came *Leutnant* Hamm and the sentry. Strange cast a startled glance up at the Prussian, holding the paint-can concealed at his side. A stupefied look came into von Goare's eyes as he saw a duplicate of his own face. Unconsciously, he half-lowered the hand gripping the Luger.

With a jerk of his arm, Strange hurled the contents of the can squarely into von Goare's face. The Prussian's snarled oath ended in a splutter. He dropped the gun, staggered back, gasping for breath and clawing at his eyes. The prim-looking *Leutnant* frantically lifted his pistol, but Grogan whirled like a pitcher throwing a ball, and one of the wax heads hit the officer between the eyes. The molded head broke, and Hamm toppled to the floor. Strange sprang over him, snatched up von Goare's Luger.

The sentry jumped back with a cry of alarm, and the muzzle of his rifle swerved toward Tex Taylor. Tex's hand shot to the barrel. He gave it a furious jerk and the sentry plunged headlong into the room. The Mauser roared, jetted flame at the floor. Tex wrenched the gun away, brought it down with a thud on the sentry's head.

Von Goare had writhed back against the wall. Strange tumbled him over the cot, dashed to the door after Tex and Grogan. The big Irishman had taken Hamm's pistol, and Tex still had the Mauser.

"Behind the shed!" Strange said tensely. He slammed the door, dropped the bar in place. There was no time to snap the padlock. He raced around behind the shed, expecting any moment to hear the alarm given.

"Engines must've drowned that shot," panted Grogan as they ducked behind a row of fuel drums.

"They'll miss von Goare soon—he's to lead the raid," Strange answered. "We've only one chance. Hide that gun under your belt, Grogan. And Tex, you'll have to drop the rifle."

"I get it," muttered Tex. He unfastened the bayonet, shoved it under his blouse, and fastened two buttons. "All right—let's be movin'!"

He stepped out, with Grogan beside him, and Strange strode along

behind with the Luger raised. In the dim blue light a crowd of pilots and mechanics could be seen around the massed planes ahead. At the edge of the clearing, a captured D.H. was idling, racks filled with bombs. Two black Fokkers had been started and taxied into the clearing, and parallel with the D.H. was von Goare's white Fokker, prop making a disk of bluish light.

"You two—the D.H.!" Strange said swiftly. "I'll take the white ship. Use the bombs—we can't let those 'staffels' get—"

He clamped his lips as the captain named Kreiger trotted toward them. Several pilots had turned, were staring as Tex and Grogan marched along, hands in the air.

"*Herr Major!*" Kreiger wheezed amazedly. "What are you doing with the prisoners?"

"They're to be shot!" rasped Strange. He kept on, prodding Tex and then Grogan in the back with the Luger. Kreiger trotted alongside, eyes popping.

"But—but, *Herr Major*, I thought they were—"

"Never mind what you thought!" Strange said viciously. The eyes of a hundred Germans were on them now, and perspiration dripped down his forehead as he went on. "It's General von Bulow's order—and I'm going to execute it my own way. Get some rope. I'm going to tie their feet together, put them out in that field, and even my score with them."

"You mean—shoot them from the air?" gasped Kreiger.

"Why not?" snarled the G-2 captain. "If I'm the executioner, I'll do it any way I please."

"*Ja, ja*—of course—" Kreiger goggled at the two Yankees. "But where is the other man?"

"There's a reward for turning him in alive," snapped Strange. "Now get the rope!"

Kreiger turned, ran back under the camouflage.

"Thank the Lord for German discipline," mumbled Grogan.

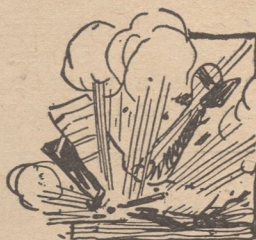
"Shut up," Tex hissed through his teeth.

Strange stared over Grogan's shoulder at the D.H. It was only fifty feet away, but he had purposely prodded them to one side not to arouse suspicion. Those watching Germans would think that von Goare was up to some new phase of brutality. But when they saw—

CRACK! The report of a gun cut through the drone of motors. The crowd of pilots and groundmen wheeled as one man to stare back under the nets. Tex and Grogan dashed for the D.H., and Strange sprinted for the white Fokker.

A gun blazed at one side, and Strange saw a non-com level his pistol for another shot at Tex. He snapped a shot from the Luger, dropped the man in his tracks. Two armed Heinies suddenly appeared in front of the white ship. He swore, darted for the nearest black D-7. The pilot was about to climb into the pit. He sprang back, snatched at his belt. Strange fired, and the man's gun dropped from his shattered hand.

A Maxim hammered furiously as Strange sprang into the black ship. Fabric ripped near the trailing edge of the top wing, and the phosphorous lines whipped down toward his head. Then a new and heavier clatter swelled the din, and the tracer lines



instantly ended. Grogan was standing up in the rear of the D.H., raking the crowd with his spouting Lewises.

Strange shoved at the throttle, kicked hard left rudder. The black ship slid off one chock, groundlooped crazily. He caught it as it lurched back toward the nets. A checkered Albatros was charging out. He squeezed the trips as he ruddered back, and the Albatros twisted, crashed into its neighbor.

Men were leaping to take the place of the dead Maxim gunners. Strange opened the Mercedes, sent the Fokker thundering down the field. The D.H. was pulling up into the gloom. A searchlight caught the black fighter, and a Maxim blast smoked past the left wing. He hauled the stick back, then shoved it ahead as the Fokker screamed up over the trees. The ship swayed, picked up speed, and drilled up into the night. He banked, looked down. Seven or eight Boche ships were racing across the field in hot pursuit, and like a white streak von Goare's Fokker lanced up from the center of the clearing.

The D.H. was speeding back across the field at a thousand feet. He saw two bombs slither down through a lifting searchlight beam. Flame geysered below, and the nets blazed up. Another little group of ships plunged madly through the fast-spreading fire. Another bomb struck, and two of the planes vanished in the blast.

Strange climbed at full gun, headed west with the Mercedes roaring. More than a dozen ships had escaped. Unless the 49th were warned, the pilots might still carry out their

grim orders. The fire at the air base might cripple von Bulow, but it would not prevent him from launching the drive into the undefended Vosges. Once the Boche shock troops reached Essenville, they would have a highway and railroad to speed them into an unprepared section of France.

The black Fokker was flying at two thousand meters. He held to that height, though it was barely enough to clear the jutting peaks to the north and south of Thieves Mountain. Far ahead, he saw a shaft of light swing around the sky—from the field of the 49th. Evidently, they had heard the bombs strike. At least they would be partly warned . . .

He nosed down a trifle, eyes slitted against the wind to see the ragged outline of peaks silhouetted by the distant light. He was flying above the camouflaged area, and as nearly as he could tell was within a mile of the hidden entrance in the cliff.

SUDDENLY, orange light sprayed upward at him. With a start he saw he was passing directly above the cliff. The men in the dummy cabin had apparently been waiting to spot him. He kicked aside as a machine-gun blazed. To his dismay, a second gun flamed from the shadows above him. The next instant the white Fokker was plunging headlong at him!

He reversed, grazed the top of the camouflage rocks. Von Goare had outguessed him. While he was climbing above the mountains, the Prussian had raced through the lighted lane to stop him from warning the squadron.

The lights on the white Fokker's top wing abruptly cut through the gloom. Strange zoomed, then frenziedly banked to the left. The D.H. had shot out of the night straight in his path!

The two-seater whipped into a chandelle, and he saw Tex, bare-headed, crouching over the stick while Grogan clawed at the spade-grip of the Lewises. He knew that they, too, had been speeding to warn the 49th.

Von Goare had snapped into a tight turn, was hammering a burst up into the D.H.'s blind spot. Strange bored in, his Spandaus thrashing. Von Goare's bullets were coming perilously close to two bombs that remained in the two-seater's racks. He saw Grogan lean down, then the bombs plummeted through the white Fokker's lights.

As the black eggs disappeared, the D.H. plunged around toward the Yankee drome. Von Goare hurtled after it, crouching low in his pit. Strange's tracers smoked over the tail, bounced from the armored turtleback. The three ships shot through the beam of orange light from the

dummy cabin. Strange jerked his stick back, zoomed in a hopeless attempt to get above the crouching German.

A flash split the darkness behind the three ships. The bombs had struck. Von Goare sprang up in his cockpit, stared backward. Strange rammed the Fokker's nose down, tripped the Spandaus.

Two red streaks shot above von Goare's head. He kicked around in panic. Strange whirled with him, his tilted guns almost fixed on the white ship's pit. With a frantic swerve, the Prussian shot back toward the cliff. He was within sixty yards of the black rectangle from which he had emerged when flame belched out through the opening. A terrific concussion shook the sky, and blazing bits of camouflage spouted up beyond the dummy cabin.

The Prussian's Fokker whirled.

Strange saw von Goare's black-smearred face, distorted in frenzied horror. The flame had blinded him.

For an instant, it seemed the white ship would clear the rocks. Then the head-tipped wing hooked a jagged shelf! There was a grinding crash, and the Fokker struck the cliff. It hung for a moment, began to slide down the rocks. Part way down, half of the upper wing caught in a crevice. The rest tumbled to the bottom, burst into flames.

Strange pulled up, stared about the sky. A few Boche ships were milling above the center of Thieves Mountain. He looked down. The D.H.'s bombs had set off the cache of explosives, had blown the elaborate mountain of camouflage to bits. A holocaust blazed below. Even as he watched, there was another terrific explosion, then a weird, rumbling sound filled the air. Like an avalanche

of dark snow, a vast slide of rock came tumbling down from the peak to the north. Slowly, majestically, it began to cover the blazing inferno.

The circling German planes wheeled and disappeared into the east. Suddenly, wings flitted into the slowly fading flare, and Strange saw the D.H. bank toward him. He plucked off the wax nose, signaled as the two-seater closed in. Grogan stood up, flung a quick gesture of recognition. Strange edged his ship alongside, saw Tex grin and point down toward the cliff. He followed the other man's pointing hand.

High above the burning wreck of von Goare's Fokker, the white wing panel glowed brightly. The wax head on the tip was the ghastly replica he had thought to be Tex Taylor's head. It seemed to leer down into the flames, as though it mocked the man who had once been the Headsman.

Logging the Model Market

(Continued from page 45)

home technique, these booklets give valuable instructions covering lathe practice and operation. Readers of FLYING ACES Magazine may obtain copies of the publications free of charge by addressing the Technical Service Department, address as above, and mentioning F.A. Mag.

Megow's, Howard and Oxford Sts., Philadelphia, Pa. Megow's have added to their line a thirty-inch wing-span flying scale model of Major Williams' *Gulphawk*. An exact duplicate of the famed Grumman,

this job includes features incorporated by the famous flyer. The retail price is 50c.

Other ships in Megow's recently-designed 50c line are the Aeronca K, the Monocoupe, Taylor Cub, Stinson Reliant, and an authentic, detailed model of the Arrow Sport V-8 Designed for flight performance.

Megow's is also featuring a model of Clarence Chamberlin's high altitude ship, *Miss Stratosphere*. This kit, which sells for 60c, offers a novel type of construction and is

covered with wood veneer.

Continental Model Airplane Co., 1129 Myrtle Ave., Brooklyn, N. Y. Just as this "log" was being completed, Continental informed us that they had received the drawings of ships soon to be included in their line of 8 in. solid scale kits. Stephen J. Graffeo prepared the plans, which cover such ships as the Martin Bomber, Stinson Reliant, Vought V-143, and the Boeing YP-29. The kits will retail at 10c.

BY NICK LIMBER

All Questions Answered

(Continued from page 29)

everyone knows that Rickenbacker is with an airline company, Turner has a radio program, and Frank Hawks has been representing a well-known watch company. I believe that in the article "*There's Nothing New in the Air*," Dave Martin agreed that the autogiro and the Handley-Page slots were two of the more modern contributions to aviation.

Stan Hawkins, Hamilton, Ontario:—Frank Hawks' ship was cracked up, but your question can be explained in the fact that the Lycoming engine may turn out that many revs in comparison to the r.p.m. of the Twin-Wasp. That doesn't mean, however, that it will turn out the same amount of power. The little Aeronca revs up to 2,400 r.p.m., but that probably wouldn't have taken Hawk's job off the ground. It's pow-

er that's needed not just revs, you see.

Merle Harbert, Walla Walla, Wash.:—Yes, a correspondence course is Okay if you apply yourself. Many men now in aviation got their start through correspondence instruction.

Robert Stotelmeyer, El Centro, Calif.:—I have no idea where you could get model plans of the Heinkel He51. I have never seen any advertised.

Junior Meyers, Middletown, Ohio:—There are no reliable reports on the total number of planes shot down during the World War. This can be understood when one realizes that many so-called "confirmed victories" were only planes going down

with engine trouble or minor injuries to the pilot or observer. That "N.R." you mention is the designation given to racing-type planes in this country.

D. A. Dunn, Concord, N. S. W., Australia:—Thanks for the tip on the Victoria Cross. The world's air speed record is 440.67 m.p.h. turned in by Agelo in his Italian Macchi M. C. 72 seaplane. I have no knowledge on the Westland Pterodactyl, beyond what has already been published. I believe secret tests are still being carried out.

Donald J. Quinn, Chicago:—I believe several forms of the variable camber wing have been patented, both here and abroad. I would check with the U.S. Patent Office before you take any further steps.

News of the Modelers

(Continued from page 61)

F.A.C. member and flight leader, with a 12" tail-less model of his own design. Charles Marigold won the hand-launched stick model event, although Bill Snoden ran him a very close second. Marigold also won the R.O.G. stick event, again with Snoden a close runner-up.

Fraser-Lee's *Mr. Mulligan*, all-white with a 20" wing-span, won the flying scale contest in spite of the fact that the model is more than two years old and "heavy with repairs after it once tried a flight through a tree."

Comedy was added to the program when some of the R.O.G. models shed their wings on would-be take-offs. And in the novelty event, Chuck Marigold's entry tried to shake itself to pieces because of a broken prop. Another model, loth to leave its maker, completed nine tight circles around him before it made a sudden decision to land.

Ralph Herber is president of the P.H.H.S.A.A., and Fraser-Lee served

as the FLYING ACES reporter.

TRENTON GAS TOURNAMENTS

AT Trenton, N. J., recently, the junior and senior members of the Trenton Chapter of the N.A.A. held a "rain-or-shine" gas model meet for which the weather man furnished a rainy day. Despite the weather, however, 112 contestants from four different states participated.

In the endurance event the first three places were taken by Charles Bossie (Philadelphia), Clement Buel (Binghamton, N. Y.), and Herb Denaci (Newark) for their respective times of 7 min. 19 sec., 6 min. 55 sec., and 5 min. 50 sec., on 1/28 oz of fuel apiece.

First three places in the 40 sec. timed engine run event were won by Ed Seegmuller (Bronx, N. Y.), Walt Dickerson (Newark) and Walt Marionscheck (Plainfield, N. J.). Seegmuller's time was 10 min. 42 sec., and Dickerson's and Marions-

scheck's were 6 min. 17 sec. and 4 min. 43 sec. respectively.

Marionscheck placed first in the design and workmanship contest, and Frank Ehling (Jersey City) and Howard Simmons (Middlesex, N. J.) came second and third. Walt Eggert (Philadelphia) was number four.

The six-foot span Brown-powered model flown by Barney Onofri, of Trenton, while failing to lead in any of the events, was recognized as one of the most spectacular flyers at the meet. The day of the meet was the model's first flying day, and even though it was raining hard at the time Barney sent his ship forth in contest, it made good time. Later, it just missed the 13 min. mark on 40 sec. engine run.

Subscriptions to FLYING ACES Magazine, together with F. A. Positive Identification Bracelets, were awarded to Will Giblin and Emilio De Angelis, both of Trenton, for placing in time and endurance events.

Happy Landings

(Continued from page 33)

terrain on meteorological conditions, the elementary principles of radio communications and radio range operations, and—if you are still with me—the elementary principles of aircraft aviation and a knowledge of the aviation facilities in use on the civil airways.

Also consider the fact that he must have excellent vision—both eyes first-

rate without correction (meaning without glasses)—and that he must be proficient in about thirty-four other subjects besides those I have mentioned above!

"What," you ask after wading through all that, "is so tough about becoming a mere airplane pilot?"

Of course, I could go on like this for hours—and you might even stay

with me and read it. But instead of spouting off further, I'll just remind you that by the time you read these lines the booklet itself will be off the press and all you need do is write to the Bureau of Air Commerce, Department of Commerce, Washington, D. C., and get a copy of your own.

And you'll like it!

On the Light Plane Tarmac

(Continued from page 34)

more than the Taylorcraft—and they are selling them!

