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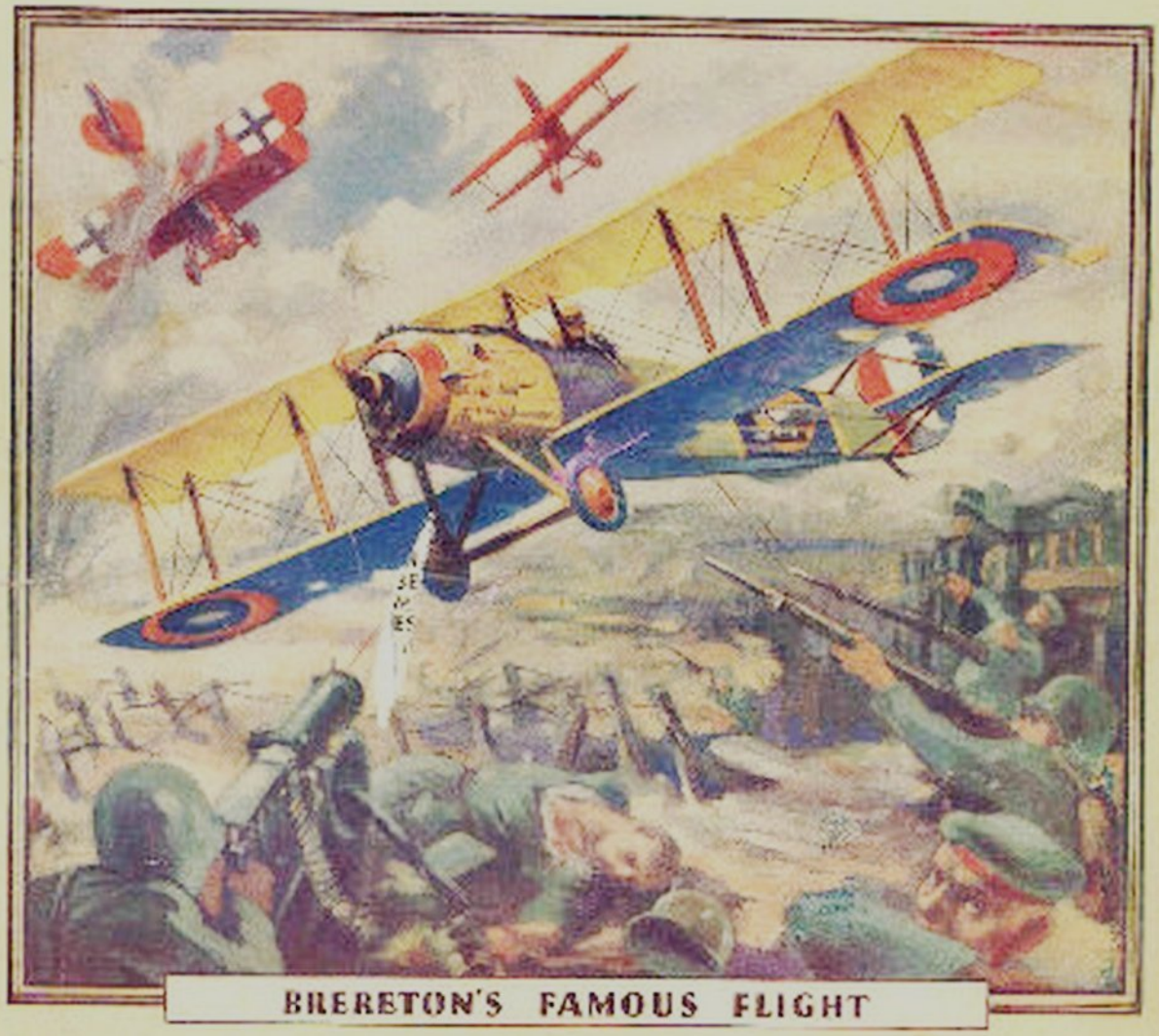

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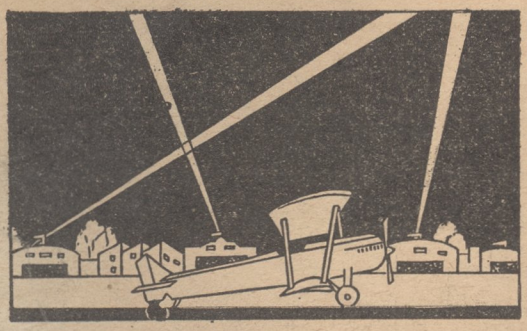

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FLYING ACES

A. A. WYN, *Editor*

VOLUME XVIII AUGUST, 1934 NUMBER 1

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Legion of the Lost

By Donald E. Keyhoe

Author of "Menace of the Unmasked," "The Midnight Ace," etc.

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Philip Strange Faces the Challenge of the Blue Death!

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Illustrated by Eugene M. Frandzen

CHAPTER I

Death in Blue

IT was an hour till dawn. A faint leaden gray was visible along the eastern horizon as Philip Strange dived his Spad for the field of the Thirty-third.

Down by the hangars, a bucket of waste was blazing. Strange's green eyes brightened. They were evidently preparing for an early patrol. He steepened his dive, and the Spad howled down through the raw night air. Noting the smoke from the flare, he swung into the wind and leveled off. As he taxied toward the line, he saw that only one ship was out—a Nieuport. Beyond, he vaguely glimpsed an empty hangar. He let the Spad roll to a stop, idled the engine for a few moments, then threw the switch. The Hispano coughed and died.

To Strange's suddenly alert senses, the hush which followed was ominous. He climbed out quickly, took a hasty look about him. The flickering light from the burning waste fell on the lone Nieuport.

Strange stared at the plane. Only the jagged stump of a propeller remained, and the engine cowling was riddled with bullets. As he went around the Spad, he saw a figure back in the shadows, facing toward him across the Nieuport's turtleback. He started, reached swiftly for his gun as he caught the gleam of metal in the man's hand. Then the flare blazed up, and he halted in amazement.

The face of that glaring figure was a weird and ghastly blue!

With a hoarse exclamation, Strange started back. The figure did not move. After a tense moment, Strange stepped forward, pistol still uplifted. Then he saw a look of agony frozen on that eery blue face, and he knew the man was dead.

Dazedly, Strange let his eyes pass over the queer, half-clad figure. The bare arms and throat were that same bluish hue. The man was leaning forward against the side of the Nieuport, one arm on the turtleback. In his blue fingers was gripped a Colt .45 pistol. His dilated eyes seemed almost alive in their frightful agony.

Strange shivered and went around the Nieuport's tail to where the dead man stood. He touched one arm and found it rigid. Then the light flickered up again and he saw the red stain on the back of the man's undershirt.

"Shot in the back," Strange muttered. But that did not explain the bluish skin.

He gazed around, saw bodies on the ground near one of the huts. He went over quickly. All were dead,

Sensational "Philip Strange" Mystery

The pilot of the Breguet fired a rocket—and down came that traitor mob of killers—in Allied ships.

The hush that greeted Captain Philip Strange on that dark Allied drome was ominous. And back in the shadows that grim foreboding was fulfilled, for there lay the dead bodies of the men who had once fought and flown there—and the face of every one of them was a weird and ghastly blue.

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crumpled in grotesque positions, as though they had stiffened even in falling. All but one had been shot, and this one had been knifed or bayoneted. Every face had that same blue and ghastly color.

Strange drew a long breath. In every direction it was the same—men struck down apparently with hardly a struggle, bodies stiff in that queer blue death. He saw one group of at least forty men, obviously mowed down by machine-gun fire. Five or six, seemingly untouched by the bullets, had been brutally bayoneted or stabbed. Two or three had been shot through the head by pistol-caliber slugs.

As he gazed over that throng of blue-faced corpses, Strange felt a wild urge to start the Spad and be gone from that horrible scene. He drove it back with an effort and went into the nearest barracks.

Here, too, were dead men—a scattered few who had evidently tried to hide. They had been shot down. The other huts told the same story of ruthless butchery. Stunned, Strange forced himself on to a final search of the headquarters hutment.

The door was partly opened, and through the aperture he saw an oil-lamp dimly burning on a desk. A presentiment of something evil flashed over him as he stepped inside. He took a quick glance around, then jumped back with a muttered oath.

Pinned to the wall by a bayonet was Trent, the squadron commander. There was no sign of blue in his face, though it was twisted with frightful pain. On his breast, held by the dripping bayonet, was a squadron roll-call sheet.

Drop by drop, the blood fell upon the names, slowly blotting them out.

For almost half a minute Strange stood there, looking on that sinister picture. At last he roused himself and went to the switchboard in the orderlies' pen. As he had expected, the lines had been put out of commission. He was trying for a second time, to make sure, when he heard the sputtering roar of an approaching motorcycle.

He hurried outside, saw the headlight of the machine appear from the wooded lane that led to the nearest highway. He ran toward the first row of huts, where the motorcycle seemed headed. Suddenly it jerked around. As the light fell on him, it grated to a hasty stop, and an officer jumped from the side-car. Clutching his automatic, the man ran toward Strange. With an exclamation, he halted and lowered his gun.

"Phil!" came a familiar voice. "What are you doing here?"

Strange blinked into the light, recognized Noisy Jay, one of his twin aids.

"Never mind that," he said huskily. "Something terrible's happened."

Before Noisy could answer, an official G.H.Q. car

dashed up beside the motorcycle. Through the gray of early dawn, Strange saw two or three cars behind it. The first car had hardly halted when a bulky figure jumped out, and Strange saw it was General Thorne, the Chief of Air Service.

Thorne started toward them; then he saw the first group of dead lying back in the shadows. He stopped short, and a stricken look crossed his stern, weather-beaten features.

"Good God, they've struck again!" he groaned.

The men from the other cars came running up beside him. Strange saw Tom Jay, Noisy's twin, Major Bell, aid to Thorne, and several officers from Second Corps Headquarters. Back of them was a little knot of drivers and Staff bodyguards.

There was a chorus of horrified exclamations as the group saw the gruesome scene.

"The same as the 65th," whispered Major Bell.

Thorne turned with a haunted expression.

"There may be some left alive," he muttered. "Spread out and search—"

"No use, sir," Strange said quietly. "They're all dead."

Thorne wheeled at the sound of his voice. "Strange! I thought you were in London."

"Colonel Jordan sent for me. I was to meet Major Blount here."

"Then you don't know what's been happening?" the general said tensely.

"Only this." Strange gestured toward the dead men.

The faint drone of a plane sounded from the north. The entire group stared anxiously into the graying sky. After a few moments, the peculiar beat of a Mercedes was distinguishable. To Strange's surprise, looks of relief flashed over the officers' faces. Then General Thorne shook his shaggy head.

"Don't be too sure. They might start using Boche ships. They've tried every other trick."

"It's just one ship," said Strange.

The others looked at him oddly, then exchanged glances.

"That's one of their damnable tricks," grated Thorne.

"That ship's coming down here!" exclaimed Tom Jay.

Major Bell whirled to the group of armed guards. "Get your guns out!" he ordered. "General, I think we'd better clear out of here, anyway."

"Wait a minute," growled Thorne. "We'll see what this is."

A CHECKERED Albatross was plunging down from the clouds. As it swooped down to land, Strange saw fabric streaming from bullet-torn wings.

"Whoever he is, he's been in a real scrap," he said tersely.

The checkered ship touched ground. The pilot was out of the pit in a flash, running desperately toward the huts. Suddenly he seemed to glimpse the dead men for the first time. He jerked to a halt, and Strange saw that he was swaying.

"Get him!" snapped Major Bell.

Several men dashed toward the pilot. He whirled and started to run for his ship. Abruptly, he caught at his side, stumbled and fell. Strange was one of the first to reach him.

As he turned the man over, he saw a red line across his jaw, where a bullet had creased it. There was also a red stain at the side of his flying-suit. Strange knelt and tore open the suit. An American Army uniform lay beneath.

"A spy!" blurted Major Bell.

"Maybe not," said Strange. "We probably won't find out for some time. That's a bad wound."

"What beats me," exclaimed Noisy Jay, "is the way he hopped out of there and ran when he was hurt like that. He did it in nothing flat."

"Must have been keyed up from shock." Strange ripped a piece from the pilot's shirt for a pad on the wound. "Shock can give a man incredible power—" He stopped, for the white, set face of the stranger had twitched suddenly.

The man's lips began to tremble. Strange put his ear closer to listen, for the Mercedes was still idling. The muttered words were in German.

"I hear, O Master! I live only through thee—"

"Guess that settles it," grunted Major Bell. "Kraut lingo. What's he saying?"

"If you'll keep still," snapped Strange, "maybe I can find out."

The wounded man's eyes shot open. In a split second the daze was wiped from his eyes, and into their depths came a queer, unearthly light. As though his wound were nothing, the man jerked himself up to a sitting position, whipped a lightning gaze over the staring men.

Strange started. Never before had he seen such a swift leap out of unconsciousness. The man must have been faking, and yet there was something . . . .

In a flash, the weirdly bright eyes whisked over the guards, the Corps officers, and the cars back in the shadow. At incredible speed, they seemed to register the entire scene. Words ripped from his lips with the speed of bullets.

"Staff officers! Thank God! Get me to Chaumont, quick."

The words were in English. Bell and Strange looked swiftly at each other, then at Thorne. Instantly came another staccato drive of words, so fast Strange could hardly catch them.

"You think I'm a spy. That ship—this uniform! I'll explain *en route*. Get me to Chaumont."

Strange made a hasty test. "It might have worked—if you hadn't snapped out of that fake faint so quickly," he said.

The pilot whirled to his feet in a frenzy.

"I am no normal man. Guard me, chain me—but do as I say. I die a frightful death to do this."

As the flood of words tumbled forth, a kaleidoscopic maze of emotions flashed over the pilot's white face. The man was like some creature from another world, his whole being keyed to a fast and furious pitch. Strange could even sense the swirling turmoil of the man's seething thoughts.

"Who are you?" he asked bluntly.

A tortured look flitted over the swift-changing face.

"One who has only hours to live. No—not this wound." The man made a desperate gesture. "In a few hours—perhaps only one—I shall be gone. Get me to Chaumont while there still is time!"

The terrific despair in his eyes decided Strange. He nodded abruptly.

"I'll take a chance." He looked at the staring officers and guards. "We'll have to carry him. He's liable to collapse."

"No, no, this is nothing!" The pilot seized Strange's arm with amazing strength. To Strange's astonishment, he found himself propelled toward the cars. "We must run," the man said tensely. "They may discover my trick—"

He jerked to a halt, stood listening intently. Then a look of terror leaped into his face.

"The Murder Patrol!" he moaned. "They're coming

after me. They're on the way."

Bell and the others broke into excited cries. The major whirled to General Thorne.

"Good Heaven, sir! You must get away—"

The wounded pilot did not seem to hear him. He was staring into the sky, stark terror in his eyes.

"We must get to the cars, sir," Bell shrieked at Thorne. "You heard what he said."

"Keep still," rapped Strange. "There's nothing up there."

The Albatross pilot whipped around toward him.

"They're splitting up—searching. They know I'm wounded . . . . ship crippled . . . . couldn't get far."

Strange shook his head. He was convinced now. The man was out of his mind.

"I forgot," the fast-driving voice said hoarsely. "You can't hear. They're too far."

Two or three of the Corps officers started hurriedly for the cars, one of the guards with them. Strange looked after them, contemptuously.

"Listen," moaned the wounded pilot. "One has separated. He's coming here!" He swayed again. Terror seemed to do what the pain of his wound failed to effect.

Strange caught him, lowered him to the ground. Then suddenly he spun around, for the muffled roar of a ship had become audible above the drone of the Mercedes. The wounded man pulled himself up with a wild effort.

"A gray Spad! God help me!"

Strange stood up. Only a flitting shape was discernible, diving toward the field. He glanced aside at Thorne and the Jays, and was surprised to see their faces taut and white. Major Bell made a last despairing plea.

"If not for yourself, sir, then for the Service. You owe it—"

"Go ahead," said Thorne curtly. "I'm sticking with Strange."

Almost wringing his hands, Bell remained. Three men only, beside the Jays, were left from the group that had followed Thorne. One was a Staff officer, the others enlisted bodyguards.

Strange gazed up at the descending ship. It revealed itself as a slate-gray Spad. He glanced down uneasily at the wounded man. What kind of creature was this who could see and hear beyond the power of normal men?

CHAPTER II

THE MURDER PATROL

THE gray ship had been headed to one side, but it turned sharply and circled the field. As it glided down, he saw it bore American cocardes, but no squadron insignia. It looked like . . . .

"That's a G-2 ship," he said quickly.

"You're right," muttered Tom Jay. He gave a sigh of relief.

But the Albatross pilot seemed driven to desperate action by the sight of the landing plane. He got to his feet, whirled as though to flee. Strange tossed a glance at the two bodyguards.

"Take care of him. He's likely to faint again."

The Spad rolled to a stop, swung under expert handling into a turn so that the nose pointed into the clearing. The pilot climbed out quickly, leaving the engine idling.

Strange watched this narrowly, but as the Spad pilot turned toward them, he laughed abruptly.

"It's John Rawlins! There's your menace!"

A dubious looked passed over Major Bell's round face. "You mean you know that pilot?" he asked.

"Certainly. He's an Intelligence officer—used to be in my unit."

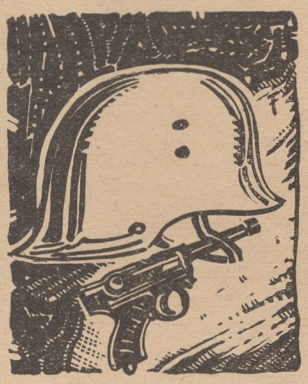
Rawlins approached swiftly. He was a small man, and Strange recalled that he had been rather deliberate in his movements. But now he seemed possessed of some driving excitement. He gave the Albatross a quick, probing glance, then shifted his gaze to the group about Strange. He gave a slight start as he saw Strange and Thorne, then saluted smartly.

"I see you know, general—this terrible thing."

An inexplicable uneasiness went through Strange as he heard Rawlins' voice. There was something about it . . . .

"Yes," said Thorne. "But you—"

"Ah!" said Rawlins. "I see you've caught him."



This time Strange was certain. The Intelligence man was under some fierce tension, was hiding some odd emotion.

"I was afraid he'd get away," Rawlins went on.

The Albatross pilot groaned as Rawlins started toward him. Strange held out one hand.

"Just a minute. What is all this?"

Rawlins pushed up his goggles with a swift movement. Strange stiffened. There was the same bright, almost unearthly light in Rawlins' eyes that the other man's held.

"This man is one of the butcher mob back of these killings," Rawlins said crisply. "He was contacting a spy near Bar-le-duc, and I trapped him. He got away—"

"He's tricking you! For God's sake, kill him while you can!" cried the wounded man.

Rawlins smiled gently at Strange, but the smile left Strange cold. There was something about it like the stare of a snake, a fixed glitter.

"Well, he's in good hands now," Strange said calmly. "We were just going to take him to Corps Headquarters and pump him, anyway."

The small man's eyes flickered briefly. "Good," he clipped. He smiled again. Strange felt oddly annoyed, for there was a patient manner about the man. He had changed oddly.

"I'll leave him in your hands, then," Rawlins went on. "I'll meet you at HQ."

He turned toward his idling ship. Strange's sharp eyes rested on the two pistols he carried. The holsters were tied down. Rawlins, slowest shot in the G-2 air unit, wearing twin-guns and tied-down holsters!

"Wait," he said curtly.

Rawlins did not stop. Strange flung a swift look at the two armed guards.

"Get to that Spad! Don't let him get into it."

The two men dashed toward the gray ship. Rawlins turned slowly, stepped to one side as they ran to the plane. Near the tail of the Albatross, he abruptly halted. The next few seconds were like a nightmare to Philip Strange.

Rawlins' quivering hands flashed to his hips. There was but a blur, and four shots crashed in a single roar. Both guards fell dead instantly. With a wild cry, Rawlins whirled back toward the wounded pilot.

"And now—the end of a traitor!"

Strange's gun was halfway out, but Rawlins had fired and sprung for the checkered ship before he could even take aim. The Albatross pilot toppled to the ground, shot between the eyes.

Then the Albatross lurched forward.

Strange gave a snarl of rage and sprang after it. Noisy Jay caught him and frantically hauled him back.

"He'll kill you, Phil—"

"Let me go!" snarled Strange. He tore himself free, but the checkered ship was hurtling down the field. With an oath, he raced to the Spad. The Jays were charging after him, yelling for him to wait, but he struck the throttle and sent the ship thundering down the drome.

THE Albatross was lancing up in a mad chandelle. Strange held the Spad's nose down, gaining speed on screeching wings. Suddenly the checkered ship snapped around at the top of its climb. Slanting steeply down, it plunged for the lifting Spad.

Strange swept his stick back and drilled up at a crazy angle. With a twitch of controls, he corkscrewed around for the other man's tail.

Br-r-r-t-t-t-t! Strange's jaw dropped. With a lightning renversement, the other man had cut him off. Rawlins—who had been his worst pilot!

A vicious burst hammered into his wings. He flung out that deadly torrent, ripped around in a slashing bank. His Vickers pounded—and fired into empty space! Strange dazedly crossed his controls. That devil had all but vanished under his guns. He threw a swift look around—and stared into blazing muzzles.

The crash pad before him ripped into tiny bits. He sprang to one side, ruddered madly out of the deadly fusillade. Part of a strut gave way. Tracers scorched past his head.

He set his jaw, whipped into a shrieking Immelmann. As he jerked around, the tail of the Albatross for a second lay in range. He tripped his guns, saw the tracers burn for a split-second across the darting wings. Then the checkered ship catapulted out of range.

Strange swore in baffled fury. That traitor wasn't human! He'd outguessed every move.

T-t-t-t-t-t! A short, chopping burst raked over his cowl again. He snapped one wing down, flung the shaking Spad around. With every bit of his seething brain, he strove to catch the other man's murderous thought. He had to succeed—or he was finished.

With a snarl of triumph, Strange stood the Spad on its tail. The Vickers crashed out a deadly hail. The checkered plane, whirling in a mad split, plunged through the tangle of tracer. Thank God, he had guessed right!

There was a puff of smoke; then flame spread from the nose of the Albatross. Rawlins leaped up in the pit. For one instant he stood with both hands raised to the sky, then pitched over the side and into space.

Shaking, Strange dragged his eyes away from the falling figure. He circled the field three times to calm his twitching nerves. His brain was on fire. In that last instant, he had put all the energy of his being into that mental effort.

He saw the Albatross blazing, down at the edge of the field. He closed the throttle and slowly went down to a landing. General Thorne and the Jays rushed to the side of the riddled ship. Strange cut off the motor, climbed out with a dazed expression. Thorne gripped his arm excitedly.

"Strange, do you realize you're the first to escape in an actual fight with one of those devils?"

Strange shook his head slowly. "Rawlins," he muttered. "I can't believe it yet."

Thorne's face clouded. "An American—one of that mob," he said huskily. "It was bad enough before, but now—"

"You and Major Bell have mentioned a mob two or three times," Strange said quickly. "Who are they?"

Thorne pointed to where the body of the Albatross pilot lay on the ground, still at last.

"You heard what he said?"

"About the Murder Patrol?"

Thorne nodded soberly. "That must be their name for it."

Major Bell tugged at the general's sleeve. "It's dangerous to stay here, sir," he protested. "If the others should show up, it would be curtains."

Thorne motioned to Strange.

"He's right. This is one time when it's madness to stay and fight. We'll get back to Second Corps."

"I'll fly there," said Strange, turning toward his Spad.

"No, you won't," Thorne grated. "You come with me. If you met the rest of that pack, all hell wouldn't save you. It's a miracle you're alive now."

Strange followed him, with the Jays and Major Bell.

"I was to meet Major Blount here," he recalled suddenly.

"He's probably with those poor wretches." Thorne gestured toward the blue-faced corpses, looked away quickly.

"I didn't see him. In fact, I didn't see more than three or four, besides Trent, that I could tell were officers."

Thorne halted beside his car and stared around. "But the pilots—"

"Didn't you see that empty hangar?" asked Strange.

Thorne started. "No — everything happened so quickly."

"Not a ship in it, and I think the others are empty, too."

The general turned to Major Bell. "Go see about that," he ordered.

In less than a minute Bell was back, panting.

"Gone, sir!"

Thorne's rugged face lit up. "They must have escaped. Get in here quickly, you men. We'll dash back to Corps and check up."

THE Jays piled in with the driver. Strange and the major sat back with Thorne. In a moment the car was roaring back through the wooded lane. Thorne gazed sharply at Bell.

"What about the 65th? Were all the ships there?"

The major scratched his chin uncertainly.

"I wouldn't swear to it, sir. We were so horrified on finding those bodies."

"Did you see any pilot's bodies?" Strange interrupted.

"A few, and I naturally supposed they were all killed."

Thorne's hopeful look increased. "Maybe we haven't lost the entire squadrons, after all," he remarked.

Strange frowned. "You haven't told me yet what this Murder Patrol is," he said.

"God only knows," said Bell heavily. "Before this business with Rawlins, we thought they were a bunch of Boche killers using Allied ships. But now—"

"When did they show up?"

"They appeared first about a week ago, flying Nieuports and Spads. There were only twelve of them, but they jumped a whole squadron and wiped it out in less than a minute."

"Who saw it?" demanded Strange.

"Archie and balloon outfits. They said it was the fiercest fight they'd ever seen. They were using incendiary bullets, and they got most of the squadron in flames. Then they hopped into the clouds and vanished. Since then, there have been a hundred men shot down by that same mob. They fight like fiends. Even our best aces seem helpless. The word's gone out that it's suicide to fight back when they strike. They move so fast that

(Continued on page 69)

Snapshots of the War!

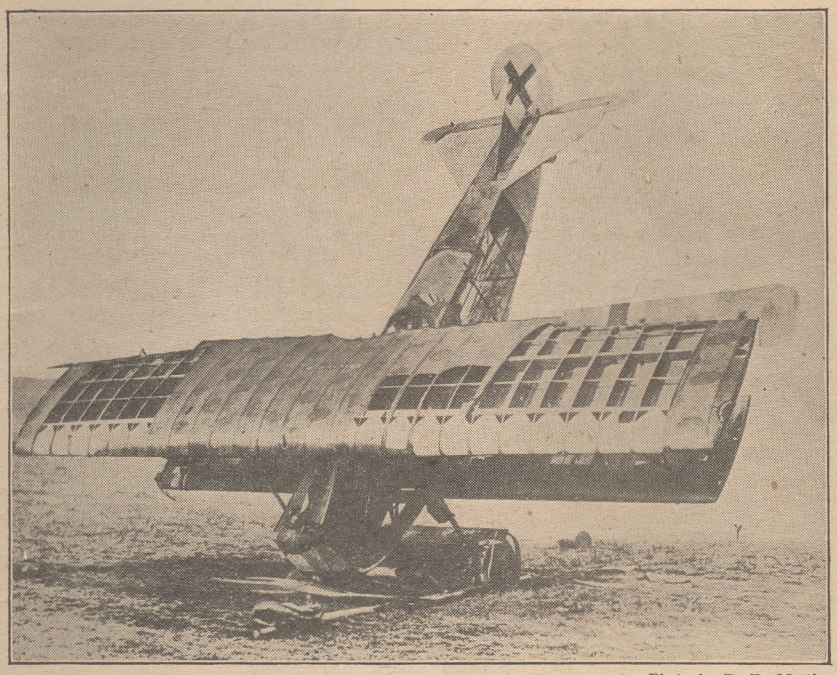


Photo by R. R. Martin

Here's one to show you how the Fokker wings were made. This D-7 was shot down on the Western Front and, in tearing off the insignia, the captors disclosed the detail of the construction. Note the leading edge stiffening formers which were made of strips of three-ply.

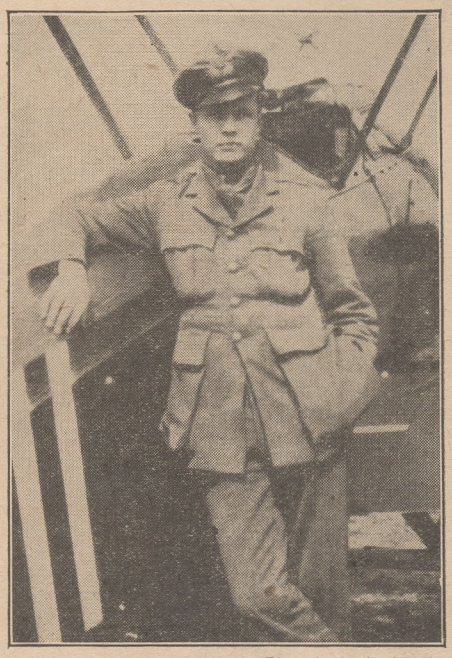


Photo by R. R. Martin

The man who is credited with having finished the flaming career of Baron von Richthofen, Germany's ace of aces! Captain Roy Brown, the Canadian of No. 209 Squadron, R.A.F., and the Camel which he was flying when he downed the Red Knight of Germany.

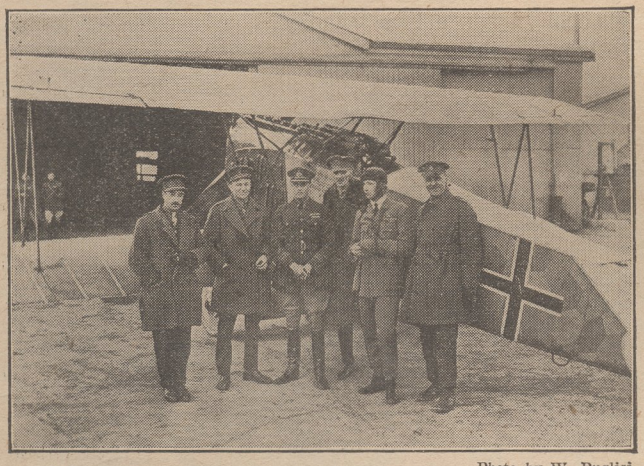
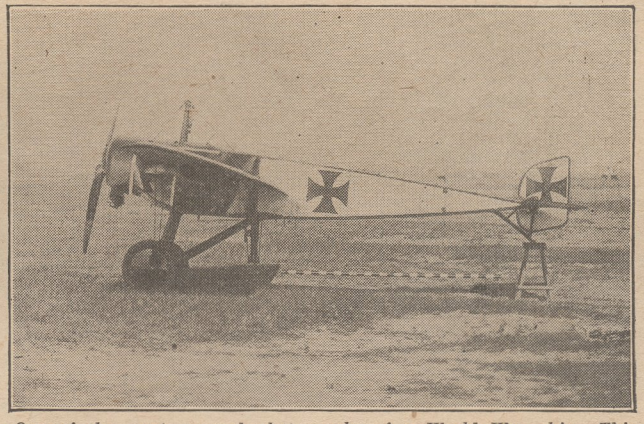
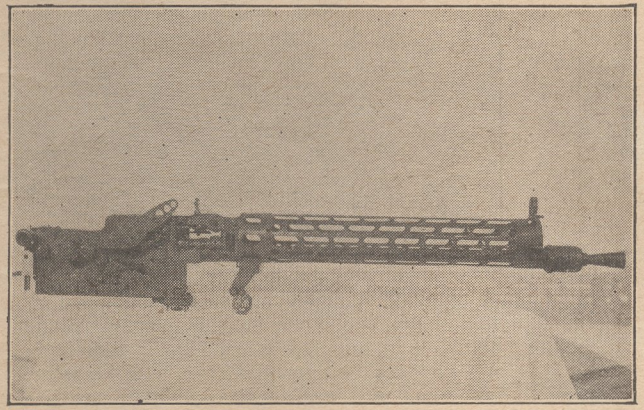


Photo by W. Puglisi

Major William Barker, V. C., shortly after his famous fight with sixty Germans. Here he is, still with one hand in a sling, standing with one of the seven enemy ships he brought down. He is surrounded by British Staff officers, and the artillery officer who confirmed the fight. Barker is the second from the right.



One of the most unusual photographs of a World War ship. This is the little-heard-of Fokker E-2, built late in 1914. Notice that it does not carry fixed machine guns, for the interrupter gear had not then been invented.



A real close-up of the famous German Spandau machine gun. The strange muzzle-cup on the end of the barrel was a gas-recoil arrangement to speed up the rate of fire. Note the original water jacket, slotted out to allow the barrel to be cooled by air.

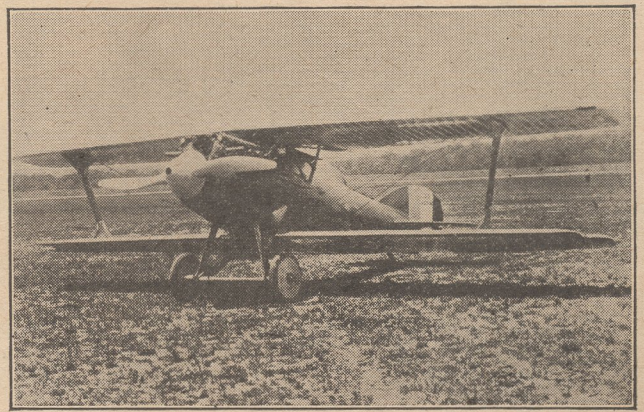


Photo by W. Puglisi

Another rare war plane, the Vickers 16-H Fighter, that came out late in 1918—too late to be used to any great extent. It had the old Camel's anhedral on the top plane, it will be noticed, and a Rolls-Royce "Lion" engine. Top speed? About 132 m.p.h.

Broncho Busters

U. S. NAVY TEST PILOTS IN THE SKIES!

Thrilling Article

By Lieutenant H. Latané Lewis, II

Author of "Flying on Top of the World," "Lifeboats of the Sky," etc.

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Here you see the U. S. Naval Air Station at Anacostia, Washington, D. C., where all the flight test work for the Navy is carried on. Recognize the Capitol in the background?

OUT of the sky over the U. S. Naval Air Station at Washington, D.C., some time ago, came the scream of a diving plane, increasing in a mighty crescendo. High over the field, there was a tiny silver speck in the sky which grew larger and larger with the suddenness of an approaching comet.

Standing on the concrete apron in front of the hangars was a little knot of Naval pilots, members of the Flight Test Section. Their deeply tanned faces were tense and drawn, their hands thrust tightly into pockets as they gazed upward at their comrade. Each of them was mentally making that dive with him.

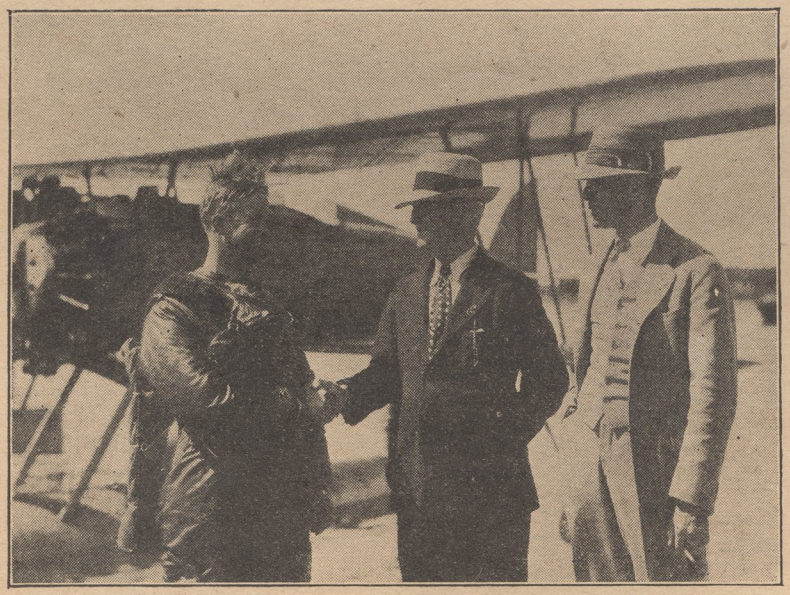
Inside the cockpit of the plunging plane was Lieutenant George Cuddihy, one of the Navy's crack test pilots. Down, down he raced at terrific speed. The roar of the engine and the shriek of the wind could be heard all over Washington. People stopped in the streets and stared open-mouthed at the sky.