No wonder the light-plane manufacturers are going a little daffy!

READER BRIETZ'S CLOSE SHAVE

OUR request for letters telling of our readers' experiences flying light planes has brought us a splendid response. And now here's the one that takes this month's \$2.00 check. It comes from George F. Brietz, Jr. And it was mailed from Bolling Field which gives it a decided smack of authenticity. It has a swell moral, too—

Light Plane Editor:

Here comes one of those personal experiences. I send this in because it may help private pilots to realize why

they should obey regulations.

In Panama there used to be a club quite rightly named *The Atlantic Aeronuts*. I think it might have been better if the club name had been abbreviated to just *The Nuts*.

We—yes, I was one of 'em—had several jilopies, to wit: one Avian, one Eaglerock, and two Cubs. The ships were not in good condition, but we had a lot of fun trying to break our necks in the things.

One evening shortly before dusk a gentleman, whom we shall call Martin, took off in the Eaglerock to do a little cloud busting, which at best isn't a good idea on a Hiss Powered job. Anyway *tempus* proceeded to *fugit*, as it usually does, and in a very short time night, as the novelists say,

dropped a mantle of darkness over the field. Martin hadn't returned, and the only landing lights we had on the field were auto headlamps.

Some of the fellows were slightly worried about our Mr. Martin who had not seen fit to return, so George Ola and I volunteered to go take a look-see for him (as though that would do any good!) Thereupon we took off in our Avian and cruised around over Colon for a while. And not spotting Martin we then started up the coast toward Porto Bello.

It was a clear night with only a few wisps of clouds here and there. Well, we were winging along with the old Cirrus clanking as nicely as could be expected, when I happened to look up over my left wing. Well, sir,

the dark shape of a plane loomed up out of the pall heading straight for us! And believe you me, gentlemen, I almost broke an ankle on the right rudder pedal. In fact, with very little more pressure the stick would have gone through the instrument panel.

We got out of the way, all right. But it was close. Much too close! I shivered all the way back to the Fort Davis Field.

We managed to make a respectable landing, and in a few minutes Martin came in with the Eaglerock. My

knees still weren't in very good shape. But my mouth was okay—and I certainly used it in asking him the whys and wherefores of his attempt to kill all three of us.

I grant that neither of the ships had any aviation lights—but Martin's reply to my query made me sit down. And that suddenly!

"An Avian?" sputtered Martin with a vacuous look on his pan. "Why I thought that was a little cloud. Fact is, I started to dive through it!"

From then on and henceforth I

resolved *never* to fly at night without lights! So help me!

George F. Brietz, Jr.
Bolling Field, D.C.

If you have had a light plane experience that'll tie or top that one, shoot it in and we'll give it a reading—and maybe the two bucks. In fact, we're looking for all kinds of true sport craft exploits—especially those that'll teach the other fellow something. But don't make your letters longer than 300 words.

Flying Aces Club News

(Continued from page 38)

the Curtis-Wright Technical Institute of Aeronautics.

Ross also flagged in Captain J. Erroll Boyd, first Canadian aviator to fly the Pacific.

Swell work, Ross! And this particular job, coupled with the many excellent additional services you have rendered the Club in the past, is the job that caused me to rush to you your F. A. C. Distinguished Service Medal. Congratulations! You earned it!

By the way, Ross informs me that while things are shaping up nicely for his new Toronto squadron, there's still room in the outfit for any other interested applicants who wish to contact him. Drop him a note. His address is 31 Wilfrid Ave., Toronto, Canada.

Right here, I want to add a word or two for our Canadian and overseas readers. There seems to be a little confusion among some of you concerning International Reply Coupons. These coupons, obtainable at your local post office, are used to make small remittances to other countries.

However, no matter how much you pay for each coupon in your country, we are only allowed five cents per coupon *here*. So if you wish to remit, say, twenty-five cents in U.S. currency, five coupons are required, and two are needed to cover ten cents. For larger amounts it is often ad-

visable to secure International Money Orders at the Post Office.

DURING the past few weeks, General Headquarters of the Flying Aces Club has approved the award of the Distinguished Service Medal, F.A.C., to some of our worthy members. Besides Ross Smyth, mentioned above, the medal has been presented to Gerald P. S. Smith, F.A.C., of New Plymouth, New Zealand; Major R. Burke, C.O., New Zealand Squadron No. 1, F.A.C., Wellington, New Zealand; Col. Zack Reed, F.A.C., Uncas-on-Thames, Norwich, Conn.; and Walter Bickmire, F.A.C., St. Mary's, Pa.

In addition, an F.A.C. Ring was awarded to Major Eddie Munzing, F.A.C., of Dorchester, Mass.

These chaps have all been doing excellent work, not only at the present time, but also over a long period in the past. So, medal-winners, you can feel proud of your decorations—they've been sent to you because you fully merited them. Good work!

Here's a note for F.A.C.'s in Richmond, Va. Landon Christian, the "White Ace," is anxious to contact you with the idea of revvin' up a new squadron in your city. Landon's an expert modeler and he knows his aeronautics, so shoot him a card at his home address: 2314 Maplewood Ave., Richmond.

Remember the three-view draw-

ing of the Fairchild *Sekani* in last month's issue of FLYING ACES? Well, when that was prepared for publication, the Fairchild folks hadn't released much definite information about the ship. But here comes a letter from John Pawling, of Toronto, who spills the whole low-down.

"Practically every Canadian pilot," writes John, "was asked what he'd like to see in the 'ideal ship' for Canadian flying. For you know that flying conditions here are generally different from anywhere else in the world. Anyway, their answers were all tabulated and taken into consideration, and the new Fairchild *Sekani* is the result.

"The ship carries ten passengers and weighs five tons, fully loaded. The load includes pilot, co-pilot, passengers, and a fuel supply weighing 3,120 pounds. Its range is 420 miles. Powered with twin Wasp Junior engines of 400 h.p. each, its cruising speed is 168 m.p.h. Climbing rate is 830 feet per minute, and the ship's absolute ceiling is 16,000 feet. The *Sekani* will climb 3,000 feet fully loaded on one engine."

So there you are, fellows! That's one time Clint Randall—with the help of F.A.C. John Pawling—was able to score a "scoop" on the magazine's Model Editor.

Which makes this a swell place to cut the switch—yours till Santa Claus packs the windsock full, gang!

Death Flies to Fukien

(Continued from page 26)

H. G. HARDWICK

This is to remind you that your subscription terminates with this issue.

We suggest that you send us a check to cover your renewal of the magazine.

THE NATIONAL GEOGRAPHIC SOCIETY

Bish read again, clicked his heels and saluted to complete the impres-

siveness of the startling announcement. "Why didn't ya tell me, pal?" he said out of the side of his mouth as he bent in a deep bow.

The Countess Khitrivo repressed a grin. "There's nothing like having the right connections," she agreed.

THE Bellanca turned out to be a machine of the 1936 vintage powered with a 420 h.p. Wright en-

gine. It was in fair condition, with new fabric on the wings and new dope on the fuselage. It bore the Geographic Society's insignia.

"Let's speed it up. This Chinese mug may take it into his head and call some one before we get away," Bish said.

"You can join Mr. Hardwick in checking the plane. I'll engage the Oriental gentleman in conversation

to keep him out of mischief," the girl said with a smile.

"Okay," cracked Bish, and he toddled off toward the hangar where Hardwick was already inspecting the fuel gauges.

Together they helped in pumping about 150 gallons of gasoline into the wing tanks, then saw to it that there was enough oil. The cabin had been fitted up as a four-seater with a portion of cargo space converted into a flying laboratory. Inside they discovered dark-room facilities, several types of aerial cameras, mapping devices, and the usual display of exploration equipment including four Winchester rifles, which Bish stroked fondly.

"Very nice," observed Bish. "Let's go on a picnic."

"Don't worry, I have a feeling we're in for a beaut!" offered Tug. "Call the Countess now so we can get going."

Tug barked signals, then started the Wright engine and let it rumble until the temperature needle crawled up the dial. Bish handed the Countess up, and lastly they explained to the still puzzled Chinese officer that they would return in about twelve hours and that there would be no necessity for reporting them to any of the authorities. They stated that they were simply flying up to Amoy, the treaty port, for some special supplies.

The Oriental saluted, bowed, and backed away.

Tug took the Bellanca off across wind and let her climb gently until he got the feel of the controls. The Countess sat up front with him, while Bish pottered around somewhere in the rear, checking the ammunition and what not.

Now they turned north over Fatsan, curled east at Lienping, then skirted the foothills of the Ta Yuling Mountains. Finally they set their nose on Shaowu, which lay more than three hundred miles away.

"There's a small field at Tingchau where we can get down in case we have any mechanical trouble on the way," the Countess explained to Tug, holding a small map before him and pointing out that little town in Fukien Province.

"I don't think we'll have to. We have gas enough for about 750 miles, and she seems to be working like a top," explained Tug. "But what are our chances for a landing anywhere reasonably near this Vinaya Monastery?"

"The Monastery stands on a high bluff overlooking the river. There's plenty of space around its grounds which the priests and the Buddhist students cultivate. There are a few open fields used as pasturage for cat-

tle. But what are your plans?" queried the girl.

"I have none. I believe we shall have to make them up as we go along. Right now we can only hope to arrive at the Monastery in time to get to this Fa Hein friend of yours and try to stop him from translating the book. Possibly we can get possession of it."

A light came into the girl's eyes. "Why are you doing all this for me?" she asked. There was a softness in her voice.

Tug hesitated, then made a hurried answer: "I've got a hunch we're shoving our nose into something hot this time—and there may be a great news story in it."

They raced on for another hour, with Bish still dabbling around in the cabin space behind.

"What the deuce is Bish up to back there?" Tug finally asked the Countess. "I'll bet our fat friend has gone to sleep."

The Countess went back to investigate, then came back smiling.

"He's enjoying himself with the photographic material. Says he's trying some experiments."

"He's nuts!"

And Tug Hardwick settled down to checking his position over Tingchau, which the Countess now identified by a small aerodrome below.

TUG'S reveries were abruptly broken by a clatter from behind, and he suddenly found Bish leaning over his shoulder.

"Holy smoke!" bellowed the stout newsman. "The Mureaux is right behind us! It came up from somewhere below!"

"They must have landed, for some reason, at Tingchau," the Countess gasped, her eyes wide with fright. "What are we going to do?"

"Listen!" Bish barked back. "They may try to down us. I'll bet they called back and found out that we took the Geographic Society plane. That would be enough excuse—if they saw us on their track."

"Of course," the girl cried. "They'd know we're chasing them—especially if they learn that I am with you."

"Where are they?" demanded Tug.

Bish pressed his face against the window, then called: "They're dead behind us. Start throwing this peanut wagon about, will you? Come on, Countess!"

He dragged the girl out of her seat while Tug began to sling the Bellanca all over the sky. Bish and the girl then scrambled up the aisle and disappeared into the freight compartment.

From above, a gull-wing French Mureaux—a fighting job with Hispano-Suiza engine and a three-bladed

prop—slashed toward them. It looked like the Geographic plane would be cold meat.

In the Mureaux, a heavy-set Russian in the front cockpit was enjoying his position immensely. He was watching for his chance with his front armament, while a small Japanese behind him fingered a machine gun mounted under the streamline covering of the double cockpit.

"Which wing would you like me to shoot off first, Yoshida?" Captain Borgroffo asked, with a knowing grin. "With this cannon fitted to the motor, it is too easy, eh?"

"Never mind your trick shots, Captain," Yoshida warned. "I want to see you get a direct hit and put them in flames. That's the only assurance we can have that we have completely destroyed them."

Captain Borgroffo nodded grimly. He'd show this Jap what a Russian could do. Thereupon the Hispano motor cannon spoke twice, causing the Mureaux to vibrate from stem to stern.

"You have *not* shot off a wing, Captain," hissed the Nipponese. "Allow me to try my luck."

Meanwhile, a pitiful single flash of gunfire spat up at them from one of the windows of the Bellanca. And the Russian swore as a slug smacked against the Mureaux's all-metal wing, making him cringe in the cockpit.

Behind, Yoshida pressed the trigger of his machine gun, sprayed a hosing of lead down on the helpless commercial plane.

Hardwick fed more gas to the Bellanca, then looked up. Mercilessly the Mureaux was diving upon them, spitting a hail of death from both machine gun and cannon. Frantically Tug kicked rudder to escape—then he gasped in horror. For a sickening trail of fiery smoke was billowing from the cabin ports of the Bellanca, and from inside there came a fierce scarlet glow that indicated that the whole interior was aflame.

"There you are," the Russian Captain beamed over his shoulder. "I told you I could do it."

"I do not agree," Yoshida replied. "I feel that it was my burst that put them in flames."

Both now looked down to watch the Bellanca twist and spiral in her plunge. The flaming smoke was now pouring back in longer streaks. And finally the lines of the plane were lost in the dull nothingness below.

Borgroffo and Yoshida strained their eyes to catch sight of the ultimate crash of the American ship. There then came a fearful mushrooming of dull whitish flame and a cloud of smoke then trickled along the low valley. They saw no more of the Bellanca.

"Now," the Russian said, "we can continue our way in security. Since your Countess friend is not likely to bother us further, we can complete the rest of our task in comparative freedom. And I might say that I long for the serenity of the Vinaya Monastery and the fine viands of our Buddhist friends. You are satisfied, yes?"

"I am," Yoshida answered blandly, "satisfied that it was my gun—not your heavy voiced cannon—that destroyed the plane. However, we will forget that now and, as you say, rest secure that we have at last eliminated our most persistent enemies."

The Russian sniffed, turned back to his piloting.

THE Bellanca rolled to a thumping halt on a fairly open stretch of tufted ground with her round ports still smoking.

Hardwick was frankly scared and unable fully to comprehend what had really happened. Every second on his way down he had expected to feel the fuselage leap away from the wings and start its final lurch earthward for the splintering climax. But nothing like that had happened. The Bellanca had held together, allowing Tug to steer her dead into the open area that had come up out of the black-green nothingness below. And still expecting to be consumed by the gulping flames behind him, the newsman finally set the craft down and cut the switch.

When Tug leaped clear, he was greeted by the laughter of both Bish and the Countess. They were at the cabin ports, grinning like a couple of mischievous school-kids.

"Get out of there!" called Tug. "Get out of there before she goes up."

"You're goofy," cracked Bish with a ribald cackle.

Tug hurried up, took a zinc-covered metal holder from the hands of the girl. He looked at it a second or two, then it all came to him.

"You two devils staged that?" he gasped. "You used Taylor flares and the like to make believe we were on fire?"

"It was Beansie's idea," the girl went on to explain, coming out of the cabin door. "He made two flares of some sort, using the photographic flash powder he found in there."

"But it was all so fiery. I thought the whole cabin was in flames," argued Tug.

"Oh, I fixed that by mixing some other stuff here. I can make it burn any color," Bishop went on. "One flare that I fixed up in an old oil can worked swell streaking out of the upper hatch. Then to make it more realistic I set off another powder which made it look as though we

were on fire inside. It was all quite realistic."

"Yeah, too realistic for me. And what were you doing during all that madness?" demanded Tug turning to the Countess.

"Just sticking those Taylor flares out of the window and pulling the wire igniters. Lovely, wasn't it?"

Hardwick was finally satisfied, and he now glanced up into the sky. "I wonder how they came on us that way," Tug said, stroking his chin. "They must have landed at Tingchau, just as you said. I wonder what for?"

"Yoshida probably wanted to know whether you had turned up. I guess he wanted to make sure whether he was being followed. He's a very methodical man, this Yoshida," said Countess Khitrovo.

"Maybe. But that hardly answers the question. He has something in the back of his nut—something we don't know about."

"Perhaps he tried to get a message through to this Vinaya Monastery, so that he would be sure of contacting this priest guy who knows the Yunnan lingo," suggested Bish.

"No," said Tug wagging his head. "He wouldn't do that. He's certain Fa Hein will be there, otherwise he wouldn't have started. But he certainly is in a hurry to get there, you can bet on that, or he would never have taken the risk of swiping that Mureaux. Still, he stopped at Tingchau for something—something hot!"

"Well, let's get moving. That guy will be there and have the whole blamed book translated before we get going again," argued Bish. "And won't they get a surprise when we waltz in on them?"

"I wonder," said Tug. "Those birds—Hello! What's this?"

"Horsemen . . . bandits," husked the girl. "We must hurry."

"Bandits? This far south and east?" demanded Tug.

The muffled thunder of hooves came closer as they started for the cabin door of the Bellanca. There were fully fifty men cantering toward them. They carried lances and rode with that certain ease of men born to the saddle. Before Tug could get the girl up into the cabin, the leading patrol group thundered up, and a small squat leader barked an order. The others simply reined in smoothly, drew short carbines from their rifle scabbards, and covered the three before they could make another move.

Tug, Bish and the Countess could only stand there in the half light of the clear night and watch the rest ride up and circle the plane. The horses stood swishing their heads and waving their long manes while

their riders sat motionless and expressionless. A tall, Mongol-type man rode out of the circle and drew rein before the three who stood close together at the cabin door.

"These are Kansu Tartars from the West," whispered the girl. "What on earth are they doing this close to the coast? They are far from their own territory."

"There goes the book and all the business," moaned Bish.

The big Mongol rode like a Cosack. His head-dress, a cross between a Russian bearskin and a Punjab turban, glittered with crude silver ornaments. And his blue tunic bore two leather bandoliers heavy with Lee-Enfield clips. To complete his outfit, a picturesque ivory-handled revolver, rusty yet foreboding, was stuck in his wide leather belt.

The man smiled. He was handsome, in a bandit way. And now he saluted and bowed in his saddle in a somewhat affected manner.

"I am so sorry to bother you in this way," he said, "but I am afraid I shall not be able to allow you to leave—that is, for some time. We have use for your plane."

"And to whom are we indebted for this interruption?" asked the girl, moving forward from the cover of Tug's shoulder.

"I am Kwang Kei—a bandit king, I suppose you would call me. These," he bowed again and swung his arms in a half-circle, "are my Kansu Tartars."

THERE was a certain fascinating timbre to the man's voice which bespoke a certain culture. He used his words well and smiled as he explained his position. Obviously he was proud and every inch a leader.

Tug moved forward.

"I wish you to understand that we are Americans, and that we are on a survey mission sanctioned by the Chinese National Government. We must object to any interference, and any untoward move will be reported to the proper authorities," he said plainly and slowly.

"Of course, I understand," Kwang Kei said quietly. "You are supposed to be Edward Farnsworth in charge of the Geographic Society's exploring venture. But of that, I am not sure. You see, I happen to know that this plane was stolen this evening from a hangar in Whampoa."

"Now I know why Yoshida landed at Tingchau," Tug whispered to Bish out of the side of his mouth.

"However," the bandit chief went on, "I will not detain you any longer than necessary. I can feel for a fellow robber. There is honor among thieves, you know."

"What's your game?" asked Tug.

"Just a little matter of some Chinese gold intended for the Nationalist Army headquarters at Nanking," Kwang Kei explained blandly.

"He means the money the Canton government has raised to help fight the Japanese," the girl said in a low tone.

"A train is now moving north with a substantial sum which is really intended for the coffers of foreign munition makers," smiled Kwang Kei. "It was mulcted from the poor and needy of the southern provinces, who do not realize in what manner it will be frittered away."

"It's for the defense of their country, isn't it?" demanded Tug.

"That might be one explanation, since it was the excuse for levying the taxes," the big Tartar said, "but we who are more acquainted with the wiles of those in power know that it will be wastefully spent for weapons of death—armaments paid for at exorbitant Occidental rates. I deem it my duty to intercept that money and—"

"And spend it on your own bloody pastimes," broke in Tug.

"Not all of it. Our requirements are small and our demands not too unreasonable. We require good horseflesh under us, sufficient arms and ammunition for our defense, and sufficient food to keep up our physical strength."

"You know," muttered Bish from behind Tug, "I'm beginning to like this guy."

An idea was forming in Tug's mind, and he made a quick decision.

"All right," he said. "If you feel that way about this war chest business, we'll let you carry on. What are your plans?"

"Still, I do not trust you. But I will explain my plans at any rate. There are always bullets for betrayers. You understand, I think."

KWANG KEI gave an order, whereupon his men dismounted and loosened their saddle girths. He, too, dismounted, turning his charger over to an orderly who moved up from out of the darkness. This bandit leader was more suave than ever now as he strode up and down before the three captives.

"Within an hour," he opened, lighting a long black cheroot, "an Army train bearing a strong box of true Chinese gold will pass through the Fu Nang Pass north of Lungyen and into the Valley of Black Blight which runs north toward Yungyan. You may not have heard of the Valley of Black Blight, but regardless, you will take me there in your plane. With," he added, "a couple of my loyal men as a suitable guard."

"You mean you want *me* to pilot you?" asked Tug.

"Of course. Who else? I am not a skilled pilot, and none of my men are acquainted with petrol engines."

"You're taking an awful chance," warned Tug.

"I ignore the threat. Within the hour my second troop will have attacked the Army train and will have waylaid the wagon carrying the gold. I propose to arrive there in time to remove the gold chest, take it back to this troop, and hurry it away into the hills of Kiangsi—where we will see that it is properly distributed among those who need it most."

"Forgetting, of course, that to do so your murderous gang will have to kill a few dozen of the poor devils you so sympathetically profess to be aiding," smirked Tug. "Still, you're in the saddle, so I suppose we shall have to go through with it. By the way, you don't know a gentleman by the name of Taro Yoshida, do you?"

"Or Captain Borgroffo?" added Countess Khitrovo.

The bandit chief went white. He stopped his striding, faced them with jaw set.

"You devils," he hissed, as he reached for the massive weapon at his hip. "Then you—you know?"

"Now the cat's out of the bag," moaned Bish. He turned to the Tartar: "Call me Beansie. You can carve it on my headstone. To the tender memory of Alton 'Beansie' Bish—"

"Shut up!" Tug barked. Then he faced Kwang Kei: "Of course we know," he raged. "You have been working with Yoshida and his gang all the time."

"That's why you are here so far from your mountain country seeking an Army train of gold," the Countess added.

"Yeah," broke in Bish. "But *why* is he here? We were supposed to have been shot down in flames."

That statement caused Kwang Kei to replace his guns. He turned, chattered in some strange tongue to two of his lieutenants. Evidently, the Tartar was puzzled about something. He pondered a moment, suddenly made a decision. Then more orders and rapid action sounded somewhere behind. Four bandits, hairy and smelly, came up, grabbed Bish and the Countess. Tug tried to interfere, but he only walked into the curved blade of a massive cutlass. Bish and the girl submitted to having their hands tied behind them, and then they were walked away toward a shadowy copse of trees nearby where some of the bandits had already lit a campfire.

Tug wanted to help them, but he could not keep his mind off what Bish had said. Why had Kwang Kei turned up here—even though he might have

been tipped off by Yoshida? There would have been nothing left if the plane had fallen in flames, as they had planned. He might have figured that all three might have escaped by parachute, but even so, anyone coming down in this desolate territory would be days getting out and would stand no chance of intercepting Professor Tao's explosive secret.

He stood there watching them march Bish and the girl off.

"You need not fear," Kwang Kei said thoughtfully. "They will be taken care of—unless." Then he adopted a new tone: "You know Yoshida?"

"No. I only know of him. He's something in the Japanese cabinet, isn't he?" replied Tug, appearing sincere.

"You are *not* Edward Farnsworth?" Kwang Kei prodded.

"No. My name is Hardwick. I'm simply an American newspaper correspondent connected with the Amalgamated News Service."

"I seem to have heard your name—somewhere. But I cannot recall," the big Tartar said.

"Probably it's just as well for me. But I admit that I've done a few articles on Chinese bandits—and their peculiar methods of torture."

"Well, come on, my friend. We had better be going, and it will be best if you, what you call, 'play the game'—or you and your companions will get a taste of those bandit tortures—first hand."

Then, while Kwang-Kei completed his plans for the flight to the Valley of Black Blight, Hardwick was left well guarded, to ponder over the problems at hand. But somehow his mind continued to wander back to the business of the Geographic Society plane, and the question of why Yoshida had been so keen about making certain that it was destroyed, or at least safely taken into custody.

Kwang Kei finally selected two of his chief lieutenants and they climbed aboard the plane. Before getting in himself, the big Tartar showed Tug a map of south-eastern China and indicated where he wished to be flown.

"We are now at a spot a few miles east of Tingchau," he explained. "I wish to be flown east toward Lungyen, here. It's about sixty miles by air. You should do it well within forty-five minutes, eh?"

Tug nodded: "With any luck."

"From that point, I will direct you."

Tug climbed up, glared at the two pig-faced men who sat in the two rear chairs with heavy pistols snuggled in their laps, and took his seat at the controls. Then he stole a glance back

toward the rear of the cabin. He was trying to find the secret of the Bellanca.

There was nothing there but the jumble of pots, cans, bottles, and landing-flare standards that Bish had so usefully employed in evading the attack of the Mureaux.

At least nothing that Tug could see.

Now the cabin door slammed and Kwang Kei came up, shoved his way into the co-pilot's seat, and nodded with a grim smile to Tug.

THE flight out toward Lungyen was uneventful. Tug quietly ignored most of his captor's questions, while he gave himself up to a careful contemplation of the situation. He wondered, for instance, why this gold was being moved through such dangerous country by Army wagon train, and then he realized that considering everything, it was probably the safest measure to take—if it were carried out in complete secrecy. Had they tried to ship it by sea, it would have had to pass through the Japanese naval blockade, and its movement by rail would have been most obvious and certainly dangerous.

They reached Lungyen in about forty minutes, and by that time Tug had partially formed a plan of escape. Still, there was one point that was not yet clear in his mind.

Over the Fu Nang Pass, they circled at about 4,500 feet. To the right lay the Valley of Black Blight, a sinister piece of topography. The trees, what there were of them, were gaunt spikes, reminiscent of the frousy spines on a beast that had moulted badly. To the east ran a thin black line—the Fu Nang Pass through which the Chinese Army pack train with its load of gold must now be crawling.

Tug watched Kwang Kei, saw the lines on his face change as he stared down. Suddenly a portion of the black, spine-like line below seemed to crinkle. There were spattering slashes of light and the dull slow movement of lice-like patches moving across the dirty back of some monster.

"They have attacked," Kwang Kei said smiling. "It will take but a minute now."

"Too bad you don't have courage enough to go down and give them a hand," smirked Tug. "But I presume you are too valuable a leader to take any such chances. What price the starving coolies of Canton now?"

The big Tartar laughed. "You have all the stock phrases of the American newspaperman," he said. "You all make the same statements. They belch from you like stamped biscuits coming out of a hopper."

"Maybe, but that still does not answer the question."

"The answer would be equally as stereotyped," agreed the Tartar. "Something about men willing to die for an ideal, even though that ideal may only be a Tartar chief."

"Bunk!" snorted Tug.

They waited for a few minutes more, then the bandit nodded: "We will go down now," he smiled. "Try and land as close as possible."

"I can get right down in the pass," said Tug. "It looks safer there."

The engine was throttled back and Tug S-turned the Bellanca back and forth until the ship was floating over the heads of the men below. Tug set her down a hundred yards or so beyond the frenzied ring of Tartar tribesmen that surrounded what was left of the wagon train.

As Kwang Kei jumped out, he gave stern orders to the two guards. Then he went over to the mad milling mob, and after quieting them with a gesture, he inspected the wagons. A few Chinese still groveled near the wheels and a horse with a broken leg was trying to hobble away into the darkness.

From the darkness beyond, a few desultory shots continued to ring out and fierce flashes of flame became golden javelins through the underbrush. The Chinese were still trying to get up enough courage to make a counter attack and regain their lost gold.

But Kwang Kei was a born leader. He snapped orders thick and fast. The stragglers were recalled and the raiders who were still after blood were warned to return and re-form their lines. The wagons were run together, the dead bodies piled into the tangle, and the lot was fired with flaming torches.

And while the blaze leaped up, Tug could see the treasure chest being moved toward the Bellanca. It took the efforts of four monster men to lug it the few yards that separated the plane from the center of the barbaric ceremony.

And as they came on, Tug finally got a nubb in of an idea. He smiled grimly, looked about the cabin again. The two guards were still watching him, but they were also acutely interested in the gold chest that was being portered toward the plane. Tug could have taken a chance right then. Once he got into the air the guards would not dare shoot him, because he was their only chance of getting them down again safely.

"No," he muttered to himself. "I'll give my other plan a whirl. Besides, I've got to get Bish and the Countess out."

The cabin door was now yanked open and the two guards came for-

ward to help drag in the heavy chest. Kwang Kei was just behind, and his great eyes gleamed as he saw the box containing the treasure shoved into position against the freight compartment bulkhead.

After a few more orders, he climbed in. The porters backed away, uttering deep gutturals, then hurried off to where the rest of the band was preparing to mount and ride away.

"How do you want this stowed?" Kwang Kei asked. "Will it be all right back here?"

"You'll have to move it farther front, behind those seats," Tug said. "And," he added thoughtfully, "We'll have to drop one of these guards of yours. That gold must weigh plenty. I wouldn't try to take her off with all this load, especially over ground as rough as this. Still, it's your party."

KWANG KEI considered for several seconds. He could not afford to risk a crack-up now. They had to get off with the gold immediately and get it well away from the Valley of Black Blight.

The Tartar decided quickly, ordered one of the guards out. The man scampered off, plainly delighted to get out of this unfamiliar mode of transportation.

"We might make it now," said Tug with a satisfied air. "Get up here and let's get off."

"Back to your friends," said Kwang Kei, with a slight smile.

"But where to after that?" queried Hardwick.

"That I shall decide when we get back to my main body."

"Well, I'll bet you've decided already."

"You must not forget, my friend," Kwang Kei smiled, "that I hold all the cards, as you Americans say."

"Sure, but do you know how to play poker?" taunted Tug.

He watched the lone guard pull the cabin door shut, then he started the engine. Since it was still warm, he soon had a suitable motor temperature and was able to take off. But all the time Tug held her down, gave every indication that the Bellanca was having great difficulty in getting away. Kwang Kei was plainly worried. He gripped the sides of the co-pilot seat until Tug had her well into the clear.

"I'm not taking any chances on this trip," Tug said after a few minutes. "I'm taking her well upstairs—just in case. I want plenty of room to get down in event of an emergency. She's laboring now."

For ten minutes Tug climbed her, continually heading back west toward the plain where Bish and the

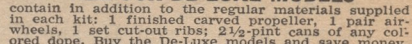
Tug worked fast now. He grabbed the automatic, rolled the man clear with his foot, then advanced cau-

"And now that pig-sticker you carry on the other side," said Tug, taking the long curved knife in Kwang Kei's belt. "No, sit there—and keep her nose on the horizon, for I've still got another trick to pull. You needn't worry. We have plenty of fuel. That was just a tricky little gag of mine. See, Kwang Kei—the needle goes



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<p>SHEET Balsa Special for Gas 36" Lengths</p> <table> <tr><td>1/16x2</td><td>..\$4</td></tr> <tr><td>1/16x3</td><td>..\$6</td></tr> <tr><td>3/32x2</td><td>..\$7</td></tr> <tr><td>3/32x3</td><td>..\$9</td></tr> <tr><td>1/2x3</td><td>..\$10</td></tr> <tr><td>3/16x2</td><td>..\$7</td></tr> <tr><td>1/2x2</td><td>..\$11</td></tr> <tr><td>1/4x2</td><td>..\$8</td></tr> <tr><td>1/4x3</td><td>..\$15</td></tr> <tr><td>1/2x3</td><td>..\$16</td></tr> <tr><td>1x3</td><td>..\$30</td></tr> </table>	1/16x2	..\$4	1/16x3	..\$6	3/32x2	..\$7	3/32x3	..\$9	1/2x3	..\$10	3/16x2	..\$7	1/2x2	..\$11	1/4x2	..\$8	1/4x3	..\$15	1/2x3	..\$16	1x3	..\$30	<p>For Five Foot Lengths in Sheet 1/2" Thick and Three Foot Length price.</p> <p>REED</p> <table> <tr><td>1/8", 3 ft.</td><td>..\$5</td></tr> <tr><td>3/16", 3 ft.</td><td>..\$7</td></tr> <tr><td>1/4", 3 ft.</td><td>..\$10</td></tr> </table> <p>BIRCH DOWELS 36" Lengths</p> <table> <tr><td>3/16" dia.</td><td>..\$5</td></tr> <tr><td>1/4" dia.</td><td>..\$8</td></tr> </table>	1/8", 3 ft.	..\$5	3/16", 3 ft.	..\$7	1/4", 3 ft.	..\$10	3/16" dia.	..\$5	1/4" dia.	..\$8	<p>SPRING STEEL WIRE (In 5-foot lengths)</p> <table> <tr><td>1/16 dia.</td><td>..\$5</td></tr> <tr><td>3/32 dia.</td><td>..\$5</td></tr> <tr><td>1/8 dia.</td><td>..\$5</td></tr> </table> <p>DURAL GUN BEAM</p> <table> <tr><td>1/4"x3/32" foot</td><td>..\$20</td></tr> <tr><td>3/8"x3/32" foot</td><td>..\$30</td></tr> </table>	1/16 dia.	..\$5	3/32 dia.	..\$5	1/8 dia.	..\$5	1/4"x3/32" foot	..\$20	3/8"x3/32" foot	..\$30	<p>ALUMINUM RIVETS (Lightweight)</p> <table> <tr><td>1/8" x 1/4"</td><td>per doz.....\$5</td></tr> <tr><td>3/32" x 3/16"</td><td>per doz.....\$5</td></tr> <tr><td>1/4" x 1/2"</td><td>per doz.....\$5</td></tr> </table> <p>WOOD SCREWS 1/4" x 1 1/2" Per doz.....\$5</p>	1/8" x 1/4"	per doz.....\$5	3/32" x 3/16"	per doz.....\$5	1/4" x 1/2"	per doz.....\$5
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up again! I just monkeyed a bit with the three-way fuel petcock."