The officers watching at the Air Station were strangely silent. That ship that Cuddihy was testing was a foreign-built pursuit job that had just been brought to this country. It was a vest-pocket-edition airplane, with a tremendous engine in the nose. The appearance of the little ship was positively vicious. It looked like a killer.

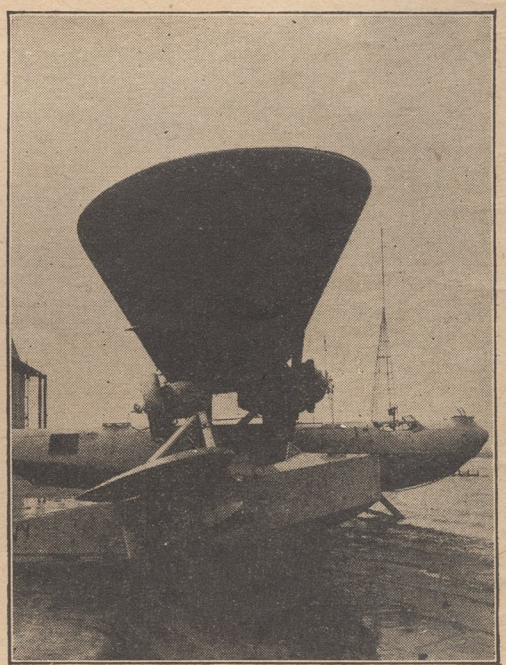
Cuddihy had taken it up to 10,000 feet. Here he had leveled off for a moment; then he had pointed its nose straight toward the earth and given the engine full gun. Tearing through space like a bullet, the little silver plane shot downward.

He was getting close to the ground now—too close. He ought to be pulling out. Instead, the plane continued its mad plunge. Suddenly, the watching group of officers sucked in their b r e a t h. Something had g o n e w r o n g. Cuddihy was one of the best flyers in the service, a

All Photographs, Official, U. S. Navy



At the left is Lieutenant C. C. Champion, whose daring exploit of falling seven miles in a burning plane is described in this article. Here he is being congratulated by the late Admiral Moffett after setting the world's altitude record in the "Apache"—back in 1927.



A contrast in the types of planes tested by the Navy. The large craft is a patrol plane (P3M-1), while the small ship alongside is designed to be operated from a submarine. The wing of this ship can be quickly attached and detached, and the whole machine can be stored within a special compartment inside a sub.

of the Air

When the average man on the ground sees a Navy plane being put through its paces, he thinks merely that its pilot is in a playful mood. For he does not know that the man in the cockpit of that wildly cavorting plane is one of the Navy's cream of aviation, a member of the Flight Test Section, whose daily job it is to defy danger and death in order to make flying safe for those who are destined to fly the ships after him. All those wild dives, zooms and spins mean something!

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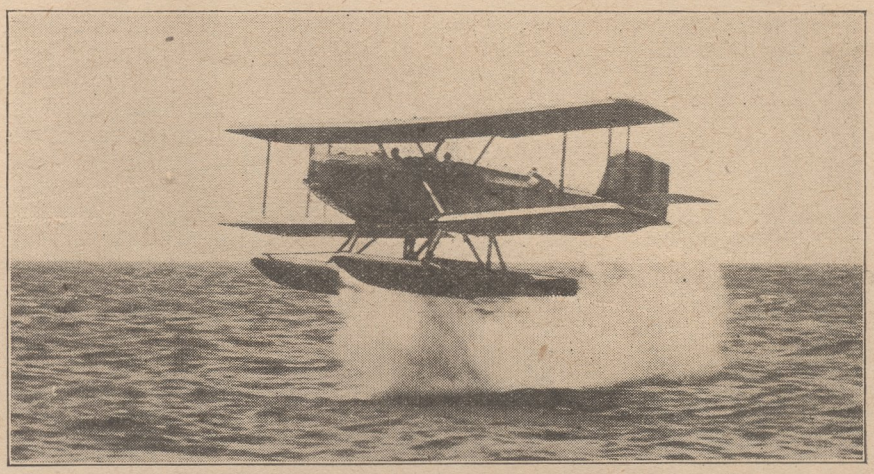


A U. S. Navy Torpedo plane launching a torpedo during one of its practice flights. Looks deadly, doesn't it?

Schneider Cup man. He would not purposely dive a new ship so low.

He never came out of that terrific, howling two-mile dive. Straight into the ground the plane drove itself like a rivet for twenty feet with an earth-rocking crash. Rescuers worked for several hours before they could extricate the broken body of the gallant pilot.

It was a dramatic, tragic demonstration of the weakness of this type of plane and a brave sacrifice on the part of Cuddihy. Otherwise, the plane might have been accepted for use in the Navy and would have dealt death to many pilots.

This was a striking example of the dangers of the work carried on by the Flight Test Section of our Navy. It is the job of this little group of flyers, who are the very cream of naval aviation, to determine whether or not a new type is satisfactory for carrying out the work for which it was designed and whether or not it will be able to stand the terrific stresses of military flying.

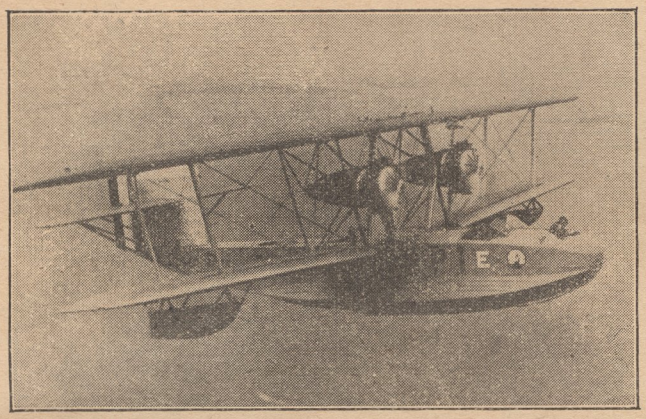
A test maneuver which shows a Navy fighting plane rounding a pylon at high speed at the Naval Air Station at Washington, D. C. See the good old Stars and Stripes floating from the pylon's top?

When the average man on the ground sees one of these ships cavorting about the sky—diving, zooming, spinning, and roaring down close to the water at high speed—he may think that its pilot is just in a playful mood. On the contrary, he is performing an intensely serious work. Strapped to his leg is a recording pad on which he is hastily jotting down information while he flies.

The Navy does not build any of its planes. All of them are constructed by private manufacturers under a contract which guarantees its specifications and performance. When a new type is under consideration, it is taken to the Flight Test Section and is first given what is known as the contractor's demonstration.

A pilot from the company that built the plane takes it aloft before a board of Naval officers and

The late Lieutenant George Cuddihy, one of the Navy's crack test pilots. His fatal crash while testing a new vest-pocket airplane with a tremendous engine in its nose is described in this article.



One of the largest planes ever to be tested by the Navy Flight Test Section. This one, a patrol plane, is the Martin PM-1.

demonstrates its general characteristics. He must show that the plane can be landed satisfactorily on the ground, or, in case of a seaplane, on the water; and that it can be landed upon a carrier deck. He performs various standard maneuvers and demonstrates that the plane can withstand certain stresses.

In this test, the plane is dived vertically for several thousand feet until it reaches "terminal velocity." That is the point where the resistance of the air equals the force of gravity, and no matter how far the plane is dived, it will not go any faster. Then it is abruptly pulled out. This imposes a terrific strain, amounting to many tons of weight, and if the plane has been improperly designed, the pilot is apt to find himself minus wings and headed for parts unknown.

Lieutenant Fred Trapnell, U. S. N., who rode a plunging ship down from 15,000 to 7,000 feet after the tail had given way and the plane was out of control. That's danger for you!

If the ship gets through the contractor's demonstration satisfactorily and gives evidence of being able to carry out the specific job for which it was designed, it is then turned over to the Flight Test Section for exhaustive tests by Navy pilots.

Before the plane is taken into the air, it is gone over as thoroughly as a doctor examining a patient with stethoscope and X-ray. It is weighed, empty and fully loaded, the engine tested, and photographed from all angles. One of the most important items of equipment to be tested is the flotation gear. As Navy airplanes operate hundreds of miles out at sea, they must be equipped with apparatus to keep them afloat in case of a forced landing. Machine guns are next installed and synchronized with the engine so as to fire through the propeller. Then the radio is inspected and installed. When these preliminary details have been completed, the craft is ready for actual flight tests.

The first test is for speed. Runs are made over a course 13,500 feet long on the Potomac River and are timed with a stopwatch. They must be made at very low altitude to prevent inaccuracies due to climbing or diving and to permit the engine to develop full horsepower. The runs are made in two directions to eliminate the effect of wind. If the plane bucks a headwind while flying in one direction, it will have a tailwind of the same velocity on the way back, which will even things up. After the top speed of the plane has been found, the engine r.p.m. is gradually reduced until the plane stalls, giving the lowest speed at which it will stay in the air.

Tests are made to find the rate of climb of the plane and its ceiling. The ceiling tests determine first the service ceiling, which is the point at which the plane ceases to climb over 100 feet per minute; and then the absolute ceiling, or the point above which no amount of coaxing will push the plane. A baragraph is carried which makes a continuous record of altitude for every minute that the plane is in the air.

The plane is now tested for stability—lateral, longitudinal, and directional. It is thrown into all sorts of abnormal positions and must demonstrate its ability to recover quickly and easily.

The spin test is one of the most important of these maneuvers. Some airplanes, when once thrown into a spin, are impossible to bring out. Others have a tendency to go into a flat spin, which is highly dangerous, since the controls lose their efficiency. It is obviously important to discover any abnormal spinning characteristics before a plane is accepted.

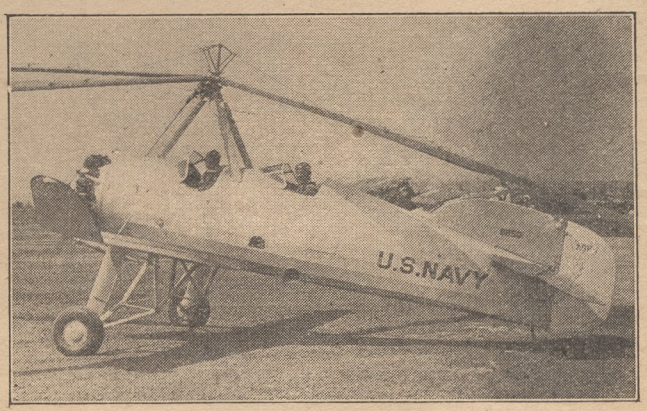
Then comes the maneuverability test to determine how well the plane can be handled. The smaller types are given a thorough acrobatic test. They are kicked about the sky in every possible maneuver and are all but turned inside out. All the maneuvers carried out in the contractor's demonstration are duplicated with a Navy pilot at the controls. The terminal velocity dive, which is also repeated, is one of the most dangerous tests and has probably caused more crack-ups than any other.

The plane now performs the maneuvers characteristic of its purpose. A fighter type is required to carry out pursuit tactics. A torpedo plane goes through the maneuvers that it would have to do in actual warfare. Each of the other types, patrol, observation, dive, bomber, and so on, are required to do the job that will be expected of them in active service.

Machine guns and bomb racks are next tested. The plane is taken down on the Chesapeake Bay, where it creates a miniature war all its own. The guns are actually fired, and dummy bombs are dropped into the water.

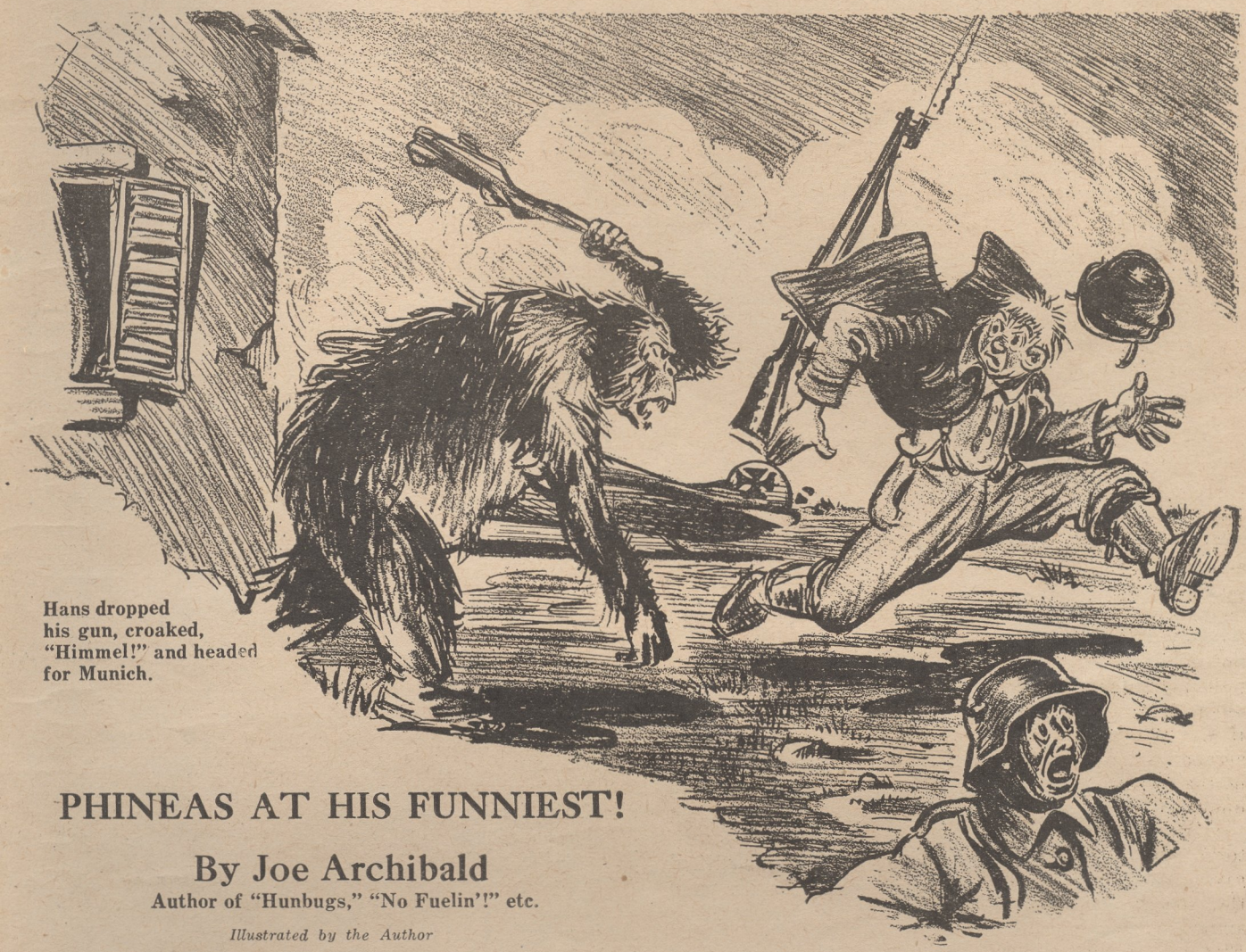
When the Flight Test Section has completed its work, the plane is sent to the Washington Navy Yard for catapult trials. From there it goes to the Experimental Division at Hampton Roads, Virginia, where it is given rough water tests in case of a seaplane, or carrier deck landing trials if it is a land plane. All this data is sent to the Navy Department for consideration in determining whether or not

(Continued on page 95)



They test the small ones as well as the giants at the Flight Test Section's headquarters. Here's a tiny autogiro on trial at the Washington station.

Intelligence Pest



Hans dropped his gun, croaked, "Himmel!" and headed for Munich.

PHINEAS AT HIS FUNNIEST!

By Joe Archibald

Author of "Hunbugs," "No Fuelin'!" etc.

Illustrated by the Author

Phineas Pinkham was so pleased with his particular prisoner that he even offered him a cigar that wasn't loaded. Yes, they call that fraternizing with the enemy!

✪ ✪ ✪

A FLIGHT, pride of Major Rufus Garrity's Ninth Pursuit Squadron, was out on midday patrol. For fifteen minutes they had been circling high above Jerry territory, spoiling for a scrap, but the only animate things Captain Howell had spotted upstairs were crows cruising in a flock to establish the cornfield lines.

The leader of A Flight was wondering why the great von Schnoutz, who had moved his layout all the way from the Italian front, had not as yet made an appearance in the sector. It was very apparent that this was not the day for his début, so Howell made a scathing remark to the effect that a lemon drop, compared to a Jerry's backbone, was as white as goat's milk. Forthwith, the flight leader signaled for the homeward sweep and right-ruddered.

One Spad, however, seemed to have a different idea. It was a Spad painted a horrible shade of brown. On the day of its painting, Lieutenant Bump Gillis made the remark that every time he looked at the thing, his mouth developed a taste like the inside of his flying gloves. The brown ship bore a splashed insignia—a bottle of poison. Yes, the Spad belonged to Lieutenant Phineas Pinkham, Bachelor of Artifice, Knight of Calamity and an alumnus of Doctor Merlin's Camelot College for Conjurors.

"Why, we only just started out," complained the pilot of the delirious-looking ship. He grinned as he headed away from the formation. "Never let it be said that a Pinkham tosses away his hoe before the row of potatoes is all weeded."

Five minutes later Phineas met a Pfalz. Accordingly, the jokester of the Ninth Pursuit jerked back his stick, went into a half-loop, rolled and came down to see whether the maneuver had been of any use. Then he grinned, baring more teeth than one mouth ordinarily is expected to hold, and got set to let his guns roar. A white face looked back at him. The Pfalz pilot banged away at his guns with a panicky fist.

"A set-up," chuckled Phineas, and stabbed his finger toward the Yankee lines.

The Jerry opened his mouth and yelled something.

The colonel was mad. He was going to hit somebody.

Phineas could not hear a sound, but he knew it was something nasty. In retort, he made the Pfalz shake with a bunch of lead that caught it right in the floating rib. The Boche pilot waved both arms, gestured toward enemy territory, and nodded his head.

"If you weren't just silly, you would've done that the first time I told ya," Phineas sniffed. "Everybody isn't soft-hearted. Haw-w! This is maybe the easiest fight in the *guerre.*"

The Pfalz flew straight ahead, with Phineas glued to its tail. As it shot low over Yankee trenches, machine guns spat at it. Phineas leaned overside of his Spad and shook his fist.

"Lay off, you fatheads!" he roared. "If I was gittin' the worst of it, you'd stand there gawkin' with your arms folded. Tryin' to cheat me out of a *descendu,* huh? Of all the dumb—"

Phineas herded his quarry to a safe spot behind the Yankee lines and slipped in to collar the Jerry. The Von made no attempt to run, as he had landed almost in the laps of a regiment of American troops. He clambered out of his pit, twisted away from the grasp of a muddy infantryman and lifted his chin in disdain.

"That's right," Phineas applauded as he came running up. "Do not mingle with the hoi polloi. Let go, bums! I saw him first across the lines. *Wie Gehts, mein Herr?* Wassis lost, huh?"

"*Leutnant* Pingham!" exclaimed the Heinie captain. "*Ach,* worser you look as efen I imagine. So, you haff me, *ja?*"

"If I haven't, I'm driving reindeers in Siberia," responded Phineas. "Well, Heinie, let's *allez.* I'm overdue at Barley Duck as it is an' oh, boys, it's the first time I am bringin' home a swell excuse to the old turtle."

"*Ach,* Pingham, *der* trickster, *hein?*" moaned the German. "Ha, smart you are, *ja? Mein Vater,* he vould laff adt you, ha-ha-ha! Heilmann *der* greadt. You haff heardt of him, *Leutnant, nein?*"

"Wha-a-a-t?" gulped Phineas. "Ya know Heilmann the Great? I seen him six times back in Des Moines, Iowa. Stayed through every show."

"Me, I am Lothar Heilmann, *Herr Leutnant,*" boasted the captive. "His son, *ja.*"

"Sit down, Fritz," said Phineas. "Here, have a cigar, an' it ain't loaded, neither. Move over, you frowsy-lookin' doughs, an' let the gentleman sit down on the log. Heilmann the Great, huh? Here's some molasses candy an'—"

"A hell of a *guerre* this is," muttered a square-jawed sergeant as he got up to give the German a seat. "Treatin' Jerries like they was better than us. I'll report that homely fathead. Fraternizin' with prisoners. I'll show 'im!"

"*Ach,*" groaned Heilmann, "*und* only two veeks I coom up to fly. *Ach!*"

"Fergit it!" exclaimed Phineas. "Let's talk about your old man. Ever see him make the horse disappear? How'd he do it, huh?"

For almost an hour Phineas and the Boche pilot sat and talked. *Leutnant* Heilmann gave the Yank a paper book which he carried in his flying coat. There was a picture of his famous father inside the cover. Many tricks that had astounded crowned heads in all parts of the world were described. It was well for the Allies that many doughs were lurking about, for so engrossed was Phineas in the lore of the master magician that *Leutnant* Heilmann would have had ample opportunity to get a head start back to his native land.

"*Und* over by Alsace iss vhere *mein Vater* he liffs vhen he iss nodt by *der* submarine," continued *Leutnant* Heilmann. "His house it iss filled up *mit* trick inventions *und* mirrors *und* everyt'ing vhat looks like it ain'dt."

"Wha-a-a-at?" gasped Phineas, tearing his eyes from the print in the book. "Ya say your old man lives in Alsace?"

"*Ja, ja,*" Heilmann averred, then sighed. "Look vunce, *Herr Leutnant,* here iss it Hambach, so. All alone iss it, vun bick house maybe five miles avay, so." And Heilmann took out a stub pencil from the pocket of his tunic and began to draw a rough map on the cover of the book. "*Der* house it iss closed shut *und* no vun liffs by it now. Long vay from any place iss anybody *und*—"

"Well, well," Phineas said, his eyes aglow, "we better *allez,* like I said. Come on, Jerry, I'll give you a ride."

"*Der* book," queried Heilmann, "you giff it back, *ja?* I keep—"

"Oh, yeah?" snapped Phineas. "I don't remember seein' no book. Of course, I'll give you the picture of your old man an' that's all. You can't prove you ever had a book. Hurry up, or I'll slam you one, as don't fergit we are mortal enemies an' if I have to shoot you—"

"*Ach, Schweinhund,*" growled Heilmann, as he trudged to the Spad. "I hope it giffs quick a fight between von Schnoutz *und* you, oopstart! I gedt *der* book. I vill tell your superior—"

"Why, you big tattletale," grinned Phineas. "Shut up or I'll take you to the drome wrapped in a blanket. Or maybe I'll tell the Yank sergeant you said his face looked like a tomcat's mug, huh?"

"*Ach,* I go," grunted Heilmann. "*Ja.*"

"Did he say that, lootenant?" ripped out the Yankee sergeant, striding toward the ship.

"Nope," replied Phineas, "but if he had, I wouldn't have contradicted him. Haw-w-w-w-w! Well, adoo!"

"If I ever run across that homely baboon after the *guerre* some place," the sergeant seethed as the Hisso prop roared, "I'll lay him away among the tulips."

THAT threat was promising a rosy future for Phineas compared to what the major, Sir Rufus Garrity, was holding in store for him at Bar-le-Duc.

"I'm finished!" the Old Man was fuming. "I'll spread-eagle that homely cluck to the top of a hangar. I'll show him! By cripes, Howell," he said to the flight leader, "he goes ferrying two-seaters this time unless he comes in leading a Heinie. You'll see, I'm not fooling this time. I—where was he goin'?"

"Am I the big bum's skipper?" Howell asked.

"Ha, ha, ha!" guffawed Bump Gillis. "I git it. Ha, ha! Am I the big bum's k—ha, ha!"

"You crack jokes, eh?" yelled the C. O. belligerently. "You—you think you're pretty smart, Howell, don't you? Well, I can break you like a stick of macaroni. And you, Gillis, you dumb Scotch windbag, I'll—"

G-z-z-z-z-z-z-um-m-m-m-m!

"It's a plane!" shouted Howell. "Phineas—"

"Nice of him to come home early," Bump grinned as the Old Man blew into the stem of his pipe and showered himself with sparks.

"I'll handle the cluck," raged the major, and shoved his hot pipe into his pocket. He got outside just in time to see Phineas brush a wing tip against the side of the house. The Spad, motor cut, slipped into one of the dizziest landings ever seen on an airdrome.

"Sir," breathed Howell, "somebody's with him. He's got a—"

The Old Man would not believe his eyes until he got close to the brown Spad. A scared individual slipped off the lower wing and wiped a damp brow.

"Besser iss it I shouldt ride a buzz saw," gasped the Teuton. "Nefer vunce again do I go oop in a plane. *Leutnant* Pingham he iss crazy *mit der* koopf."

"H'lo, bums," Phineas grinned as he got out of the Spad. "Meet *Leutnant* Heilmann, major. I hope you kept the meat an' spuds warm as at the moment the Heinie's stomach is emptier than the inside of a flight leader's head. Ha, I showed 'im what a Spad would do an'—"

"You fresh ape!" cracked Howell. "I got that insult. I'll—"

"Ha, ha, ha," laughed Garrity, "I got it, too. Ha, ha! Like the inside of a flight leader's head. Ha, ha!"

"My book!" yelped the Jerry. "*Der Leutnant* Pingham he shouldt giff back *der* book vhat he steals from me, *ja!* He robbedt me *und*—"

"A book?" Phineas came back with a fine attempt at amazement. "Why should I? I already got a book. The kraut's framin' me as he's sore 'cause I knocked him down."

"One of you is a liar," roared the Old Man, and he looked straight at Phineas. "You know what you get for robbing prisoners, don't you?"

"There ya go accusin' me," Phineas said indignantly. "Of course I know. Sometimes ya git some marks or a gold watch or maybe a bloodstone ring an'—"

"Get into the house," Garrity snapped at the irate Hun. "Pinkham, get out of my sight!"

"Does that break my heart?" were the parting words from the irrepressible jokester. "Haw-w-w-w!"

Phineas spent a couple of hours in his hut digesting the contents of the purloined book. Brain cells which had not been put to much use in the past were stored up with the secrets of Heilmann the Great. At length Boonetown's contribution to the Allied air fleets got up, concealed his book in a safe place and sauntered out onto the drome. Ten minutes later a motorcycle was speeding toward Bar-le-Duc. It returned in an hour. Phineas hopped out of it and just had time enough to cache a bulky paper package in the cockpit of an old ship in A Flight's hangar before the last patrol of the day went out.

"Where've you been?" Howell snapped testily.

"Didn' ya git my postcard?" replied Phineas. "Haw, I'll have to ask that the U. S. mails get speeded up. Just as soon as I git my helmet on, I'll be ready for work. Anyways, I've got time comin' to me, as I stayed out longer than you bums on the last patrol. I'll be gone only a minute. Haw-w-w-w-w!"

"Bump," Howell addressed the Scot solemnly, "would you like to be a flight leader?"

"I don't even hear you, Howell," replied Bump Gillis and stepped up to the Spad stirrup.

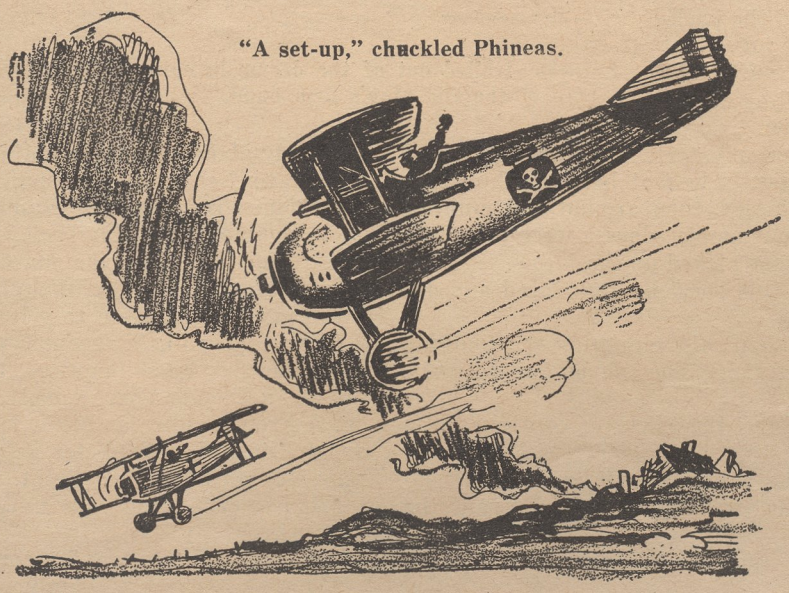
A Flight went out again and strafed a balloon, drove a two-seater out of the Yankee front yard and called it another day.

"I sure would like to know where von Schnoutz is," mumbled Phineas as he came home with the formation. "The Dresden Demolisher! I bet the only thing he ever broke up was a chest of china. I guess he's afraid of me. Well, ya can't blame the bum." And the awe-inspirer grinned contentedly.

FOUR Yankee brass hats visited the drome of the Ninth just as mess was being served. Two were from Wing Headquarters. The others professed to be attached to the Intelligence Corps.

"Hello, Garrity," a colonel said glumly. "Any new developments?"

The major shook his head. "Nothing out of the way going on around here. That is, of course, omitting the name of Pinkham. I think you're in the wrong neck of the woods. If there's a Jerry agent around here, he's turned himself into a field mouse."



"A set-up," chuckled Phineas.

"Hm-m-m," growled the brass hat. "Well, I'm telling you, Garrity, that there's a leak here some place. Last night Gothas washed out a camouflaged ammo dump not ten miles from here. How about that restricted area being egged day before yesterday, where the Frog tanks are being tested, what? And if the Jerries ever get the plans of those new tanks, we'll be in a fine mess. Got to have 'em for the push. You know what they are. There isn't a German shell that can wash one out. It'd take ten direct hits even to slow one up. You say there's no leak here. Then how does it happen that the Jerry birds know just the right places to lay their eggs? What?"

"Answer yes or no!"

A brigadier swung around on his heels. "Who said that?" The door of the orderly room was open. Outside, the pilots of the Ninth were noisily eating. Phineas Pinkham was pouring almost the entire contents of the ketchup bottle onto his plate when Major Rufus came out.

"Somebody here evidently doesn't know his place," the colonel tossed out. "Garrity, some of these flyers are too fresh. Get too much leeway. If I were running this outfit—"

"Gentlemen," the Old Man said, after clearing his throat ominously and glowering at Phineas, "these men have had a hard day and—"

"Oh, so this is the famous Lieutenant Pinkham?" the brigadier cut in, as he took an inventory of the pilots crowding around the board. "Great joker, eh? Well, Garrity, what do you say we have a little entertainment? I've heard so much about the astonishing accomplishments of Pinkham."

"At your service, sir," said Phineas, hopping up from his chair.

"I have got maybe the swellest trick you ever saw. I'll pour water, milk, port wine and champagne out of the same jug."

"They asked for it," Bump Gillis said under his breath to the flyer next to him. Major Rufus Garrity stifled a groan and essayed a sickly grin.

"He'll have to show me!" laughed the colonel. "Ha, ha!"

"Ha, ha," echoed the Old Man weakly and shoved a chair toward a brass hat.

Phineas ran out of the house and came back in a few minutes with a package under his arm.

"Hand me four glasses," he said to Bump Gillis. "And if everybody will just move down to the end of the table to give me room, I'll start in." He unwrapped the package and took out a big jug. Next he fumbled around with the glasses, his hands working faster than the eye could follow.

Phineas strolled out of the drome in spite of the Old Man's firm hand.

"I have to say some mysterious words," grinned Phineas, "over each glass." The watchers saw him pick up each of the wine glasses, turn around and mumble something. When the four empty glasses were placed on the table in a row, Phineas picked up the jug.

"I'll pour water into this one," he announced and did just that.

"This'll be milk," he then said, emptying the contents of the jug into the next glass. The colonel gasped as he saw the white fluid.

"The next is port wine," the trickster continued. "Is this a trick, oh, boys?"

"Look," exclaimed the brigadier. "It is, by gad!"

The fourth glass soon was filled with a liquid the color of champagne.

"I am waitin' for the applause," said Phineas, bowing deeply.

He got it.

"Port wine, ah!" breathed the colonel. "Think I'll just down it. Crazy over port, Garrity." He got up and reached for the glass.

"Uh—hey-y-y-y-y!" gulped Phineas. "Hey, don't drink it as—" He made a frantic pass at the glass in the colonel's hand. Instead of hitting it, Phineas' fist crashed into the brass hat's nose. The colonel went over backwards in the chair, turned a complete somersault and landed with a thud, his bruised nose pressing hard against the floor.

Major Garrity pulled the officer to his feet. The colonel was mad. He was going to hit somebody. The somebody happened to be Garrity, whom he whanged in the stomach with a powerful fist.

"Colonel or no colonel," roared Sir Rufus. "I never was brought up in pink dresses. Duck this one!"

"That was poison," yelped Phineas. "Listen, as I—"

"Gentlemen!" the other brass hats thundered. "Gentlemen, you forget—"

"I didn' ask him to drink it," Phineas cut in again. "It was a trick with hydrogen sulphide solution, an' in each glass I put stuff that you couldn't see as I'm sleight of hand an'—"

After anxious moments the officers subsided. They made peace with each other, but not with Phineas.

"Foolin' with poisons, are you?" the colonel grated as he patted his sore nose tenderly. "Garrity, I've heard enough about this man. I'm going to prefer charges against him. I might've been poisoned."

"Who asked anybody to drink it?" protested Phineas. "I ask you, Major Garrity, who asked for the trick? They're bum sports an' haven't any sense of humor."

"Get out of here, Pinkham," Garrity said in his nastiest voice. "Get out of here!"

"I'm practically in Barley Duck," the culprit grinned. "Adoo."

"You don't leave this drome, Pinkham," howled the C.O.

"That's it, Garrity," the brigadier said with approval. "A firm hand—"

The colonel rubbed an ear and nodded. "It is, major. You pack a wallop. Well, let's get this business over with."

PHINEAS strolled out of the drome in spite of the Old Man's firm hand and wandered aimlessly about the surrounding country. His thoughts turned to *Leutnant* Heilmann, the captured Teuton's illustrious sire. Hambach, Hambach! Just over in Alsace at a remote spot. Hambach, the treasure ground of mystifying illusions, the mare's nest of incomparable magic. Hambach! The thought of the place was to Phineas as a grain bin to a hungry rodent.

"I will most likely succumb to the temptation before many hours," he soliloquized. Soon thereafter Phineas came to a hillside where something of interest was going on. A Frog urchin was busily trying to get altitude with a big kite. Night had not as yet moved in and there remained an hour of twilight.

"*Bon* swar," Phineas grinned. "What're voose doing, garson?"

"Ze *vache* I milk, *oui*," retorted the youngster.

"Snappy reparty," complimented the representative of the Ninth. "That's some kite. Let me show ya how it's done back in Boonetown."

"*Cochon!*" snapped the little *garcon*. "Beeg peeg! I tell *mon père. Allez!* I fly ze kite, *oui*."

"Aw, be a sport," urged Phineas, and took the kite line out of the young Frenchy's hand.

"Wa-a-a-a-a-aw! Wa-a-a-a-aw!"

Phineas was ignoring the howls of the *enfant terrible* when a Frog peasant hove into view.

"*Americain chien!*" he howled. "Give to ze enfant ze kite. He play together with heemself. *Oui, voilà!*"

"Here, take your old kite," growled Phineas. "You're just selfish an' if I had voose, I'd lam you good. I ain't seen voose around before," he said, turning to the papa Frog. "Who're you?"

"Boche, they have drive us out, peegs!" replied the Frenchman. "We tak' t'ings *et* go. Shells they have drop all around. I tak' ze *chat*, ze peegs an' ze mule. Here I

stay to when ze Boche air drive' out, *oui.*"

"Well, adoo," grinned Phineas. "I hope that kite takes the little Frog right up to the moon, the brat. *Bon* swar!"