Tug now darted down the aisle again and came back with some short lengths of heavy cord.

"You can move over. We'll let Johnny Robot fly her for a while," said Tug snapping in the gyro-control set. "I could have done that before, but you know how it is."

Kwang Kei fumed as he realized how he had been tricked. He was in an uncontrollable state of anger, but the cords Tug Hardwick fitted to his ankles and elbows kept him under a reasonable degree of management.

All that settled, Tug then bound up the unconscious guard and rolled him into the space between the chest of gold and the freight compartment. Then he went forward and took over the wheel.

The rest is up to you, Kwang Kei," he said with a tight-lipped grimace. "Of course I could dump you out of the door right now, and as far as you are concerned that would be all there was to it. You wouldn't know whether I got my friends out or not—and of course you have their welfare at heart."

Kwang Kei just snorted. He was beyond normal conversation now.

"Now, you can retain what breath of life you are entitled to," Tug went on as he guided the big monoplane westward. "You can act right and say the things I want you to say—or you may get nasty and force me to blow out your cerebrum. I think the medicos call it 'cerebrum,' but maybe the word 'brains' is more understandable to you."

"You are in the driver's seat now," Kwang Kei admitted with a growl. "We shall see how it works out for you. I suppose you *do* know how to play poker."

THE big Bellanca had arrived back and was circling the open space below. The campfire was still blazing, and the horses of the bandits were carefully picketed off toward the north. Tug watched Kwang Kei for some time, then said: "Well, here we are. Now it's your turn to talk—and to talk right. The less said the better, for unless—"

"You are in the driver's seat, Yankee!" stormed Kwang Kei.

"All right. Don't forget that. I have a very itchy trigger finger."

Kwang Kei frowned.

"And after we get through with you, Sir Bandit," taunted Tug,

"there's a little matter of one Taro Yoshida and a certain Captain Borgroffo." Then he slipped the gun into his pocket and turned his attention to the landing. He jockeyed back and forth for some time until he had the layout well in mind. Then he steadied the Bellanca into a long glide and let her roll to a stop not far from where they had taken off.

"Now remember," he said out of the side of his mouth. "You speak to your mob out of that side window. You order them to release the captives and allow them to enter this ship. You will explain and act the part—just as if you were not any too keen about their getting too close to so much gold. You understand? And remember that you won't get out of this alive if those two friends of mine are even scratched."

The big bandit nodded grimly.

Tug left the motor idling, rammed his covered gun into Kwang Kei's ribs, then opened the side window of the cockpit. Four bandit lieutenants came up, and Kwang Kei barked at them in their own tongue.

For several spine-tingling seconds, Tug sat there, tried to figure out what the Chief was saying. But the language was unintelligible to him.

"No funny business," he warned.

"They've gone to get them," the Tartar muttered, "And now what are you going to do with me?"

"I'll keep my word as long as you keep yours," Tug snapped.

There were several more minutes of distrustful anxiety. Finally Tug could see the Countess and Bish being led through the shadows of the trees with the flames of the campfires dancing behind them. Kwang Kei watched too—intense hatred reflected in his heavy face.

Bish and the girl came up. They were bedraggled and puzzled figures. Tug leaned over the Tartar and yelled to them: "Get inside, quick!"

Hardwick heard the door open down the fuselage. He called down again, told his companions to look out for the guard. Then he gave the engine the gun and let the plane roll away.

"What about me?" bawled Kwang Kei. His eyes were glassy with rage.

Without replying, Tug let the Bellanca roll as far as he dared, then rolled her around.

"All right, Bish," he called. "Come and cut this cookie loose."

Bish, still startled and unable to

figure it all out, took the knife from Tug and slashed the cords that held Kwang Kei.

"There you are, old topper. Back to your smelly minions."

But Kwang Kei did not move. He simply huddled there with his head on his chest.

"It's the fortunes of war, old boy," said Tug. "This time, you lost—and you might as well be a good sport about it."

Bish tugged at the man's shoulder, but had to grab quickly to prevent his falling forward on the wheel.

"Say!" gasped Tug. "He's out!"

"You mean we got to *get him out*," jabbered Bish.

They shook the man, then shoved his head back. The face was a dull yellow and eyes were closed. Then Tug spoke up again:

"Maybe he swallowed some kind of poison—an attempt to 'save his face' among his men. But we can't stop to see about that. Get him out—quick!"

They dragged the heavy Tartar down the aisle and hurriedly shoved him out of the door. Next they carried the injured and well-bound guard out and deposited him near his Chief.

In the middle distance they could see the Tartars mounting their horses.

"Get going! Get going!" yelled Bish.

Tug raced back inside the cabin, leaped for the wheel, and rammed the throttle forward. Once he heard the cabin door slam, he let her have her head. The Bellanca then took up the challenge, slammed toward the galloping horsemen.

Bish huddled up in the co-pilot's seat, stared at the thundering riders. Tug held the Bellanca on its course, regardless of the menace, and at the last second, the horsemen wheeled. Another instant, and that roaring juggernaut would have hit them.

Tug hoiked the Bellanca hard, and luckily she cleared. A spattering of shots rang out in the crisp night air, forcing him to nose down again. But gaining distance, he lifted her again, hopped over a belt of scrubby trees, and roared upward.

"What's this all about?" asked Bish finally.

"We got away."

"Yeah, but I mean what's the story about Kwang?"

"Oh, we got together on a little

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understanding—after he swiped the cash, which, incidentally, is all back there in a box.”

“Whew! What a night!” cracked back Bish!

COUNTESS KHITROVO was very happy. She came up and took over Bish's place while the pudgy one trimmed the ship, rearranged the somewhat displaced cargo, and set out the stage for the next sequence in this mad night of adventure. So far, they had triumphed beyond their wildest dreams.

Tug gave the girl full details of his experiences while they raced on toward the Vinaya Monastery at Shaowu. “But,” he said, “I still can't get over the idea that your friend Yoshida had plenty of reason for wanting this bus destroyed. There's something aboard here that they either want, or—no, I guess it's something they want to get rid of.”

The girl pondered, and Tug took many opportunities to gaze at her. She was, he kept thinking to himself, really beautiful.

“Plane . . . Geographic Society,” she mused. “Cabin . . . freight . . . camping stuff . . . photography equipment . . . pictures . . . Wait a moment—Pictures! It might be pictures of some sort!”

Tug nodded: “It *might* be pictures. Go get Bish off the top of that gold chest and see if you two can't rustle up something in that back room—something besides smoke bombs,” he grinned.

THEY reached Shaowu in about two hours. There were already faint indications from the east of the coming dawn, and Tug realized that they would have to work fast. He was worried about his fuel now, for they did not have any too much since the trip to the Valley of Black Blight.

The Countess came back finally, somewhat worried. “Not much luck,” she said. “We found a lot of pictures, but none that seem to hold any clue to what we are trying to get at. And what *are* we trying to get at?”

“I'm not sure. Something, I suppose, that Yoshida wanted to get rid of. I can't figure it out. But say, is that the monastery ahead there? That big gray mass?”

“Yes—that's it!” cried the girl. “Notice the open space off to the right? That's the pasture—the open field where they graze the few cattle they require. Can you get the plane in there without using your engine further?”

“Watch me!”

“You'll have to. We can't take any more chances.”

Tug dragged the big throttle back, and the Bellanca settled into a low

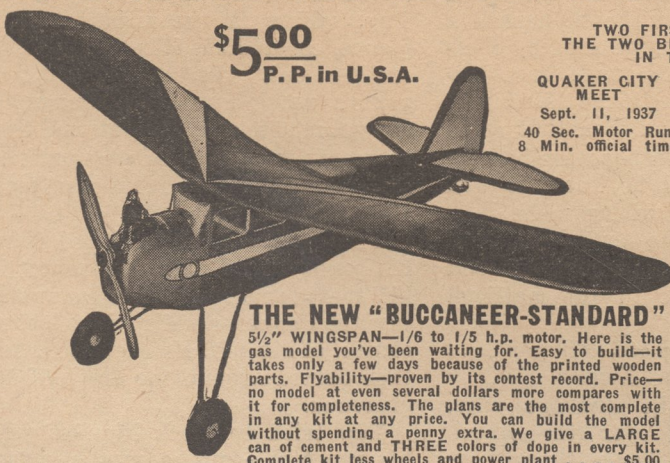
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whining glide. Bish came forward, peered ahead over their shoulders.

"Getting ready for the flare-up?" he asked.

"Yes, and you'd better see what weapons you can unlimber back there in that arsenal of yours. We may need a little fireworks display again, my dear Bishop."

"Call me Beansie," said Bish hurrying back.

Tug was worried now. There were too many things that could go wrong. Still he held the Bellanca in her glide.

Then so intent was he on his landing that he did not see what the girl saw. She grabbed his arm, screamed: "Look! They are at the plane over there. Three of them! They must have made Fa Hein a captive. See, they are pushing him into the plane."

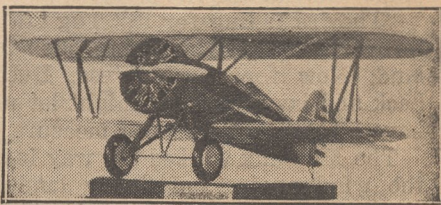
Tug stared, then saw the silvery Mureaux backed into a corner of the rambling field, its prop shimmering in the half light of the exhaust. They were licked!

Yes, Yoshida had captured Fa Hein and was forcing him to fly with them to some spot where they could make him decode the formula for the mysterious explosive. And the little party in the Bellanca dare not fire on the Mureaux now for fear of injuring the Buddhist priest.

Tug circled once, showed himself completely to the Mureaux pilot. He was stalling for time. And while his mind was a jumble of facts and possibilities, meanwhile the Mureaux was taxiing away.

Then all of a sudden his tangle of thoughts cleared itself. Tug was master of his emotions again. He reached down, grabbed an Aldis signaling lamp, and drew the Bellanca up into a climbing turn.

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This was where brains instead of brawn were to work!

He told the girl to hold the wheel steady a moment while he flashed a message. It was to be a decoy message. And it would snare Taro Yoshida—if it worked. The thing was that he still had an idea that some mysterious photographs were bothering Yoshida—and he knew it was little more than a wild gamble.

He snapped the switch, peeped down the signal gun sight, and flipped a message in International Morse. It read:

Stop . . . Wish word with you . . . have photographs—Kwang Kei.

He repeated the message once, then again took over the wheel. "Here's hoping," he muttered, explaining what he had done to the girl. "Now have Bish get a couple of rifles ready—just in case."

The Mureaux was well off the ground now, but her pilot seemed to be hesitating. And now the French plane was banking.

"They're falling for it," Tug muttered. "Look, they're going back to land. Now for it, Countess. Duck back and lay low. They might let us have a blast just for good measure."

The Mureaux worked her way into the wind again, and finally landed near the middle of the field. Tug smiled to himself, banked in the opposite direction, and finally came in—with the wind.

"It's an awful chance landing this crazy way, but I've got to take it," he said.

The Bellanca floated down from a position well clear of the field. It was a sickening sensation, but Tug was adamant in his demands on the controls. It seemed that she would never get down. But he smiled again to himself: "They'll sure think this is Kwang Kei trying to fly the boiler himself."

The Bellanca bellied over the hedge, and Tug fish-tailed like mad. She swayed back and forth, then bounced high.

"Wow!" gasped Bish from somewhere behind. "What are you trying to do?"

"Call me Bouncy," gagged Tug. "You watch this landing, my boy!"

The Bellanca still floated along and was now dangerously close to the Mureaux. Tug fish-tailed again and Bish let out a loud cat-call. She dropped, rumbled, staggered, then rolled up until her whirling prop was spinning not ten inches from the whirling blade of the French fighter.

"I guess that will hold them," grinned Tug. "Now give me a gun—and grab one for yourself."

Bish was out first—and he took no chances. He snapped a shot at Yoshida, who was huddled over the gun in

the rear cockpit. There was a scream, and the Japanese folded up and disappeared below the edge of the pit. Tug, taking in the situation at a glance, covered the Russian pilot.

"Get out," he ordered. "Your game's up. We've laid Kwang Kei away, and we have the National Government funds, too. All we want now is the book stolen from Professor Huang Chai Tao."

The Russian cockily climbed down, his hands raised high the instant he hit the ground. But the instant he saw the Countess Khitrovo he lost all control of himself. He began to curse, then darted around the front of the Mureaux.

Tug tried to block him off with his repeater—but he was not soon enough. Borgroffo stumbled, arms wide, straight into the path of the whirling blades of the Mureaux!

"Good Lord!" cried Tug.

There was a crash and a scream. Then the slashed body of the Russian fell to the earth lifeless.

They turned away from the horrible sight. Then the Countess managed to cry: "Where's Fa Hein? He was here when they started off."

Tug darted to the side of the Mureaux cockpit, peered inside. "Here he is—under Yoshida. Come on, let's get him out."

They lifted Yoshida's body clear and extricated the old Buddhist priest. Then the shaken Fa Hein told them that Bish had fired just in time, for Yoshida had not been sure of the message and had only ordered Borgroffo to land to make certain. He had intended to use his guns and inquire later.

"I believe, fair one," Fa Hein now said to the Countess, "That you will find the book and box you are seeking in that man's pocket."

He pointed down at Yoshida.

The Countess was on her knees at once and soon arose with the lacquer box. Opening it, she brought out the Canton-silk covered book that bore the strange junk design. She flipped the pages, smiled at Tug.

HARDWICK cut the throttles on both ships while the Countess continued her talk with Fa Hein.

"Photographs?" said the old priest. "You fooled them about some photographs? But there *were* some photographs. I heard them say so. That's why they came back. They wanted some photographs—of some sort."

"Let's go and look," said the Countess.

She led the way into the cabin and showed Fa Hein into the rear compartment. There she switched on a light and drew out a sheaf of 11 by 8 glossy prints. Once more they went through them, studying the

pictures carefully. The priest took his time, inspected each one with a large cumbersome magnifying glass.

There were ordinary ground scenes, scenes showing broken portions of the Great Wall, obliques of mountain passes, and vertical shots of rivers and villages. But none provided even a clue—until at last Fa Hein noticed the last four.

He stood and frowned at the first for some minutes, then flipped the print over and read:

"Unidentified workings north-east of Wuchou in hidden mountain pass."

"I thought I remembered that spot," Fa Hein said expansively. "I spent many of my early days in that section of China. That particular pass is an almost inaccessible place."

"And look at this one," exclaimed the Countess, taking up the next. "Now that I look at it very closely I see what I'm sure are hangars of some sort dug out of the rocks. Lend me your glass, Father—perhaps I can identify those planes."

The glass brought the photo out in high detail. Here was evidence enough to damn a certain European power—proof of a secret alliance with Japan. Here were fully a dozen gun-bristling war planes. How many more were inside the hidden hangars?

They studied all four pictures for some time and finally figured the story out. It was apparent that somehow the members of the Geographic Society had stumbled on this hide-out not 150 miles from Canton. They had taken the pictures; and then to avoid any international complications, they had decided to keep quiet about them until they could be sure of their next move.

But those on the ground must have realized that their secret hangar and landing field had been spotted and perhaps photographed. They might even have caught the glint of sunlight on the camera lenses.

That was why Taro Yoshida wanted the Geographic Society Bellanca wholly destroyed.

After inspecting the pictures again, Tug nodded agreement. "This means bad business if they get away with it," he said coldly. "If they are allowed time, they will move in a supply of fuel and bombs. And they can blow Canton off the map. That might even stop the Cantonese from moving north to give help to the Nationalist armies. We've got to move fast."

"Well," agreed Bish, "you can't say we didn't pick up a few fancy items. We nailed Professor Tao's formula, the gold intended for the north, and now the evidence of an air attack from the south."