The Old Man was waiting for Phineas. "Now where've you been?" he barked.

"I been flyin' a kite," responded the grinning pilot.

"Don't kid me!" snorted Garrity. "Let me tell you—"

"Huh," Phineas complained as he kept on toward his hut, "it's even illegal to tell the truth in this dump. Well, did ya find the spy? Them brass hats would lose a elephant if they drove it up a tree with only one limb. Adoo."

"I'll murder you yet," Garrity muttered, and left well enough alone. "Flyin' a kite! The spotted-faced hyena!"

Phineas' rest that night was troubled. He tossed on his pallet continuously. Bump Gillis almost put him to sleep once with a well-aimed boot. Toward dawn, however, temptation got Phineas in a weak spot. It urged him to get his clothes on in a hurry, steered him out into the chill of early morning and pushed him toward A Flight's hangar. It so happened that Sergeant Casey had come on duty early to dig into the tonsils of a Hisso. He was busily engaged when Phineas barged in and made known the fact that he was taking the brown Spad out.

"I would ask no questions," he advised Casey, "as if you don't help to get out the ship, I'll do it myself and will go right through the side of the hangar if I have to." Without pausing for breath, he added, "How d'ya know I ain't on a secret mission, huh?"

"I don't," replied Casey. "I am sure of it."

"Ha," responded Phineas, "you are droll, Casey. C'mon, let's go."

"I do it against my better judgment," growled the sergeant. "But anythin' so I can work without bein' bothered."

In fifteen minutes the brown Spad was headed toward the lines, and back on the drome, Major Garrity was standing at the window of his quarters, pounding upon the pane.

"That's what I want," he declared savagely as a pane of glass cracked. "I got him dead to rights now. I'll bust him!"

The brown Spad slipped unobserved through the mists of early dawn and bored into Jerry territory. Phineas had a map strapped to his knee and one gloved finger was locating a little dot which designated the town of Hambach.

"I'll be there in no time at all," he grinned. "Boy, I can't wait! I hope I find a way to make a horse disappear, or maybe even a brigadier general. Will I have fun in the *guerre* then, oh, mama!"

The brown Spad flew on. There seemed nothing else in the sky, but there was. Two Jerry Pfalz ships were burning up the ozone between the Moselle and Hambach. In the pit of one sat a hawk-faced Teuton who had tried to look as much like the Kaiser as possible. He sported a carefully waxed mustache, the turned-up pointed ends of which almost got in his eyes. This was the great von Schnoutz, the Dresden Demolisher.

"*Ach,*" he chuckled as he spotted a dark blob through the ether ahead. "*Donnervetter,* I vill haff *der* Iron Cross tonighdt, *ja, und* fifty t'ousandt marks also yet."

Phineas was circling over the spot where he knew Hambach should be when he suddenly realized that he had not been the only buzzard in Europe to get up before breakfast. He saw the Pfalz ships come roaring in when it was too late to make a break.

"Cripes!" grunted the lone adventurer. Then he saw the light.

Trapped! There had been something very fishy about that Heilmann business. Too easy—that was what it had been. The son of Heilmann the Great had been in on some underhanded plot to—Phineas swore prodigiously.

"The dirty bums!" he yelped, and headed for the ground.

HOW he ever escaped the strafing from above he never knew. How he ever made a passable landing without breaking up anything more than both wheels was something he did not take time to figure out. He just left the wrecked Spad and sprinted for a big house that loomed up above him on the crest of a hill. He made it in next to nothing flat.

The Pfalz ships roared into a landing. The pilots were out of their ships and banging away with their revolvers at the blur in the fog which was the great and renowned Phineas Pinkham.

The door was locked, so Phineas ran around back and discovered a window open. He dived inside the house and looked about him frantically. On the other side of the room he had tumbled into he spotted a door and made for it.

"*Handen hoch!*" The thorn in the side of the Ninth Pursuit skidded back on his heels. Three ugly-looking Boche infantrymen had stepped through that door. Behind him, Phineas could hear the Boche pilots slipping in through the window.

"*Leutnant* Phineas Pingham," rasped a voice, "I haff you, by *Gott, ja! Der* greadt von Schnoutz he has gedt you. Smarter am I as *die Dumkopfs* vhat you fool before yedt."

Phineas reeled around and screwed up his face. "I thought I smelled somethin'," he exclaimed. "Well, bums, everythin' comes to an end, huh! I surrender an' demand the honors of war."

"*Ach,*" von Schnoutz chuckled, "easy vas it. *Der* fire it shouldt gedt doused *mit* fire, *hein?* I sedt *der* trap *und Leutnant* Heilmann giffs up so to catch Pingham. Ha, Heilmann der Greadt's Vorkshop—molasses in *der* dish it catches flies, *nein?*"

"Ya big squarehead," snapped Phineas, "so that was why you were layin' low. Well, Napoleon made mistakes, too." He shot a glance askew as he backed up to the wall slowly. The glance took in a strange-looking object leaning against the wall. It was a big mummy case, and the lid was swinging open. Immediately the Pinkham brain began to recite paragraphs from the book of Heilmann the Great.

"I got to hand it to ya," he complimented the Von. "It's about time the Kaiser found a Von with brains."

Von Schnoutz stuck out his chest and forgot to be wary. Phineas whirled suddenly and leaped into the mummy case. The cover of it slammed shut as guns roared.

"You forgot what house you was in," the intrepid Yank howled. Then his usual "Haw-w-w-w-w!" almost blasted the cover of the mummy case.

"Ha," laughed von Schnoutz, "safe iss he, *ja.* Pingham he puts him in *der* safe place. Only Heilmann *der* Great he gedts out, maybe, *und* this is not vun stage *mit* tricks, *nein.* I take it in *der* great Pingham wrapped like he vas a Pharaoh. It giffs a coffin to bury him in. Ho-o-o! I ledt him out in vun minute. You hear me, *Herr Leutnant?*"

Phineas did not. He had pressed a button inside the case. Down into the cellar he dropped, his face split with a broad grin.

"The Krauts should've read the book," he said to himself, picking himself up out of a heap of excelsior.

Phineas began an exploration. The cellar was crowded with a conglomeration of stuff, black drapes, wires, trunks, baskets, ropes and pulleys. The visitor to this magician's heaven felt pangs of regret at having to leave

(Continued on page 90)

Sky Pioneers—

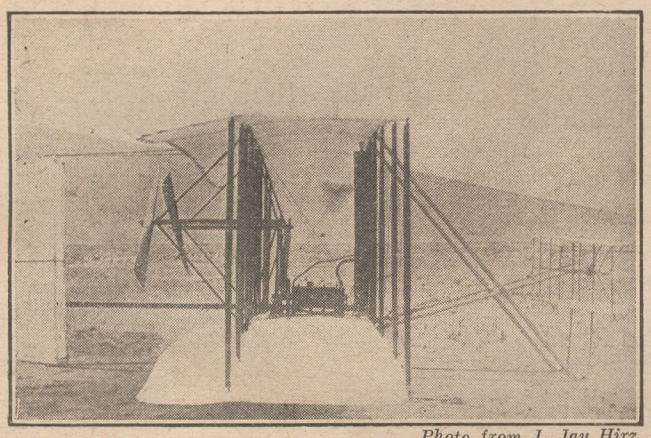


Photo from J. Jay Hirz

Upper left: Here's the machine that started all this flying business. The Wright Brothers' first ship had to be flown from a prone position on the lower wing. Almost thirty years ago, it rose from the sands of Kitty Hawk.

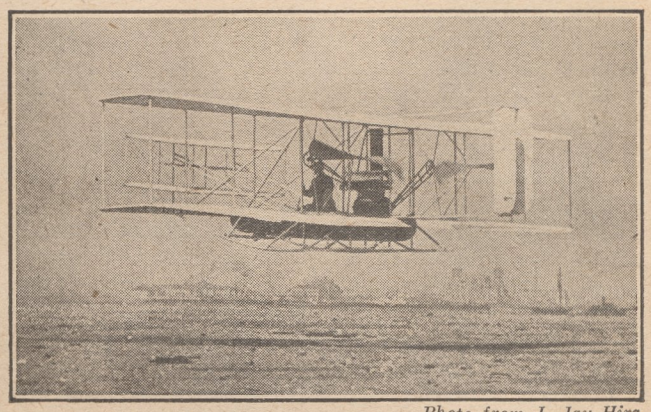
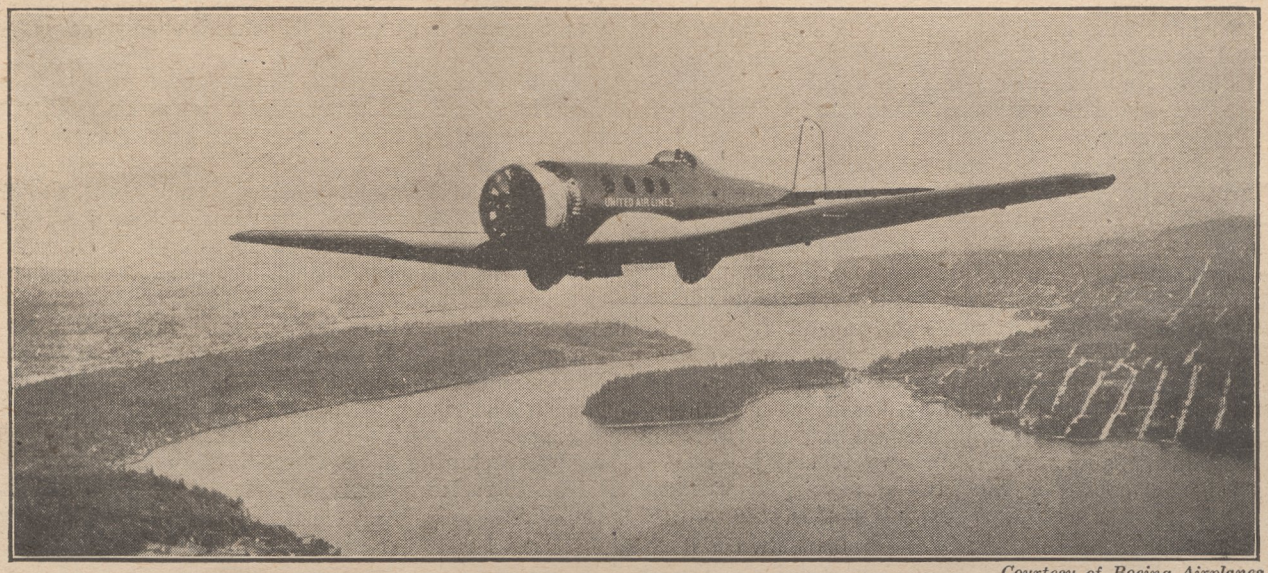


Photo from J. Jay Hirz

Above we see the first non-stop record flight that amounted to anything. Wilbur Wright flew from Governor's Island to Grant's tomb and back, a distance of about fifteen miles. Today, the Boeing transport shown below crosses the continent in about eighteen hours.



Courtesy of Boeing Airplanes

This is the ship that did more for the United States air mail system than any other type used, until about eighteen months ago. It is a Boeing low-wing single-engined monoplane, used for both passenger and mail carrying on the United Air Lines. It was from this model that the famous Boeing bomber and the present Boeing transport were evolved. The structure was enlarged, strengthened and improved. Two engines were mounted in the leading edges of the wings—and they had the Boeing bomber. Some one said, "What a great transport that would make, fixed up for passenger carrying!" And we get the Boeing air liner. Aviation moves!

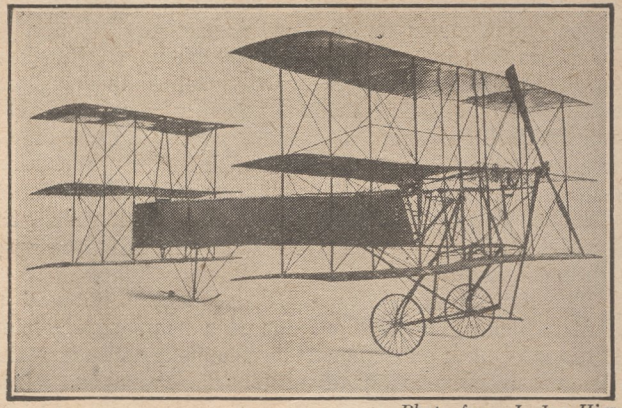
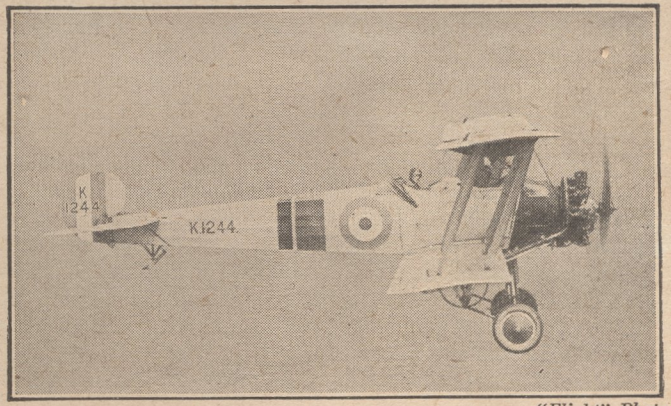


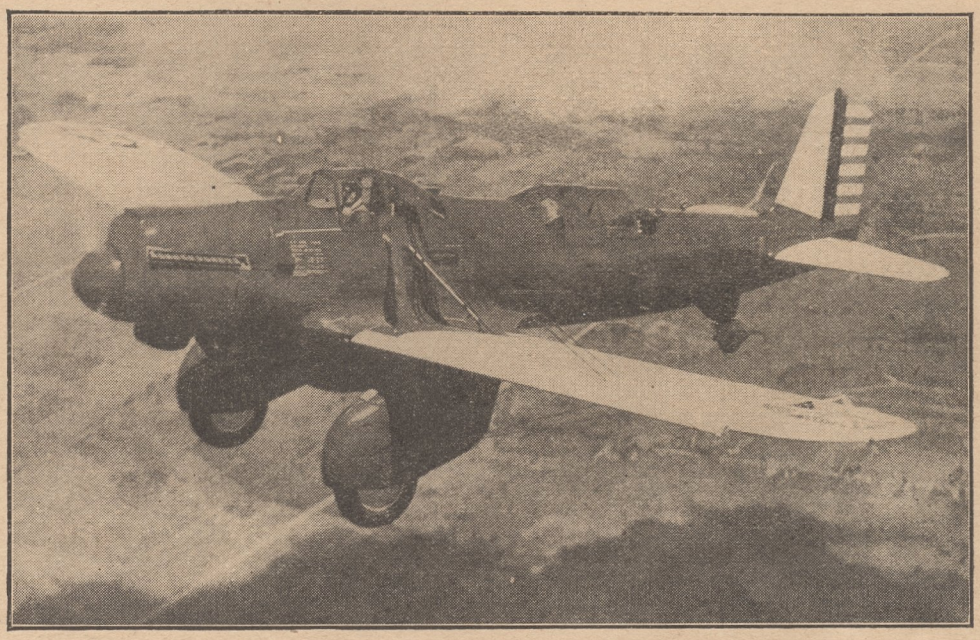
Photo from J. Jay Hirz



"Flight" Photo

Above on the left you see one of the first triplanes ever built. It was made by A. V. Roe of England in 1912 and today stands in Kensington Museum in London. On the right is Roe's more modern job, the Avro Lynx, which is used by the British Royal Air Force for all types of training. Note the folded hood for blind flying training.

Past and Present



Curtiss has always been a big name in aviation, and an interesting comparison may be made in the big two-seater terror at the right, the Curtiss A-8 Attack, and the box-kite Curtiss pusher of 1909 vintage, below it. The A-8 Attack is the original model of this line. The same ship fitted with a Cyclone engine is now known as the "Shrike." It carries anything from four to seven guns and a 1,000-pound demolition bomb. Other racks fitted inside the body or under the wings will carry an equal weight in fragmentation bombs. The "Shrike" is now regular equipment in several two-seater fighter squadrons. The old pusher was flown only a few months ago at one of the national air shows by the late Captain Al Wilson. What a contrast! One Curtiss does 197, the other about 77.

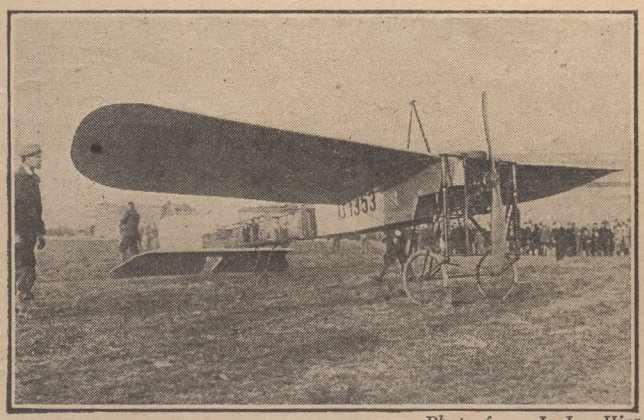


Photo from J. Jay Hirz

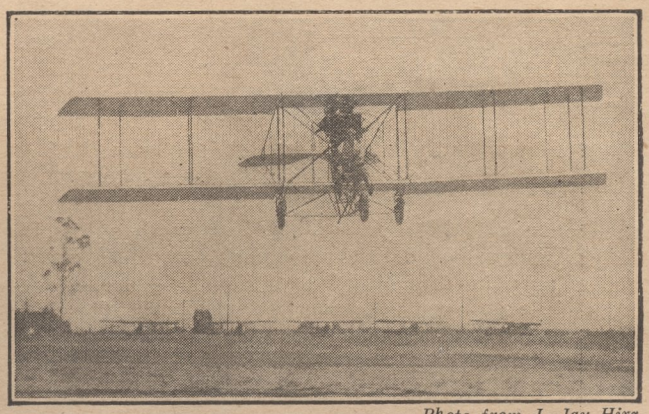
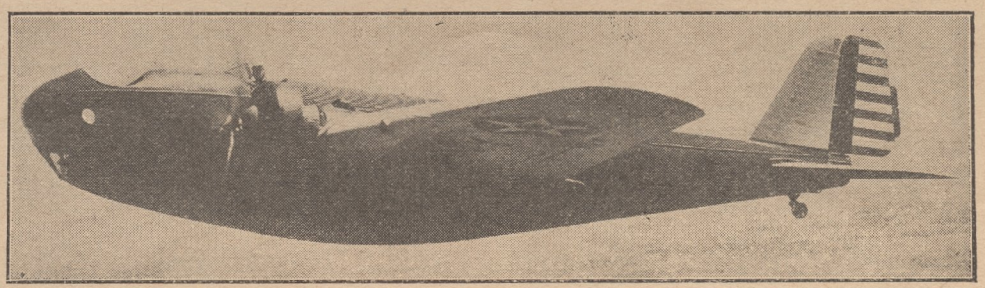
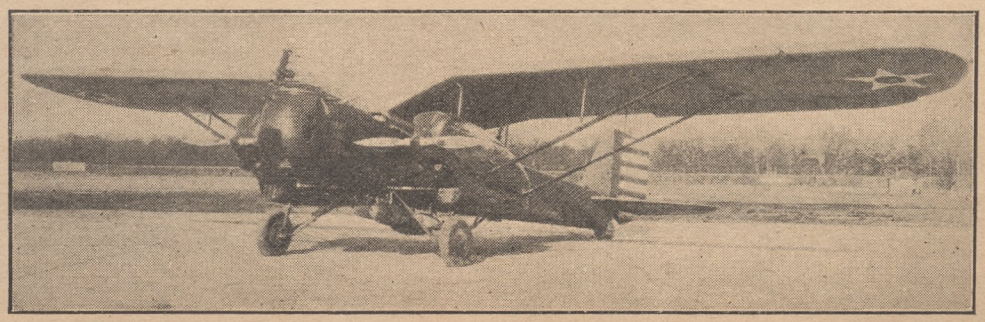


Photo from J. Jay Hirz





In 1909 the world was startled by the news that a Bleriot monoplane had flown across the English Channel from Calais to Dover—a great feat in those days. Compare the fragile craft above with the two modern monoplanes of the U. S. Air Service, on the right. The upper monoplane is the mysterious Martin bomber, which is said to do more than 200 miles an hour. The front cockpit carries a heavy-caliber gun, bomb-sights and bomb-releases. Below it is the Douglas B-7, a gull-winged bomber powered with two Conqueror engines, which are hung in metal frames below the wings. This ship also carries a large demolition bombs below the fuselage for attacks on congested areas. Take another look at the Bleriot—and see what an advance has been made in twenty-five years!

The Black Knight

THRILLING TRUE STORY OF TWO ENEMIES WHO BECAME FRIENDS

By Arch Whitehouse

✪ ✪ ✪

FOR months during 1917 and 1918, two men fought almost daily on the Western Front. One flew a Fokker D-7, the other a Sopwith Camel. Neither scored a victory over the other. Two years ago, these same two men met again in London, flew together, made speeches from theatre stages, crusading for peace, and if things go as they hope, they plan to stage a sporting race across the Atlantic to carry on the good work they started in 1932.

One of these men, Major Baron von Schleich, known as the Black Knight of Germany, is credited with 34 victories. The other is Squadron Commander C. Draper, formerly of the Royal Naval Air Service of Great Britain, whose long list of victories includes twelve of the men who flew behind the Black Knight. During the war days, Draper became known on his particular front as the "Mad Major." That nickname was usually given by troops in the trenches to an apocryphal character to whom was credited any crazy piece of flying performed down low over the lines. It is quite probable that Draper was as much entitled to it as anyone. In another sector it was Mickey Mannock or Ray Collishaw who might be called the Mad Major.

However, be all this as it may, the Black Knight of Germany and the Mad Major of England are planning an east-to-west race across the Atlantic. On their arrival, they hope to tie up with a number of American aces and do some thorough campaigning for world-wide peace. Ernst Udet and his wild-flying Flamingo have done much in the past few months, and it is quite possible that von Schleich and Draper will carry on.

Credited with thirty-four victories during his colorful career at the Front during the World War, Baron von Schleich has become best known as the Black Knight of Germany. Still actively interested in flying, the Baron plans a flight across the Atlantic to promote peace.

The Black Knight and the Mad Major shaking hands after their mock duel in England. On the right—the winner! They are standing in front of the plane flown by von Schleich.

All this friendly wings-across-the-sky business began several years ago, when Draper became the guest of the Black Knight at a War Comrades banquet in Germany. Von Schleich confided in Draper that he hoped one day to go to England and find a British airman who, on September 2nd, 1918, had actually saved his life by a generous gesture. It seems that von Schleich had on that day engaged this chap, who was flying a Sopwith Dolphin. The battle went on for what seemed hours, and finally the German realized that he had no more ammunition.

It looked like the finish, and he saw the Briton come in broadside, his guns trained on the Fokker. Von Schleich took one long chance, waved his hands and indicated that he was through. His belts were empty. Almost at once, the man in the Sopwith Dolphin sensed what had happened. He took his fingers from the trips, flew up alongside, smiled encouragingly and threw the German a salute. With that he flew off.

For weeks Draper tried to find out who this man was. The Baron remembered that the Dolphin had a bird painted on its side. For a time, a pilot by the name of "Taffy" Jones, a captain in another R.N.A.S. squadron, was believed to be the man in question. But now Captain "Grid" Caldwell, a New Zealander, is believed to be the person they had sought. He probably will never be actually found.

In July, 1932, the Comrades of the Royal Air Forces Association gave a dinner in honor of Major E. Ritter von Schleich and Captain Baron G. von Richthofen, a cousin of the noted Red Knight of Germany. The menu cards were decorated in British cocardes and the German Maltese cross. I have the Black Knight's card, which is autographed on the inside by a dozen of England's best known airmen.

At this meeting, an ex-British flying officer came in, sat down and looked around. Almost immediately, Baron von Schleich cried, "Reece!"

The man was Stanley Blake Reece, who on May 21st, 1918, was called away from a set of tennis to take another pilot's place in a formation. Reece had no time to change from his soiled flannels, so he slipped on his

and the "Mad Major"

The Black Knight's wartime rival and present-day friend—Major Christopher Draper, who was known on his own particular Front as the Mad Major because of his wild-flying tactics and daring. A transatlantic race with von Schleich is among the Major's plans for the future.

Back in 1917 and 1918, two men flew and fought against each other in the war-filled skies of France. Just two years ago those same men met again—in peaceful England. Here Arch Whitehouse, who happened to be in England at the time, gives you the story of that meeting between Baron Eduard Ritter von Schleich, the Black Knight of Germany, and Major Christopher Draper, formerly of the R. N. A. S. and sometimes known as the "Mad Major" of the Front.

R.F.C. tunic, grabbed a helmet and a pair of goggles and went over the line.

Eighteen ships of No. 64 squadron went out over Vimy Ridge. In a mix-up that followed, Reece was out of position and a few German scouts fired on him. He found himself eventually going down out of control. The pilot who had paid him the most attention followed him down from 17,000 feet.

Upon landing, they discovered, to their amazement, that they were both in improper uniform. The Englishman was wearing tennis flannels and a greasy tunic, while Baron von Schleich had nothing on under his leather coat but a suit of pajamas and short flying boots. They both laughed and were driven in to Douai, where they were photographed together in their amazing costumes.

"Now look here," warned Reece. "I don't mind posing with you, old man, but you've got to do me a favor, too. I'm going to have a cut at getting away, and you'll have to promise not to let anyone use this photo of me, in case I succeed. It helps a lot in recognition, you know. What about it?"

Von Schleich laughed, generously agreed, and entertained Reece at a light meal. Six weeks later, Reece actually escaped from a train while being transferred from Karlsruhe to Landschut in Bavaria. But after ten days of wandering, he was caught again, and held until December 15th, 1918.

Reece, who had made such a gallant try for liberty, was "carrying on" in civilian life as an insurance agent in Liverpool when the first mention of the Black Knight was made in the English newspapers. He probably was working hard and doing his best to put all memories of the war behind him. After all, when one remembers the experience of being shot down, the anguish of the first few hours of captivity and the hair-raising thrill of an eventual escape and a heart-breaking capture, one has little reason to retain the harsh memories.

However, the first faint lances of memory came back when he saw the first photograph of the Black Knight. When another picture came out, showing Reece posed with the Black Knight, with tennis flannels, R.F.C. tunic and crashed ship in the background, the scarlet memories of war must have swept back in an overwhelming deluge.

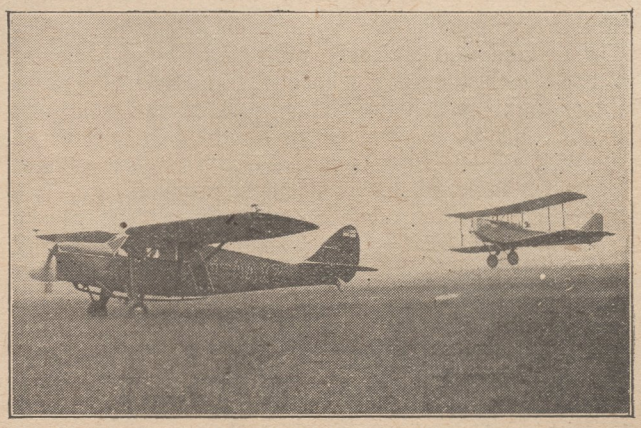
At any rate, Reece made a hurried call to London, got in touch with Major Draper and identified himself.

"Come down at once. The Baron wishes to meet you," boomed Major Draper. "We are having a special show tomorrow. You simply must be here."

"I'll be packing in a few minutes," Reece replied.

And so it went, day after day, in England in 1932. The Black Knight of Germany was meeting the men with whom he had fought—meeting them on a new common ground of aviation. They exchanged yarns, sympathised over wounds and crashes. The Black Knight staged a race around London with Major Draper, which was won by the Englishman, with but thirty seconds to spare. At another air carnival, they put on a mock duel. Their act packed flying fields during the day and theaters during the night, when they appeared on the stage and talked over old times.

With all the war talk of today, and the possible place that aviation and aviators will take in it, it is somewhat refreshing to learn that men who have already fought together can meet again and regret all that has passed. One wonders whether the next war, instead of being fought in the air, can be prevented by the friendships that have been cemented in the tracer-flecked skies of France.



And here you see the actual air duel between the German and the British war aces. Friendly enemies, they were in this battle—and it was quite a different story from their encounters back on the Western Front.

Renegade Raiders

Through the inky black skies above the Caribbean the big transport K 33 cut its way. Dead ahead, the first beacon on the South American mainland spelled safety. But back in the cabin of that giant monoplane was Passenger No. 13—a man whose face was always hidden, whose voice was never heard. Death was aboard the K 33!

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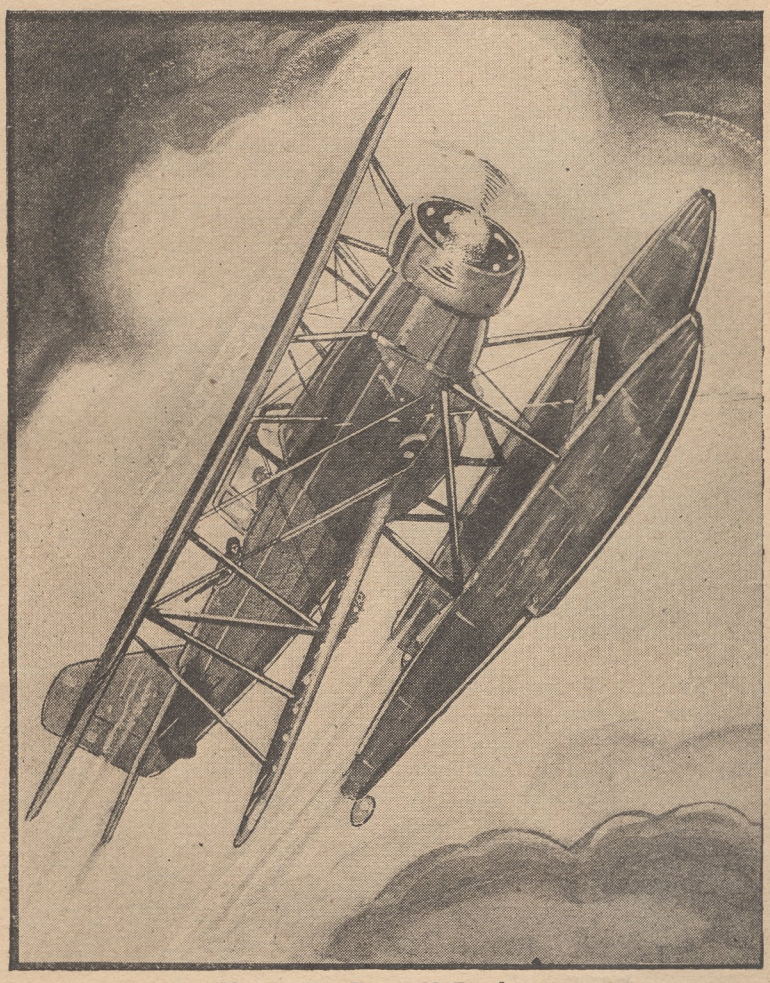


Illustrated by Eugene M. Frandzen

TIP JORDON'S brown hand moved the throttle flap forward, and the four 675-horsepower Clarions broke out into their deep-throated roar. The K 33 began to move forward across the rippled waters of Biscayne Bay.

In the passenger compartments sat twelve men who, according to the clearance papers Jordon had stuffed into his leather dispatch case, were headed for Rio. There were twelve men now, and one more was to be picked up at Havana that evening. He was the leader of the orchestra that had chartered the ship for the long flight down the east coast of South America.

"Spike" Rafferty, who was playing the double rôle of flight mechanic and co-pilot, stood in the doorway to the control cabin and watched Jordon bring the big ship up on the step and then into the air. "Lifts nice, doesn't she, Tip?" Rafferty looked back at his passengers and then up at Jordon again. "An' I had to give up a swell shark-fishin' trip with 'Buddy' Townsend just because some dizzy publicity man sees a movie an' gets an idea."

Jordon smiled as he straightened the big bus out and headed south toward the long line of Keys which stretched away from Florida like a Chinaman's fingernail.

Rafferty yelled again. "Wonder which one of those eggs is the crooner. That little slim guy with the pretty black moustache, I'll bet." Rafferty grinned broadly as he looked up into the pilot's compartment. "Let me know when you want me to spell you, Tip. I'll be right here, watching the board."

Tip nodded and Rafferty pulled his head back into the little compartment where the instrument panels gleamed against the quivering wall of the giant seaplane. "Glad they were short-handed," he muttered as he watched the four tachometers. "Give me a chance to get in a little more time, and then some day I'll be a big bad pilot with a nice blue uniform." He glanced out of the porthole and frowned down on a long, narrow strip of tangled green. "There's where we would have been tomorrow," he scowled as the shadow of their ship flicked across the low squat roof of the fishing club on Key Largo. "Boy, I sure aim to tangle with a shark."

The big monoplane rode the eddying air with hardly a bump. Tip Jordon was holding a course which would take them to Havana. Spike Rafferty was playing with the microphone.

"Hello, TAA," he said. "That you, Toomey? Yeah, this is Rafferty, K 33. Yeah, everything okay. Over Key West an' heading out. Sweet ship . . . . Yeah, they're all right. Queer-lookin' bunch of mugs for fiddlers, aren't they, or didn't you see 'em get on? Never saw so many fiddlers in an orchestra in my life . . . . Okay, see you later . . . . Say, lay off the sharks while I'm away, will you? K 33 signin' off."

Two hours later the streamlined hull of the K 33 had thrown a shower of phosphorescent water into the black night as Tip Jordon set it down just off Morro Castle, in answer to a signal flashed from the ruffled waters.

Rafferty opened the door of the after-hatchway and stood watching a line of fire where the triangular fin of a shark cut the dark waters. Up front, the propellers hissed through the warm air while the throttled motors chugged faintly.

"I'll help him aboard, if you don't mind," a voice in the darkness said. "He's sick, and I know how to take care of him. By the way, I think the pilot was calling you as I came through the compartments."