"Yeah," said Tug. "And now, Bish,

we'll scoop the gasoline out of the Mureaux, pour it into the Bellanca, and be off. Fa Hein will go with us and translate this Yunnan formula en route, and I'm sure the authorities will be happy to make a contribution to his Monastery in the way of payment for his work. Yep, we'll head

north right away—and deliver all this news where it'll do the most good."

The Countess looked up with a warmth of regard in her eyes. "No man could have done a better job," she said, "than you—Mr. Hardwick." "Call me Tug," was the reply.

Chalk Up a Couple For the Studes!

(Continued from page 20)

... At what altitude?"

"Gee! I don't know exactly, Mr. Hoyt. But only *some* of the buildings were higher than I was—and I ducked them all right."

Hoyt clapped a hand to his forehead. "Jumping Jehosopha! Don't ever tell anyone you flew in. Tell 'em you *taxied* in . . . !"

* * *

Oh, of course, we did a lot of talking among ourselves about the "foolhardiness" and "poor judgment" Ted had displayed—but it wasn't very satisfying. We listened politely to each other's dissertations on the subject and nodded in solemn agreement, but inwardly we knew we were being a bunch of hypocrites. The fact—the all important fact—that we had tried our darndest to get home and then ended up in bean fields and alfalfa patches while Ted Peters had *flown through*, was something you couldn't get around. And let me tell you, when anyone, regardless of circumstances, does something with an airplane that men like Clarke, Goebel, and Hoyt failed to do—then that guy's done something!

When the story of how our solo student had been the *only* one to get back to Clover from Brea, we took an unmerciful razzing. Pilots always take an unholy delight in "getting something" on another flyer and riding him ragged. And I'm telling you that the "Retreat From Brea" was just their meat!

THE SINKING OF "SOUR PUSS"

AND now let me relate my second student eulogy—the story told in western naval circles of how a flying cadet caused a cantankerous officer literally to be laughed out of the service.

It all happened at San Diego when the Navy was using North Island for primary training, for which work the station had taken delivery on a number of two-place training planes.

You see, it developed that this particular type of craft was, under certain land conditions, prone to spin flat. And so, no more of these planes were accepted, although the ones already in service were kept active in the primary training work. On these latter ships, a warning—"DO NOT

SPIN"—was stenciled in big black letters on both front and rear instrument panels. And so, everything was Okay; for aside from the spin characteristics the plane was an excellent basic trainer, and as spins are not a phase of primary instruction, there seemed to be no objection to using them in this limited capacity.

Well, the story goes that a certain flight officer was, much to his disgust, assigned to North Island for duty as an instructor. He was an unpleasant sort of a cuss anyhow, and the fact that he had to spend the summer struggling around with cadets did nothing toward mellowing his disposition.

So in a short while he managed to earn for himself a high degree of unpopularity with the other instructors. And as for the hapless cadets who had the misfortune to draw him as instructor, he was the personification of all human evils.

One of the studes who most heartily subscribed to this opinion of him, had previously served a hitch in the naval air service as an observer. It was on the basis of his fine record and high intelligence that he had been granted the opportunity to earn a pilot's rating. This chap, although having no accredited stick time, was decidedly air-wise. No doubt the pilots with whom he had been flying as an observer had let him handle the stick a bit—unofficially, of course. At any rate, this fellow was nobody's dummy when it came to flying. But despite this—or perhaps on account of it—the aforesaid soured-on-the-world instructor took special pains to make life miserable for him. Loudly and publicly he dwelt upon the stude's "mistakes", never missing a chance to herald the cadet before the rest of his flock as Exhibit "A" in stupidity.

OUTWARDLY, the young ex-observer took all this very meekly—but in the back of his mind a plan was beginning to evolve for showing Old Sour Puss up. The cadet had run across a report on the spin characteristics of these trainer planes made by Al Williams, who had deliberately spun one in to find out what this "flat" spin business was all

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about. The cadet studied this report exhaustively until he knew it backwards. This was the basis for his big idea.

Patiently, he bided his time. He was learning to land now. Day after day, Sour Puss kept him at it. Meanwhile, the rest of the group had already soloed, but the disgruntled instructor, harping more than ever on the ex-ob's alleged stupidity, refused to turn him loose. Then finally, the cadet's landings were so consistently good that Sour Puss was forced to let him go. The kid's ability was getting too obvious for S. P.'s comfort.

Solo he did—and his landing was almost perfect.

"Accidental," remarked Sour Puss. "When a *cadet* makes a good landing it's *always* accidental," and he smiled unpleasantly. "Now, we'll go up and try some *spot* landings. First off, 180's from a thousand feet, next 360's from fifteen hundred, then 720's from two thousand, and at least four turns of a spiral from three thousand. I believe it'll be interesting to see what you can do with *that*."

"Yes, Sir," said the cadet with his usual meekness. But his eyes must have been gleaming; this was just made to order for his plan!

He performed the first three assignments creditably, but naturally not to Sour Puss's satisfaction. Then he took on altitude for the fourth maneuver—the spiral from three thousand. When he reached that height, he throttled back and kicked the trainer into a vertical.

"Nose down! Nose down, you fool!" bellowed Sour Puss.

"Yes, Sir," shouted the cadet, and he bobbed his head to indicate understanding. But instead of easing off and letting the nose drop, he yanked the stick back to his stomach and kicked on full inside rudder.

WHOOSH! The trainer whipped off into a spin, and grinning at the

"DO NOT SPIN" sign on the dash, the cadet shrugged his shoulders perplexedly—and waited. Now it was up to Sour Puss!

LET it be recorded that Sour Puss did a lot of things in a hurry. First, he reversed controls. But the nose of the trainer had come up. She was now spinning flat, and the controls were ineffective. Next, Sour Puss jammed the throttle open, hoping to throw a blast on the tail surfaces. But the motor wouldn't take it. As frequently happens when you have gravity feed in a plane which is spinning flat, centrifugal force prevented the flow of fuel to the carburetor.

Then in desperation Sour Puss tried the Leukenheimer primer, but all he could get out of the motor was a couple of sickly coughs. That was enough! Sour Puss flipped the catch on his belt—and with a final curse for the cadet, he bailed out most unceremoniously.

Naturally, he had expected the cadet to do likewise, but our knowing student had other ideas. From Williams' report, he understood that these trainers spun flat *only under full load conditions*. He knew that an appreciable shift of the center of gravity forward would permit the trainer to spin normally, and of course the removal of Sour Puss's weight had reduced the loading and had changed the center of gravity to some extent. So the instant Sour Puss was clear, he kicked full outside rudder, and shifting his own weight ahead by leaning as far forward as possible, he pushed the stick hard against the dash.

Through another complete turn the trainer wallowed, then abruptly the controls took hold and she snapped out of the spin and into a dive.

The rest was easy. The cadet leveled her out still with a thousand feet to spare. Then he began to look

around for Sour Puss—and he had the gratification of seeing the silk-hung officer drifting lazily past the shore line and out over the shallow waters of the bay. Presently, the dome of the chute collapsed, indicating that the ill-tempered instructor had plopped into the water. This was the "sinking of Sour Puss"!

THE cadet circled over the spot until he saw boats rushing to his erstwhile instructor's rescue, then he flew back to the field and landed.

He immediately reported to the C.O., said simply that he had not followed the instructor in bailing out because he still had quite a bit of altitude and so he thought it would be valuable experience to fight the flat spin a few moments longer. He further stated (the liar!) that he really had no idea the plane could be brought out of it and that he had intended to jump after another turn or so.

That was all he said at the time—and nothing more was necessary. Half the personnel on the island had witnessed the whole performance, had seen a student break a flat spin and safely land a plane from which an instructor had bailed out. They had seen the instructor fished out of the bay dripping, spluttering, and half drowned—and the fact that the instructor, of all men, should be none other than the swaggering, arrogant Sour Puss was the choicest morsel.

Yes, they made the most of it; they *poured* it on!

Sour Puss couldn't take it. He managed to get a transfer, but the story followed him. Eventually, I understand, he resigned.

Maybe in this case the thing was carried to an extreme. But that is beside the point I happen to be emphasizing, which is:

Every once in a while you gotta chalk one up for the studes!

Cat's Spad-jamas

(Continued from page 16)

plane, but he don'd giff no nefermind aboutt ridink in *der* Zeppelin. Ho! Ho!"

NOW just a mile away from that Heinie hydrogen hack, Phineas Pinkham was arching through the ozone looking for the spit of von Heinz' exhaust. Imagine his surprise when he spotted that Zeppelin so far off its course. For a moment he wondered if he had fallen asleep and was having a nightmare. He pinched himself, decided he was awake, and got down to business.

He went up as far as he could go, then dived and took a poke at the black cross that was splashed across the Zep's dorsal region. Nothing happened. Meanwhile Heinie machine gunners sprayed lead at him, made him back up his Spad for a minute. Again Phineas came at the cigar and tried to peel off its wrapper with tracers. Then his Vickers hopelessly jammed and his Spad had to take a lot of Boche lead through its wings.

"Well, I'll see what kind of filler that stogie has got, anyway," the Yankee bat flyer decided. "That is one cigar that will not get back into

the box. Here I come, you sausage eaters!" And Phineas pointed the Spad straight at the Zep, gave the Hisso full throttle.

Inside the Zep the Boche skipper howled for more speed. The little Teuton with the tomcat in his arms got his signal and stepped down through the trap with a black parachute streaking out behind him pennon fashion. In the machine gun pit aboard the gas bag a pair of Heinies frantically waved their arms at the Spad plummeting toward them as if to shoo it away. At exactly the right moment, Phineas Pinkham bailed out

of his ship and the chute in the basket on the top wing went with him. He bounced off the big Kraut cigar's shortribs just as the Spad hit the Zep like a red hot rivet smacking an Idaho baked potatoe. One of the crowbars zipped through the dirigible's giblets like a lancet, kept on going to terra firma where it went right through the top of a Yankee truck that was heading toward Vaubecourt.

"Cripes," howled the dough who was driving the bus, "they're even throwin' crowbars—them Boche. They—look, Pooley—up there! It is a Zep, an' it's breakin' in half! It's gonna fall in the Meuse, I bet. Boy, it's on fire now! Whatinell is one of them cigars doin' over here, huh? L-Loo-ook o-o-ou-t!" A piece of something whanged against a tree close to the truck that had been braked to a teeth-jarring stop. It was a chunk of Spad, and the doughs saw big letters painted on it. PINKH—they read.

"That crackpot flyer rammed it, that's what!" a dough choked out. "Well, he's got wings now that he won't never be able to take off. What a guy! Wow! Look at that thing hit! Yo-o-ow!"

CRA-A-A-ASH!

The Zep splatted into the Meuse and enough steam to boil all the rice in China belched toward the moon. Not more than a mile away, *Herr Hauptmann* von Heinz, scared out of his skivvies, turned tail and headed for home.

"*Ach du lieber!*" he moaned. "*Das* was fir me, *der* rammingk mit der Spad und *das* Pingham was der doer. *Der* deffil he ist, but now he ist der deffil was ist deader as *der* mackerel fish. *Ach, Gott!*"

Then the news spread over the front faster than a scandal in a fishing village. A Heinie Zeppelin had swung off its course, had been driven by the wind over the Western Front where Lieutenant Phineas Pinkham had smeared it over the landscape like cheese on a cracker.

Later, in a Yankee Divisional H. Q. near the Meuse, a pair of truck drivers told officers about the piece of Spad that had nearly sideswiped them on the road. They embellished their tale with the bit about the crowbar that had stabbed right through the heavy top of the truck, washing out a lot of corned willie.

And on the drome of the Ninth Pursuit Squadron Major Garrity crossed the name of Lieutenant Phineas Pinkham off the roster and ordered the R.O. to concoct a fitting message of sympathy to send to the surviving Iowa Pinkhams. Even so, Bump Gillis and Captain Howell had their doubts, but they went around gathering wildflowers to construct a

floral piece to place on the Pinkham grave once word was received as to where it was located.

"I think he ought to be buried near the Meuse, don't you, boys?" opined Garrity gruffly.

"Huh, then no horses could drink the water afterwards," snorted Bump Gillis. "Maybe he's got a bottle of Prussic acid in his pocket that'd bust open!"

"This is no time for such remarks, men," Garrity chided the Scot. "Haven't you any heart at all?"

But Bump only raised his eyebrows. It still had to be proved to him.

NOW not far from Bar-de-Luc Phineas Pinkham had hit the linoleum after drifting through the ozone seven or eight miles from the point where he had bailed out. He fell on his angelbones and was dragged to the edge of some woods. Then the chute billowed out again and he had to wind his long legs around a small sapling to stay put. He had just worked his way out of the harness when his big ears suddenly fanned out. A sound came from above his head and over to the left where the trees were thickest.

"ME-E-E-EOW!"

"Huh," grunted the Yank, getting onto all fours, "here kitty! Nice kitty. Here Kitty!"

But the sound did not come again. The Boonetown pilot got to his feet, started walking a little stiffly out of the woods. "I know I heard a cat," he insisted. "They can't tell me I didn't. Well, I wonder which is the way to Barley Duck? I—" He stopped short, let out a yelp. Not ten feet in front of him was a Kraut fresh from the ill-fated Zep. He could tell by the funny hat the fellow wore, for it looked like a Limey sailor's skypiece.

"*Kamerad!*" gutturalled the Heinie. "From *der* Zebblin I coom vunce. I fall oudt—and hidt idt *der* tree. *Ach Gott*, sooch business, *hein?*"

"Well, it ain't no faffy pull," Phineas chirped. "You're either a rubber man from India or an awful liar. Have you walked this far already from that wreck? An' say, Heinie, did you hear a cat—*der Katz*—holler, huh?"

"*Nein*. You take me for *der* brizoner, ja? *Ach*, zo sick *Ich bin* from *der* fightink yedt. I am Rudolph Kenzenheimer, ja!"

Phineas scratched his head. Some-

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thing was rotten even if he was a long way from Denmark. Nothing made sense. Getting closer to the Kraut he saw that there were scratches on the man's face.

"Well," he said, "goose step double quick, Rudy, and make it schnappy. I'll turn you over to an A.E.F. cop and get you off my hands toot sweet. Haw-w-w-w!"

And Phineas did just that, then made his way back to the drome of the 9th. He arrived at 4 a.m.—to find a big horseshoe, made of green pine branches and interwoven with whatever wildflowers were available at that particular time of year, tacked to the door of his hut.

A sentry peered at the prodigal who was folded up in the sidecar of a motorcycle and scratched his unshaven jaw with a bayonet.

"You're supposed to be dead, Lieutenant," he complained. "They already got plans for your fun'ral tomorrow. Huh, this is a fine kettle of smelts."

"Oh yeah?" howled Phineas. "Ain't that a shame? I bet they even divvied up my socks an' things already. Let me out of this mechanical bug! I'll show—"

Just then the Old Man poked his head out of an upper window of the Frog farmhouse and yelped: "What-inell's goin' on down there?"

"Haw-w-w-w-w!" guffawed his bad penny. "Am I in time to be a pall bearer, Major? What did you get my coffin lined with—silk or thistles? Well, here I am—in the pink—after snipin' that Kraut flyin' stogie. Yip-e-e-e-e-e-e-e!" He bellowed in conclusion. And the result was quite satisfactory, for pilots leaped out of their beds and poked their heads out of the doors of the huts in Buzzards' Row.

"I knew it!" ejaculated Bump Gillis disgustedly. "He ain't dead. Nothin' could kill that numbskull. If he drank cyanide, he would gain three pounds."

Old Man Garrity slammed the window down, went back to bed. Phineas walked into his hut and began to peel off his clothes. "Aw-wp!" he yawned, looking at the floral piece that Bump had tossed into a corner. "A fine thing—an' you bums knowin' how I hate daisies. Even when I am dead ya want to give me hay fever. Haw-w-w-w! Well, bong sour, Bump, toodle—oo, an' all that!" Whereupon the Pride of the Pinkhams hit the hay.

THE brass hats did not make much of a fuss over Phineas Pinkham smacking down the Zep. Oh, they promised him a medal and a week off when he chose to take it, but they still insisted that von

Heinz—Allied Enemy Number 1—was still loose.

Also another important matter had come up. The brass hats wanted a certain set of plans that were supposed to be in the hands of a snooper from Wilhelmstrasse. Three months before, the Allied brain trust had snagged a couple of Heinie stool pigeons trying to get through the lines and into Belgium, but they had nothing on them but cognac breaths. One of the Krauts had laughed right into a big Yankee brass hat's prop boss.

"Ach!" he had spouted maddeningly. "Noddink vhat you Dumesels could do vill stop der paper mit der locations uf all der Amerikaner billets, airdromes, subbly dumps, und alles, from gettink to der High Kommand yedt. Zo smardt ist der scheme I vish you chentlemens shouldt sometime know about idt. Zo after der var, maybe in zwei, drei mont's, ve tell you—und vill you laff mit stiches! Ho! Ho!"