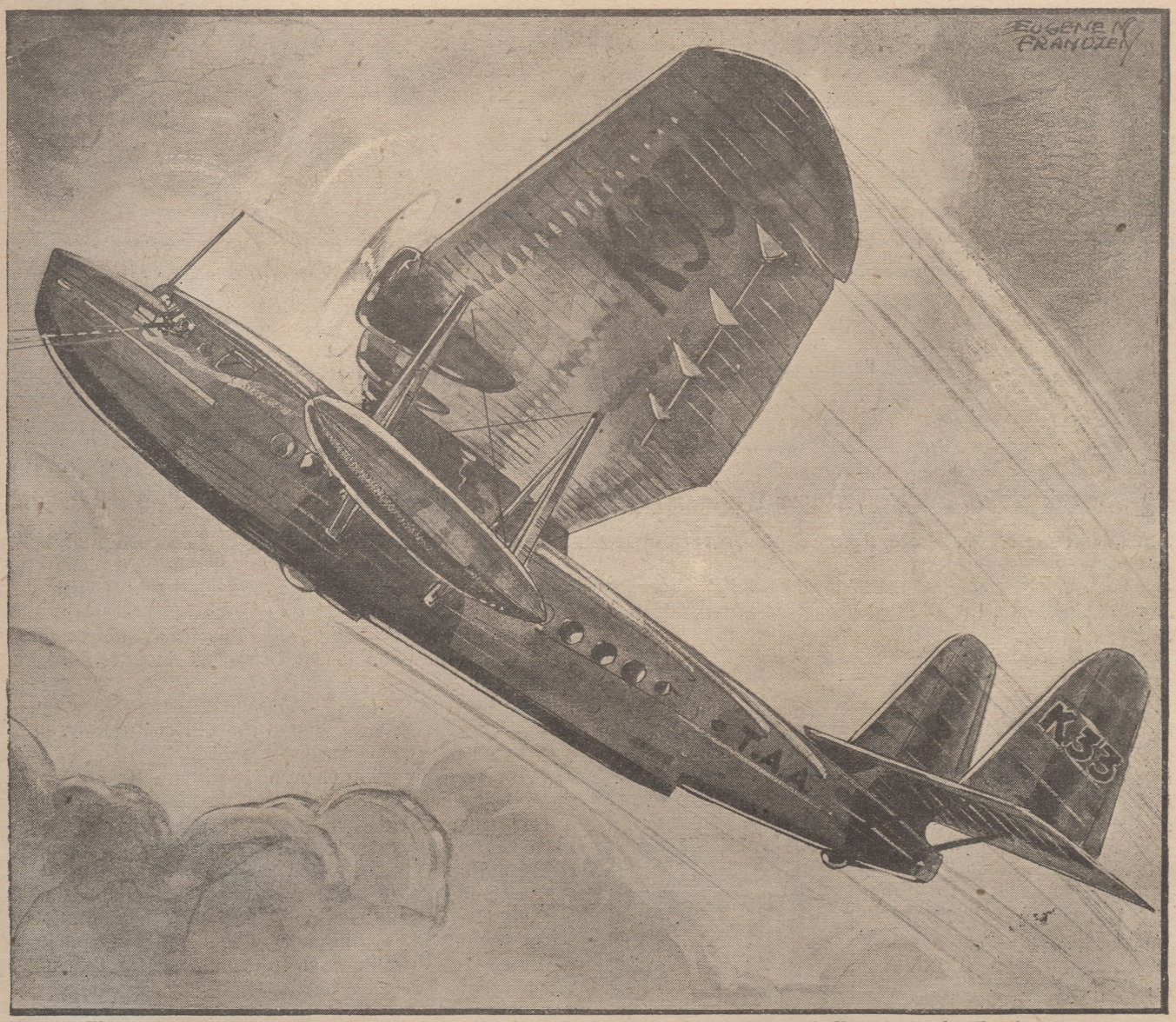
Spike looked at the hulking shadow beside him and then at the small boat which was bobbing like a blurred shadow on the waves. "Okay, mister. I'll be right back to close the hatch. Wonder what Tip wants?"

A few seconds later Spike, grumbling a bit, was making his way back through the passenger compartments. His eyes roved over the seated men. "Thirteen," he mumbled as his eyes fell on a muffled figure seated between two men in the after-compartment. "Boy, he sure looks sick, the way he's bundled up." For a moment

Gripping Modern Adventure Novelette

By F. E. Rechnitzer

Author of "The Joystick Jockey," "The Richthofen Legend," etc.



The nose of the red two-seater shot into the air as Rafferty sent a stream of bullets from the K 33's guns.

he paused in the aisle. "Wonder which one of them it was told me Tip wanted me."

Rafferty reached the hatchway and looked over the side as he started to pull the hatch over. "Look at 'em," he muttered, as he watched lines of fire curving and thrashing through the water. "Looks like they're maulin' somethin' for a fair-ye-well."

In the middle of the fiery foam, the dark blur of the boat in which the new passenger had arrived bobbed around. Rafferty had the hatch half over when he stopped to take another look. "I'll swear there was another guy in that boat with the new passenger," he muttered. He watched the thrashing of the big gray fish for a moment and then slid the lid over the hatchway. He tried to get a better view of the late comer as he walked up toward the control cabin, but the thirteenth member on the passenger list had his face well concealed by the high collar of his gray topcoat.

Rafferty slid the door to Tip's compartment back and stuck his head into the dimly lighted cabin. "All set, Tip," he smiled. "An' that makes thirteen."

A frown crossed his face for a moment and then faded. "This thing's lookin' a little queer to me, Tip."

Tip said, "Forget it!" as he moved the throttles forward. The motors broke out into a rhythmic bellow, and the huge hull left a path of flaming waves behind it. The ship splashed once and then lifted clear.

Rafferty closed the door and walked back to the radio. He threw the switch over and then back with a jerk as a thin blue light flickered out from behind the panel. "There's something gone sour," he mumbled as he tried to look behind the black panel. "Hell!"

He tried the switch again, and once more there was a bluish flash, and a wisp of smoke curled toward the ventilators. "She's dead now, that's a sure bet." He walked to the control cabin and shouted through the slide. "Radio's gone haywire. Have to get it fixed at Belem while we gas up."

The ship cut through the inky blackness. Down below was the tossing surface of the Caribbean, and dead ahead blinked the first beacon on the South American mainland. Once or twice through the long reaches of the night, Spike Rafferty had spelled Jordon at the controls. As dawn began to show signs of creeping up

over the eastern horizon, he tossed the wheel over to Jordon. Tip took the wheel without a word and settled himself in his seat. His jaws were tight, and there was a look around his lips that made Rafferty lean closer. "What's the matter, Tip?" he asked.

"Know what's wrong with the transmitter?" Jordon asked evenly, as he let his eyes travel across the compass air speed and altimeter.

Rafferty shook his head.

"It was a short, Spike," said Jordon. "Found a hunk of wire down back there. Looked damn queer, too, the way it was jammed in."

"You mean?" Rafferty glanced over his shoulder and forced a smile as he looked into the eyes of the slim fellow he had picked out as the crooner.

Jordon nodded. "Looks like somebody jammed that outfit on purpose. What made you say something was queer last night?"

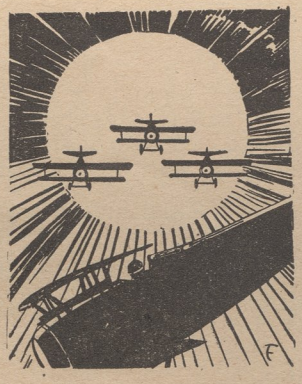
Rafferty related the incident of the empty boat and the false message he had received from the big fellow by the hatchway. "And have you noticed how that new guy, the one that's supposed to be the leader, keeps his mug covered?"

"Yes, and I just noticed something else," said Tip. "I just came through the passenger compartment where he is and saw them looking over a map. Covered it up before I could see what it was." Jordon paused a moment to study his compass card. "Doesn't it strike you funny, Spike," he continued, "that they should be more interested in maps than music?"

"Why don't you set down at Trinidad an' find out what it's all about?" said Rafferty, waving his hand in a friendly manner to the little man staring into the control compartment. "Wish that egg would sit down," he muttered. "Gives me the jitters."

"Been studying this place ever since he got on," said Jordon, "All last night he stood there."

For a moment there was silence. The two men sat looking through the slanting windows at the approaching land. Finally Jordon mumbled out of the corner of his mouth. "I'm gonna take a chance and set down. We can always say we wanted to see what was wrong with the radio."



THE sun was beginning to toss pink rays into the windows as Trinidad slipped into view.

"Well, let's go, Spike," Jordon said as he eased the throttles back. "We'll go down and see if we're suffering from a case of nerves."

As the nose of the hull dipped toward the green landscape below at an angle which would take them out over the harbor for a landing, the door behind them slid quietly open. "What is the matter?" an even voice said into Jordon's ear.

"Engine trouble." Jordon turned, and then paled as he looked into the business end of an automatic. "What's this?"

The man with the gun reached out with his foot and moved the throttles forward. The engines took up the beat where they had left off a few moments before. "You'll keep on with your flying if you know what's good for you, my friend."

Jordon looked down into the barrel of the automatic and then up into the face towering over him. "I don't know what your name is, but you can't bluff me, mister. I'm flying this bus. Bump me off, and the whole bunch of you go down with the ship, believe it or not."

The man with the gun smiled. "I refuse to believe it. Here, you get out of there," he said, scowling at Rafferty.

Rafferty knew when it was wise to move. He edged over to the door, where he found himself covered by another one of the passengers. As he was shoved into the instrument compartment, he saw the little chap with the black moustache slide through the door leading to the control cabin, but he did not hear the man with the gun say to Jordon, as the slim chap slipped into the seat vacated by Rafferty, "Let my friend have the wheel."

Jordon passed the controls over and sat back, ready to grasp them at a second's notice. He soon saw that his assistance would be unnecessary, as the little man was putting the K 33 through its paces. First to the right and then to the left the big seaplane turned and wheeled, standing on its blunt wing tips. As Jordon got over his surprise at the little fellow's skill in throwing the big ship around, he began to study the tanned face by his side, trying to ignore the gun at his ear. Suddenly a whistle of surprise escaped his lips. He had seen that face before—not in person, but in pictures which had adorned the bulletin board at the operations office.

"He's Deschamps!" He looked up at the man with the gun. "He's the bird that disappeared over the English Channel last year with that load of gold."

The man with the gun smiled. "He's a good pilot, isn't he?" The man in the door spoke to the little pilot, who looked at Jordon and grinned. Then the man with the gun turned to Jordon again. "He says that he would like you to land it when the time comes. You'll be careful, won't you?" The automatic moved closer to Jordon's head.

"Land where?"

"At the *Iles du Salut*," said the tall one grimly.

"Devil's Island?" breathed Jordon.

"Yes, we are paying them a little visit. Now you will please come back here and join your friend."

Jordon hesitated. The yawning muzzle of the gun moved closer. He got up, stepped down out of the control cabin and stood in the aisle.

"In there, please." The man with the gun motioned toward the instrument compartment, where Rafferty stood staring out through the glass. "If you had kept on flying, there would have been no need for this until we had almost reached our destination." He opened the door and pushed Jordon through. The door slid to, and a man took up a position on the outside.

"Now what?" whispered Spike, as he settled down on the little stool in front of the dials.

Jordon shrugged his shoulders. "We're in a pickle, that's one sure thing. They're setting down at Devil's Island, that's another thing." For a moment there was silence as Jordon slid down to a sitting position on the floor. "And you picked that little guy for a crooner! Know who he is?"

Spike made a face. "He's the pilot?"

"He's the pilot," said Jordon. "And another thing, he happens to be Deschamps, the war ace and the guy that disappeared with a million bucks' worth of gold out over the channel. Everybody thought he had dropped it, but it looks as if he's hooked up with a gang. Wonder what the game is, anyway. Never heard of anybody visiting Devil's Island on purpose. Most people are trying to get away."

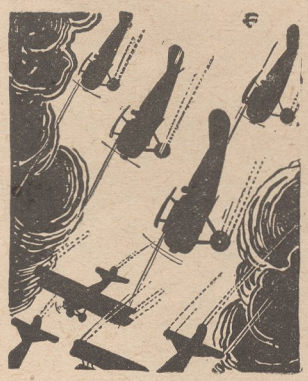
"Maybe that's it," muttered Spike. "Maybe they're gonna try an' spring somebody." He stopped talking and looked up at the door. His face pale and his mouth open. "Good God, Tip!" he finally managed to gasp. "Look in back of you."

Jordon looked over his shoulder and then leaped to

his feet. Staring at him through the window was a sinister-looking apparition. It was glaring into the tiny compartment through slits in a gray pigment which, molded into the semblance of a human face, covered the head of the thing on the other side of the glass. For a moment Tip looked through the glass into a pair of steely eyes. He studied the rough gray mask covering the stranger's face a second and then spoke to Rafferty over his shoulder.

"Looks like your number thirteen, Spike," he said in a low voice. "Wish he'd let us know what the big idea is."

As if the figure in gray had heard the words, he slid the door halfway open and stood covering the two men with a short-barreled automatic which he held clenched in a gray-gloved hand. Behind him stood a squat figure with a sub-machine gun pointing under the gray-clad man's arm.



Then a thin, metallic voice sounded out. "If you two will obey my orders, no harm will come to you."

"You're the leader, I take it?" said Jordon, as he stood facing the figure.

"I am."

"And what's the big idea of taking my ship on an excursion to Devil's Island?" asked Jordon.

"I am going to get my brother and one or two of his friends who will be useful to me in my work," came the thin voice.

"And who might you be?" Jordon asked, keeping his eye on the gun in the stranger's gloved hand.

There was a faint chuckle. The head moved as if the masked figure were laughing. "I am called 'the Shark'."

Rafferty gasped. The door slid to again. The two prisoners faced each other in silence a moment.

"You acted as if you'd heard of this bird, Spike," said Tip, moving closer to his friend. "Who is he?"

"Why, I thought everybody had heard of him," replied Rafferty, watching the door. "He's been raising hell around Cuba an' South America for the past year. Big price on his head from four or five of the governments around here. Always gettin' revolutions started, and then while the fighting is going on, he does a lot of robbing. They say he's a murderous devil."

"Why does he wear that trick mask?" Jordon paused. "Oh, I see now—that thing is made out of sharkskin. That's what makes it look so gray and rough. Theatrical bird, wearing that rig."

THE K 33, under the guidance of its new pilot, roared on through the quiet morning air. Georgetown was somewhere behind them, and the course was leading out to sea. The two prisoners stood by the glass-paneled door and looked out into the passenger compartment, where the twelve men, under the supervision of the man in the gray mask, were taking something like machine guns from the black violin case.

"No wonder they wouldn't let anybody near those fiddles," muttered Rafferty. "Look at that egg over there. He must be takin' a business course. He's been studyin' that typewriter book for the last half-hour. Sh! Here comes the Shark."

The Shark came to the door and paused, while men with guns took up their position on each side of him. Then he opened the door.

"You will go forward now, and take over the controls when we are ready to land," the metallic voice said. "Do a good job, or—" The Shark looked at the guns and then shook his head. "No, it will be a harder death than that. You stay there." He pointed a gray-gloved hand at Rafferty.

As Jordon crawled into the left-hand seat of the control cabin, he spotted three dark blurs of color on the sea, some miles ahead. With the K 33 thundering along at 175 miles per hour, the three spots grew larger and began to take on definite shape. Jordon had a hunch as to what they were. On and on they came, rushing toward the speeding plane. They grew clearer by the minute, and soon Jordon could make out the small islands covered with palm trees.

There they were—the *Iles du Salut*—Devil's Island and its two sinister companions, *Ile Royale*, the largest, and Saint Joseph—known the world over as the islands of agony. The K 33 roared on. On the palm-fringed *Ile Royale* Jordon's keen eyes could make out the commandant's house, the hospital, and the big prison on the hilltop. Then Saint Joseph's caught his attention — Saint Joseph's, with its three long, white buildings where men were caged like animals in windowless cells for the expiation of their crimes.

Jordon watched the three islands and wondered which one was their goal.

"You will land us on this side of the nearest island," an even voice said over his shoulder. "Land and taxi up close to the shore. Be sure to keep the island between the plane and the *Ile Royale*. You understand, I hope?" There was an ominous ring to the voice at his side.

"So they're going to Saint Joseph's," murmured Jordon to himself as he settled himself behind the wheel. "Springing somebody from the world's hell hole. His brother, he said back there."

Something rapped against Tip's shoulder. He knew what it was and what it meant, and his hand dropped to the throttles. The roar of the motors died away to a gurgle. The horizon jumped up across the sloping glass in front of him as he pushed the wheel forward. He tried to keep his legs steady on the rudder as he brought the ship around and prepared for the landing. That piece of cold metal, which might get hot at any moment, made it difficult. He saw blue-clad figures running along the rocky shoreline, but he wasn't interested in them. What interested him was the sight of men dressed in striped uniforms. They were the prisoners—and among them was the brother whom the Shark was going to rescue. Some ran along the rocky beach. Others sat and watched the huge ship come in, as if they had lost all interest in earthly things.

The metal hull slapped into the water with hardly a splash. The gun at Jordon's ear moved an inch or so away. Breathing a sigh of relief, he looked up into the face of the man in the doorway. "Now what?" he asked.

"Call ashore and ask them to send a boat out. Tell them anything, but at the same time be careful what you tell them." The man with the gun paused. His lips curled back in a faint grin. "That is, if you wish to live."

Jordon pushed back the window at his shoulder and yelled to a gold-braided officer on the shore to send out a boat. In a few moments a boat, rowed by six husky, sun-browned convicts, was bobbing across the open water toward the big seaplane, which had already been anchored. There was a tenseness in the air. Save for an occasional shout from the shore, no human voice was heard. The zero hour was drawing nearer and nearer with each sweep of the oars.

As the boat grated along the metal sides of the hull, the tall man with the gun said quietly, "You will come with us now. It will be better if you and your friend are seen in the boat. Deschamps, you will remain with the ship. Keep the engines turning slowly. Be ready to move at a moment's notice. Herman has charge of

the anchor. Come." The man waved Jordon away from his seat.

A few seconds later Jordon and Rafferty were crawling down the short Jacob's Ladder into the boat manned by the convicts. In the stern and shielded by two of his men sat the Shark.

"Hell's gonna pop in a couple of minutes," whispered Jordon as he moved toward the bow.

"Yeah, they've all got their pop guns under their coats. See 'em?" growled Rafferty, as he slumped down on a coil of rope.

"Silence," hissed a voice over their shoulders.

The boat left the ship and turned toward the shore, driven along by the powerful arms of the bare-backed men at the oars.

Jordon hitched himself around so that he could see the beach and the tiny stone dock. He breathed a prayer of thanks when he saw only one blue uniform among the huddled figures on the sands. Then he studied the others a little more closely. There were little Frenchmen, flaxen-haired Germans, swarthy Italians, brown-faced Spaniards, heavy-faced Poles, yellow-skinned Chinamen, slant-eyed Annamites, and ebony-skinned negroes. Criminal representatives from the wide world were standing there on the burning beach, awaiting the arrival of guests from the outside.

"Boy, if they only knew!" grunted Rafferty under his breath.

Just then the bow of the boat grated on the beach and willing hands reached out to hold it against the pull of the waves. Rafferty and Jordon stood up, wondering what was going to happen and which way they would jump when it did.

Then the quiet voice of the man in back of them said, "You will step out of the boat, gentlemen, and get out of the way as soon as you can. Keep out of sight, if you know what is good for you."

The two Americans stepped out on the sand and edged away from the spot where the rest of the passengers were disembarking. Out of the corner of his eye Jordon saw the blue-uniformed French officer who had been standing on the beach step forward, and then crumple to the beach.

"They've clocked one already," snapped Jordon, as he dropped behind a rock. "Here, get down. They're apt to start popping any minute now. Look, they've sprung the guns on them!"

The two men crouched low as three of their former passengers dashed up the hill, carrying machine guns in the hands. "They're to cover the channel leading over to *Ile Royale*," said Jordon. "Look out there by the ship. That bird Deschamps has got a gun sticking out of the window. And there's one by the after-hatch. Guns all around."

"Isn't there somethin' we can do?" asked Rafferty as he watched the prisoners on the beach being herded against the hillside by a man with a gun couched over his arm.

"Want to get blown to kingdom come?" growled Jordon.

"No, not exactly," muttered Rafferty, peeping over the edge of the rock.

"Look, Spike—there they go up over the hill. Now things will pop." Jordon had no sooner gotten the words out of his mouth than the faint rattle of machine-gun fire sounded from the other side of the hill. Then it was still again. "Somebody's trying to get over from *Royale* to see why we landed on this side of the island. There they go again. Listen! That was a rifle."

"I'm gonna scram out of here," whispered Rafferty as he started to worm his way across the stretch of sand between the rock and the palms. Jordon started to follow and then lay still as the rattle of a gun sounded out over the water and sand flicked into the air in a close pattern between the two men.

Rafferty looked around. "He get you, Tip?" Then he shook his fist toward the ship. "You dirty little skunk! That was Deschamps takin' a pot at us. Let's make a run for it."

THE two men got to their feet and dashed madly toward the green shrubbery at the edge of the sand, then threw themselves flat as the angry drone of slugs snapped through the air. Palm fronds drifted down around them as lead bored its way into the trunks of the trees. Then they made for the top of the hill and crouched behind a low white wall just as a rattle of shots rang out below them. Far out on the narrow channel between *Royale* and Saint Joseph's they saw a white lifeboat turn and go for the other shore. "It's sinkin', Tip," breathed Rafferty, "See how low it is in the water. There goes another boat out."

The two men watched as the other boat raced from the far shore toward the spot where the other lay low in the choppy waves of the channel. Another burst rang out and was answered by a shot or two from *Royale*. A bit of white plaster splashed into the sunlit air on the left of Jordon. It was hardly noticed by either of the men as they saw the stricken boat go under just before the rescuers arrived. The water swirled around the bobbing heads and great gray bodies swirled through the struggling mass. Then red began to show on the surface.

"Sharks!" Rafferty's voice was husky, and his fingers gripped the edge of the wall until his knuckles showed white. "Look at 'em tear into that bunch of helpless devils, just as if they were tryin' to help the guy that calls himself the Shark. Bet he's up there somewhere, laughin' with that tin horn voice of his."

For a moment or so they watched while the second boat came up to the red swirling water. Rifles popped, and men reached down to pull their companions from the jaws of death. Some came over the side alive, some half-alive and others in shreds. The water grew redder and redder.

Rafferty turned and grasped Jordon by the arm. "Tip," he said, "I'm gonna get one of those birds. I'll be satisfied with just one."

"It isn't our scrap," cautioned Jordon. "Let them fight it out among themselves. I'm not worrying so much about them as I am about the ship. They'll walk off with that."

Rafferty looked his companion in the eye a moment before he spoke. "You're just stallin', Tip, just stallin' until you can see a chance to barge in and try to square accounts, aren't you?"

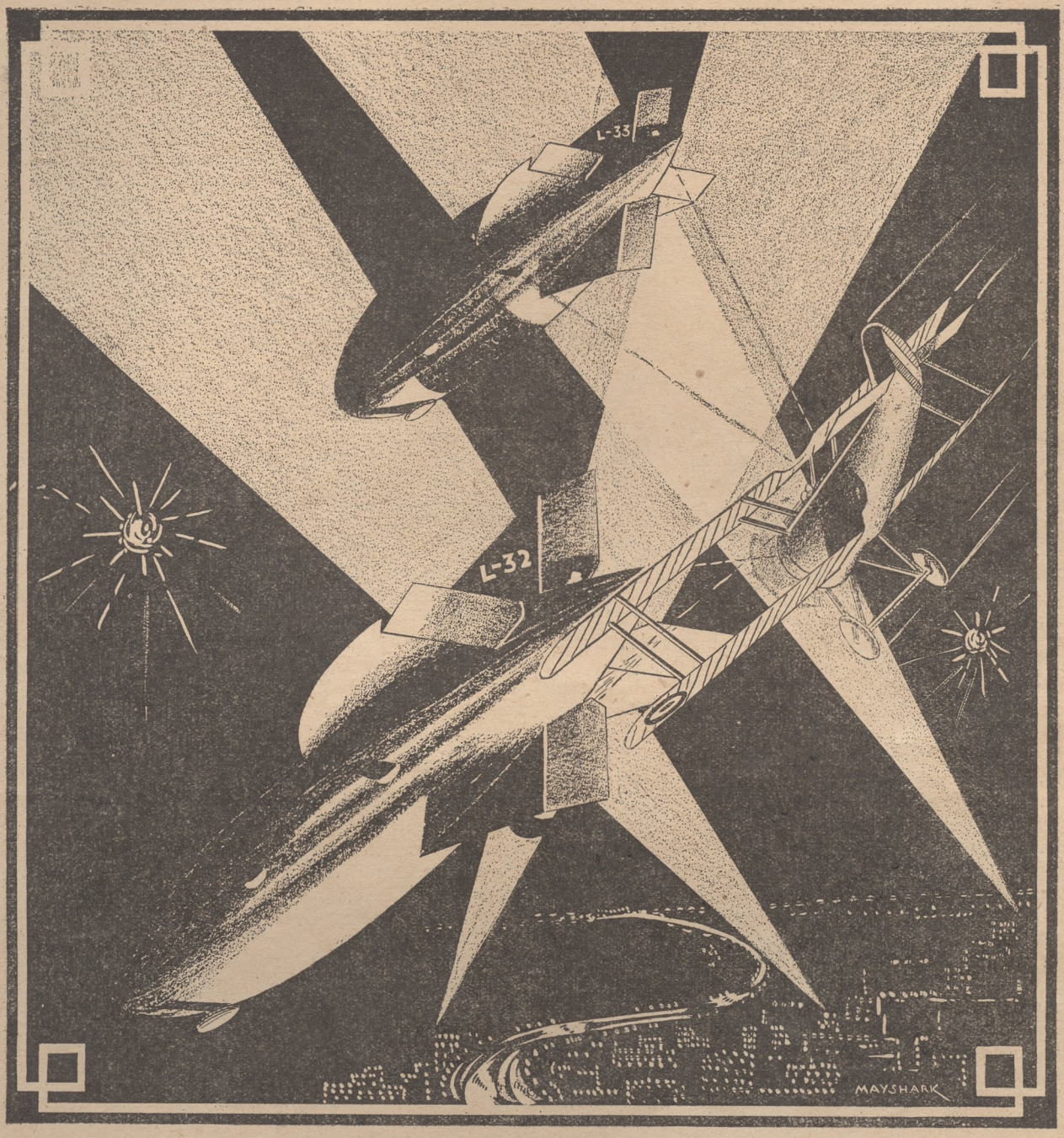
Jordon said nothing. He didn't need to—his smile told the story. Rafferty crawled along the wall toward the group of buildings where the firing had broken out anew.

They reached a cluster of tall castor bean plants and halted as a burst tore up the gravel in the path they had just been about to cross. A bullet splashed into a palm trunk, leaving a small black hole in the rubberlike surface. Rafferty whirled in his tracks and then threw himself headlong into the bushes. A second later he was back at Jordon's side, holding an automatic in his big fist. "Poor French sentry in there with his leg an' chest all embroidered with lead. Thought we were one of 'em an' tried a shot. Come on, Tip, we got a gun now. Five slugs in the clip, too."

They wormed their way through the underbrush and came to a cleared spot. Three low roofs met their eyes. At the one side, sunk level with the ground, they could see iron grills gleaming in the hot sunlight. It was

(Continued on page 79)

As the tiny Sopwith whirled to the attack, another huge Zeppelin blasted a broadside of Maxim tracer at its pilot.



A V.C. in Chains

A LONE PILOT DEFIES THE ZEPPELINS!

By James Perley Hughes

Author of "The Feud That Outlasted the War," etc.

Illustrated by C. B. Mayshark

The deadly work of the German Zeppelins in their raids on London and the coast of England was a personal challenge to one young British airman—William Leefe Robinson, V. C. Here we present the true story of his feud with the commander of the L-32, one of Germany's greatest raiders of the night skies— a story never published before!

A FEUD which led to the greatest honor which a British soldier can win and ended behind the barbed wire of prison camp began when the Zeppelins first raided the British coast. The toll of innocent lives, the ghastly wounds and cruel deaths suffered by women, children, old men and wounded soldiers stirred Lieutenant William Leefe Robinson to a pitch of frenzy that made him a virtual madman.

Robinson was a graduate of the Oxford flying school. Stationed at Croyden, he soon developed a hatred for the Kaiser's raiders that became an obsession. Through the German papers, which were ob-

tained *via* Holland, Robinson came to know the commanders of these murdering aircraft. He centered his hatred upon Lieutenant Peterson, commander of the L-32, which had inflicted ghastly cruelties upon the east coast of England and the London suburbs.

"Archie fire will never get that devil," Robinson kept saying to the pilots who were stationed at the great British flying field.

"What will do it, then?" he was asked.

"A plane—firing incendiary bullets."

"Whose plane?" his companions wanted to know.

"I was thinking of using mine," Robinson retorted.

Guffaws of laughter greeted his words. The Zeppelins were not only heavily armed with machine guns in their gondolas, but Maxim gunners were stationed on the tops of the giant airships, ready to repel the first plane to appear.

"Thinking of joining the Suicide Club?" the pilots chaffed, "If that's what you're looking for, why not join a machine-gun battalion in France? That's always sure death. Why gamble?"

Robinson, however, refused to heed their jeers. He had seen too much of the Zeppelins' deadly work. He hurried to the War Office, consulted brass-hatted, red-tabbed staff officers and outlined his plan. Gray heads were shaken. It was something that couldn't be done, the generals united in saying.

Then came the mid-summer raid in 1916 along the shores of Kent. Hundreds of victims were blasted to pieces by the bombs the Germans dropped. Among the victims was a girl whom William Leefe Robinson knew, a girl whose fresh young beauty was destroyed.

"I'm not going to stand it," the young pilot kept saying, "They can court-martial me, but I'm going to get the next ship that comes over here."

Fresh German newspapers, received through Holland, only added to Robinson's outrage. They bore fulsome praise for Peterson, commander of the L-32, and identified both ship and man. Robinson recalled other outrages by this same officer. He swore an oath not only to avenge the death of the English girl, but to destroy both ship and commanding officer.

Meantime he practiced night flights, going up when he had only starlight to direct his course, as well as on nights when the moon was full. He learned to spot the small dots of light that marked the country side. His position was the same as that of a Zeppelin commander flying over a darkened world. Mere glimpses were the only navigating signs he saw.

September, 1916, saw Robinson get his first chance at the raiders of the skies. Early in the night, warnings were received from watchers to the east that the Zeppelins were on their way. The anti-aircraft batteries surrounding London were given extra ammunition. The searchlight batteries were concentrated along the path the Germans would most probably take. Warnings were sent to prepare the civilian population for the horrors of a visitation.

Early evening saw William Leefe Robinson standing beside his Sopwith, ready for the enemy's coming. He had loaded his belts with a special ammunition, two inflammatory bullets to each tracer. No solid shot was used. He had only one plan to execute. He must fire a burst of fiery bullets into the giant bags of hydrogen that supported the German raiders. A sea of flame would do more than a three-inch gun.

Telegrams from the coast told of the raiders' arrival over British territory. The murmur of Mercedes motors, high in the clouds, located the Zeppelins, although they could not be seen. Robinson tensed as he awaited the word which would send him into the air.

"I shan't order you to stay down," his commanding officer told him, "but remember—this is entirely on your own."

"Right, sir. Entirely on my own."

Then came a flash that set his motor to throbbing. He swept up into the night air and climbed, hanging the Sopwith on her prop and not leveling until he was at the height at which the Zeppelins were reported to be flying.

The upper reaches were filled with scudding cloud fleeces. The crafty Germans kept above them, lowering an observer in a wire cage at the end of a steel cable, where he hung a thousand feet below the airship, directing the bombing by means of a telephone.

Lieutenant Robinson swept the upper sky, searching for the L-32 and its commander, Lieutenant Peterson, the murderer of the Kentish girl. But he could not find his enemy. The clouds, British clouds, labored in aid to the Hun. Occasionally he got a flash of a huge bulk swimming through the mists, but it was swallowed up before he could bring his guns to bear.

Meantime the British anti-aircraft forces plastered the sky with high explosive and shrapnel. Metal was flying in every direction. A fragment of shell struck Robinson's Sopwith and for a moment he believed he was doomed. He battled with the staggering craft and finally got it down to Croyden. Instead of being hailed as a hero for his gallant effort, the members of his squadron hooted at him.

ONCE more the German papers told of the exploits of the L-32, Lieutenant Peterson commanding. He was accorded the Iron Cross, first class, and the Red Eagle. Another successful raid and the *Pour le Merite* would be his, the Boche papers predicted.

"Peterson again! Once more the L-32," Robinson raged.

Meantime, word of Robinson's venture had leaked into the papers. The Germans, like the British, got their news through Holland. George Peterson heard of the daring aviator who had been seeking him in the clouds over London.

"The next time we visit Britain," he told the German reporters, "our Maxim gunners will fire a salute in his honor."

Neither Robinson nor Peterson had long to wait. The moon was waxing and the weather bureau predicted fair skies and favorable winds. Only a few days intervened, and again the Zeppelins turned their noses toward London.

Robinson had paid little attention to the gibes of his companions. He was awaiting a night when the raiders could not hide in the clouds. Then he would get his revenge.

A crisp September evening without a cloud in the sky gave him the setting for which he had prayed. Early in the evening, wireless warnings were received from the patrol boats in the North Sea.

"The Zeppelins are coming," was the message that flashed through the air.

William Leefe Robinson glanced at the sky. Not a cloud. Both stars and moon would be shining unless there was a decided change. He tuned his Sopwith until it ran like a finely regulated watch. Once more he filled his belts with bullets that would fire the great gas bags.

"This time there will be no clouds," he kept saying.

At last word was received that the Zeppelins were

over England, sweeping down the coast toward London. Robinson waited until their distance was less than ten miles. Then he took to the air, climbing until he felt his Sopwith stalling in the rarefied air. He circled, peering through the moon-drenched night. Dim glimpses of phantom shapes sweeping toward the helpless city. One, two, three—at least half a dozen. Among them must be the L-32, the murderer of that pretty little girl in Kent.

Robinson gunned his Sopwith toward the oncoming raiders. He raised his night glasses, studying the silver sides shining brightly in the moonlight. The archies were ripping the sky with their bright bursts. Robinson, however, had talked with the archie commanders after his first trial flight, and had showed them the wounds his Sopwith had suffered. Now, as he swept toward the Zeppelins, the ground guns ceased fire and the searchlights concentrated upon one airship after another.

The British pilot had eyes for but one—the L-32. He sought it from its companions. He watched the searchlight play. A beam fell upon the marking—L-32. Robinson's heart leaped and he thrust his throttle forward. In another moment he was screaming through the air, the leviathan of the clouds his goal and target.

"It was a huge mark at which to shoot," he wrote, years afterward, "but I had the haunting fear that I would miss. I had pinned everything on this one chance. First I raced head on, but the Maxims in the forward control car sent out such a barrage that I swung around to make a flank attack.

"Once more I was the target for a concentrated machine-gun fire that made the air a cherry red. I zoomed, shooting up to come down upon my target, only to find a squad of Maxims upon the Zeppelin's roof. They, too, were blasting at me as fast as the automatic mechanism of their weapons could operate.

" 'I'll get it,' I growled to myself. 'Everything has its blind side.'

"I kicked the Sop around and attacked from the rear, coming into a position where neither the guns on the roof nor those in the motor gondolas could fire at me. I had Lewis guns, not Vickers, upon my cowls, and I threw two full trays of inflammatory bullets into that huge bulk.

"I twisted around to put fresh ammo in my weapons. A feeling of impotence swept over me. I had done everything that I had planned, and still the Zeppelin was racing toward London. I thought of the women and children, old men and cripples, who would be killed by Lieutenant Peterson and the L-32. I whirled to attack again.

"But as I returned to engage the L-32, the L-33, flying behind the leader, began to fire at me. Its broadsides of Maxim tracer danced on every side. Somewhere a bullet was speeding that would destroy me unless I used every care. I must hurry and complete my task or I would not live to do it. Holes were beginning to show in my wings. Soon the engine or myself would be struck and then—I looked again and saw a flame running up the Zeppelin's sharp stern.

"Then a bullet barged into my engine, half killing it. I dropped the Sopwith's nose to avoid another burst. Next, I was shooting toward the ground."

EIGHTEEN years have come and gone since that historic night, but Horst, *Freiherr* Treusch von Buttlar Brandenfels, commander of the L-33, writes that his memory is clear in every detail. He was the skipper of the Zeppelin which followed the L-32 and directed the fire that forced Robinson to drop out of the fight.

"It was a sight no man can ever forget," the German writes, recalling the details of the L-32's disaster. "Lieutenant Peterson and I had been friends of years' standing. We saw the wasplike little Sopwith attacking him, like a kingfisher assailing a whale. But we knew the danger of those streaking lines of red. We unlimbered our own guns and filled the air with tracer.

"Suddenly we saw a blue blaze appear. It turned to yellow. Next, flames started running up the L-32's side. They spread, lighting up the heavens. The great ship began to careen. Soon it was entirely out of control. The metal skeleton glowed red where the fabric had burned away. Then the whole envelope was afire and falling. A blazing mass went hurtling through the sky. We watched it, fascinated by the awful spectacle.

"At last it crashed, and we went on, finishing our task with heavy hearts. Our gallant comrades had gone down to ghastly doom. I had lost a shipmate of many years. Peterson was more than a friend. I swore that I would avenge him."