Yes, Chaumont had been using up all the aspirin supply in France ever since getting wind of this latest Kraut connivery. The Allied bosses had been moving supply dumps from one place to another, had shifted troops and whatnot until there were no places left to put them. They hired every Frog Rembrandt, every interior decorator and theatre scene shifter from the Channel to the Alps, to camouflage the points of importance. But there was no use in pouring the woodpile over the Senegambian when the enemy had already spotted the gentlemen with the ebony epidermis.

Two days after the folding up of the Kaiser's Zep, Captain Howell took "A" Flight out to get a gander at the Heinie backyard, and the Boche met them in a swarm and almost cooked their goose. Phineas Pinkham, having been excused from flying due to the fact that the Spad manufacturers had been a little late with new models, sat in his hut reading one of the issues of *Frink's Fact, Fancy & Fiction Weekly*. His attention was centered on a column bearing the heading: *Things We Bet You Never Knew*. There was a paragraph or two there pertaining to the remarkable comeback proclivities of the domestic feline:

Mrs. Wofford B. Squidd, of Split Lip, Kansas, claims the ownership of a cat that no doubt holds the American record for returning long distances to its home. After having been lost out of a moving van, the said Squidd feline walked forty-eight miles through unfamiliar territory in three days and eleven hours to appear on the porch of the Squidd's new abode in Split Lip. The records show that only one other feline Sinbad has

beaten the Squidd cat's mark. A tortoise shell tomcat named "Marco Polo" owned by a German family in Frieburg, Germany, was made the subject of a Teuton cat fanciers' experiment and was taken sixty miles away from its home in a sack. It was dumped into the middle of a thick forest—but in five days "Marco Polo" a little lean around the shortribs, arrived back home meowing for its dish of milk.

"Huh," Phineas sniffed, "anybody'd think that was somethin'! Why I will write in an' tell 'em about our cat, 'Houdini.' He was thrown into the drink in a potatoe sack with an anvil tied to 'im, an' he comes back the next day covered with cockleburrs an' carryin' a woodchuck in his mouth. Huh, I—" The Yank hesitated, read the story over again, and scratched his noggin. "Why—er—I always said this magazine was the best we ever subscribed for. I—Haw-w-w-w! Anyhow, it's worth tryin'! I only hope Babette'll be home tomorrow night."

Lieutenant Pinkham went out of the hut. Bump Gillis' Spad was coming in and it went into a ground loop. A tail fin spun through the air and almost cut Phineas Pinkham's throat. Captain Howell was landing a Spad that could have been used as a gravel sieve. Two other ships came in and the pilots jumped out of the pits as if there were time bombs under the seats due to go off any minute.

"Bong matten', bums!" trilled the Boonetown pilot, grinning broadly at Bump and Flight Leader Howell. "Are the Kraut buggies shootin' shrapnel? No Spandau guns made such a mess as that! Who won?"

"Wellington!" snapped Howell. "Who do you think? Why right now I feel like cutting the throat of the first guy who pokes a finger at me."

"Just say one more thing," Gillis chimed in threateningly, pulling out a spanner wrench, "an' I will need a criminal lawyer!"

"Tsk! Tsk! You are very touchy, aren't you, girls?" Phineas sniffed. "Well, in a couple of days I will make everythin' safe for the Democrats, as while you was upstairs I was catchin' up on my reading. I don't see how anybody can be anythin' but a moron if he doesn't read once in a while. Bong apray midddy for now, bums!" He swaggered away and Howell caught Bump's arm just as he was about to heave the wrench.

"Lemme go!" howled the Scot. "I pricked my finger twice makin' that wreath for him an' I don't see why we wasted our time."

OVER on the Jerry side of the big fuss, Herr Hauptmann Adolph August von Heinz was keep-

ing an appointment with a bunch of Kraut *Herr Obersts*. It was late in the afternoon, but von Heinz wore cheaters with black glass in them.

"You are very sure, *Herr Hauptmann?*" a Heidelberg graduate asked The Owl. "*Der Cherman from der Zebblin who yoomped oudt as der Spad hidt idt? Ja?*"

"*Ja, Excellenz*. Noddink can I nodt see by *der* dark night yedt. Blain as *der* nose by *der* vase I see idt *der* parachoot open oop, *ja! Das* Pingham, I bedt you *mein* life, he yoomps alzo—right after *der* man in *der* Zebblin yoomped."

"*Ach Gott sie dank!*" breathed an *Herr Oberst* between snorts of *Schnapps* big enough to drown a wild boar. "*Haff der* liddle dringk, *Herr Hauptmann, und Hoch der Kaiser mit uns, hein? Der Tag ist* closer as yestertag. Vunce cooms idt *der* blans of *der* Yangkee back area und ofer you go mit *der* Gothas. You show dem *der* vay aroundt, *hein?* Ho! Ho! *Das* Pingham! Vun time ist he don't play *der* trick und *der* vorm turningk, *ja!*"

Night crept in on Bar-le-Duc, and Lieutenant Phineas Pinkham arrived there hard on its heels, piloting a mechanical bug that he had confiscated without consulting the proper authorities back on the drome. He drove it past Babette's maison and grinned when he saw there was a light in the Frog damsel's window. Skidding his motor bike around in the mud, he ruined the uniforms of a couple of Frog shavetails, then rode fast toward his favorite *estaminet* with the threats of the French Looeys ringing in his big ears.

In the *estaminet* Phineas put a couple of good snorts of cognac under his belt, felt in the pocket of his trench coat for his ammunition, then sallied forth into the night. He disappeared into a back alley, opened a package, then proceeded to fill his pockets with its contents, even sprinkling some of it in his hair. Finally he jammed some of the stuff down into his boots, then put the remainder back into his trench coat.

"Nice breeze blowin' tonight, haw-w-w-w!" he chuckled, tossing a handful of the hayseed-like stuff up into the ozone.

On a back fence a pair of tomcats who were measuring each other for a haymaker suddenly sniffed at the air and pulled their punches. The first feline to come out of a crouch me-e-e-o—o-wed—then hopped off the fence followed by its sparring partner. Not far away another mouse sniper came out of a deep snooze as if a hornet had backed into its empenage. It sniffed at the ozone, did a

two-step, then legged it through a Bar-le-Duc back street.

Phineas Pinkham was now walking down a very prominent right of way in the Frog town with a dozen or so cats at his heels. They hopped on his undercarriage and hung on. One even got up to his shoulder and began to lick at his ear. Out of doorways, off back fences, and out of dark places the feline population of Bar-le-Duc swarmed to the trail of the Boonetown miracle man. The representatives of three armies plus a number of Frog civilians crowded the sidewalks to watch the sight with bugging eyes.

ME-E-E-O-O-OW! YA-R-R-R-ROUGH! PUR-R-R-R-R-R-R!

"What is that crackpot flyer doin'?" a Yankee colonel coughed out. "I've heard of the Pied Piper of Hamelin leading all the rats out of town but—"

"Ha! Ha!" laughed a dough, "it's the pie-eyed Pinkham of Barley Duck! Look at them cats come!"

"Ici—chatties," Phineas coaxed the felines, throwing a handful of cat opium into the ozone. Some of the stuff went in through an open window where a mouse-colored cat was just being let loose from a leash. Bits of catnip settled down on its nose and it let out a gurgle, sprang for the window, then leaped from the sill to a tiled roof. A white-bearded Frog yelled for it to come back.

"*Ach! Er—sacré bleu! Halp! Gendarmes! Ze homme steals ze chat! Gendarmes!*" He rushed out of the room dived down a flight of stairs, and catapulted into the street. But the tomcat had gotten too big a whiff of the coke of catland and was already shinnying down a gutter pipe.

Phineas Pinkham had reached the steps of Babette's domicile when the mouse-colored rat destroyer joined his feline army. The Boonetown pilot did not bother to knock on the door of his weak moment but pushed right in. Forty-seven varieties of cat barged into the Frog house, a dozen of them clinging to the Yankee plotter.

"*Sacré Nom de Dieu!*" screeched Babette. "*Chats! All ze chats in ze—*"

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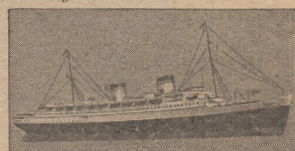
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"Stop!" yipped Phineas. "Don't pick up that broom, Babette. It's Intelligence stuff I'm doin', mawn cher-ry! Ceasez-vooz! Here, chatties, have ze chatneep. *Oui! Oui!*" Holding his light of love by one arm, Phineas tossed all the catnip he had left into the air and on the floor. The felines sprang for it, turned somersaults, played leapfrog, and went into all sorts of contortions as they lapped up the herb.

"Zis ees ze *dernier* straw what she br'aks off ze camel's back, you crazee *homme*," Babette wailed, making passes at felines that leaped, spun, and cavorted all around her. "I call ze gendarmes! I put you in ze bastille. E-e-e-e-ek! Open ze door, toot sweet, Phenyas. *Vous moi* hear, *non?* Nevair do I believe what ze *ozzer soldats* have say about *vous*, *mais* now I know shee ees bats in ze steeple *vous avez, oui!*"

"Oh, fairmay ze bootch!" Phineas tossed out. "I got to find a cat, com-prenny? Look! Most of 'em have had enough. Haw-w-w-w! They are goin' out the winder. Four of 'em have bells on, Babette, an' those we got to keep *ici*, savvy? Help me catch 'em!"

"All ze kind of nuts to *vous!*" snapped Babette. She swung the broom, literally lifted two of the felines out through the window with a lusty thwack on their tail assemblies. Outside, the gendarmes and M.P.'s were pounding on the door. Phineas sprang to the window, closed it, then grabbed the struggling, clawing Babette and tossed her into a closet. He slammed the door on her, braced a heavy chair against it.

"Oh, I keel *vous!*" her muffled voice squawked above the cries of the cats and the bedlam in the hall. "Crazee—cuckoo—peeg—*chien!* *Cochon!* Neet-weets—gendarmes!"

The gendarmes and M.P.'s barged

in just as Phineas corraled three cats. The Boonetown miracle man was very indignant. "Stay where you are, *voose* brass-buttoned bums, or Pershin'll hear of this. I have got a spy here, I bet. Don't make a sound, as I have got to do somethin' *ici*. An' don't let that dame out, as she let one suspect get loose already. Huh, you'd think she had somethin' to git sore about."

The civil and military cops froze where they were in spite of their better judgment. Phineas Pinkham was down on all fours coaxing a trio of cats out from under the stove. "*Ici*—nice chatty! *Ici, mon amis*. Lookit who geeve eet to voose, ze catneep, *oui!*"

TWO of the cats crawled out, crept a little cautiously toward Phineas. Their bells tingled as they moved. The one that remained puzzled Phineas—for a moment. Then he grinned triumphantly at the gaping M.P.'s and chortled: "Haw-w-w-w! They laughed when I spoke to the cats in French, but when I—watch me, bums!"

"Comst du hier, Katzy—Katzy! Raus mit! Comst du hier, Katzy!"

"Me-e-eow! Pur-r-r-r-r!"

Out from under the stove crept a big mouse-colored tomcat with a bell as big as a horse chestnut hanging from its neck. But it only made half the sound that the bells on the other mouse hunters made.

"Haw-w-w-w!" enthused Phineas, "It only understands Heinie. Boys, I was sure I heard a cat out in the woods the night I knocked off the Kraut Corona-Corona. It's quite a magazine, *Frink's Fact, Fancy & Fiction Weekly*. Coom, Katzy—*Vorwärts, Marco Polo!*"

While Babette was kicking the plaster off the walls of the closet and the dumbfounded M.P.'s stared, the wonder of the A.E.F. took a small bottle out of his pocket and pulled the stopper out with his teeth.

"Git me that basin there," he yipped. "Fill it with water. Haw-w-w-w!"

An angry, bristling individual with a white goatee broke through the restricting arms of the Frog and U. S. law and demanded that Lieutenant Pinkham give back his cat. But when the freckled pilot looked up at the mustached arrival he howled: "Arrest that guy! He's a Heinie stool pigeon. Hold him, as I am goin' to give him the same works I give the cat!" Thereupon Phineas dropped a crystal into the basin of water. He dipped the rear end of the squirming protesting mouse-colored tomcat into it, held it there for several seconds, then released it.

A gendarme gulped: "*Sacre!* The

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"Underby's Un-Dye! Fifty cents a bottle!" Chirped the man of the moment. "This cat is a tortoise shell. Haw-w-w-w! The Krauts are very thorough, huh? They figured maybe somebody would remember about Marco Polo an' recognize him if they saw him—so they dyed his hair. Marco Polo is the great Kraut come-back cat, an' it was goin' to go back to where a *Herr Oberst*, or somebody, would take charge of this bell around its neck."

Then Phineas unfastened the tabby cat's collar and proceeded to examine the little bell. It came apart in the middle and a small ball of very thin paper dropped out.

"Haw-w-w-w!" he enthused. "Bring eet *ici* ze bum who says he's a Frog, toot sweet! I'll show you his whiskers are as much a fake as Marco Polo's."

Yankee M.P.'s dragged the protesting citizen of Bar-le-Duc to Phineas Pinkham's side, and the inimitable magician poured half of the contents of the basin down the sputtering captive's face. Almost immediately his goatee and eyebrows became as black as Major Rufus Garrity's chances to succeed Woodrow Wilson as President of the U. S. A.

"Presto!" chirped Phineas. "Drag the bum to the icebox an' call G.H.Q." He slipped the ball of paper into his pocket and followed the stunned members of the French police force and the A.E.F. cops out into the street.

Back in the house, Babette's muffled screams became louder. But everybody including Phineas Pinkham had their thoughts monopolized by far more important things than an imprisoned *femme*. The half tortoise, half mouse-colored tomcat struggled in Phineas's embrace, made lusty passes at him but to no avail. Having had its full of catnip, Marco Polo was determined to trek back to where it had come from or its reputation would not be worth a plugged *pfennig* across the Rhine.

PHINEAS put up at a hotel in Bar-le-Duc, demanding privacy while all the insulation on Frog wires began to burn. The news hit Chaumont. The Allied brain trust was told that Lieutenant Pinkham had captured one of the Kaiser's greatest snakes-in-the-grass. To an Intelligence office in Bar-le-Duc the bearded Teuton looked very much like Baron Grounz, the slippery Eel of the Elbe, who had not been seen anywhere around since the battle of the Somme.

Major Rufus Garrity came into Bar-le-Duc with half his flying personnel to bask in some of Pinkham's

reflected glory. Frog and Yankee brass hats crowded the door of the Pinkham suite demanding to know what he had found in the cat's bell. The C. O. of the Ninth joined them just as Phineas opened the door and let a cat out of his room. The feline trotted past the officers, bell jingling.

"Step aside, bums, as Marco Polo is on his way ag'in," chirped the inimitable Yank. "Haw-w-w-w! No, you're not boiled, Rufe—er—Major. The cat is one color up front and another in the rear. It's that Underby's Un-Dye that I—well, has anybody sent for Pershin' yet, huh? I have got a map here with the location of every supply dump, ammo dump, airdrome, Chic Sale house, and everythin' in the U. S. backyard. Boys, it is quite a narrow escape the Allies had, huh? It seems that a Pinkham steps out in every *guerre* an'—"

A brigadier-general brushed past Major Garrity, stamped up to the Boonetown wonder. He told Phineas who he was, demanded the evidence found on the Eel of the Elbe.

"Awright, awright, it's the cat's whiskers, huh?" beamed Phineas. "Here are the papers, haw-w-w! Well, I threw my Spad with the crowbars tied on it at the Zep instead of von Heinz—but I will get him next. Listen, bum—er—gentlemen, when I bailed out of the crate, a Heinie jumped at the same time an' he was holdin' a cat. So later I tumbled to how the Krauts might be workin' things. Then I says to myself that the plans are ready to get shipped or they would not have sent Marco Polo over, huh? Haw-w-w-w! The tomcat is on his way back an' I hope a shell don't get all of its nine lives before it arrives. Will they have a cat-aleptic cat-aclysm at the cat-acombin' I give 'em! It is a cat-astrophe to put in their cat-alog. Haw-w-w! Maybe I oughter talk a little slower so's you can cats-up with me, huh? Boys, am I hot!"

"Er—Lieutenant," the brigadier said weakly, "you have just about saved the whole war for the Allies. Chaumont will—"

"Aw, you're nuts!" broke in the Boonetown pilot with a grin.

Major Garrity pawed at his face, glanced at the brass hat, and wondered if he would really throw the chair at Phineas. "Ah—er—yeah, you're a hero, all right, Carbuncle, but—er—let's go back to the drome before—"

"Sure," Phineas agreed, "I guess there ain't anythin' I forgot to do, haw-w-w-w!"