Germany was not long in finding out who had destroyed the L-32 and with it a crew of more than forty men. Promotion came to William Leefe Robinson, and the greatest distinction Britain can offer to its heroes. King George V pinned the Victoria Cross upon his breast and admitted him into the circle which holds only the bravest of the brave.

But Baron von Buttlar Brandenfels and the other Zeppelin commanders were a unit bent on destroying the man who had sent Lieutenant Peterson down to fiery death. Not only did they hunt out his landing field and bomb it, but dark, shadowy figures within the British lines were constantly upon his trail, a knife or silenced pistol ready to strike him in the back. British Intelligence discovered the danger and told Robinson. For a while he fought against the unseen foes, but wearied of the battle in which his adversaries were always hidden.

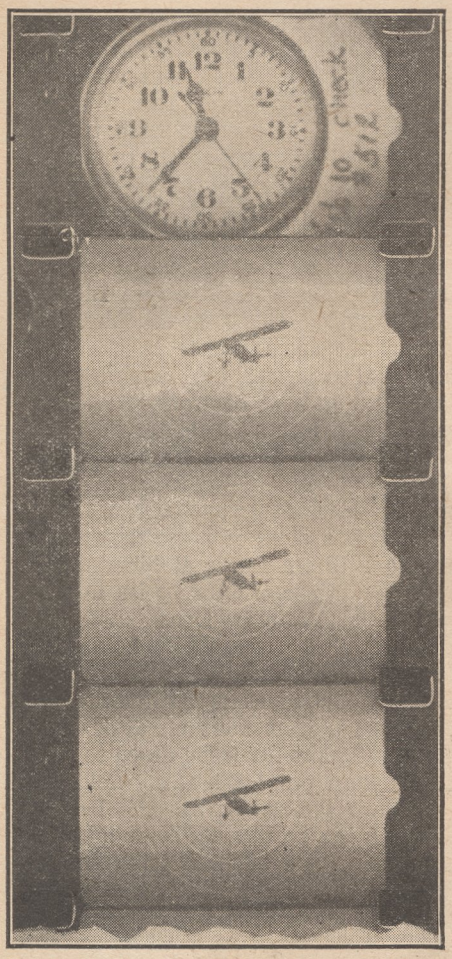
"Send me to the Western Front," he begged. "I'll have a chance there."

His request was granted and he was put in command of a flight in one of the best known squadrons in the Flanders sector. The dark forces followed. They could not penetrate the British lines, but their messages crossed the trenches, and within three days after Robinson's appearance in the war zone, German squadrons were combing the air, searching for him.

Several times Robinson's formation clashed with them, but the clever Boche retreated. Then came a day when he led his men on a dash into enemy territory. He saw a flight of Fokkers about the same size as his own unit. Battle followed, a dogfight in which both sides milled around. Next the skies above opened to spew out a score of fighting Pfalz pursuit planes. They concentrated their attack upon the man whose breast bore the purple ribbon of the Victoria Cross. William Leefe Robinson had been marked. Now the enemy was upon him. A dozen Pfalzes ringed him, firing without cessation. His comrades tried to barge in and save him, but they were driven back.

Robinson was quick to see his plight. He signaled his followers to retreat. They obeyed his instruction. Then he tried to break through the cordon. Pfalzes and Fokkers united to whip his reeling craft. Tracer sprayed it. Several of the foe were struck and fell, but Robinson remained in the air.

(Continued on page 96)



Here's an enlarged section of negative film from a Fairchild camera machine gun. It shows a typical series of photographs. The image of a watch and data card shows at the end of each series of exposures, or bursts of fire.

The Camera Gun

A MACHINE GUN WITHOUT BULLETS!

By Carl Bernard Ogilvie

✪ ✪ ✪

CLIMB into the rear cockpit of this army plane. We're taking off for one of the big thrills of the U. S. Air Corps training schedules—aerial gunnery.

Sure, we're going up for a dogfight, and there will be a lot of machine-gun work, but breathe easy, brother—the bullets will be bursts of movie film, not lead.

Fasten on the safety belt and stand up in the gunner-observer's place. That machine gun mounted on the Scarff ring is the latest Fairchild camera machine gun, CG 16. It looks like a real machine gun and weighs about the same. Take hold of the spade handles and get wise to swinging it up and down and around on the ring. Now line up the ring sight with the muzzle sight. Feel for the trigger on the butt end. Don't press it yet. Got the feel of how to work it? Okay!

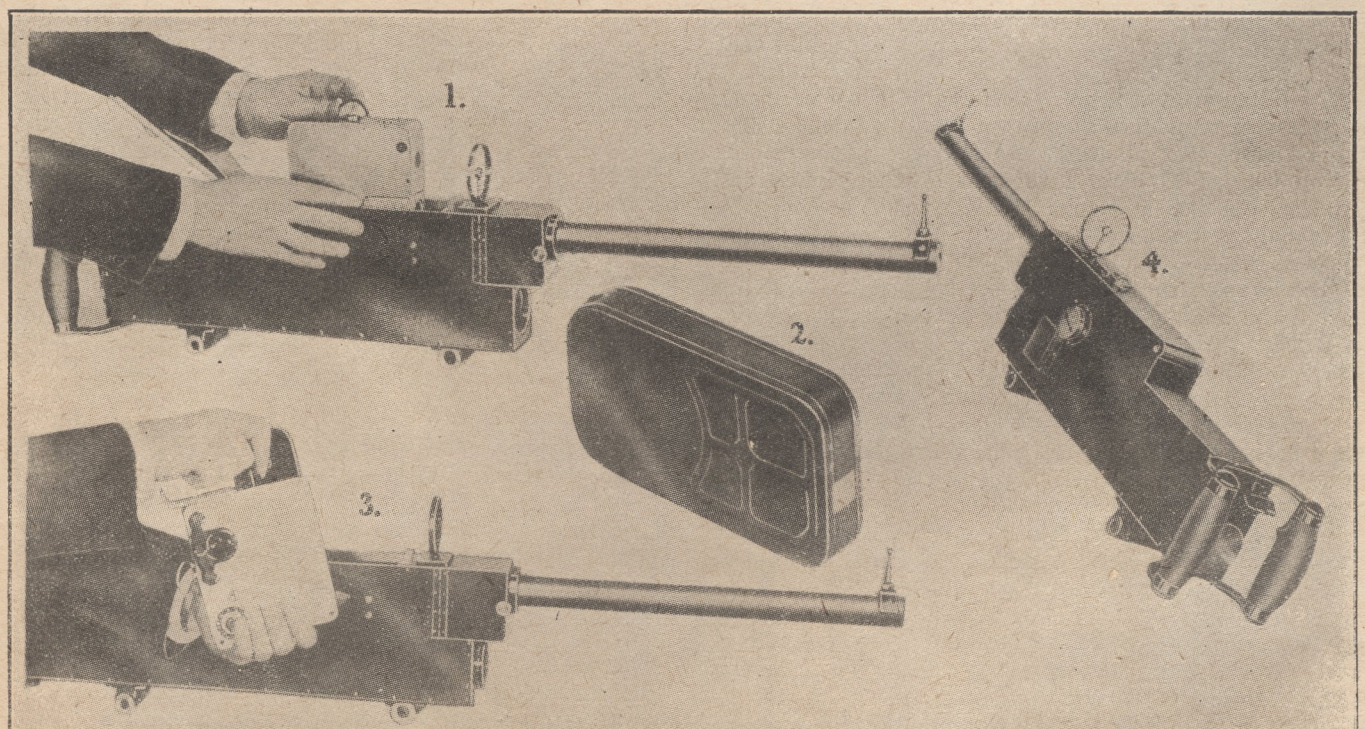
There goes your "friendly-enemy" ship taking off. Our orders are to patrol at 10,000-feet altitude and protect ourselves from attack by that friendly-enemy plane. I'll do the patrolling. Your job is protecting.

Why this aerial gunnery training with a camera gun at a real airplane instead of shooting at a "sleeve" target with a real machine gun loaded with ammunition—you ask? That's a fair question.

You see, the old "sleeve" type of target had to be towed behind a plane. It wasn't possible to simulate actual combat in this manner. Besides, a punctured sleeve target only registers your hits. There is no way of telling how much off you were on your bum shots. But the Fairchild camera machine gun is accurate. From the point of economy a roll of the new 16-mm. motion picture film costs only the price of a few dozen machine-gun bullets.

Here we are! The altimeter needle registers on 10,000. On the *alerte!* That "hostile" plane is hovering around somewhere. There he comes—tearing down at us. Swing the camera machine gun around. Get your sights

(Continued on page 95)



The accompanying illustrations show how easy it is to load the CG 16 camera gun with film. In Figure 1 the hinged top of the camera unit compartment has been opened and the camera unit is being lifted out. It is held only by accurately finished guides and the pressure of the compartment cover. Figure 2 shows the film magazine as it is received from Fairchild completely loaded and ready for the gun. In Figure 3 the magazine is being slipped in the camera unit. It is impossible to put it in improperly. The only remaining operations are to close the film compartment door and replace the camera unit in the gun. Figure 4 shows you the Fairchild CG 16 camera gun ready for installation in flexible type of mount. Ring and bead sights and grips can be readily removed for installation in fixed mount. Provision is made for attaching a solenoid for operation electrically from control stick of aircraft.

The Bulldog Brood

The Yank pilot whirled his bus around and tore up in a lightning flash—to face the blasts of fire.

Illustrated by Frank Tinsley

GREAT WAR-FLYING YARN

By

Harold F. Cruickshank

Author of "Jinxed Joysticks," etc.

✪ ✪ ✪

Through a red gauntlet of merciless fire the skipper of 77 Squadron had led his men—until only two of the old gang remained. One of those was down behind the German lines—the other was grounded for mutiny—and a new skipper was on the scene.

✪ ✪ ✪

THERE were but two ships of A Flight, 77th American Pursuit Squadron left, and right at the moment, those two bullet-clipped Spads had about as much chance of extricating themselves from the sky jam into which fate had hurled them as the proverbial snowball in Hades.

Captain Jack Becker, senior remaining skipper at 77 Squadron, and acting C.O., hung crouched above his stick, eyes slitted, lower jaw stuck out defiantly, as he whirled his tattered bus round out of the line of Fokker fire. For the moment in the clear, he shot a glance overside at his erstwhile buddy and old flight member, Lieutenant Lew Connor, who was milling around below.

Plenty of tough breaks had struck 77 Squadron, particularly A flight. Today, Jack Becker and Lew Connor had zipped up into the sky in an effort to find the drome of the seven murderous Fokkers which had taken such a heavy toll of 77's men and ships of late. The old C.O. of 77 had gone down in flames. The whole squadron seemed to be under a jinx. Wing and Brigade had charged the squadron with incompetence, negligence.

For the past week, Jack Becker had been acting C.O. Wing had at last promised reorganization. A strict disciplinarian was coming to take over. The news was

received with no little showing of disgust on the part of all pilots remaining. The squadron surgeon had blown right up, and had told the brass hat executives at Wing what he thought of them, and told them in a way that only Doc Harcourt could. He and Captain Becker were the only two original 77 officers left. By all the rights of the game, the squadron should have been turned over to Jack Becker. And every single member of the squad thought so.

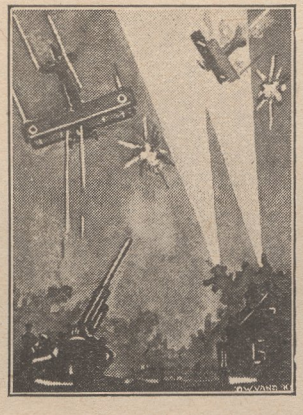
It had been Becker himself, however, who quelled the threatened mutiny. Becker was like that. Topside, in the mill of the war gods, he was a rip-tearing killer. Down at mess, at play, he was a silent man whom men admired. To hell with Wing! If they chose to play favorites—well, they couldn't tear the heart out of Becker. He was fighting for Uncle Sam and the Allies, and not for a bunch of politicians.

Such was Jack Becker's philosophy. But right at the moment there was little time for reflection. Lew Connor was at last in danger, and Jack liked that redheaded Irish-Yank buddy as well as he had ever liked a human being in all his life. With a low snarl, the skipper kicked around, streaked out from the flame of a set of twin Spandaus, and shoved his strained and tortured Spad over into a hell-bent dive.

Five Fokkers had attacked the Yank duo, and five of this kind meant plenty opposition. Becker had shattered the stick wrist of one Hun pilot, sending him limping along to eastward, but there were still four ships of the Fatherland in the mill—odds of two to one.

Three of these four had now got Lew Connor hemmed in. Death threatened the young redheaded looie in a hundred different forms, but his face was scrolled by a distorted grimace of defiance. He was going to make one or more of these Boche buzzards pay plenty for his life.

BECKER plummeted down, running a red gauntlet of merciless fire as he dived almost vertically to Connor's assistance. The skipper's big chest heaved a grunt of admiration for the lieutenant, who was now fighting with his back to the sky wall. Already the topmost Fokker was streaking down on Becker's ship, and at any second, the skipper would be forced to zoom off, if he intended to save his own life.



It was Connor who changed the aspect of the battle. In a swift glance about him, he took in the situation in a flash. He could see that Jack Becker was running himself right into hell's pit, with a fast Hun diving directly on his tail.

Connor's mind was made up to a change of tactics with the speed of a lightning flash. Becker must be saved at all costs. Men like Jack didn't come into a man's life every day.

Turning his thought into action, the Yank pilot whirled his bus around, faked a short spin, then tore up in a tight zoom to face the horrible blast of fire from six Spandaus.

Jack Becker, ready to trip his Vickers, gasped. He bellowed a barrage of oaths, and his big frame surged from side to side in the cockpit. What in God's name was Connor attempting? Why couldn't he have held on a few seconds longer? . . . . Now he had thrown his only chance of escape to the winds. A blasting sideswipe of fire seemed to tear a gap in the side of the Yank lieutenant's Spad, hurling it out.

Jack Becker stabbed hard at his lower lip. Lew Connor was slipping off, but even as he slipped away, his Vickers belched flame. A Fokker hung staggering a moment, then burst into flame. Connor's ship now heeled over and began a mad, whirling avalanche to earth. But Lew had more than balanced the score. He was alive and the Hun was dead, spinning earthward, a charred mass.

Becker hurled his ship into an Immelmann. He was alone now, with three Fokker pilots hungry for revenge. As he whipped his ship out flat, the skipper shot a glance to the needle of his gas gauge. His brows jerked up. By rights, he should cut out for 77's tarmac, or at least attempt to do so. But in his heart there surged the desire for revenge. With the passing of Lew Connor, his entire flight had gone.

The Fokker trio had slipped off, and was now converging on him from three different points. He jockeyed his stick and instantly threw his ship into action. If he didn't split this formation up in his next move, his chances were about done.

First he stabbed his stick down, then touched in his throttle to the hilt and eased the Spad back. He was going to drive on through that charging trio of Boche ships, and then—the only sensible thing to do was to scud for the home tarmac while his last ounces of gas held out.

But as Becker's nose struck up, he at once realized that he was definitely in danger. One of the Huns had anticipated his move and was whirling round in a tight Immelmann, to bring him up above Jack's back.

Becker touched his left stick and rudder. He intended to do just as Lew Connor had done—strike definitely at one Hun ship and take his chance on what struck at his own rear. Now he was slipping off. His Vickers were blazing. Some of his lead was taking effect. He could see the fabric on the Boche ship fly out. But at top speed, Becker had overshot before completing the kill. He gunned the Hisso up full and eased back on his stick to loop. His heart was tripping madly, for he expected to come face to face with certain death. A Fokker had previously Immelmanned to get into striking position on his tail.

In spite of his nerve, Jack could not suppress the shudder which convulsed his taut frame as he went on up. At the peak of the loop he gasped. Where was that striking Boche lead—that flame which should have scorched him head on? The sky seemed empty. And then, off to starboard, Becker glimpsed another Spad, diving hard onto the back of the Fokker which should have got him. Out of the apparently empty sky, assistance had come. A lone Spad scout had seen the mill and had struck down to lend his aid.

Now Becker flashed his ship alongside a sister Spad and waved his thanks. A crouched form stiffened in the pit and began to flag a message.

"Turn out now and get back to your tarmac," the pilot signaled. Becker grunted. Who the hell was this, ordering him out? He was grateful, and all that, but no stray pilot could direct his action. He signaled back that a member of his flight had gone down, and that he intended to make a search of the area.

"You haven't a chance," returned the other. "Get back. That's an order."

Jack Becker signaled back just three words: "Go to hell!" and hurled his ship down into the gathering gloom of early dusk. Lew Connor might have made a fair landing. At any rate, Becker could never rest until he had either confirmed Connor's death, or his safety.

The remaining Fokkers had limped along home. The attack of the stranger had been swift and effective. Jack Becker felt a surge of admiration bulge his chest—admiration for this fighting hellion whose arrival had

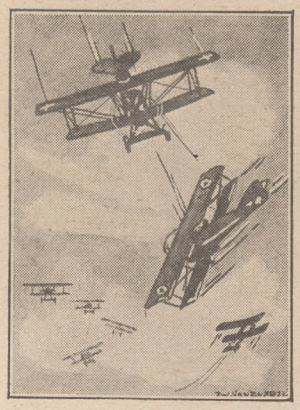
been so timely. He had never witnessed a better diving attack, in power. But now his thoughts were on Lew. Must he report the total loss of his flight?

IT was almost dark when Becker's Spad signaled for lights at 77's tarmac. His tires had barely kissed the turf before a sergeant dashed up. The Spad ground to a halt and Becker leaned overside.

"The new C.O. wants you in the office at once, sir," called the non-com.

"The—the what!"

"The new C.O., sir. You knew he was due here any time before you pulled out. Lieutenant Connor, sir—what happened to him?"



"I don't quite know, Kelly. He's down. I picked up his ship. Down in the woods east of Burlene. Spad seemed okay, but I'm not so sure Lew's—" He broke off short and wiped his grease-smeared face. "What's the new major like?"

The sergeant drew in close, casting a glance back over his shoulder.

"A plain dyed-in-the-wool hellion, skipper. Only been in a short time. Had the entire officer staff up on the mat already. He's a—well, I'd say he was a throw-back to a fighting bulldog crossed with a wolf hound and a barrel of dynamite. He wants you to report, the moment you come in, an' if it was me, I wouldn't keep him waitin', sir."

"Thanks, Kelly. Have the ship serviced for immediate patrol. Check up on her prop. You may have to change it. See that there's plenty of gas. I'll attend to the ammo." Jack Becker patted his sergeant's shoulder and strode on to the office hut.

At a growled "Come in," the skipper opened the door to the lighted office. He started as a chunky form raised itself from a crouch over the desk.

"Y-you!" he gasped. He was looking into that fighting face which had loomed up out of the pit of that stranger Spad cockpit an hour or so ago. So this was the fighting hellion who had come to reorganize and discipline 77 Squadron!

"Yeh, Captain Becker. Have a seat. I'm Major Ward."

" 'Baldy' Ward!" Becker gasped. "Well, I'm a—" He broke off and took a seat. So Brigade had wished Baldy Ward onto 77! He was a veritable heart-breaker. Kelly had been right in his description.

"And when I give an order, skyside or any place at all, Becker, I want it obeyed. You get me, of course?" snapped the major.

"Yes, I get you, sir. Hadn't any notion you were the C.O. when you came to the rescue, though. But listen, sir. Get this. If I had known then that you were the new C.O., it wouldn't have made a damn bit of difference. The last of my flight was knocked down. I was determined to try and locate the scene of his crash. Every member of my old A flight was a little more than an ordinary flight member, to me. We were all pals. Right now, I've a notion that Lew Connor might be free—wounded, but free, down there in the *bois* east of Burlene. I aim to hunt him out and, if possible, rescue him."

"Are you telling me, Becker? You mean you're going to take charge of this squadron, or am I?" The major was on his feet, glaring at the skipper through bushy, fighting brows.

"I mean that I don't give a single hoot in hell what happens, major. I'm ready to be sprung out, if that must follow. This squadron has had a bad deal all round. I wouldn't mind going back to the infantry. Hell! Why should I? This squadron should have been mine, but I'm letting that pass. We should have received supports, replacements, when we most needed them. My flight should have been reorganized. Have you taken a squint at the record of old A Flight? Are you coming in to try and teach the old original members of this squadron how to fly, how to fight, or are you going to attempt to cooperate for the good of the service?"

Baldy Ward snorted and shuffled on his feet. He stuck a couple of fingers hard into the waist belt of his Sam Browne and came round from behind his desk to plant himself firmly before the skipper.

"I've come here to put 77 back on the map, Captain Becker. I didn't ask for the job. You get that right now, will you? Good. Well, take it from me—while I command here, I'm giving the orders. You'll take a three days' rest—excused from all duties. I'll likely need you as senior captain, to assist me in plans for reorganization. Meanwhile, you'll ground yourself for three days. That'll be all, Becker—for now. See you later, perhaps tomorrow."

Jack Becker's face flushed a bright scarlet, then blanched. His hands balled into knotted fists, but without a word, he nodded and strode on outdoors.

So this was Baldy Ward, the tamer of men, the man who had once made Richthofen eat out of his hand—the man who had broken the hearts of a score of potential Hun-busters! And he had grounded Jack Becker for three days, every hour of which was, to Becker, the most precious time he had ever known.

"Grounded, hell!" he swore. "No damn disciplinarian with a face like a bulldog is going to hold me now!" Becker's mind was made up. If Ward had started to ride him, then Ward must be bucked off. At all costs, Lew Connor must be located, dead or alive.

Back in his office, Baldy Ward resumed his slumped position at the desk.

"So that's Jack Becker!" he mused. "Lost his entire flight. Alone, by God, and Wing expects me to tame and discipline a man of his calibre! H'mmm . . . ." The major touched a buzzer and got the sergeant mechanic's quarters. Captain Becker's plane must not be touched for three days; in fact, it must be rendered unserviceable. Baldy Ward intended that from the very start his orders should be obeyed. An odd smile played with his mouth.

The deep night closed in, blanketing 77 Squadron in an element of deeper gloom. Lew Connor was missing. Jack Becker, the most popular skipper in 77's history, had lost the last of his fighting hellions. And, seated in the office chair of the C.O., was a newcomer who seemed not to care a hoot. A throw-back to the stubborn bulldog, the wolf-hound, and a barrel of dynamite!

JACK BECKER prowled the tarmac the following day like a caged jungle beast. He had scarcely a word for any member of the squadron, save for his old pal, the squadron surgeon. Major Baldy Ward had left the tarmac at dawn. Becker's Spad had been partly dismantled on the new C.O.'s orders. There wasn't another plane available, and Jack's anger swelled to a growing hatred for this man-tamer who kept him from his search for Lew Connor.

"I wouldn't take it too badly, Jack," offered Captain Blair, the surgeon. "You expected something of this sort. It won't last long. Hell's bells! Every pilot in the squad's on the verge of mutiny. They know how you feel, brother. Here's another who isn't going to stand for much of this martinet's action. By George, I'll tear him apart and take the consequences, if he doesn't change pretty soon. He lit into me about the condition of the

medical hut last night. And I've been tying up you mad-brained buzzards for months, without a squawk. I'm sorry about young Lew, buddy. What are you figuring on doing?"

They had been strolling across the tarmac, Becker silent, his head down, his eyes slitted. Suddenly he snapped up his head and faced his friend.

"You needn't have asked that, Doc. You know what I'm going to do. I'm going to cadge a plane from 120 Squadron, and peel out. But I gave that damn bulldog my word I wouldn't attempt anything until he returns. That was a fool move on my part. He's been gone most of the day—likely stewing over the reorganization of old 77 with the brass hats at Wing. I wouldn't care so much if I thought Lew had cashed in, but I've a strong hunch he hasn't."

"Well, I suppose that's all there is to it then, son," returned the surgeon. "I'm sure that if I were in your place I'd skin out, and be damned to my word."

It was only lacking an hour of dusk when Jack Becker sprang from his bunk at the call of a dog-robber.

"Wanted on the phone, sir," called the man.

Becker hurled himself to the office and snatched the receiver from the hand of the signaler on duty at the switchboard.

"Yes, Captain Becker speaking . . . . Who? . . . . Oh—Wing . . . . What's that? . . . . Can't be done. I've got strict orders to ground myself for another three days . . . . I can't help it if the whole Burlene zone gets blown to hell. I'm telling you I can't make a solo patrol. I—"

Becker broke off, to listen. What was this officer at the other end saying? Orders by wireless from Major Ward that Captain Becker was to run a solo cruise of the Burlene woods before dark? It sounded like a phoney. Hell! If Ward wasn't at Wing, he was at Brigade.

"Listen," cut in Jack. "Who's nuts, you or me? I tell you that Major Ward distinctly ordered me to the ground for three days . . . . Three days, yeah! My plane isn't in condition. Tell him to go to hell—by wireless, if you like. I'm carrying out my previous instructions. G'bye!"

Jack Becker slammed up his receiver and turned to the door. He hadn't settled himself to a pipe, before the orderly again called him to the phone.

"Who is it this time, signaler?" he jerked as he grabbed at the receiver. "That Wing skipper again?"

"No, sir. It's the big chief—the colonel himself."

"You, Captain Becker?" rasped the voice along the wire.

"Yes, sir. Captain Becker speaking . . . . Yeah, I heard, but I—well, you heard what my orders were. I can't do it. I won't do it, now. No plane . . . . Can't help it, sir. Let Major Ward take the consequences . . . You what? He's—you mean to say Ward's down east of Burlene woods and wirelessed for me to make a patrol above? You're not fooling, sir?"

Jack Becker's pulse was hitting hard under his flesh now. His whole being quivered. He was listening to a barrage of words that stirred his whole being. Was this colonel out of his head at the other end of the wire?

"Very good, sir," gasped Becker, at last. "Since you give me your word, then I'll have to get a plane. Give me approximate map location . . . . I—oh, you didn't get that? Never mind. I'll go . . . . I said I'd go—that's all I can do. If your lion tamer's got himself in trouble, I suppose it's up to me to help pull him out. He helped me yesterday. Can't forget that. Right, sir!"

Jack hung up, and sent the signaler plugging in to action. The mechanic sergeant bounded into the hut.

"A Spad, Kelly, at once," barked the skipper of old A. "I don't give a damn whose. Shoot her to the line. I—what's that? What did you say?"

"Your own's ready, sir. Major Ward said to—well, I reckon he was only bluffin' you. Somehow, I've changed my mind a bit about him. Mebbe enough so's I'll cut the wolf-hound part out. Spad'll be at the line and revved in less'n ten minutes. Hisso's warm right now—orders from the C.O. before he left."

"You mean he told you to keep my ship ready for instant action?"

"Sure! But I wasn't to let on to you, skip, unless in a case of extreme emergency."

"Well, I'll be a—get going, sarge. Make that eight minutes. Something tells me—something. I don't know what."

The skipper bounded out, and hustled into his flying leathers. Just what did all this mean? Jack Becker gave it up. He had the Wing colonel's word for it that the call to Burlene woods was *bona fide;* and in any case, a trip to that zone was what Becker had yearned for.

Dusk wouldn't blot out visibility for an hour or more yet. Jack Becker hadn't felt so good in many days; and still there lurked in his mind that prowling element of the ominous, the mysterious, for which he had no immediate solution.

LIEUTENANT LEW CONNOR groaned as a savage pain assailed his right leg. For practically the whole of a day he had dragged the bullet-torn member after him through the woods. Time and again he had swooned, only to awaken with a start at the sound of deep gutturals. Germans were searching for him. They knew he was at large. They meant to get him alive, if possible.

The Yank had had no chance with his Spad, in his last fight. The rudder control wiring had been nicked. He had fortunately landed atop a cluster of willows, and had been able to drag himself clear.

In spite of the pain from his leg, Lew had clung to his reserve of nerve, and had outwitted the Huns. A tiny cold spring stream trickling through the woods had contributed much to his comfort, but the Huns had forced him from the stream area and now they were closing in on him. He was not conscious of the roar of a sky motor, towards mid-afternoon. He had slipped out again into the maw of unconsciousness.

Now he was staring like a trapped jungle beast through a port in the foliage. The Boche had found his latest hideout. They were closing in. He could see them, and his hand dropped swiftly to his automatic.

"Can only get about one," he breathed. "They're too many for me. I—" He started at a sound at the rear, the cracking of a dead tree limb. He was being encircled, surrounded.

For the moment, those creeping soldier forms before him whirled in a dizzy blur. He clutched hard at a willow for support, but it cracked in his hand. In a flash three German Mausers struck up, and a coarse voice called on him to put up his hands. Something in Lew's mind tripped. He'd be damned if he'd be taken alive. He couldn't bear the thoughts of German hospitals, prison camps.

His gun arm raised. He was taking careful aim. His trigger finger was taking up pressure, when again he started at a sound at his back. He whirled. His gun crashed. A low cry escaped him. He was staring through blurred vision at the heavy frame of an American flying officer. God! He had pulled the trigger, and only his shaking hand and indifferent vision had averted a tragedy. He reeled towards this stranger now, but the newcomer snarled an order.

"Down! Drop flat. Look out!"

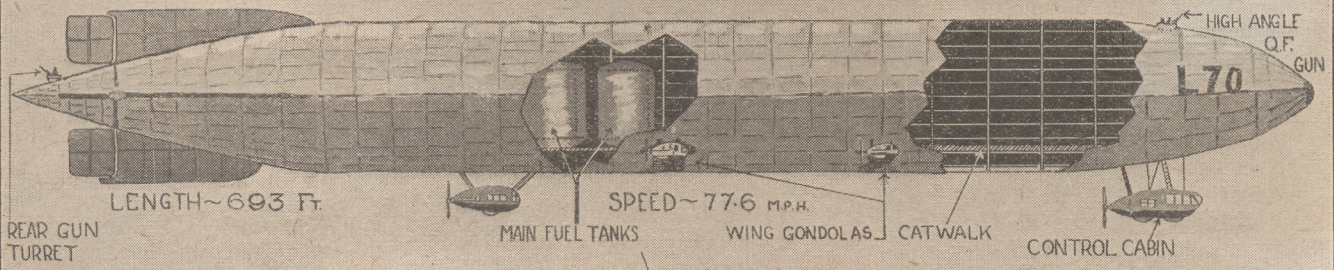
Crack! Crack! The stranger fired, leaping to one side,

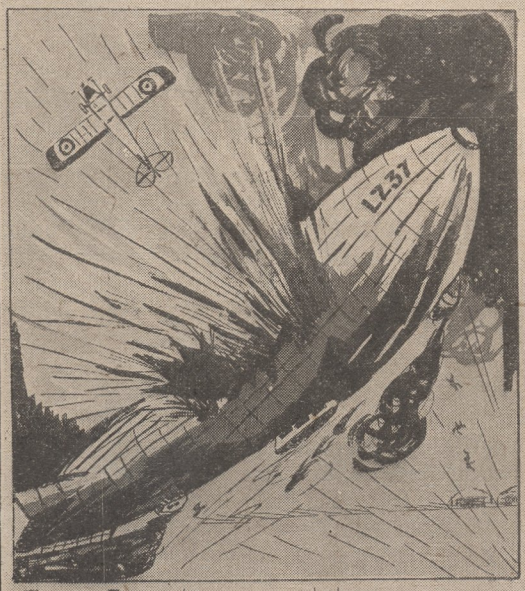
(Continued on page 88)

Zeppelins of the World War

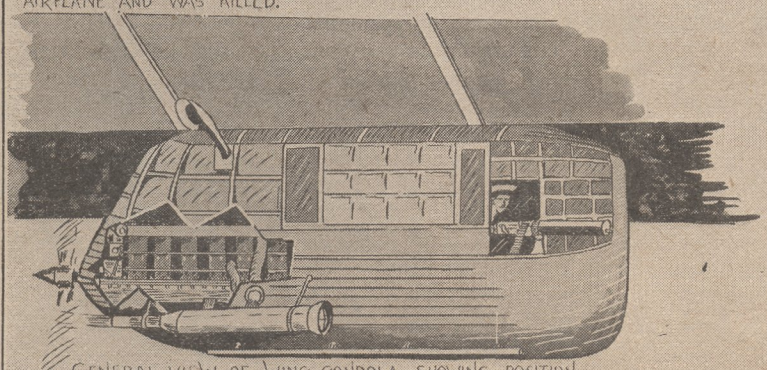
By Arch Whitehouse

L 70. THE MIGHTIEST AIR-RAIDER OF THE WAR ~ THREE TONS OF BOMBS COULD BE CARRIED A DISTANCE OF 8,000 MILES ~ SEVEN MAYBACH ENGINES WERE CARRIED, TWO IN THE FORWARD GONDOLA, GIVING A TOTAL OF 2,100 H.P. ~ BROUGHT DOWN AUG. 1918 BY BRITISH NAVAL FORCES, OVER NORTH SEA.





THE FIRST ZEPPELIN BROUGHT DOWN IN THE WAR, WAS DESTROYED BY SUB-LIEUT R.A.J. WARNEFORD, A 19 YEAR OLD BRITON WHO CAME UPON IT BY ACCIDENT OVER GHENT ON JUNE 15TH 1915. HE WAS FLYING AN OLD 1914 TYPE SHIP ARMED WITH NOTHING BUT A CARBINE AND SIX HAND-MADE BOMBS ~ WHEN HIS MISSILES BLEW THE LZ 37 UP THE EXPLOSION TURNED HIS SHIP ON ITS BACK, CHOKED HIS ENGINE AND HE WAS FORCED TO LAND IN ENEMY COUNTRY. UNDER COVER OF DARKNESS, HE MANAGED TO REPAIR AND RESTART THE MOTOR AND RETURN SAFELY ~ HE WAS AWARDED THE V.C. ~ A FEW DAYS LATER HE FELL OUT OF AN AIRPLANE AND WAS KILLED.



GENERAL VIEW OF WING GONDOLA SHOWING POSITION OF MOTOR, EXHAUST AND MACHINE GUN MOUNTING.

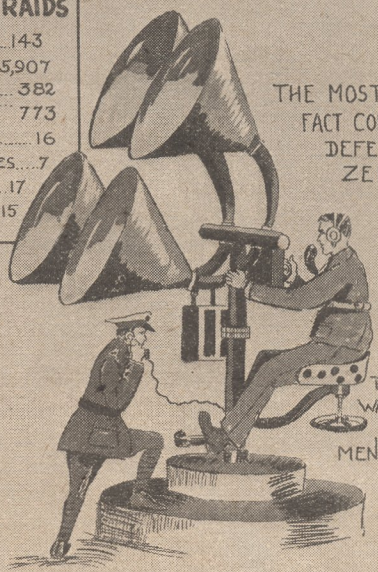
A CLOUD CAR WHICH HAD BEEN SUSPENDED FROM A RAIDING ZEPPELIN, WAS FOUND OUTSIDE LONDON IN 1918. ~ IT HAD BEEN CUT LOOSE WITH THE OBSERVER ABOARD WHEN THE SHIP SOUGHT HEIGHT TO AVOID A HEAVY ANTI-AIRCRAFT BARRAGE.

FACT, NOT FANCY.

THE L 72, A SISTER SHIP OF THE L 70, WAS DESIGNED EXPRESSLY FOR A RAID ON NEW YORK CITY. SHE WAS FITTED TO CARRY 5½ TONS OF BOMBS TO THE U.S. COASTLINE, AND RETURN. THE WAR ENDED BEFORE SHE WAS READY ~ LATER THE L 72 WAS TURNED OVER TO FRANCE AND RENAMED "DIXMUDE". SHE VANISHED IN A STORM OVER THE MEDITERRANEAN IN 1923.

THE STORY OF THE RAIDS

No. OF SHIPS BUILT		143
BOMBS DROPPED		5,907
KILLED	(IN ENGLAND)	382
WOUNDED	(IN ENGLAND)	773
ZEPPELINS SHOT DOWN		16
DESTROYED BY BOMBING PLANES		7
DESTROYED BY GUNFIRE		17
LOST IN STORMS		15



THE MOST ASTOUNDING FACT CONNECTED WITH DEFENSE AGAINST ZEPPELINS ~

BLIND MEN

WERE RECRUITED TO "SPOT" RAIDING DIRIGIBLES IN 1917 ~ BECAUSE THEIR HEARING WAS MUCH KEENER THAN THAT OF MEN WHO COULD SEE!

'34 Arch Whitehouse

Fangs of the Fleet

THRILLING AIR STORY OF TODAY

By Syl MacDowell

Author of "Buzzards of the Black Sea," "Kiwis Never Die!" etc.

No one could guess what lay behind that curt report on desertions in Navy aviation. No one suspected that back of it was a grim threat from an evil horde who, like ruthless barbarians of Genghis Khan's time, would sweep across the Pacific to sink their blood-stained fangs into western civilization. And the U. S. fleet, unwarned and unsuspecting, was sailing for the Atlantic, leaving the west coast unguarded.

ADMIRAL REGAN glared at the report on his desk, then at the luckless officer who had just delivered it. "Desertions have suddenly jumped to forty per cent above normal, commander," he sputtered. "How do you account for it?"

Commander Briggs, the fleet personnel officer, flapped his long arms helplessly. "On account of the entire fleet being ordered back to the Atlantic, possibly, sir."

"Bilge! A large part of our enlisted forces was recruited on the east coast. I notice another strange thing in this report, commander. Most of these so-called deserters had aviation ratings. Now, men drawing flight pay don't go over the hill. For instance, here is this man Scott." The admiral jabbed a finger at a name halfway down the deserters' list. "I know Scott. He was one of my signalmen on the Yangtze. Fine clean-cut lad. I recommended him for flight training at Pensacola. He made a splendid record and the last I heard, he was an aviation pilot, first-class, in one of the fighter squadrons. I'll stake my socks and stars that Scott didn't desert. What happened to him?"

"He disappeared on a duty hop up to Clover Field, sir."

"Disappeared! That's exactly what I'm getting at. Look here, Briggs, I want you to find Scott."

The fleet personnel officer made another dismal flap with his arms. In two days the fleet was leaving California waters. He was up to his ears in last-hour duties. "But we are doing everything possible, sir," he protested. "The shore patrol has a copy of the deserters' list. Every police department in the country has the descriptions, along with the usual offer of fifty dollars for turning in a deserter."

"Mere routine," snorted Admiral Regan. "Call on the district intelligence office. Get to the bottom of this. And keep me in touch. That's all, commander."

The fleet personnel officer murmured, "Very good, sir," saluted, and left the admiral's cabin.

AVIATION Pilot Scott—"Skyball Scotty," his wingmates called him—awoke. Consciousness dawned slowly in his clouded brain. His head ached unaccountably and his tongue was dry as an elephant's foot. He drew a blouse sleeve across his eyes and struggled, bit by bit, to remember what had happened to him.

His outfit, the 12-plane V-S squadron, had set down at Clover Field. The squadron was on a cross-country problem concerning a theoretical defense of the California coast against an imaginary enemy and was scheduled for an overnight stay at Clover. It was a civilian field, minus a ground crew, so Skyball had lent a hand to the squadron mechs with cockpit covers and engine tarpaulins. It looked a little like rain. It was dusk before the twelve planes were made secure in their chocks alongside a commercial hangar.

Lieutenant-Commander Radway, the squadron skipper, rewarded Skyball's willing turn-to by granting him an evening's leave. Skyball thanked him and started away from the apron towards the bus terminal. As he did so, a red-winged plane z o o m-e d the field, circled the field, then slanted down. Skyball was interested in planes. He paused to watch this one land.

It was a Skyway, a small, fast cabin job. It did a neat three-point and taxied to the apron, throttled down, and stopped a few feet from Skyball. The door swung open and a girl stepped to the ground. It wasn't quite dark yet. Skyball was quick to notice that she was a vivid brunette, quite young, and wore a suede flying jacket. She had a pretty but hard, sophisticated face and very red lips. She came towards him, smiling familiarly.

"Got a cigarette, sailor?"

Skyball swiftly produced a pack from his blouse pocket. Her gloved fingers brushed his hand as she selected one. Before he could help her to a light, she struck a match on her heel. He caught a flash of a shapely, silken knee. By the brief flare she studied him keenly, then stepped very close.

"Listen, sailor, how'd you like to make some quick money?"

This was something new. Most dames wanted money, instead of suggesting a way to get it. Skyball grinned.

"I'm listening," he said.

The girl shot a quick glance up and down the runway. No one was near them. She took hold of his arm and guided him to the red plane. The cabin door still hung open and the prop was ticking.

"Climb in," she said. Her voice was husky, as though with suppressed excitement. "Hurry!"

Skyball swung to the control seat. The dame wanted help, he figured.

"Want me to show you something, miss?" he asked as he settled in the richly cushioned rattan.

She leaped in beside him and slammed shut the door. He felt something jab him in the side. "No. I want to show you something." Skyball looked down and saw the small but businesslike automatic pistol she was pressing against him.

This was something new, too, he thought. He said, "Then what?"

"Keep your hands on the stick, brother, and take off."

"Yeah? And then what?"

Their eyes clashed. Skyball's measured the distance

Illustrated by Eugene M. Frandzen

At dazzling speed those Navy ships flashed down on the flagless freighter, and fanged death leaped from their gun barrels.

between them and wondered if he could grab the gun. Evidently aware of his thoughts, she slid as far from him as possible, but she held the automatic leveled at his middle, and her small forefinger was curled around the trigger.

"Lift her off. I'll give you orders then."

Skyball shrugged, and decided to make no play for the weapon. In the hands of a jumpy girl, that blunt muzzle might spit slugs too quickly for him. The thing smacked of adventure. It looked as if his evening off was going to be livelier than at some beach movie.

"They got a name for this sort of stunt, little one, and a tough new law, too," he remarked pleasantly.

"I know. Kidnapping. But don't worry your head about that, brother. Get this crate going before I shake a shirtful of lead outa this."

Her jaw was set and her eyes glinted like needle points. It was no good time to argue, Skyball told himself. He turned his eyes to the instrument board, toed the rudder bars, gunned the little ship around and took off down the field.

At 1000 feet, she made a restless motion with the automatic. "Head west," she said grimly.

The sea was a dark expanse westward, burnished by a long path that led to the horizon, bright under lowering clouds. A purple blot between sea and sky, seventy miles from the mainland, marked the lone Perdido Island. Perdido was due west.

Skyball leaned towards his menacing companion. "What's the plot, kid? Chinks? Dope?"

She said, "I'll talk. You fly."

Again Skyball estimated his chances. He could throw the Skyway into a tight, lurching spin and go for that gun. His fingers tightened on the stick. He thrust it abruptly forward and kicked the little ship around on a wing end.

The girl was on the down side when he flung his weight against her. He felt that she would not expect such a move so close to the ground. His left hand shot towards the gun and missed.

There was a wild, scrambling instant in which he felt her breath against his ear. She tore free, somehow. There was a second in which he wished he had crashed his fist into her tense face, as though it had been a man's. It was when the gun came up and the broad, flat side of it crashed against his temple.

A thousand lights exploded dazzlingly before his eyes. Then darkness blotted out all other sensation and Skyball slumped into oblivion.

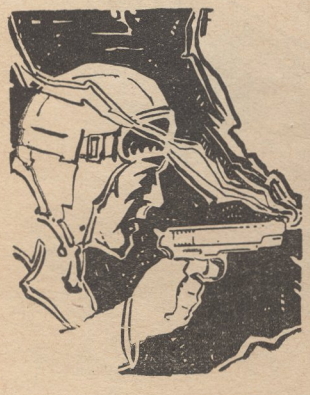
How she ever brought the Skyway out of its whirl earthward before they crashed was something he never knew.

AND now, running a hand over the throbbing lump on the side of his head, Skyball came to his senses in stifling darkness. He lay on a narrow cot. He struggled to sit up, and the springs under him cracked like pistol shots. Something bit at his right wrist. He fumbled with the other hand and made the unpleasant discovery that he was handcuffed. The other bracelet was linked to the frame of the cot. He was a prisoner!

Where? Perdido Island? He lay back and listened. All about him was silence except for the soft swish of a near-by surf. His aching eyes explored his prison. Some rough board shack it seemed to be. There was a small window in the wall across from him. He saw the black rim of a hill and thin clouds scudding across a star-specked sky.

He swung his legs from the cot and kicked the wall. He waited. Then he kicked again, harder. The blows of his heels shook the loose boards with sound enough to arouse the dead.

He was rewarded this time by shuffling footsteps outside. There was the swinging light of a lantern. The door creaked open, and a wizened Chinese in a soiled white apron entered. He carried a steaming cup of coffee. Setting down the lantern, he came to the side of the cot.



Skyball recognized him then.

"Sam! By the hind leg of a fried duck, if it isn't old Samshu Sam!"

The Oriental gave a surprised chirp, bent over and squinted. "By golly, how-do!" His dried-prune face crinkled into amiability.

Skyball saw a watchchain dangling across the vest front of the Chinese. "You ketchum clock time, Sam?"

The other hauled out a silver turnip of a watch. "She say alla samee up-an'-up!"

Midnight! Skyball was due back at the Clover hangars at twelve.

"What the devil are you doing here, you old high-binder?" he demanded. It was years since he had seen Samshu Sam, years since they had been shipmates on the Yangtze. Samshu Sam had been Admiral Regan's mess steward.

For reply, Sam handed him the coffee. "Dlinkum op. Java fixum go sleepside head."

Skyball took one gulp of the hot coffee. His head was clearing slowly. "Now get me out of this, you pirate." He pointed to his shackled wrist. Samshu Sam shrugged. "No can do. Bime by, you be deserter, by golly."

"You mean you won't help me, after all the jams I got you out of?" Samshu Sam, so nicknamed because of his over-fondness for that fiery Chinese liquor, was that rarest of all things, a scrapping Chinaman. Skyball had taught him to use his fists. Proud of his prowess, Sam had delighted in cleaning up on coolies along the Shanghai Bund. "You just a yellow-bellied pot-wrestler now, huh? No likee fight?"

Samshu Sam leaned closer. "Fight, you bet! We ketchum plenty big fight, you an' me." His black eyes flashed eagerly. "Glad you come here, by golly!"

Skyball reached up and pulled the Chinese down beside him. "What's going on here, Sam? Who was the dame that brought me? And why?"

Samshu Sam, his voice sinking to a whisper, began to speak rapidly. "You savvy big-money fella out China-side namee Slake?"

"Slake? You mean 'Cumshaw' Slake, the Shanghai millionaire? That lousy crook who stole a shipload of flour that American charities sent over to the Hankow flood sufferers in 1930, then turned around and sold it to the Russians? Hell's firecrackers, Sam, I ought to remember Slake! In the revolution that followed, the Yangtze patrol had to save his dirty hide. I was in the landing party that rescued him from a riot at Nanking."

"Slake, him boss here."

"What? And you're working for that—"

"You bet, by golly! On account Slake fella, my gland-fadda an' cousins die out Hankow-side. Die hungly." Sam gave a short, cackling laugh. "I fixum Slake fella, you bet. Now you an' old Sam fixum, hey?"

"You want to drag me into your private war, is that it?"

Samshu Sam made a sweep with a skinny fist. "No, no. Not one-man wah. This big wah, evelybody wah."

"Everybody's war? What's all this wala-wala, anyhow?"

Samshu Sam leaned close again and gripped Skyball's arm. "Slake fella, he make hell when Navy go Noo Yawk-side pletty soon. Blow up Califohnia. Blow up Panama Canal. Big sky wah, you savvy now?"

Skyball was stunned with the suddenness of the ominous news. There had been whispered rumors of a Pacific war for weeks. The Navy was full of such rumors. Old Samshu Sam had information, it was plain to see, that would have overwhelmed admirals and intelligence chiefs.

Skyball shot one word. "Japan?"

"No Japan," was the surprising answer. "Slake fella, him Numbah One man in big Mongol plot. Mongol people come killum 'Melicans. Come makee Califohnia alla samee Calasia, savvy?"

CALASIA! The word was sinister with meaning. Out of Asia Mongol hordes would come to fulfill their age-long dream of conquest. Like wild horsemen of Genghis Khan's time, ruthless barbarians would sweep across the Pacific to sink their blood-stained fangs into the luxury and riches of fat, unsuspecting America. It was a plot cunningly timed to strike the Pacific Coast following departure of the fleet from western waters. Calasia! Only men, like Skyball, who had seen service in the Far East, could see that the threat was no fantastic, idle nightmare of imagination.

And Cumshaw Slake, international racketeer, had joined hand with the evil brood. What was he doing here on Perdido Island—concentrating shanghaied skymen? So intent was Skyball in digesting the astonishing information and piecing it together with bits of his own knowledge that he did not hear a stealthy tread

outside. Samshu Sam was first to take warning. He leaped to his feet as a dark form shadowed the doorway of the shack.

The ray of a flashlight stabbed out suddenly, blindingly. Beside the light Skyball saw a heavy revolver, gripped in a square-knuckled hand. Then came the gritted voice.

"So it's like that, you yellow so-and-so! I never did trust Chinks. Lucky I listened in on your *yakamoshi*. Now say your heathen prayers because you've—"

Skyball interrupted. "What's the play? And who the devil are you?"

The man with the gun strode into the shack. The upcast rays from the lantern on the floor painted his face with long, eerie shadows that increased the menace of his appearance. It was Cumshaw Slake.

Skyball suddenly forgot the pain that throbbed in his head. Slake was an erect, powerful man somewhere under fifty. White hair showed under the rim of his black fedora. He had always affected black hats, Skyball remembered. Under the hat rim were amber-colored eyes, unblinking like an owl's, and close-set beside a sharp, predatory beak of a nose.

The eyes swung from Samshu Sam to the form on the cot. A smile flickered on Slake's mouth. "So you fell for little Marie, too, did you, sailor? Well, maybe you'll see her again."

"That," Skyball said, "will be tough luck for Marie." The cords in his neck were as taut as strut cables. "What sort of hell's porridge are you stirring, Slake?"

"The Chink told you straight. Here on Perdido are a coupla hundred stick-twisters like yourself. Traitor camp, we call it, though damn few came willingly. The Great Advance will soon reach here, with planes, plenty planes."

"And you aim to organize a peanut air force?"

"Enough to destroy strategic centers like Los Angeles, San Francisco, Seattle, and to wreck railroads, highways, water and oil reserves. But you'll see the set-up in the morning, sailor. Right now, I'm putting this Chink where he will be through meddling forever." Slake's thumb curled over the hammer of the revolver. It clicked dully. "Come out of here, Sam. Let's take a little walk down to the rocks."

A slow, cold rage had taken hold of Skyball. His free hand still gripped the half-empty cup. With a swift motion he hurled it at Slake's cold, passionless face.

Slake ducked, but not quickly enough. While the heavy cup only grazed his head, the still-hot coffee sloshed into his face.

"At him, Sam!" Skyball's yelled signal was not necessary. No sooner had the missile left his hand than the Chinaman sprang. His bony fist whizzed out and spatted into Slake's face. Slake staggered, cursing. Sam struck the pistol from his hand and kicked at the big man's kneecap. It cracked. Slake slumped down. At the same time he lurched his weight at Sam. His arm hooked around Sam's scrawny neck. They went down together, rolling, clawing for strangleholds.

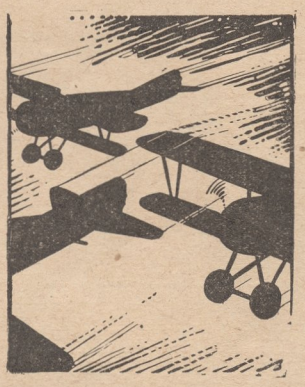
Sam's fists pecked at Slake's face like angry sparrows. Slake's grip tightened on the other's neck. Sam's breath came in wheezy sobs. His eyes bulged. His wrinkled face turned tomato red. Slake was pounds heavier and filled with a stubborn strength. Thirty seconds more of it and Sam would gurgle his last.

Skyball had tugged with his handcuffed wrist until the flesh was blood-wet. He flung himself sideways now, turning the cot over on himself. He rose then, grasping the metal edges, and, lifting it over his head, he charged Slake. Slake's foot went out, scooping the fallen revolver to him. He snatched it and fired. The cot mattress, sagging in front of Skyball's body, took the slug. Skyball felt the cushioned blow of it. The muzzle was almost in contact with it when Slake fired, so close that the report was muffled.

Then the hard, heavy edge of the cot caught Slake across the chest and threw him back against the wall. Something crunched, and he went limp with a cry that ended in a groan.

Samshu Sam swayed to his feet.

"Into his pockets! Get his keys," gritted Skyball. He swung the cot to the floor and Sam knelt beside Slake and frisked his clothing. He clawed a key ring out of a coat pocket and lurched to Skyball's side.



One of the keys fitted. The handcuff clicked open. Skyball untied his black silk neckerchief and wound it around his chafed, bleeding wrist. Slake moaned and pushed himself to a seated posture. He gulped in a tortured breath, but before he could shout, Skyball was on him. He gagged Slake with the bloody neckerchief.

He stood up. The fight had driven the heaviness out of his arms and legs. Sam had the revolver. Skyball took it from him and slipped it into his blouse. Then he closed the door. That one report from the gun had no doubt roused the camp. If it did, he and Shamshu Sam were in for a siege. Skyball blew out the lantern and dragged the cot against the door.

THE girl known as Marie had refuelled at Perdido Island, then hopped the red-winged plane from a smooth, grassy slope near the shack where Skyball was imprisoned.

Slanting up into the dark, she did not nose the Skyway back toward the mainland. She was acting on instructions from Slake. She sent her ship roaring westward again, to sea, over watery leagues on what seemed a suicidal flight.

But her orders from Slake were definite. "Fifty miles out, watch for red flares fired at five-minute intervals from deck of freighter on southeasterly course. Drop an answering flare and return," he had told her.

Marie was a competent pilot, as her daring venture with Skyball had proven. Russian by birth, she had perfected her air skill at Irkutsk on the Mongolian frontier. She had been active in the Calasian conspiracy since a certain time when a Buryat chieftain, Bori Khan, descendant of the great Genghis Khan, had contrived his dream of conquest of the western world.

Thickening weather made Marie's mystery hop more than ordinarily perilous. As Perdido Island vanished under the Skyway's tail, the ceiling lowered. She maintained an anxious vigil, but saw no red flares as she circled at the sea rendezvous until her gas supply lowered to the halfway mark. Then, an hour past midnight, she turned back.

She had no difficulty in locating the island, despite the cloud-darkened sky, for leaping flames cast a wide radiance against the racing vapors. She made for the fire and received a shock of surprise to see that the shack in which Skyball had been imprisoned was the burning beacon that had guided her return. Circling low, she set the red-winged Skyway down on the meadow where she had taken off.

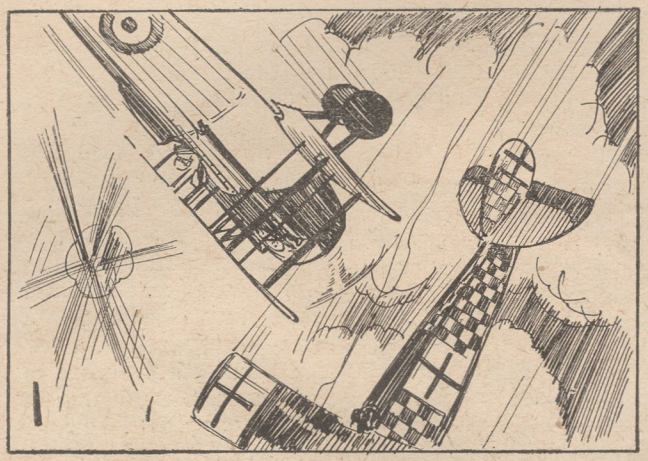
It was then that Skyball's trained ear recognized the familiar motor sounds. They raised a new hope in him, and a half-formed plan for defeating Slake's treason.

He whispered to Samshu Sam, who crouched by his

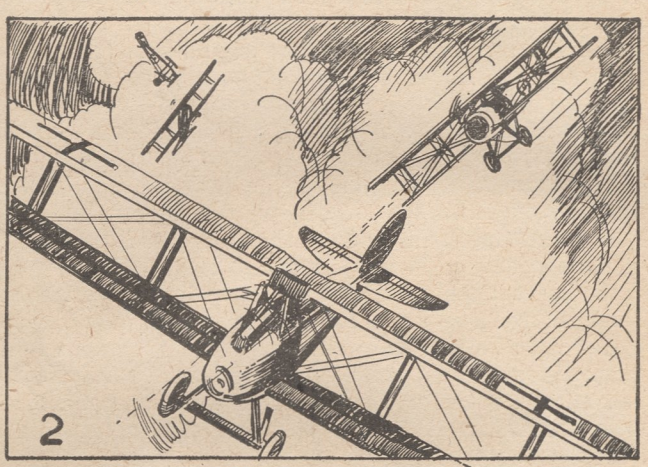
(Continued on page 84)

Lives of the Aces in Pictures

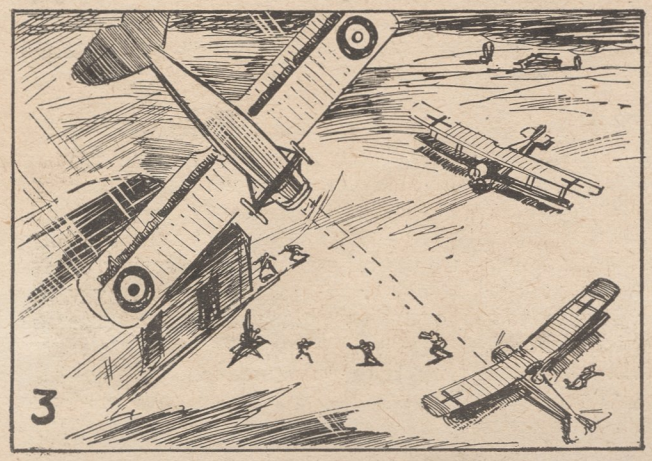
XXVI—Lt. Thomas Hitchcock, Jr., Yank Flyer



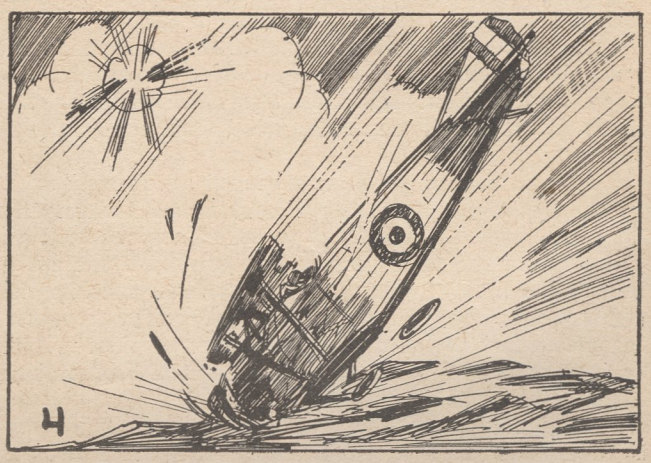
1—Thomas Hitchcock, Jr. tried to enlist in the U. S. Aviation Corps. Although he had passed his flying tests, he was rejected on account of his youth. He went to France, where he was assigned to the Lafayette Escadrille. Early in 1918, he brought down his first enemy plane, and for this he received the Croix de Guerre with palm.



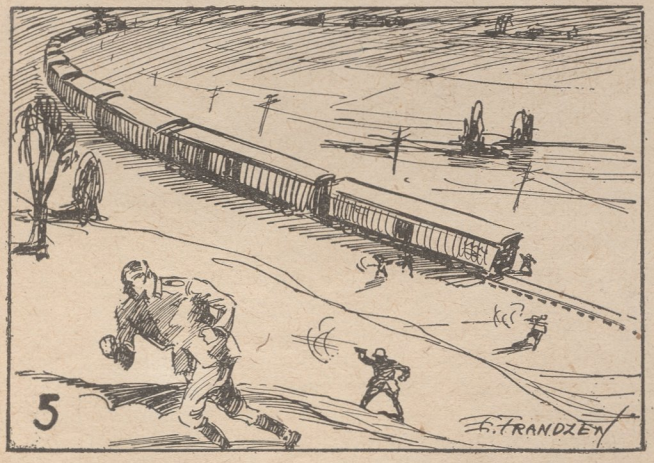
2—Flying behind the German lines one day, Hitchcock saw a large German plane very high. He climbed above it and attacked so suddenly that his bullets were immediately effective. The German started down in a nose dive. Hitchcock followed, still pouring lead into his enemy until he crashed to earth.



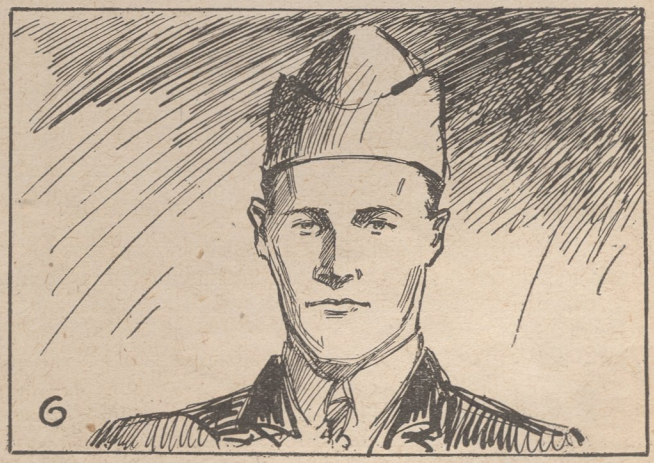
3—Hitchcock and a companion once chased a German pilot behind his lines up to the German drome. They took the opportunity presented to strafe the German field and were expert enough to catch their hapless German pilot with their machine-gun fire as he stepped out of his plane.



4—On March 6, 1918, Hitchcock was fighting several enemy planes. He was wounded in the battle, and unable to maneuver his plane. It fell behind the German lines, where he was captured. He was sent to Saarbrucken, and later transferred to a prison camp in Bavaria.

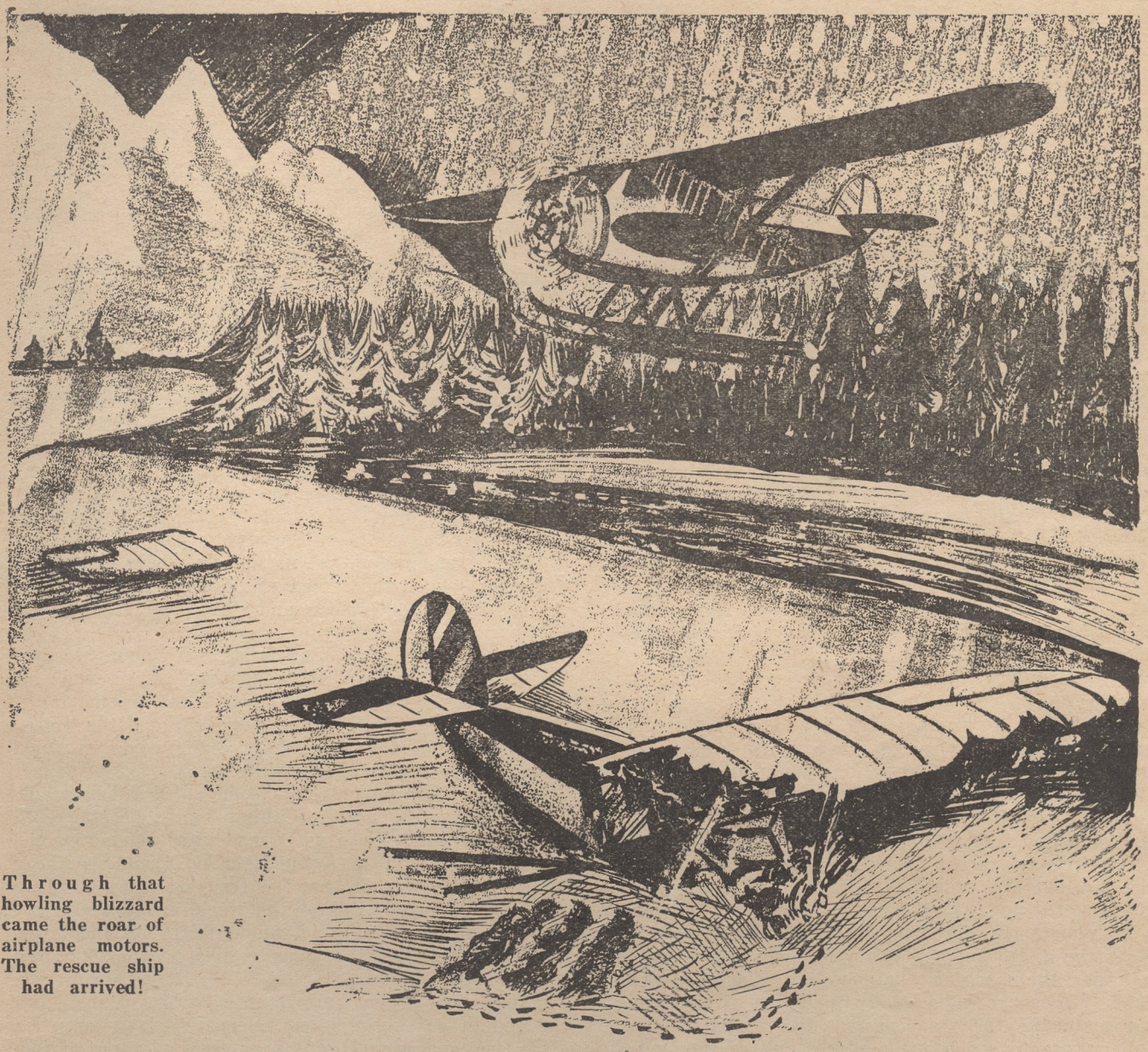


5—The youthful spirit of Hitchcock chafed at the inaction of captivity. He seized the opportunity to escape from a train near Ulm, which was only the beginning of his gruelling experiences to make good his escape. Through eighty miles of hostile country he walked, until he finally reached safety at the Swiss border.



6—Thomas Hitchcock, Jr., was born in 1900. While he was still a prisoner in Germany, General Petain awarded him promotion to a lieutenancy for his "gallant work." He has since carried out the traditions of his family on the polo field as well as in army life. His polo handicap of ten goals is the highest possible in that game.

Wings of the Northland



Through that howling blizzard came the roar of airplane motors. The rescue ship had arrived!

DRAMATIC TRUE STORY OF THE FAR NORTH

By Edward Green

✪ ✪ ✪

Many are the stories of gallantry and daring that come out of the Far North, where brave pilots wing their way through storm-tossed skies of danger. Here is a true story of a real hero of the snow wastes—a man who had a chance to save many lives—if he gave up his own freedom.

✪ ✪ ✪

OUT of Canada's wild northland they come—roaring planes and dramatic stories of the men who fly them. Tales of death, and suffering overcome by indomitable will—these are common, but outstanding is the one featuring Bill Spence, of the Spence McDonough Airways, and Buster Whiteway, a young Indian from the Berens River.

Twilight on the 8th of March found a big Fairchild monoplane winging its way near Moose Lake, forty-five miles northeast of Le Pas, Manitoba, the hopping-off place for the northern Manitoba goldfields. Big Bill Spence, veteran pilot of the north, and partner in the Spence McDonough Airways, was at the controls. He had recently completed a contract calling for the transportation of twenty-five tons of mining machinery. Though bitter storms had raged thoughout the entire period, ironically enough there was a lull now, when the job was ended. Bill was rather pleased at the prospects of a much needed rest in Le Pas. Turning to Air Engineer Cooke, he discussed the three occupants

traveling as passengers in the cabin of the plane.

Snuggled down in his seat was Bill Robinson, old-time prospector in that granite-studded northland. Across from him sat Corporal Greaves of the Royal Canadian Mounted Police. The third passenger on the list sat in silence. He had little cause for joy, for he was Buster Whiteway, Berens River Indian, being brought out of the fastnesses of his native land to face a charge of shopbreaking in Saskatchewan. Calm and immobile, he awaited his fate—and little did he realize that the next few minutes would see the pen of destiny writing his name across the frozen land.

Up front in the cockpit, Spence became alarmed. Stinging flakes of snow were being whipped down from the north by a howling gale. The twilight was fast fading, and too well the veteran pilot knew that the blackness of the forests below would soon be lost in that swirling blizzard. Less than thirty minutes' flying from a safe haven, Spence cast anxious eyes at the terrain below and ahead. Far off he spotted the gleaming white surface of Moose Lake. He was weighing his chances on making Le Pas when another blast of icy air rocked the ship violently. He decided on an emergency landing at Moose Lake, for he knew the north too well to attempt to reach Le Pas.

From a height of four thousand feet he nosed cautiously down through the ever-thickening hurricane that grasped the wings of his machine like the clutching fingers of death. As he neared the ground, the storm grew worse. Roaring in at 120 miles per hour, Spence found himself in a perilous predicament. The gale had risen with such suddenness that the surface of Moose Lake was now a white smother where whirling columns of wind-driven snow danced in macabre glee and blotted out all vision.

Skimming low over the towering spruce trees on the lake's edge into the teeth of the gale, Spence was forced to keep his motor roaring with a wide open throttle in order to effect a landing against the storm. As he cleared the tips of the spruce trees, he attempted a sideslip to avoid an obstruction ahead. Throwing the big ship over onto one wing, he shot over and down from the rim of the trees and into a blinding flurry of freezing snow.

Suddenly the rending shriek of riven metal rose above the howl of the storm. Hurtling out of the sky in a sideslip, the big Fairchild found itself robbed of the wind resistance offered by the protective rim of trees. With the added support taken suddenly away, the left wing of the machine ploughed into the hard-packed snow. Momentarily halted by the force of the impact, the motor of the stricken machine roared a savage defiance and wrenched the plane onward, hurling its shattered wing more than two hundred feet away.

The occupants of the cabin were flung through the roof and out onto the snow as the wingless machine plunged its tortured nose into the surface of the lake and finally came to rest there—a twisted mass of men and metal. Once again the howl of the storm was heard, and apart from the scattered wreckage on its surface, Moose Lake was devoid of life.

A lone wolf, prowling the fringe of the forest on the search for an unwary rabbit, peered out of the underbrush at the scene of tragedy. Scenting meat, he cautiously crept forward, but ever a coward at heart, he turned tail and fled ignominiously when he saw one of the four still forms near the wreckage of the plane make a move. The meal he had promised himself must wait.

Meanwhile, Buster Whiteway, the Indian, regained consciousness and looked about him. His red-coated captor was lying white and still beneath the body of Robinson, the prospector. The Indian's pain-filled eyes saw the sagging form of Bill Spence sprawled across the inanimate figure of Air Engineer Cooke.

Whiteway staggered to his feet. Now or never was his chance to make a clean getaway. Freedom, that powerful virus in the blood of every man, more powerful still in those of the wild, called loudly and insistently. The Indian wavered—and was lost. Freedom, a great lure to any prisoner, was surely smothered beneath the urge of a greater one. Rising above all, the call of humanity took its proper place and turned the feet of the Indian toward the wreckage of the plane.

During that short but painful crawl to the bodies of Spence and Cooke, Whiteway become acutely aware of a sickening pain that wracked his battered body. How they were he knew not, but one thing he did know—his ankle was fractured. Despite this terrific handicap, he soon reached Spence's side. It needed no second glance to know that life had fled the body of the gallant pilot. He had "put her down" for the last time, and his body was already freezing.

Turning to Cooke, the Indian noted signs of life, so he rolled the helpless man clear of the body of Spence and dragged him to the partial shelter of the wrecked airplane.

Cooke's hands were badly frozen and his teeth were knocked out, while his face was badly lacerated.