The Boonetown pilot was wrong, however. Seven blocks away, a disheveled, wild-eyed *mademoiselle* finally got out of a closet and reeled toward a cupboard. She seized a

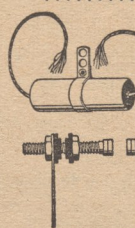
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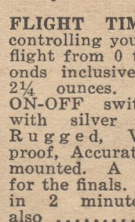
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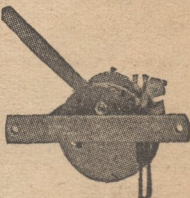
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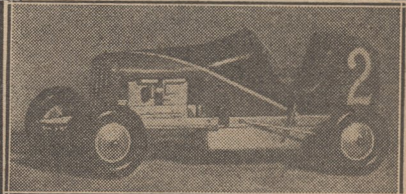
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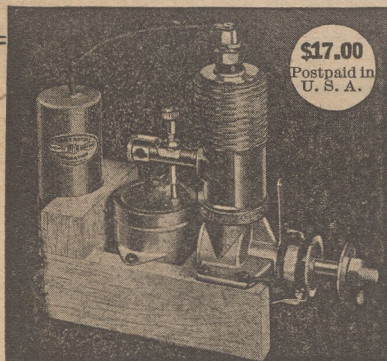
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butcher knife big enough to slice a cow in twain with one vigorous sweep, then went after Phineas Pinkham, the irrepressible Iowan.

"Ah, mon Dieu! Sacre!" she yipped. "In ze closet ze cochon weez ze spots on ze face he t'row Babette, n'est ce pas? All ze chats in France he have breeng dans chez maison. Bah! Ze peeg, ze chien! I fin' heem an' I cut heem in ze petit pieces! Poosh me in ze face, eh? Ze bum!"

Babette spotted Phineas just as a big A.E.F. boiler whisked him away. The Frog flapper jumped up and down with rage, then threw the kitchen sabre at the departing jalopi. It described a curve in the ozone, shot right through the crown of a gendarme's *chapeau*, and parted his hair the wrong way. One look at what she had done sent Babette flying back home where she locked herself in the closet voluntarily.

THE story is not quite ended. Marco Polo, two days later, walked across a devastated stretch of linoleum just behind the Jerry lines, his bell tinkling merrily. A pair of Boche looked out through a hole in the side of a ruined house. One gulped, and then guttured: "You see vhat I see, hein? Der Katz ist half of vun kindt und half anodder. Donnervetter! Nie mehr Schnapps I drink, Otto. Der nex' ting ist I see vill be der kangaroo mit feathers, ach!"

Twelve hours later the Jerry tom-

cat reached the headquarters of a Jerry division near Saarbrucken, its ribs sticking out so much that it could have been used for a washboard. It let out a prodigious howl and a big bull-necked squarehead opened the door. He gave the feline a onceover, then leaped a foot into the air.

"Ach du lieber, mein Herrs!" he yelled back into the room. "Der Katz ist. Marco Polo, he ist back. Baron Grounz he haff never failed, nein! Loogk vunce!" He picked up the cat. "Back vhere idt started oudt from. Sooch ein Katz, hein? Budt part of der dye idt vears off und giffs der komical loogk."

"Open up der bell, Dumkopf!" thundered a big Boche brass hat. "Das ist der blans by der bell, Schmaltz!"

A torturous minute passed, then Schmaltz said: "Ja, here ist der vay ve vill vin der var. Ja, giff a loogk vunce, Excellenz!"

The Kraut brass hat took a good look. The message, when laid flat, said *Warning. Bring fifty thousand marks an' leave it in the hollow tree near the old red mill at midnight or I will kidnap the Kaiserina. Haw-w-w-w!*—Leutnant Phineas Pinkham.

"Gott! Himmel! Donner und Blitzen!" erupted His Excellenz, wiping from his brow beads of sweat that almost bounced when they hit the floor. "Ach du lieber! Somet'ing it has vent wrong. Das Pingham—oh—ow!" His Excellenz passed out just ahead of Herr Oberst Schmaltz.

They Stick Their Necks Out!

(Continued from page 12)

lives are to be saved. Quickly a Coast Guard plane takes off and is set down near—but not too near—the burning boat. Obviously such a situation is loaded with TNT. If the flames should touch that plane, or if the boat's gas tank should explode

Sometimes the only way out of this dangerous situation is to use one of the inflatable rubber boats with which the larger C.G. planes are equipped. By this means passengers on a burning craft may be transferred safely to the plane. Just one of these bouncing rubber boats, expertly handled by a Guardsman, may turn an apparently inevitable tragedy into an occasion for really joyous thanksgiving.

IN the Boston area Coast Guard pilots are looked upon as messengers of mercy. It is along the adjacent New England coast that fishing fleets operate in great number. Hardened and toughened by their work and their mode of living, the fishermen, isolated for days or weeks

at a time, accept accidents and injuries as part of the day's work. Often they render first-aid to one another or clumsily attend to their own wounds. Consequently, cases of infection are frequent. Then, needing help not to be had on their ships, they send out a distress call.

Such a call came one day from the *Mao IV*, a scallop fishing boat out of New Bedford, Massachusetts. The *Mao IV* was 250 miles southeast of Boston when a member of the crew decided to lance a boil on his right arm. Because of the constant rolling and pitching of the ship he did a bad job. However, being a hardy salt, he bandaged his arm roughly and went back to work. Result: In a few days his entire arm, neck, and right side were paralyzed.

That was when the Coast Guard got the news.

A Guardsman pilot in a Douglas amphibian, on his way to New York, intercepted the message and got permission to rush to the fisherman's aid. After battling with fog, he lo-

cated the *Mao IV*, then was faced with the risk of landing in a very heavy sea. He managed to set her down Okay. But it was only to run into another difficulty—that of getting alongside the fishing boat without having his plane smashed. Being a Coast Guardsman, he finally managed that also. Somehow they transferred the semi-conscious man from the ship to the aircraft, and shortly thereafter the fisherman was in a hospital. That saving of a few hours of time cheated death of a victim.

For sea rescue work the Coast Guard needs specially constructed planes. Not any old ship can swoop down and squat on the rough ocean like a gull. To do this a plane must be very staunch, have low landing speed, and wings set well above the water. For this type of service, speed is not so essential. However, there are occasions when fast planes are needed; and, fortunately, the Coast Guard now has them.

In its earliest infancy the Coast Guard Aviation Section recognized the need for specialized radio equipment. As a consequence, Coast Guard headquarters designed standardized radio sets that can be used for radiotelegraphy as well as for voice communication. Radios operated by batteries entirely independent of the craft's electrical system insure communication in the event of a forced landing, and they provide a means of communication while on the water.

EVEN with their rubber boats, their special equipment, their training, skill, and raw courage, Coast Guard pilots often come face to face with almost insurmountable difficulties.

On one occasion, while responding to a hurry call, a pilot landed in heavy

seas. After managing to transfer a sick man from a steamer to his own craft, he was unable to lift his plane from the water. Time after time he tried—and failed.

Finally, in sheer desperation, the ship from which the passenger had been taken pumped overboard vast quantities of oil. And gliding along the resultant greasy surface the pilot succeeded in taking off. In a moment he was roaring toward shore.

Figuratively speaking, two uninformed passengers—Drama and Tragedy—sit alongside the Coast Guard pilots on their daring flights. Fortunately, Tragedy is often tossed overboard along the way.

Once in a great while Comedy takes Tragedy's seat. As an illustration, one summer day the Cape May station received an urgent call from a ship 190 miles at sea: "Man aboard with serious eye injury. Likely to lose sight. Can you help?"

The Coast Guard station immediately got in touch with a very busy surgeon. On consenting to drop everything to respond to the call, the surgeon was hustled aboard a plane, which immediately roared off for the distant vessel at sea. Once aboard that ship, the doctor—he was prepared for a delicate operation—examined the suffering man's eye. A disgusted look swept over his face. He had flown 200 miles merely to remove that troublesome old standby—a cinder—and he still had a 200-mile return trip ahead of him!

Light-hearted indifference toward danger, resourcefulness, calm, cool judgment—these are among the marks of the Coast Guardsmen. They are invaluable assets, not only to the men themselves but to those of us whose lives may some day be in their hands.

Fly the Fokker D-21

(Continued from page 40)

For each of the fuselage Bulkheads D (Plate 4) and N (Plate 3) cut out two halves and cement them together. Lay them aside to dry.

Next cement Bulkheads G, H, and J to the center section of the wing as shown on Plate 1. Add the main stringers, then the remaining bulkheads in the positions shown, and finally, the remaining stringers.

Build up the cowl (Plates 1 and 4) and cover it with 1/32" sheet balsa. Sand it to a smooth finish and cement securely in place.

PROP AND TAIL

ON Plate 4 you'll find details both for flying and scale props. Take your choice, figuring of course upon your future plans for the model. Be

sure to use hard balsa for the flying prop, since it will have to take a lot of punishment.

The tail should be as light in weight as you can make it, but don't skimp on cement in putting it together. Watch carefully for any tendency toward warping while the parts are drying. Since the flying scale tail assembly is of necessity larger than straight scale, you'll find the straight scale outline indicated on the plans (Plates 2 and 3) with dotted lines.

Moveable tail surfaces are optional; a flying model will perform better with a simple assembly. Cement the surfaces in place before covering in order to facilitate filleting with tissue.

Full details for the landing gear

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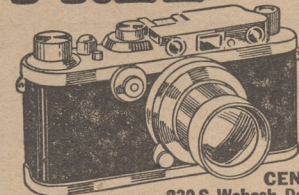
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of your Fokker D-21 model will be found on Plates 2 and 4. The type of shock absorber shown is very efficient. It has enough "give" to withstand the shock of even the hardest landing. Use hardwood wheels to lower the center of gravity of the model.

COVERING AND FLYING

SAND any sharp corners down and cover them carefully with small protective pieces of tissue, then cover the whole model. Spray the ship

lightly with water, and dope it.

The original D-21 is colored olive drab and has standard Dutch insignia. Since the ship is intended for export, however, the modeler has quite a little leeway in choosing his color scheme. The pictures accompanying this article, for instance, show my model in silver, all set for a "demonstration sales tour" of South America. Starting at the top, the rudder is red, white, and blue.

Following the coloring, the small

details such as air scoops, machine guns, tail wheel, etc., may be added.

No great difficulty should be experienced in flying the model. Glide it first in tall grass, and add weight to the nose until a smooth glide is obtained. Then give the ship her first power flight with about 40 turns in the rubber. Make any final adjustments by warping the control surfaces. And when you're satisfied that your D-21 is okay, use a winder and prepare to watch a sensational flight.

Now Comes the "Flying Catapult"!

(Continued from page 17)

when it was in place on the central take-off trestle mounted above the *Maia's* center-section.

With true British thoroughness, the *Maia* was finally completed and was ready for her test. And even her manufacturers were amazed at her

steadiness in the air and on the water. Even when well loaded she took off in 12 seconds!

While all this was going on, the *Mercury*, or upper component, was being carefully built. It was a twin-float seaplane powered with four

Napier "Rapier" engines capable of giving it a cruising speed of 160 m.p.h. based on a flight range of 3,500 miles. Actually, however, she has shown a speed some 20 m.p.h. faster than had been anticipated, and it is now known that she has a top velocity well over 220 m.p.h.

The *Mercury* is an all-metal job with a smooth-skin, streamlined fuselage, and the most interesting point about her is the main fuel tank, which takes the form of a long tube running through the center of the spar girder and attached to it in such a way as to reinforce the spar while adding considerably to its torsional rigidity. Baffles, or small bulkheads, are fitted inside the tube with flap valves which permit the fuel to flow only from the tips toward the center. This tubular tank has a total capacity of 1,200 Imperial gallons. No fuel is carried in the fuselage, which is thus wholly available for the 1,000-lb. payload and crew of two.

Since the *Mercury* will be assisted to its operational height by the *Maia*, it will be able to carry more than its own weight into the air—a trick that would be impossible if it had to take off from the water under its own power.

As this is written the first actual launching has not as yet been attempted. But the test may be made about the time this issue of F.A. reaches you. We have already seen photographs of the two planes mounted as for an actual take-off, but the engineers and designers—to say nothing of pilots—are not going to cry "contact!" on this experiment until every problem has been solved.

They must first know what will happen when all eight engines are running and what effect the vibration of the upper component's motors will have on the structure of the lower component. They must be sure that the air-flow from the propellers of the *Mercury* does not adversely affect the control surfaces of *Maia*. These and a hundred other questions must be answered—beforehand.

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Remember, too, that there must be full cooperation between the two pilots. They must decide whether on the instant of launching *Mercury* the big *Maia* will drop or dive slightly once the releases have been pulled, or whether she will hold a level course and allow *Mercury* to fly herself off and into the clear. This part of the experiment must be right, or the whole thing will end in complete failure—or even tragedy.

Yes, the British are going to give it a whirl, and the rest of the aviation

world will be standing by waiting to see how much there is to this "flying catapult" idea. And if it works, England will have a big edge on the trans-Atlantic mail-carrying game.

True, it is a scheme which a few years ago would be written off as the fantasy of a fictioneer. But in any event, this great gamble is a sporting venture worthy of high praise and admiration from sporting gentlemen the world over. And so we say:

"Happy Landings, men of the *Mercury* and *Maia*!"

Build the Spad XIII

(Continued from page 54)

Use the balsa in small pieces about $\frac{1}{2}$ " wide. After the covering has been cemented in place the compound curves of the cowl can be easily shaped with a razor blade and sandpaper.

The nose N, is made in two sections. The front ring is of $\frac{1}{8}$ " sheet while the rear block is $\frac{1}{4}$ " thick. The radiator fins are of $\frac{1}{64}$ " by $\frac{1}{16}$ " bamboo spaced by two horizontal strips of $\frac{1}{32}$ " by $\frac{1}{16}$ " balsa.

A small door is cut in the rear of the fuselage to allow rubber to be inserted. The rear hook is formed of .034 piano wire and attached in the body with several coats of cement.

The landing gear consists of two V-struts, which in turn are built up of Struts A and B, and a spreader bar C, all of $\frac{3}{32}$ " hard sheet balsa. Using plenty of cement attach A and B in their proper positions joining their lower ends with C.

An axle of .034 piano wire cemented only at the center to the top of the spreader bar, carries a pair of $1\frac{1}{8}$ " hardwood of balsa wheels. Since the axle is cemented only at the center, its outer ends are free to travel in the small slots in Struts A and absorb the landing shock.

WING AND TAIL

THE leading edges of the wing are of $\frac{1}{8}$ " by $\frac{3}{16}$ " sheet balsa. The trailing edges are of $\frac{1}{16}$ ". Shape them to the proper cross section with knife and sandpaper. Then pin 27 slats of soft $\frac{1}{16}$ " by $\frac{3}{8}$ " by $1\frac{1}{8}$ " balsa together and carve the resulting block to the rib airfoil given on Plate 2.

Pin the trailing edges to a soft board, and cement the end ribs in place. Then glue the leading edges to the nose of these end ribs and add the rest.

The tips of $\frac{1}{32}$ " sheet and the spar of $\frac{1}{16}$ " sq. are now put in place. Notice on Plate 2 that the upper wing panels are of slightly different outline than are the lower ones. Be sure you make right and left wing

panels. Reverse plan to get right one.

The rudder and stabilizer are made from $\frac{1}{16}$ " sq. and $\frac{1}{16}$ " sheet balsa.

While the framework of the surfaces is drying, practice scalloping the trailing edges on scrap balsa. Hold the wood at the edge of a table or board, and draw a rounded sandpaper block evenly across the wood as shown on Plate 1. When you're "in practice" scallop all the trailing edges. Use a fine grade of sandpaper.

ASSEMBLY

BEFORE applying the tissue go over the entire framework with sandpaper to remove any bumps that might spoil the covering job.

Khaki tissue with red trim is suggested, but of course, any color scheme used by your favorite Spad squadron or dictated by your own ideas may be used.

The wing tips and cowlings of the body are best covered with small sections of tissue because of the curvature. Cover all the exposed wood parts.

The center section struts D are of $\frac{1}{32}$ " by $\frac{3}{32}$ " streamlined bamboo $1\frac{1}{2}$ " long. The ends are pointed and dipped in cement, and are then forced into the top of the fuselage and the center section of the wing.

Check the alignment of the wing carefully in all directions. For correct incidence the leading edge should be $\frac{1}{16}$ " higher than the trailing edge in relation to the top of the fuselage side. The lower wings are cemented to the sides of the fuselage in alignment with the upper surfaces and at the same angle of incidence.