No man will ever know the agonies suffered by Whiteway as he pulled and tugged until he had the insensible bodies of both the prospector and the mountie warmly wrapped in blankets alongside Cooke. Huddling them all together for warmth, he sought means of making a fire but soon gave up the idea. Help would have to be brought soon or these men would freeze to death. He decided to seek assistance, and started his struggle for the shoreline.

Four long, heartbreaking miles, with agony tearing his soul at every step, the indomitable hero made his way. The storm-swept shores of the lake were rough and covered with deadfalls, but these did not deter Whiteway. He struggled on through a freezing cold that would have tried the mettle of any white man.

Suddenly, far out on the lake, he spied a fisherman's caboose drawn by horses. Calling loudly, he staggered toward the conveyance as it made its way across the whitened lake surface. Again he called. Could they hear him? Apparently not, for the frenzied cries for help were torn from his lips by the storm and tossed away on the wastes of ice and snow. With horrified eyes Whiteway watched the caboose disappear around the corner of an island.

This failure would have daunted a braver man, but the Indian did not give up. Despairingly he crawled after the caboose and, after what seemed years of tortured travel, he rounded the corner of Bacon Island. Out of the storm he heard the bark of a dog, and in a few minutes he came in view of the fisherman's camp. A moment later, and the story of the tragedy was pouring from his frost-blackened lips. He then subsided into unconsciousness.

No time was lost by the fishermen and in a short while a rescue party was on its way to the wrecked plane.

Indians, running in relays, carried the news of the disaster into Le Pas, and despite the blizzard, Pilot McRorie of the Canadian Airways, accompanied by Dr. Trimble and Sergeant Rose, of the R.C.M.P., roared away on their errand of mercy.

Less than twenty-five miles out of Le Pas, they ran into a terrific storm and were forced to return. One hour later saw them in the air again. They were not absolutely sure of the location, but after landing at Jim Lamb's trading post, they learned that the wreck was about twelve miles north.

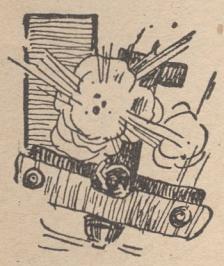
The storm had again torn out of the north, but it did

(Continued on page 94)

Brereton's Famous Flight

THE STORY BEHIND THIS MONTH'S COVER

By Paul Bissell



AT no time since the first days of the World War had the fate of France and her Allies hung in the balance as it did in those terrible days of mid-July, 1918. The Germans knew that if they were to win, the decisive blow must be given before the United States had time to pour her fresh young millions into the front-line trenches. With the frenzy of despair and against the most heroic and stubborn resistance, the gray-green horde had advanced, by July 15th, up to the very banks of the Marne. And there, for the moment, they seemed halted.

It was known at French Army Headquarters that the Huns were concentrating thousands upon thousands of their best and most seasoned soldiers for one last spear-head push for Paris. Back of the German lines, mile upon mile, the roads were packed with soldiers marching — marching on Paris.

But the river stood between them and their coveted goal —the river with all bridges destroyed. Back of the Allied trenches, through the rain that had been falling steadily for two days, columns of French *poilus* marched steadily toward the Front. Then, on the morning of the 16th, word was brought to the French command that the Germans were crossing the Marne at six different points.

For two days the battle raged — desperate hand-to-hand fighting—but in the end, the Hun was halted. Step by step he gave ground until, on the 19th, the Germans stopped their retreat and dug themselves in. Assault on their lines failed to move them.

In the whole sector no one had slept for forty-eight hours. And at the headquarters of the American First Army Corps Air Service, the men were worn to a ragged edge. It had been impossible to keep contact with the artillery units whose fire they were supposedly directing. Operations officers were frantic. C.O's were unreasonable and short-tempered, their nerves at the breaking point.

This was the situation when the 12th Aero Squadron received word from headquarters that the French High Command desired to know whether the stand made by the Germans was an attempt to hold positions until new troops arrived, or if the Hun army was really in retreat and the stand merely a protecting movement. It was imperative that this information be obtained, regardless of cost.

"It's impossible! It would take twenty-six ships, and before they made the round trip, the Huns would have every damn one of them—"

"Well, they said the information must be obtained, regardless of cost."

"By God, Haslett, you don't have to say that again. And let me tell you one thing. I'm C.O. around here, and I don't have to be told what to do by a first lieutenant." Major Brereton glared at his Operations Officer.

Lieutenant Haslett, however, scarcely seemed to have heard him. He had suddenly thought of a scheme and in a moment he was blurting it out. One plane alone might go over, flying low, gain the information and, maybe, get back.

"Great! And bring back the Kaiser, too, I suppose, just to show the boys!"

"Well, it might work."

"And the war might end some day."

"And even if the Heinies got the first one, there would still be twenty-five more to go."

"Just kill 'em one at a time, eh? Swell!"

"Well, think it over. If a plane—"

"You're balmy, Haslett. I tell you, it's suicide."

"Anyway, it's a plan, and I believe it would work."

"You do, eh? Well, by God, go try it yourself! You're not anchored there, are you?" And the major gave a short, harsh laugh, only to stop with a sharp indrawn breath as his lieutenant retorted, "You know damn well I can't pilot a ship, but—" and his eyes took on a shrewd gleam—"you could order a pilot to fly me, major.

"Surely there must be a pilot in the squadron you could order to commit suicide."

For an instant the two officers glared at one another across the table. Haslett knew his major. He knew he had won. Suddenly Brereton broke into a smile.

"You know, Haslett, that you and I have never ordered anyone on a mission we wouldn't do ourselves. We're both damn fools, but if you want to go, I'll fly you."

With the roar of its motor heard even above the inferno of bursting shells, a Salmson two-seater shot through the morning mists just above the torn treetops, and over the heads of the doughboys at Chateau-Thierry. On its wings could plainly be seen the red-white-and-blue circles of the U. S. Air Service. The pilot was hidden from view, but the gunner could be seen looking over the sides, observing intently everything below. In an instant the plane was lost to sight, only to reappear a few minutes later over Roncourt, then at Fère en Tardenois, Grand Loges, St. Remy and Soissons. There it turned east to Braisue, then Fismes, where it was thirty kilometers back into German territory. Below, the roads seemed to have turned from white to gray-green, so clogged were they with Huns—marching—marching away from Paris!

A sudden swoop, with both guns belching flame, hurled death into the marching columns below, while bits of wood and fabric flew out from the plane itself as the Huns attempted to wing it with machine-gun and rifle fire.

Then came the long flight back over the lines. The men in the Salmson strafed the trenches as they went over, and machine guns rattled from below. A thousand times that morning the two Americans barely evaded the clutch of death. Then they were home—home with the needed information. The Huns were in retreat all along the line.

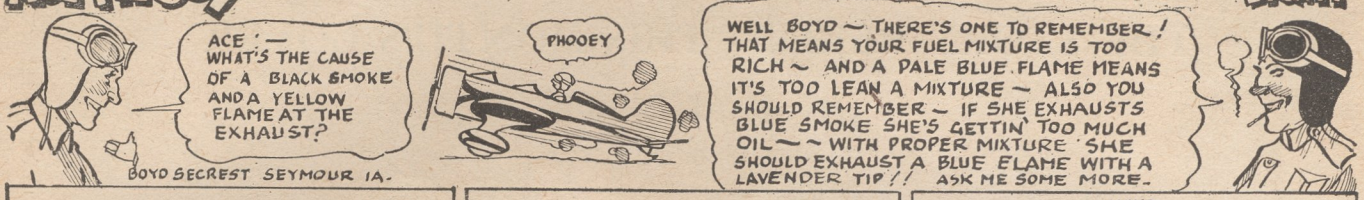
The next day came the famous order that the Allies were to advance along the entire Front, attacking at every point, for the Germans were in general retreat.

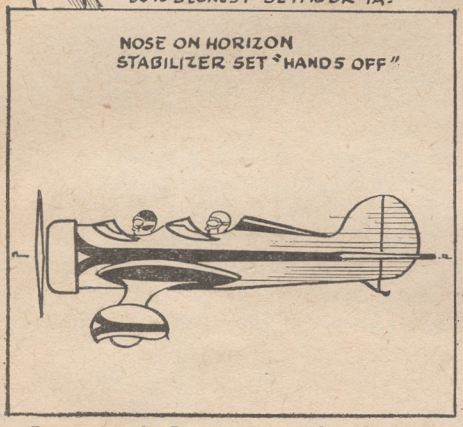
Not many around the airport knew about the flight of Brereton and Haslett, but those in command knew. The French Air Service Commander, Commandant Gerard, immediately sent over his personal congratulations and appreciation. General Mitchell, U.S.A.S., found time to drop in and pat the two on their shoulders. Eventually they were decorated by both France and their own country. The United States gave a D.S.C. The French gave Brereton the Legion d'Honneur, but to Lieutenant Haslett, because of his rank, only the Croix de Guerre could be given. However, as Brereton said, it really didn't matter a great deal, because so long as Haslett stuck around him, Haslett would be in the Region of Honor, at least.

FLYING ACES PICTORIAL FLYING COURSE

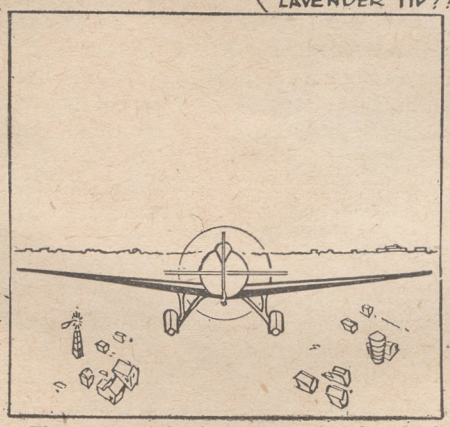
ACE McCOY YOUR INSTRUCTOR

LESSON NO. EIGHT

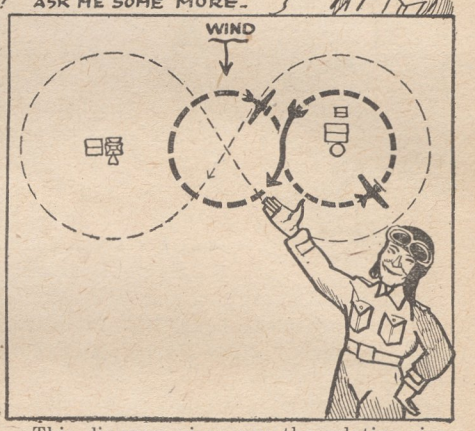




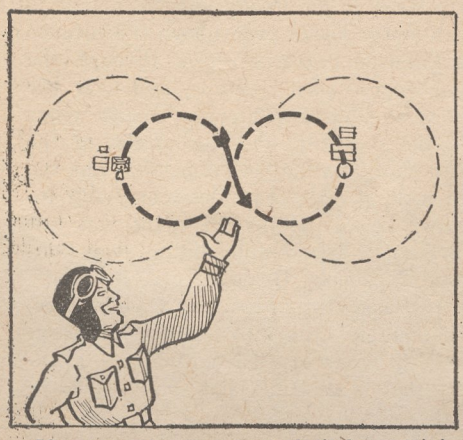
Last month I gave you the dope on shallow eights, which should be plenty fixed in your mind by now. If they aren't, go back and soak it up good before startin' this one. The same principle is used in a steep eight except it's a lot tighter circle than the shallow eight.



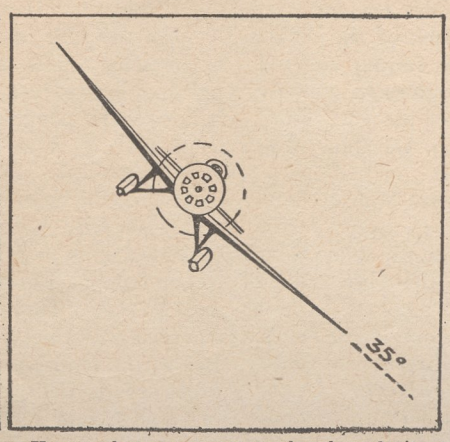
The steep eight is done at five hundred feet altitude, and you've got to keep her nose dead on the horizon and keep constantly watchin' your tachometer (revs of your prop), your bank, your pylon—and the other pylon.



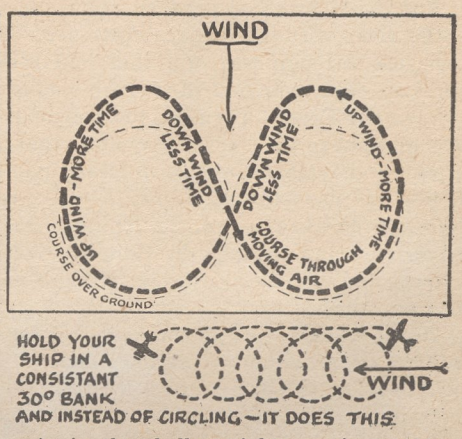
This diagram gives you the relative size of the steep eight track to that of the shallow eight. So you should pick another pylon just halfway between the two for your steep eights. Be sure they're at right angles to the wind.



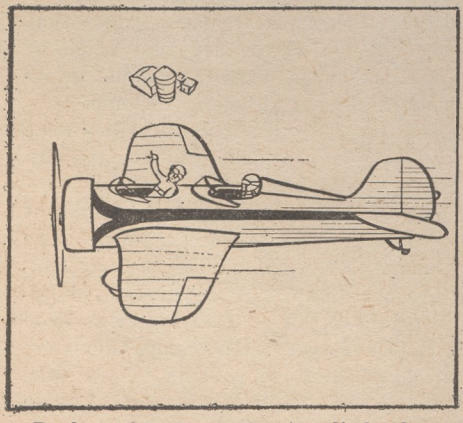
If you want to, you can do it by puttin' 'er directly over the same two pylons you used in your shallow eights, but I think the first way's the easier. Neither one of 'em is a cinch, but they'll come a lot easier if you get their relations fixed in your mind.



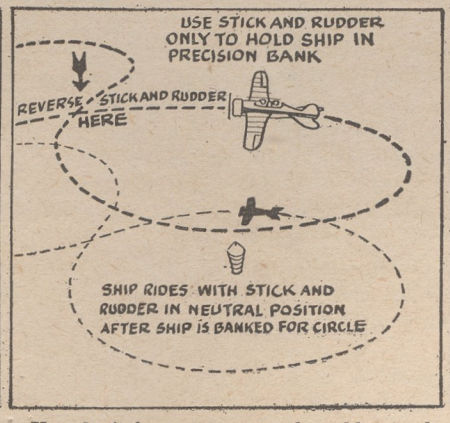
Know what you want to do, then do it—that's precision. You've got to hold her in about a 35-degree bank all the way around to "make ends meet in the middle," but DECREASE her bank a little on the upwind side o' the circle—not too much. They're tight and quick.



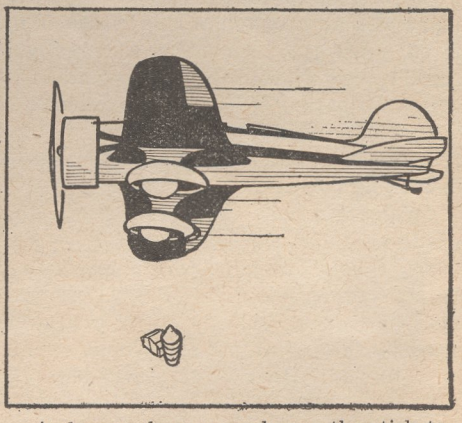
As in the shallow eights, you've got to allow for the wind and fly ovals, takin' a little more time for the upwind side. But they're just half the size and your speed's the same, so you've got to make 'em short an' snappy—an' keep 'er nose on the horizon.



Bank so that your pylon is a little above your wing tip an' hold it there all the way round until you're in line with your other pylon—then deliberately haul 'er over to the other side like you mean it. Bring the pylon up a little higher yet on the downwind side.



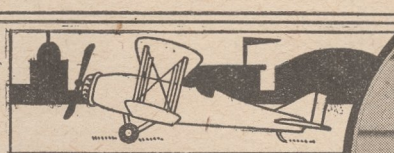
You don't have to use much rudder to do this maneuver right. All the rudder is used for is to keep 'er tail behind 'er nose. Keep the heavy boots off the rudder bar or your pretty steep eight will wind up lookin' like a pretzel.



And remember, you only use the stick to bank 'er over to where you want 'er to set. You hold 'er there with controls at neutral. It's her position in the air that makes 'er fly the circle. Govern 'er from there an' she'll cluck around there like a perfect little lady.

HAPPY LANDINGS

BY ARCH WHITEHOUSE



Now Is the Time for Aviation!

Aviation is on the up-turn—that's the prophecy of Arch Whitehouse, and this month he tells you why he is sure of it, and gives you some good dope on what each one of you can do about it. In this department, FLYING ACES gives Mr. Whitehouse free rein to express his own personal views on various phases of aviation.

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DURING the past few years we have hesitated to advise our readers to go headlong into aviation. The much-talked-of depression sank its fangs deep into the aviation industry and for months we witnessed the pathetic sight of skilled pilots and mechanics pounding the pavements and haunting the offices of the few concerns that managed to stay in business. It was senseless to advise enthusiastic youngsters to take up expensive flying courses or drain their slim bankrolls for technical training when there were at least ten pilots for every ship that was still carrying airworthy license numbers, and a dozen skilled mechanics for every motor that was being fed fuel. The so-called saturation point had been reached and passed as far back as 1930.

Today things are different. Not that there are any more planes flying or that there are dozens of jobs open, but now is the time to prepare for the future. We believe now that the tide has turned. Aviation is starting a healthy climb, and those who are trained and ready will be in on the ground floor.

There are several reasons for this opinion. In the first place, hundreds of wartime pilots and mechanics who were in the game during the boom years have dropped out, let their licenses slip into the void and turned to other professions. Many of the wartime pilots are now well over the efficient age limit. Many of the mechanics have been absorbed by the return of good times in the automobile industry.

Next, the general shake-up in the aviation industry as a result of the so-called air mail scandal will bring profit to many of the smaller concerns, who will be getting a fair share in the matter of government contracts. Firms that previously could hire only a few pilots and not many more skilled mechanics will be getting juicy orders for service equipment, and their shops will have to be enlarged and their staffs increased.

Also, we cannot help feeling that there will be a boom in general civilian flying. Hundreds of ships for private use will be purchased within the next twelve months. Some one will have to service them and maintain the open flying fields that these new pilots will use. The movement toward streamline effects in the new motor cars is fast making the public flight-conscious, and the inevitable result will be a turn toward actual flight.

No matter how we look at it today, we sense a real improvement in the aviation industry. Within six months, the first effect will be noticed when the manufacturers start advertising for help. Where most of it will come from is problematical, for many skilled pilots have given up the game, and other industries have absorbed most of the mechanics.

Now is the time to think about flight or aircraft-construction training. If you start a transport course now, you should be ready for the first surge back to normalcy. If you take up any of the various ground trades of the industry, you will be set for the first ripple of the improvement. It's up to you.

It Takes Hard Work!

WITH all this light-hearted enthusiasm, it should be pointed out, however, that flight training is not easy. Aviation is a profession, as we have said many times in the past. It ranks with that of the law or medicine, and certainly with any of the branches of engineering. Most of our readers who write in asking about getting flight training seem to be laboring under the impression that all that is necessary is a desire for thrills, a husky body and the willingness to work in a hangar for flying lessons. Unfortunately, this is not so. There are no firms in this or any other country in the position to take on help with the understanding that they will be paid in flying tuition. No firm on a business basis could undertake to assume such a risk.

For another thing, most of our readers are under the impression that the lowliest of educations is sufficient to carry them through to a transport ticket. Again they make a fatal mistake. While it is not absolutely necessary to have completed a full college or university course, it is almost essential that the student have a high school education, particularly in these days of beam flying, meteorology, two-way radio and the social standards so necessary for the master of an air-liner.

The average transport ticket costs anywhere between $1,200 and $1,500. That may seem like a lot of money, but when we consider the average salary of the transport pilot in normal times, it is comparatively little to

lay out for a profession that pays as well as law, medicine or engineering, all of which require at least four and usually eight years of college.

The other positions in aviation cost accordingly and get as good a return. You can't pick up $6,000 a year with nothing but the desire to stir a joystick and the willingness to take risks. In other words, there is more to flying than just sitting in a cockpit.

If you are really sincere in your desire to get into aviation, however, now is the time. Get in touch with the best schools at once and prepare yourself for the good times that *must* come within a few months.

For the Model Builders

ANOTHER aviation feature that should draw wide interest is that of model making. At no time in history has the interest in models and the use of models for decoration been so great. Anyone can make a good model and sell it today. Toy shops are wide open for good flying or true-to-scale airplane models. Advertisers are jumping at them for window displays, and a new industry is fast being established.

Artists and writers are good prospects as buyers of scale models, for they aid them in their writing and illustration work. Few really good models of either modern or wartime ships are available, and model builders who are ambitious can work up quite a business if they approach the problem the right way. A well-made model of a Hawk or a Boeing transport is always an addition to a den or mantelpiece. The old clipper ship and the yacht model have fast fallen into the discard as an article of home decoration. Today it's aviation. People want planes. So get busy, you model makers, and get in on the up-turn.

Turn the Other Way

WHENEVER talk of war or possible wars arises, it seems to us that the American public takes the old ostrich attitude, sticks its head into the sands of self-comfort and avoids the situation in the Pacific. It is easy to sit back and say, "War? Oh, yes, within a year or two, in Europe. It will happen—but it won't affect us *this* time."

All very nice in theory, but it has been proved that a shot fired in Rangoon often has startling effects in Keokuk or Hot Springs. Any war, anywhere, will affect the United States in some form or another. But what we are getting at is the fact that in spite of all the war-talk, the American public blinds itself to the situation in the Pacific. It's much easier to wonder whether some one else is getting into a mess.

And the situation, like it or not, is serious. Already the so-called fishing patrols around the Pribilof Islands have been strengthened. The Pribilofs, in case you are not up on your geography, are sealing islands in the Bering Sea, and the Bering Sea represents the touchy and delicate portion of Alaska. Get the idea now?

At any rate, the Navy has already seen the writing on the ice, and realizes the possibility of an invasion through Alaska and on through British Columbia, just as Germany went through Belgium in 1914. They have been putting a sealing patrol around the Pribilofs for several years, and everyone has been wondering why so many gunboats, destroyers and Coast Guard cutters are necessary to check seal-hunting. You write the answers. Now this force is being increased, and those who have been up there tell me that some queer-looking tramp steamers are mooching about that have all the earmarks of the old wartime Q-boats that could suddenly snap out of it and become snarling, high-speed destroyers.

Of course, all this may be only a nice game the boys are playing up there, but it should be mentioned, just in case you are one of these gentlemen who have been pooh-poohing the idea that America may be attacked some day from the other side of the Pacific.

What About Troop Carriers?

ALL this brings up another point to our mind, and if we keep on, we'll have the whole Technical Division down on our necks. A short time ago we got a lot of people steamed up by disclosing that the Army and Navy Air Services could use some intercepters. Thinking about this Pribilof and Alaska thing, it has just occurred to us that it might be a good idea to consider some aerial troop carriers.

Let us suppose that an unfriendly nation *did* make a landing in Alaska and started south toward the State of Washington and other points along the west coast. What could be done about it until they reached somewhere well across the borders? Would we hope that the Royal Northwest Mounted Police would stop them until we had called out the reserves? Or would it be a little saner to have a few ships that could each carry twenty-five armed men to advance posts, where the first line of defense could be set up? You may say that twenty-five men are but a mere handful. Agreed, but take that same twenty-five, add another dozen such loads brought there by troop-carriers, arm them with machine guns, and you'll believe you've run up against von Kluck's Prussian Guard. At least, they'll give a landing force a warm time, and certainly allow the boys on the Staff a few days to collect themselves and look up a map or two.

This troop-carrier thing is no joke. Other nations have transported complete regiments, a distance of two thousand miles across deserts and mountains in only a fraction of the time it would have taken had they been transported by train or motor transport.

No, we'll go on building 190-mile-an-hour monoplane fighters and 200-mile-an-hour bombers. The intercepters, fighting two-seaters and troop-carriers will be tossed aside—mainly because we do not want to learn from anyone else. We did the same in the World War, as far as aviation was concerned, and look what we got. A few D.H.4's that had been discarded by England in 1916, a few Sopwith 1½ strutters, two Handley Pages that wouldn't fly because we would not use Rolls Royce engines but preferred to use the death-trap Liberty, and a flock of Bristol Fighters that were re-designed to take the Liberty motor, rather than the tried-and-true Rolls Royce.

Not that we can't build these ships—far from it. It has been shown that America can build fighting aircraft that is equal to or better than that of most countries who are now leading the pack. But we don't.

Now what are *you* going to do about it?

There's still time for the formation of an Air Service League.

WINNERS OF MISSING WORDS CONTEST No. 2

First Prize—LAWRENCE KNORING, Roxbury, Mass. *Second Prize*—BILL NEUKAN, Duluth, Minn. *And Three Prizes*—MAX SCHULZE, Portland, Ore., GEO. J. TAQUINO, JR., New Orleans, La., and PETER GALDIERE, San Francisco, Cal.

WISECRACK-UPS

Taxi in on this runway and pick up a plane load of laughs! In this department, we present a collection of jokes, cartoons, and humorous verse. For all original contributions which we can use here, FLYING ACES will pay $1.00. No contributions will be returned unless a stamped, self-addressed envelope is enclosed.

"Well, did you propose to Jenny last night?"
"No. I didn't have the nerve."

Two of a Kind

A man was trying to start a Jenny engine on a field outside a lunatic asylum when one of the inmates peered over the wall at him.

"Got it started yet?" said the lunatic.

"Nope."

"How long have you been trying?" persisted the not-quite-bright onlooker.

"Four hours," sighed the man.

The lunatic nodded. "Come on in here," he invited.

Here's Mud in Your Eye!

Slip: Why is an aviator whose plane plows into the earth like a successful speculator?

Stream: Because he has taken a flier in real estate.

Plane Foolish

What are you crying for, son?
My daddy won't give me money for an airplane ride.
Well, brave little man! Why do you want to go up in a plane?
I want to spit down on Freddie Jones.

Music in the Air

The pair were going on their first air trip in a huge TWA airliner. The little woman had insisted on taking enough luggage to ballast a Zep, and the airport was swamped with it.

"I wish," said her husband, thoughtfully, "that we'd brought the piano, too."

"You needn't be sarcastic," came the frigid reply.

"I'm not," he denied, sadly. "I left the tickets on it."

Simply Killing!

Stude: Just after my solo flight I nearly killed a man.

Admirer: How come?

Stude: I made a perfect three-point landing and my instructor nearly dropped dead.

String Him Along!

Business man: I haven't much time. Can you teach me to fly in one easy lesson?

Instructor: Sure, bring your kite and some string at two o'clock tomorrow.

Spring Madness

First mail pilot: For a minute I thought I was off my course this morning.

Second: Why, you know every inch of that route. What was the trouble?

First: Well, I looked for the usual landmarks outside of Pittsburgh and Farmer Jones' scarecrow had a straw hat instead of the usual old derby.

Due Tell!

Mail Pilot: This bunch of bills in my ship give me a pain.

Greaseball: Why?

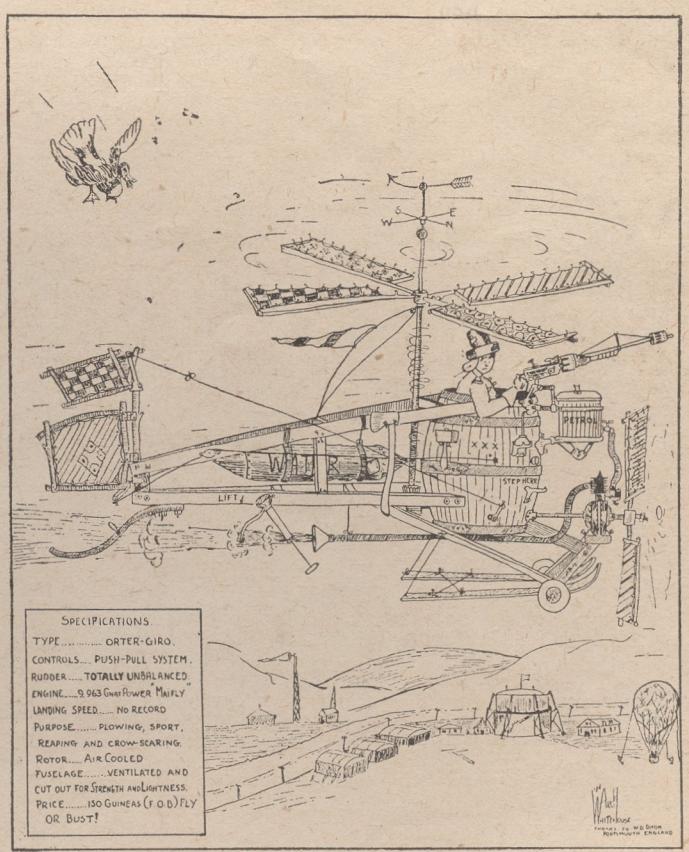
Mail Pilot: They're all going to my house.

"Goodness me, didn't your brakes work?"

Try This on Your Piano!

You: Why are airplane inventors like musicians?

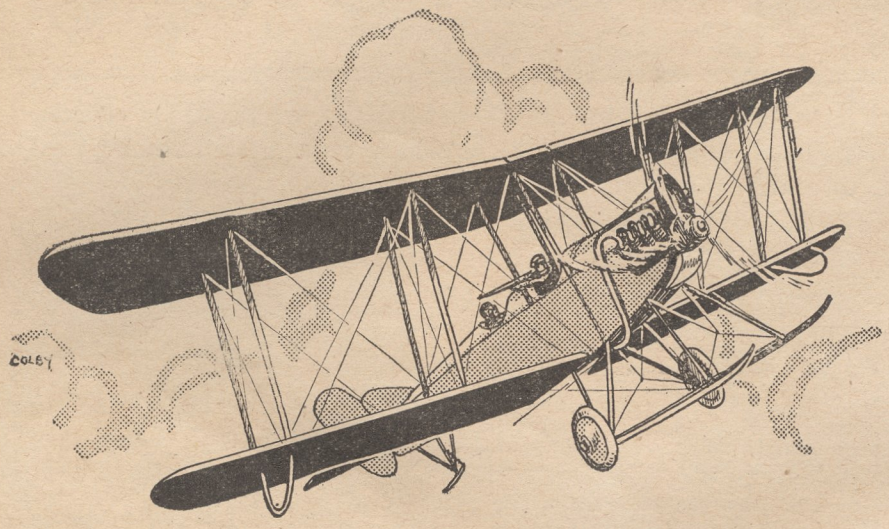
_Us:_ Because they bend all their energies to the conquest of the air.



Impractical Aeronautics No. 61—An Early Autogiro

The fame of our Mad Anthony Mainbearing is fast being spread abroad. We have just received a tin-type of this Mainbearing Bloughlamp-Buzz-Fli ship, built in England in 1899. It was designed for action against the Zulus in Africa. After one view of it, however, the Hague Tribunal condemned it as an inhuman weapon, so it was used for peaceful agricultural pursuits—potato-digging and corn-husking. Later it was entered in the first England-to-Australia race, but Mad Anthony landed somewhere in the South Sea Islands and forgot to finish. Oh, those Bali belles!

War Planes Album



B.E. 2 C.

British B.E. 2 C

THE first British ship actually to fly at the Front was a machine made at the Royal Aircraft Factory at Farnborough. This establishment was the factory base of what was then the Royal Flying Corps. The letters B.E. first stood for "Bleriot Experimental" in respect for or credit to Bleriot, who first developed the tractor type of ship. Later it was interpreted as "British Experimental." Later models were given the markings 2 B, 2 C, 2 D and 2 E. The B.E. types were also built along different lines and were given an additional designation such as B.E.3, 4, 5, and 6, all the way up to the B.E. 12, a little-known model which, by the way, was used in the London defense against Zeppelins.

The B.E. 2 C which we offer here was designed, as were many others, by Captain Geoffrey De Havilland.

It was powered with the early Renault engine and later with the British air-cooled RAF motor. The general top speed was between 90 and 95 miles an hour. The pilot sat in the back seat and the observer in the front under the center-section, from which point he fought for his King and country armed with nothing but a Webley pistol and a .303 Lee Enfield Army rifle. Later on, they became bloodthirsty and developed a bomb-dropping device consisting of a four-chambered box mounted outside the pilot's cockpit. In this were bombs which were released through trap-doors.

The features of the B.E. were unusual stability, a fine gliding angle and enough flying wires to trap a humming bird. The undercarriage used the old safety skids to prevent the ship from going over on its nose on bad landings. But with all its apparent weaknesses, it more than held its end up during the early days.

Later this ship was used for night bombing, artillery spotting and front-line photography. Many were used for training pusher pilots in the flying of tractor-type ships.

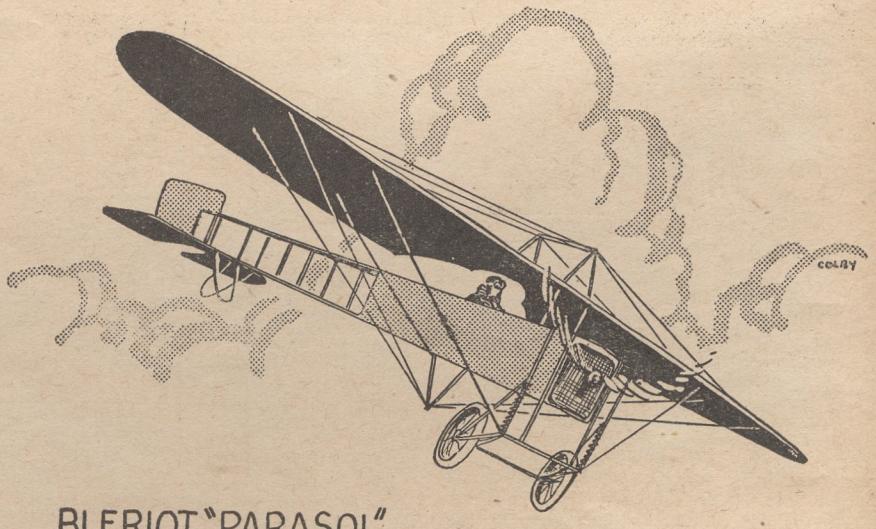
French Bleriot Parasol

THE French, well ahead of the British in military aviation when the war broke out, soon sensed the value of fast single-seaters, and the Bleriot single-seater Parasol machine was developed a few weeks after war was declared.

This Parasol job turned out to be a fine machine for long-distance observation patrols, for the high-wing arrangement gave the pilot a good arc of visibility. Many were used throughout late 1914.

The XI, as it was known, was powered with a 60-h.p. Gnome rotary which gave it the astonishing speed of 68 m.p.h. It could climb at a rate of 490 feet per minute. It weighed 660 lbs. and carried a useful load of 330 lbs.

The XI had an overall length of 25½ feet, a span of 28 feet and a wing area of 150 feet. The wings were of wood construction, with a warping device at the wing tips, instead of ailerons. It was supported by guy wires from an inverted pylon beneath the cockpit and another over the center-section struts. Other models used as hydroplanes actually had self-starting devices for the motor. The No. 39 ship was armored about the cockpit and was powered with an 80-h.p. Gnome.



BLERIOT "PARASOL"

Of course, no form of armament was carried on the XI, for the pilot had all he could do to fly it without engaging in any other activity. A story is told, where war pilots gather, that the early birds were taught to bite their upper lips if they felt a sneeze coming on, for a sneeze in those days was considered fatal. Just what the pilot did when attacked by a two-seater demon that was armed to the teeth with a snarling Mauser, is not known. The Frenchman probably thumbed his nose, rammed the stick forward and—hoped.