The outer E struts of $\frac{3}{32}$ " by $\frac{3}{16}$ " streamlined balsa are glued in position. The inner group of E struts completes the wing structure.

The stabilizer is cemented to the top of the fuselage and the rudder to the rear. The fully assembled Spad is now sprayed with water and doped lightly to tighten the tissue.

Details such as cylinder fairings, headrest, exhaust pipes, and machine

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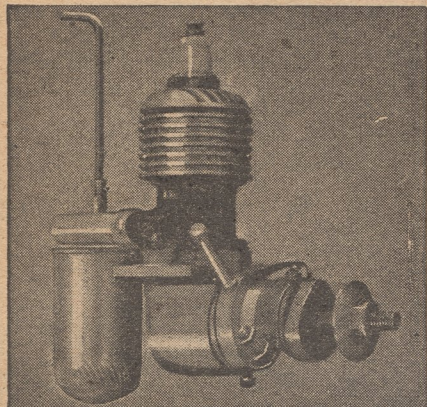
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guns are given on the drawings and may be easily made of scraps of balsa.

PROP AND PLUG

THE nose plug is a disc of 1/16" thick hard balsa cemented to a 3/8" length of 1/4" sq. balsa, which is cut to fit snugly into the nose block N. A hole is drilled through the plug, and washers with bushings inserted are glued to front and rear to serve as bearings.

The propeller is carved from a block 5" by 5/8" by 1/2". After the blades have been trimmed to the outline shown for the flying prop they are doped several times. A 6" standard style, ready-made hardwood prop with the excess length cut off may be used if desired, especially if balsa wheels are used.

Form the propeller shaft of .034 piano wire. Slip it through the nose plug and prop, and embed the end in the hub. Include a couple of washers between plug and propeller.

Four strands of 3/32" rubber are enough power for a Spad XIII under 1.25 ounces in weight, while four strands of 1/8" rubber will work better for a heavier model. The rubber in either case must be of good quality and preferably lubricated. Test glide the model gently, and check any tendency to stall by adding a bit of clay inside the nose. Correct diving tendencies by adding clay in the fuselage at the rear hook.

The first trial flight might be made with about 100 winds. Wash the rudder slightly to circle the ship to the right against the torque of the prop.

Now Make a Stunting Ornithopter

(Continued from page 57)

and inserted into the motor-stick, then glued. The top view of the gull (Plate 1) is not full height; the true height is shown in the side view (Plate 2).

A piece of aluminum tubing is glued on the front of each lengthwise gull strut and wrapped with thread. The wire L-pivot is held in the tubing with a drop of glue on the end.

SLIDE SYSTEM

AFTER the shaft has been bent, a connecting rod 1-15/16" by 3/16" by 1/32" is made from a piece of tin (Plate 1). Allow enough surplus at the ends of the strip for the loops which accommodate the pivot pin and crank shaft, which are bent as part of the connecting rod.

The front bamboo wing shaft is glued and threaded to the tubing, so it can swivel. The rear wing shaft slides through the tubing, and the

pin swivels. The pivot pin is an ordinary pin wrapped around a piece of tubing, inserted through the front piece of tubing and the loop in the rod, and then bent to keep in place (see details on Plate 1).

The model must not be covered until it has been assembled. Do not dope the tissue. Four strands of a 1/8" flat rubber, well lubricated, are used for power. All wire parts except the pivot pin are bent from .034 wire. They must be bent with extreme accuracy and kept well oiled to get best results.

This experimental ornithopter is very sensitive to adjustments. By slightly warping the tail end of the gull part or the rudder, the flight of the ornithopter may be easily controlled. A small amount of clay is useful for checking stalls or dives. It is advisable to carry a pair of pliers with you if you intend to do any outdoor flying.

A Fairchild 24 Gas Ship

(Continued from page 49)

them between the spars.

If ailerons are desired they may be made in the conventional manner, with hinges and control stops as shown on Plate 1. Aileron outlines are indicated on the large wing plan.

When assembling the wings, slip the ribs over the spars. Then pin the spars over your enlarged plan and cement the ribs in position. Line them up evenly.

Leading and trailing edges may be shaped either before or after cementing them to ribs. I prefer the latter method. A template for the leading edge is given on Plate 3.

Cement hard balsa blocks to spars

for wing strut connection and at fuselage end of wings for dowels.

TAIL AND MOTOR MOUNT

TAIL SURFACES are built in standard construction style. The ribs are cemented in place and then sanded to shape. Use 1/16" by 1/2" balsa for ribs and 1/8" by 1/2" for spars.

Hinges are made from brass or aluminum and control adjustment stops from the same material (Plate 1). These stops allow the controls to be set at any desired point for balance. By tightening the screw the stop will hold the adjustment.

The stabilizer is made in one piece, the spar being notched slightly to fit beneath the main longeron. Check stabilizer angle carefully.

The tail wheel fork is a brass strip soldered to a nail, which is cemented in the block in the fuselage.

The wing braces are given in full detail on the plans, so no explanations need be given here except that the dihedral angle may be changed by the position of the small wood screw that holds strut to wing spars. Adjustment for torque may also be obtained by this means on models lacking ailerons.

Your own Fairchild 24 model may be colored to suit your own ideas. The original model was bright yellow with a dark blue stripe and black numbers.

A simple yet strong motor mount is suggested on Plate 1. It is cut from sheet aluminum and supports not only the motor but the gas tank, too. It is not necessary for the motor unit to slide out of the model, since any slight adjustments necessary can be made while motor is in fuselage due to the removable hood over the motor.

The mount should be bolted to the No. 2 plywood former with four bolts.

The coil may be mounted on the No. 2 former. A balsa box or cradle is built to hold the battery and can be installed in the fuselage after the model is entirely finished. Since the model is balanced by the weight of the battery, this installation should be left until last anyway. The model should balance at a point approximately in the center of the wing chord. Flight adjustments can then be made with the control stop screws.

The switch for your motor may be placed wherever desired on the model, perhaps the most convenient place being near the bottom of the fuselage between the batteries and the motor.

And that's all there is to the build-

ing of your gas-powered Fairchild 24 scale model. Use care in your test-flying, and you'll have a model that will last you many years. Of course, if you should have any trouble in building the model, write to me in care of FLYING ACES Magazine and I'll be glad to help you. And now here's the bill of materials—and best of luck!

BILL OF MATERIALS

ALL wood stock is hard balsa, except where otherwise indicated.

Fuselage: Longerons—four pieces spruce $\frac{1}{4}$ " sq. by 42". Uprights and cross-pieces—six pieces $\frac{1}{4}$ " by 36". Stringers—twenty-four pieces $\frac{1}{8}$ " by 3/16" by 36". Nose block—one piece $\frac{3}{4}$ " by 3" by 4 1/2". Dowels—one piece $\frac{1}{4}$ " dia. by 20". Landing gear—one piece $\frac{1}{8}$ " by 3" by 18". Wheel pants (if desired) one piece 1" by 2 1/2" by 12" for centers; one piece $\frac{1}{4}$ " by 2 1/2" by 24" for sides.

Wing: Spar web—four pieces 1/16" by 3/4" by 30". Cap strips—eight pieces spruce $\frac{1}{8}$ " by 3/16" by 36". Leading edge—two pieces $\frac{1}{2}$ " by 3/4" by 30". Trailing edge—two pieces 3/16" by 1/2" by 30". Built-up ribs—28 pieces 3/32" square by 36". Struts—three pieces spruce $\frac{1}{4}$ " by 5/8" by 36".

Tail: Ribs—printed on one sheet 1/16" by 3" by 18". Spars—two pieces $\frac{1}{8}$ " by 1/2" by 36". Leading edge—one piece 3/8" sq. by 36". Trailing edge—one piece $\frac{1}{8}$ " by 3/8" by 36".

One pint each of cement, paper adhesive, enamel dope. Twenty-six inches of heavy music wire to fit 3" airwheel hub. Two 3" airwheels; one 1 1/2" airwheel for tail. Three yards of silk covering material. Sheet aluminum for motor mount, exhaust, and hinges. Motor switch and wiring. Celluloid. Black dope for numbers and trim. Spinner for prop.

How to Photograph Your Models

(Continued from page 47)

may cause serious blurring of the picture, you know.

In the matter of film, we usually load with Super Sensitive Panchromatic ("SS" Pan). We have found that this is best suited for model photography since it is sensitive to all colors and gives a much better picture than the ordinary N.C. film. Then, too, it is faster with indoor, artificial light.

But as a matter of fact, we'd rather take our model pictures outside in good sunlight, rather than indoors, although this is mainly a matter of personal preference. And sunlight does allow the use of a slower film if you wish it. In using the

"chrome" named types of film, though, remember that any red-colored parts of your model will come out black in the picture, while the "SS" gives a better idea of the real color.

Now we've covered camera and film, it's time we got to the model we're going to photograph. Check the ship carefully. See that all parts are complete and in good condition. Remember that the camera spots many things the naked eye might miss, so inferior details may show to remarkable disadvantage in the finished print. Thus we say again—check carefully!

Refer now to the pictures that ac-

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company this article. See the one on the first page, of Jim Junior and his camera and tripod on the porch steps? The model of the Grumman Fighter F3F-1 is backed with an ordinary old window shade which is wide enough to conceal the whole background and of a color against which the model stands out. We use this shade to give "ground" effects like that in the big shot of the F3F-1 alone, taken with the setup shown.

We have found that the three quarter rear view is always a good setting, since the model can be shown without any particular part being too close to the camera with consequent-poor focus or blur.

So to make a picture like this one, arrange your ship in a similar manner on the porch or on a small table or shelf—in fact, anywhere that you can have the best lighting and can fix a prop or other support for the window shade. We used a sled, as you can see in one of the photos accompanying this article.

Adjust your camera on its tripod or makeshift support. You would usually shoot from slightly below the model for better results in making the ship seem like a real ship photographed from the ground. Sometimes, though, you can show better detail by shooting from above. And in this connection, don't take any of these hints as absolute "must's." They're suggestions for general use.

Now, if the day is nice and sunny and the model is in good light, adjust the shutter for a speed of 1/25 sec. at F.11, or 1/2 sec. at F.22. If the day is darker you'll have to use a longer exposure—or for sure results wait for a sunny day.

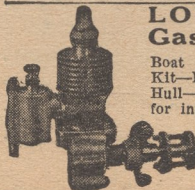
OUR two air pictures of the Grumman show a type of impressive model photo in which the ship is represented in a screaming power dive. To make such pictures as these, get a spool of thread strong enough to support your model. For the average ship size 50 will do, and you'll find grey thread shows less in a picture than black or white.

Now, remove the ship's prop and replace it with a disc of celluloid of the same size. Fasten the end of the thread to the plane so that the ship balances in the desired diving position. Adjust the model's control surfaces accordingly. Then throw the spool of thread over clothesline and hoist model to required height.

Select a sunny day for this shot

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with as little wind as possible. And if you can have someone else hold the spool end of the thread and to raise or lower the plane as needed, so much the better.

You don't need to stand so close to the model for such a picture as this. Nor will you need your portrait attachment (as a general thing). Shoot from a position where you will miss the clothesline, adjacent house tops, etc., to get a real sky picture. Adjust your focus, set the diaphragm at F.5.6 (quite wide), the shutter speed at 1/100 sec., and if you're using "SS" film you can bet on the picture!

You "long-time" modelers with big collections may wish to show all of your models "on the line." You can do this as shown in the pictures at the foot of the second page of the article. Note that the ships are lined up to give a good rear-to-side view to allow plenty of detail of markings, etc., unobstructed by the ships' wings. Set the camera a little above and in the rear of the line as shown in the photograph of Jimmy Junior and the ships. Stop down the diaphragm to F.16 or F.22, allow about 1/10 sec. exposure, focus on the middle plane, and you should get very satisfactory results.

We have now covered the most practical parts of model photo making. But we know you'll not be entirely satisfied until you have learned to make the more advanced pictures—the shots that show simulated aerial combat, landscaped ground scenes, and the like. So we'll tell you how to make these in an early issue. Watch for the article! And until then—Happy picture making!

Answers

TO QUESTIONS ON PAGE 29

- 1—Vieux Charles (French for "Old Charlie") was Guynemer's name for his very ancient Spad fighter.
- 2—Burble means the breakdown of the streamline airflow about a body.
- 3—A flaming onion was a special wartime incendiary shell comprising three blazing sections and which gave off a green glare.
- 4—If you pulled a toggle aboard a wartime bomber, you would release a bomb.
- 5—Prieur Rockets were French balloon-burning projectiles used in the War. They were cast from racks fitted to the interplane struts of Nieuport scouts.
- 6—No. The 94th Pursuit Squadron now uses an Indian Head insignia mounted on a white arrow-head design.
- 7—No. Tom Sopwith was the first to turn out a successful tripe fighter.
- 8—Major Oliver Draper, of the Royal Naval Air Service, was known as the Mad Major.
- 9—Lieut. Alan McLeod was the youngest Canadian airman to receive the Victoria Cross.
- 10—Oswald Boelke was the real organizer of the German Circus system, although von Richthofen was often erroneously given credit for the idea.

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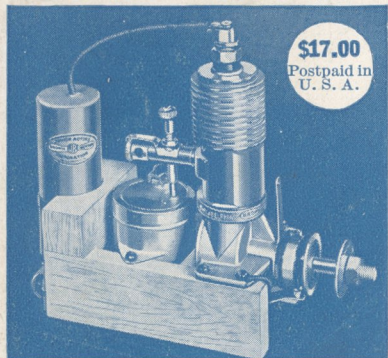
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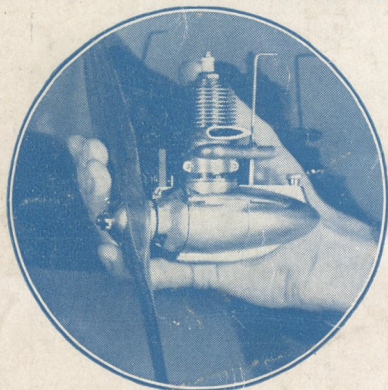
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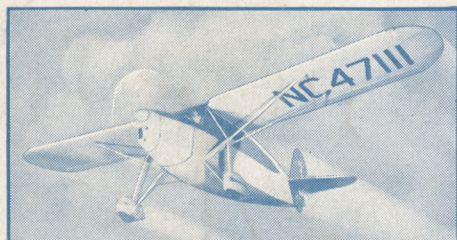
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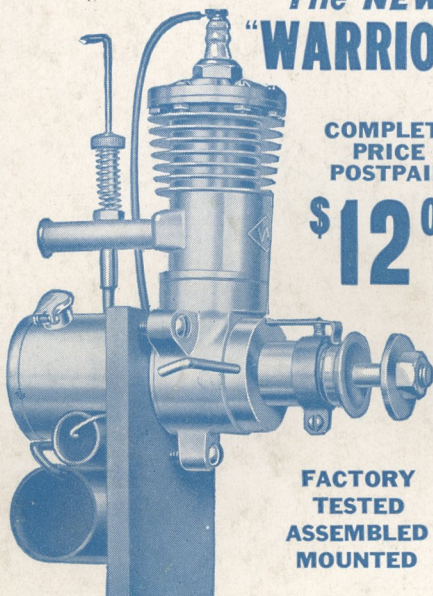
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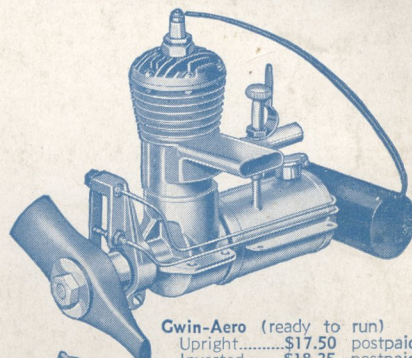
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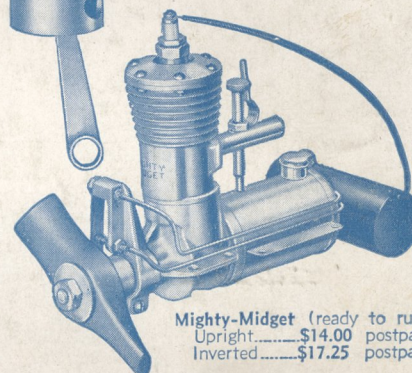
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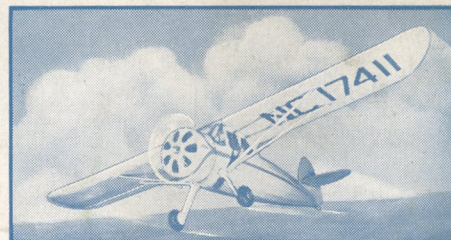
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