Far into the past we are delving this month, and presenting for your albums four ships that saw service away back in 1914 at the beginning of the World War, when there were no such things as machine guns, and sky battles were fought with pistols, jam-tin bombs and military carbines. It was a time of thrills and danger—as a look at the ships will tell you.

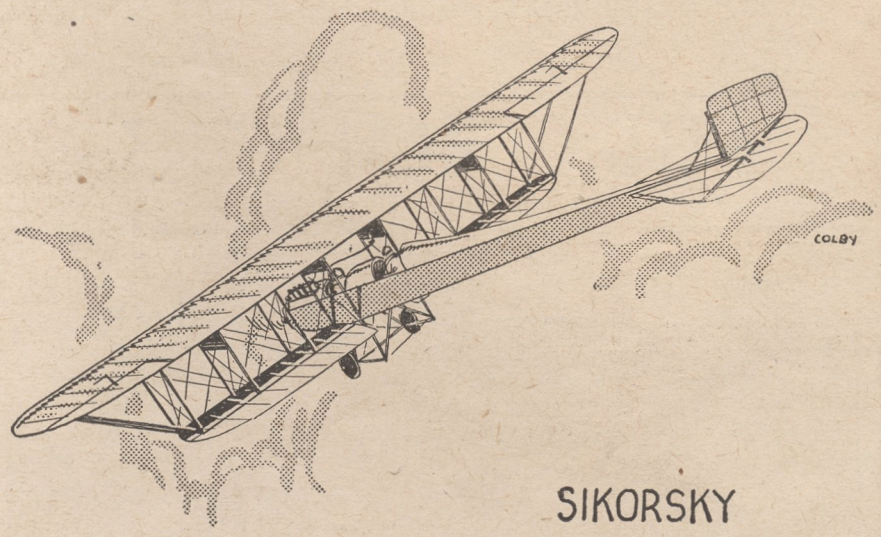
RUSSIAN SIKORSKY

AT the outbreak of the war, Russia had an air force of about 250 machines, about 150 of which were up-to-date. The principal types were Albatross, Aviatik, Bristol, Deperdussin, Farman, Nieuport, Rumpler and a few American Curtiss types. An interesting item from early Russian air history discloses the fact that Lieutenant Nesteroff did a loop months before the Frenchman Pergoud even thought of the maneuver. For this bit of flying he was charged with endangering military property and placed under arrest for a month.

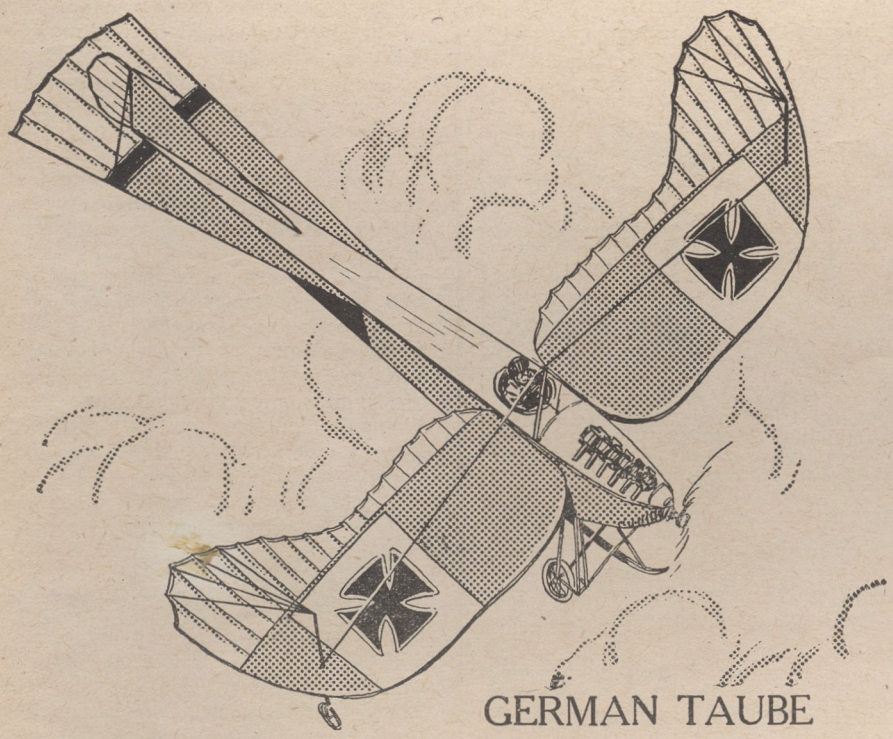
Early in 1914, a Russian by the name of Sikorsky—yes, the same man who today designs the famous American Yankee Clippers — came out with a few "freak" planes, one a two-engined bomber with a cabin that looked suspiciously like a purloined greenhouse, and the other a two-seater tractor.

The bomber was forgotten for a few months, but the two-seater was built in large numbers and used by the Russians for their fighting and observation patrols. This machine was a typical 1914 biplane, with many of the old Curtiss lines about it.

The Sikorsky, it might be added, won the Russian military trials in 1912, beating out the Farmans and Nieuports. The 1914 ship was fairly up-to-date, boasting ailerons on the upper wings, tanks hung below the upper center-section and two sections of airfoil set up high between inter-plane struts near the outer end of the lower wings. The usual undercarriage arrangement, with skids and wheels, was a feature.



SIKORSKY



GERMAN TAUBE

GERMAN TAUBE

WHEN we are considering early wartime planes, we instinctively think of a Taube. Strange to relate, the Taube was not any single distinctive ship, but a particular type. For instance, the Rumpler, Argo, Roland and Albatross firms all made Taube-type ships. The word Taube means "dove" and, of course, refers to the birdlike sweep-back of the wing structure.

When the war broke out, Germany had just seen the formation of what was her Army and Navy Air Services, the Navy taking charge of the lighter-than-air ships and a few seaplanes. The Army, however, had about 300 fairly modern ships, of the Taube type, including Albatrosses, Rolands, Rumplers and a handful of Fokker sport ships.

But the Taube that is generally considered "the Taube," was a single-seater monoplane made by a concern that had adopted that name. A few two-seaters were included, but most two-seaters in those days were biplanes.

The Taube shown in the illustration was powered with either the Benz or Argo engine. The horsepower ranged from 50 to 80. A top speed of 72 miles an hour was considered good, and 68 was probably nearer the average.

The Taube wing was constructed of wood, mostly spruce and mahogany three-ply. The trailing edge was feathered over a taped form, and the wing tips were warped for lateral stability. The general arrangement of this control system is shown in the drawing.

The tail was also birdlike, with a long horizontal stabilizer, an equally long fin and a one-piece elevator that must have given fast maneuverability. Generally speaking, however, the Taubes were slow-moving and failed to stand the pace for more than several months at the Front.

Here and There in the Air

In this department, FLYING ACES presents some of the odds and ends of aviation—interesting facts about flyers and their foibles, news picked out of the sky here and there. We hope you like it.

PILOTOPICS

By ROY HUMPHRIES

Stories Back of the Above Pictures

Upper Left—The cannon ball of the Civil War period averaged only 200 feet per second, while the modern racing plane travels almost three times as fast.

Upper Right—It was suggested to General Longstreet, Confederate Army leader in the Civil War, that all silk dresses in the Confederacy be gathered in to make an observation balloon. The plan was carried out and the balloon was mounted on a barge on the James River. One day, however, the federals captured the barge; and with it "went the last silk dress of the Confederacy."

Lower Left—Henry "Buddy" Bushmeyer made five hundred successful parachute jumps, but on his first flight without a parachute at Glen Cove, New York, in 1930, he was killed.

Lower Right—Major W. Ervin, the man who hovered over the Potomac River in an autogyro long enough to catch the string of fish, is an experimental pilot for one of the large oil companies.

Among the Silk Sailors

THE first parachute jump from an airplane, a test jump, where the parachute was attached to the plane, was made by Captain Albert Berry, U. S. Army (1921).

The first jump from an airplane with a free-type parachute was made by Master Sergeant Ralph W. Bottriell, premier parachute jumper of the Army Air Corps. He made the first jump to be performed by Army personnel with a manually operated free-type parachute. For his pioneering work in connection with the parachute, Sergeant Bottriell, who is now in charge of the Parachute Department at Kelly Field, Texas, was awarded the Distinguished Flying Cross on March 18th of last year. The first free-type jump was back in 1919.

The first emergency parachute jump from an airplane was made by Harold B. Harris (1922).

The first double emergency parachute jump from an airplane was made by two Army flyers, Lieutenant L. L. Koontz and Private W. E. Goggin (1924).

The first emergency parachute jump at night from an airplane was made by John A. Macready (1924).

The first woman's life to be saved by an emergency parachute jump from an airplane was that of Irene MacFarland (1925).

The first emergency parachute jump from an airplane from an altitude as high as 10,000 feet was made by Thad Johnson (1925).

The first airman to make 2nd, 3rd and 4th emergency parachute jumps from an airplane, and the only 4th-time jumper at present is Colonel Charles Lindbergh (1925-1926).

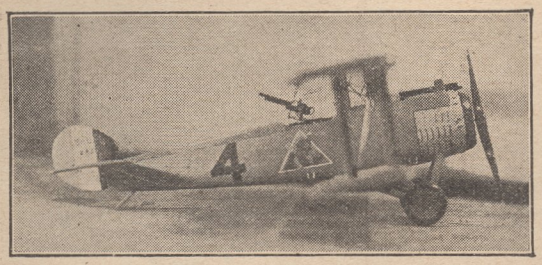
The first emergency parachute jump from an airplane from an altitude as low as 100 feet was made by A. H. Gilkenson (1927).

Short Flights

Ira O. Biffle, the man who taught Colonel Lindbergh how to fly and was mentioned by the Colonel in his book, "We," was recently found in a public ward of a Chicago hospital ill of heart disease and almost blind and penniless. Lindy sent him $50 and others helped him during the last few days that he lived.

Lieutenant Commander Herbert V. Wiley, only officer surviving the *Akron* crash, has been named commander of the U.S.S. *Macon*, sister ship of the ill-fated Akron. He was second-in-command of the *Akron* at the time of her crash and previously commanded the *Los Angeles*, now decommissioned . . . .

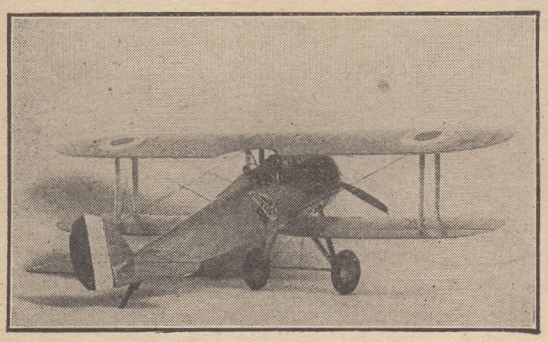
With the Model Builders



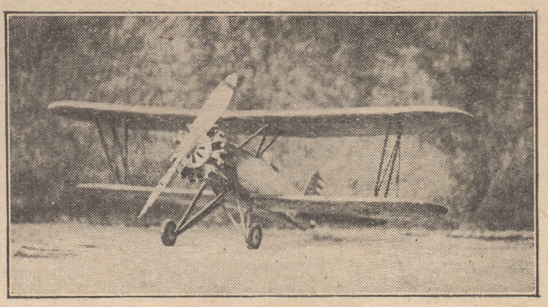
Built by Arnold Smith, Pittsburgh, Pa.

Many and varied are the models built by FLYING ACES *model builders. As a proof that the model fans that read this magazine are interested in both wartime and modern ships we show you this group of four planes. At the upper left is a splendidly detailed model of the Salmson 2 A-2, while on the right you see one of the present-day Curtiss ships, the Goshawk. Eddie Rickenbacker's famous wartime Nieuport 28 appears at the lower left, with its familiar Hat-in-the-Ring insignia, and at the lower right is a 24" model of a modern Boeing, ready to take off. Their makers' names appear under each picture.*

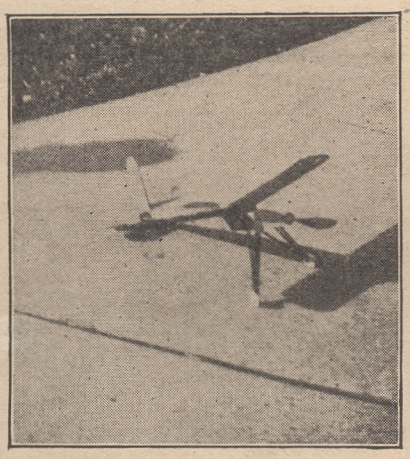
Built by Theodore Baxter

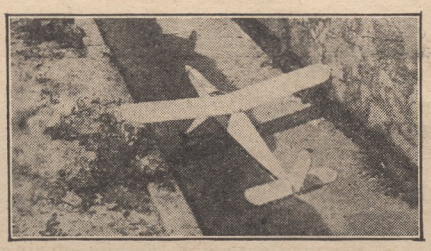


Built by Glen Courtright



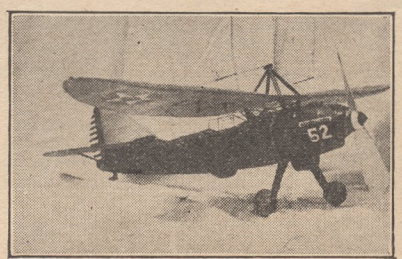
Built by James F. Kavanaugh, Jr.

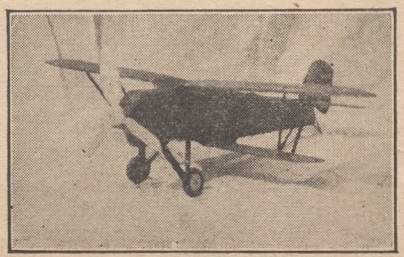




Here are three excellent models built from plans printed in FLYING ACES *Magazine. At the left the Flying Aces Utility Commercial (March, 1934, issue), built by Bill A. Robinson, of Cincinnati, Ohio, and above and to the right are models of the Flying Aces Cabin plane (February, 1934, issue). The ship above was built by Dwight Hall, West Palm Beach, Fla., the one at the right by Joe Diesner, East Chicago, Ind. Hall's ship flies over 900 feet regularly.*

Abe Shaw, 1415 Charlotte St., Bronx, N. Y., with his 20" solid scale model of a Douglas mailplane. Abe writes us that in spite of the talk about disarmament, he is turning out model after model of fighting planes. His factory is his kitchen table.

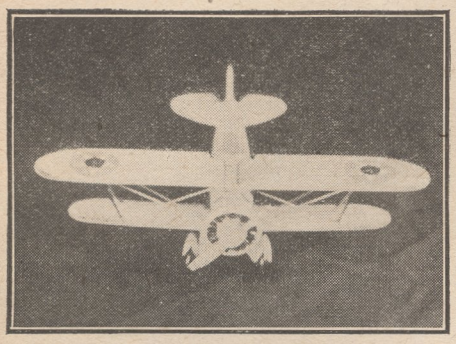




Above and below are two models built by Harry Hollmeyer, Wellesley Hills, Mass. Recognize the Douglas Observation and the Berliner-Joyce pursuit jobs?

Introducing Frank Reiner, commander of a lively Flying Aces Club squadron with headquarters at the Manhattan Beach Hotel, Brooklyn, N. Y. One of those club models he is holding is the Howard Racer—the other is colorfully named the Flying Fool.

Build the Berliner-Joyce XF J-2



An interesting head-on view of the Berliner-Joyce XF J-2 which you can build from the plane presented here.

NEW FLYING ACES THREE-IN-ONE MODEL PLAN

Follow the plans given on the next few pages, with the directions printed below—and you can have three different types of models of the popular Berliner-Joyce Navy ship! A 27-inch flying model, a 6-inch solid scale model, and a 12-inch built-up model—all from the single set of plans. There's a chance for every one of you.

✪ ✪ ✪

By Avrum Zier

THE other week I chanced to be down at one of the local airports to view one of the latest additions to our air Navy—the B/J 2, better known as the Berliner-Joyce. The beauty and grace of line of this shipboard fighter impressed me so strongly that I immediately went to work designing a replica flying model for you FLYING ACES readers.

The Berliner-Joyce is equipped with a nine-cylinder radial engine capable of a speed of 200 miles per hour. This little ship, with a wing span of only 28 feet, is somewhat out of the ordinary line of modern Navy fighters. Because of its underslung wing, it gives an entirely different appearance from that of any of our other fighters. The top wing fillets into the body with a grace that only an American ship can have. The ship is painted all white, corresponding to the color scheme of the United States Navy. The length of the body is 20 feet, 10 inches, and the span is 28 feet. The plane can attain an altitude for service of 24,700 feet.

The plans shown on the following pages will enable the builder to construct a solid model with a wing span of six inches, as well as a 27-inch flying model. If the builder desires, he may also construct a 12-inch built-up model by merely doubling the three-view layout shown on sheet 1.

BUILDING A FLYING MODEL

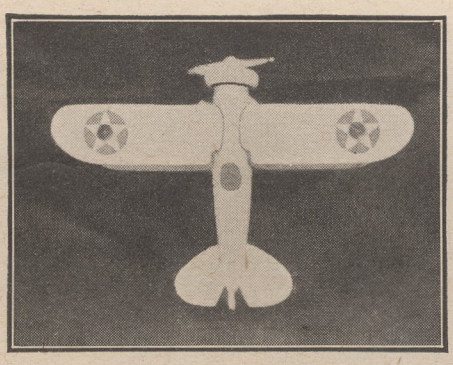
THE first step in the construction of the fuselage is the cutting out of all the formers 1-8 as indicated on plan. The grain of the formers should run vertically until former 5 is reached, which then continues to run horizontal. Or, if the builder wishes, the entire body may be constructed with the formers having the grain running vertical, but not horizontal. Otherwise, the builder will find the body will be tremendously weakened.

Cut all the notches on the formers as indicated, making sure that it is 1/16 inch square. The next step is the cutting out of the jig. It is essential that the jig must be enlarged twice the size from the one shown on the plan. After the jig has been shaped, slip the formers in their respective places and proceed, placing the 1/16 square inch stringers in their places. For the benefit of any one who does not know how to work with the jig, I refer him to the June issue of FLYING ACES.

With the stringers glued in their proper places, you can now slip the jig out and proceed with the construction of the cockpit. The cockpit is cut out of sheet balsa and glued between former 5 and 6.

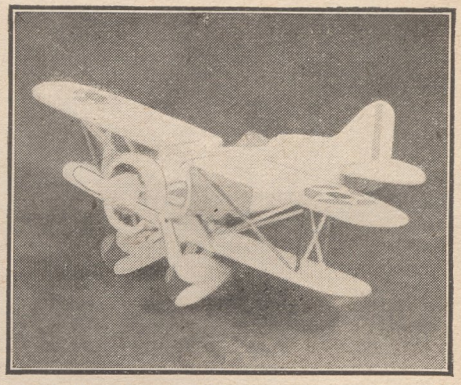
WING FILLETS

THE wing fillets are a very important part of the plane, and great care should be exercised when carving them. First cut out the block, roughly following out the various details shown on the plan. After they have been roughly cut to shape, glue them into the formers 3 and 4 as shown. With the aid of small pieces of wood, fillet the ends into the body and finish it off to a nice curve with the aid of sandpaper. A cross-sectional view of how the fillet should be shaped is shown on the plan.



When building this ship, don't forget the United States Navy insignia. It's an important addition to your model.

Give the fillet a few coats of banana oil. After it has thoroughly dried, sand it until you have obtained a smooth surface which is ready for painting. Do not finish off the part where the wing connects until the wing has been glued in place. A very good fillet is ambroid mixed with sawdust.



Note the detail in this photograph of the solid scale model of the Berliner-Joyce. This ship has great beauty and grace of line.

WINGS

CUT out all the necessary parts, such as the ribs. Before any work of assembling is attempted, recopy the plan of the wings so that you have a right and a left of the top and bottom. Placing wax paper over the plan, proceed to construct the wing in the following manner: Pin your leading and trailing edges in place without any shaping. Next, place your bottom back spar, which is 1/16 by 1/8 inch, in its place. After you have finished that, take the ribs and glue them to the parts already pinned on the plan.

Now take another 1/16 by 1/8 inch piece and place it in its place as the front top spar. While the ribs are drying, select a strong piece of bamboo of about 1/16 square inch. This bamboo is to be used for the wing tip. With the aid of pins, place the bamboo around the tip as outlined on the plan. The wing should be left to dry about twenty minutes to assure the strength.

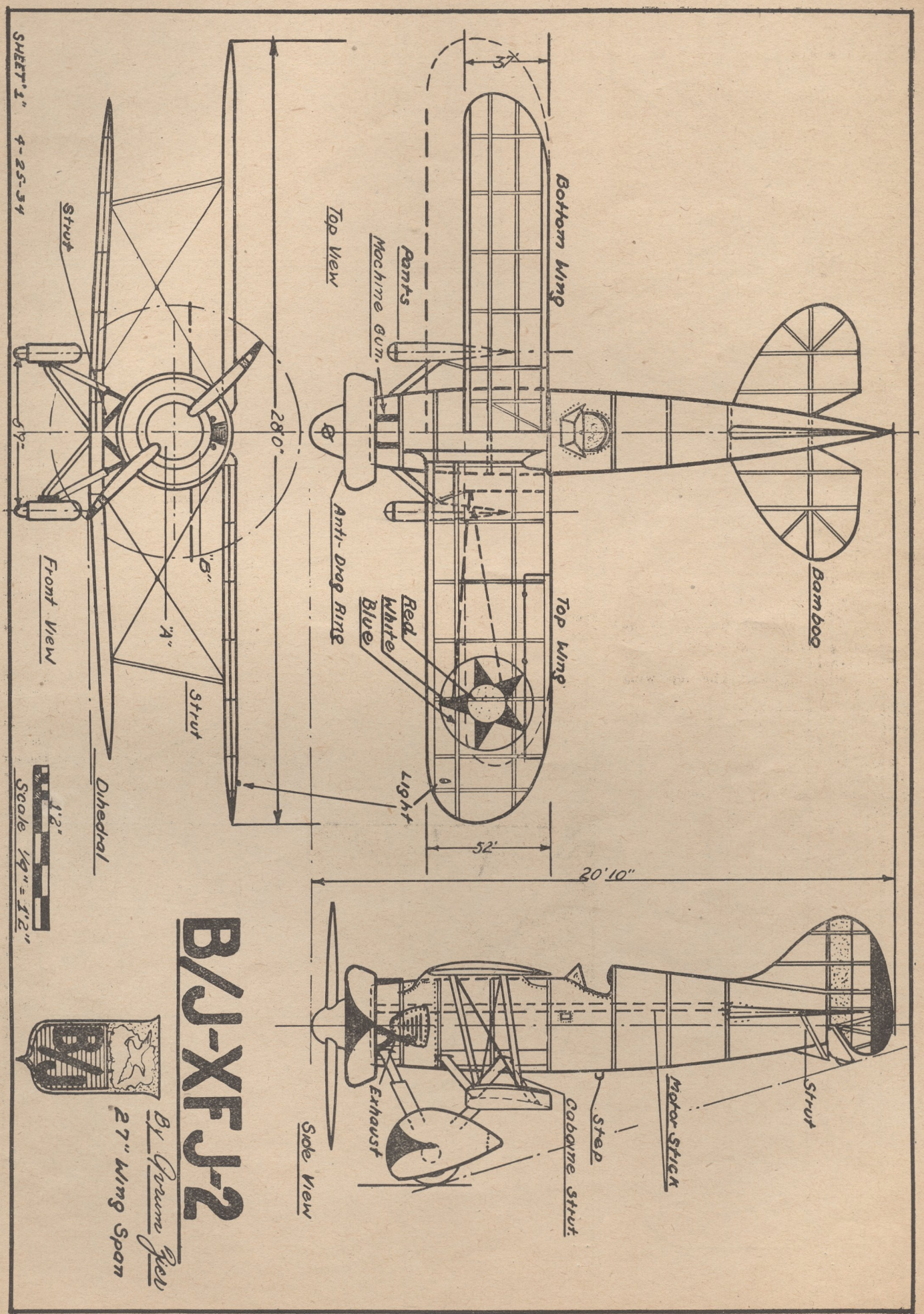
After you have removed the wings, sand the leading and trailing edges to shape. Notice that a special spar is glued to the bottom of the wing so that the inter-wing struts may be glued to them.

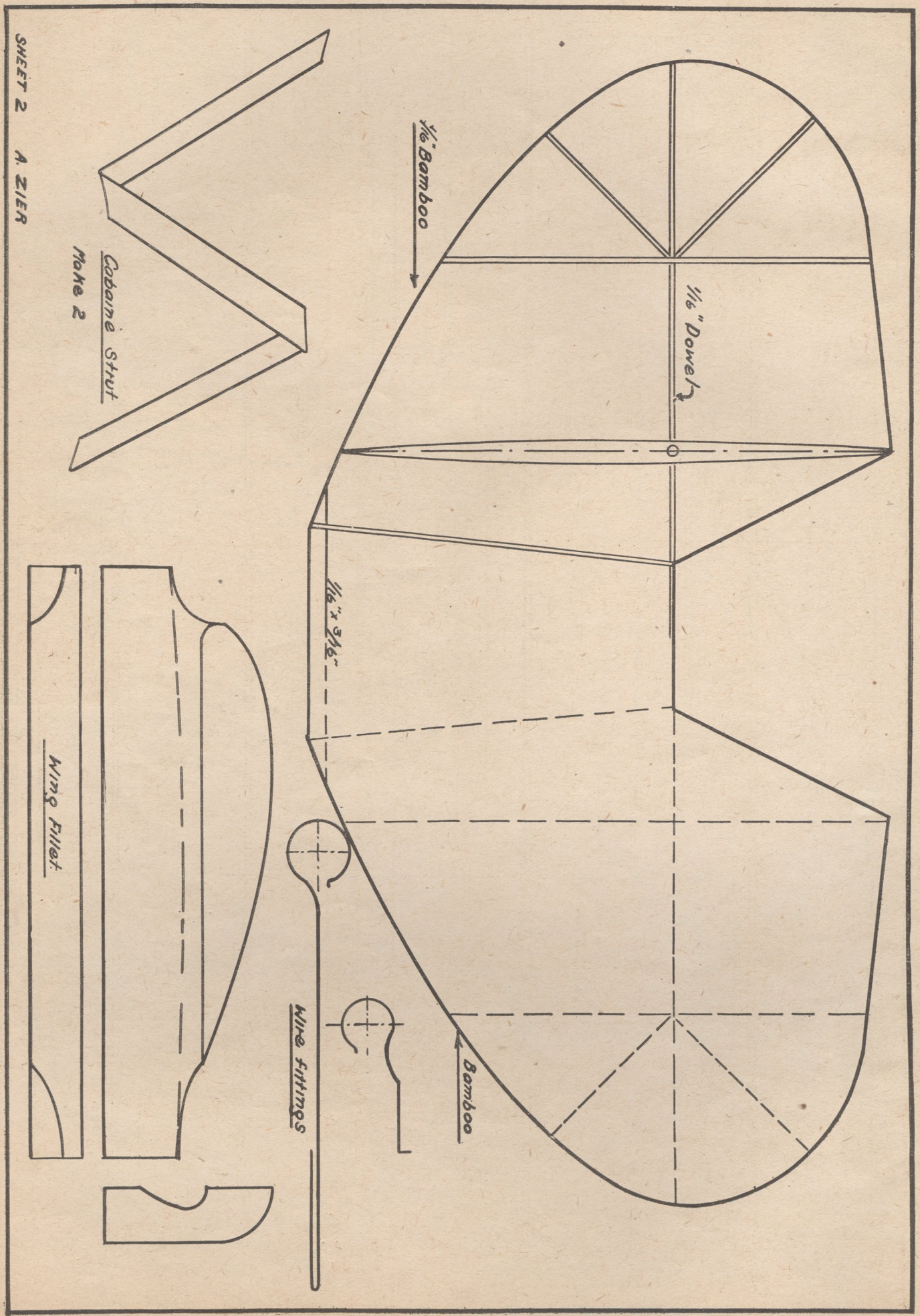
The bottom wing is made of three parts as shown on plan. It is constructed in the same way as is the top wing. When assembling the bottom wing, be sure to set it at about a three-degree dihederal. The center section of the wing is partly covered with sheet balsa so that the cabaine can be glued on.

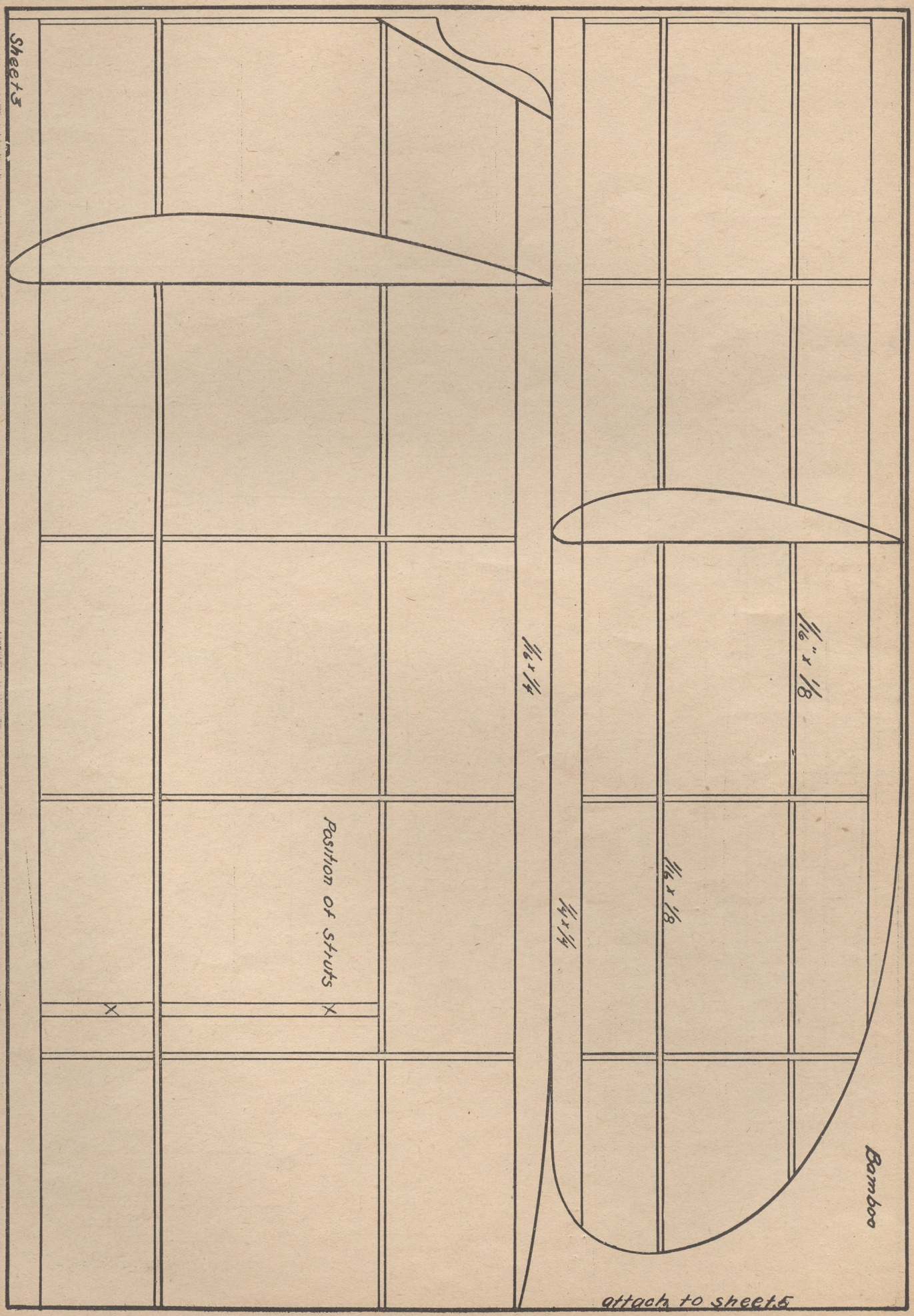
TAIL UNIT

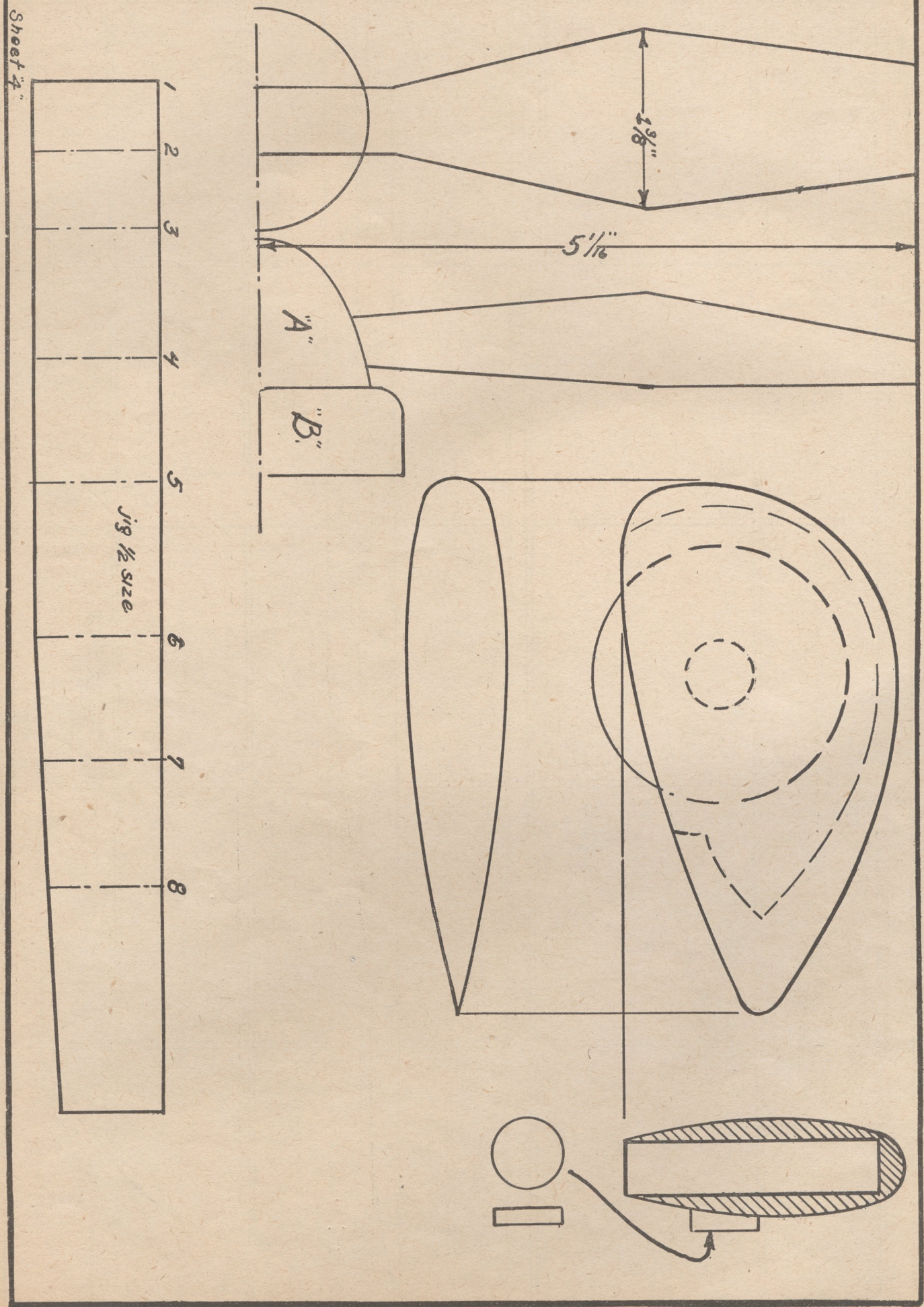
THE tail unit consists of the rudder and the stabilizer. Both are constructed with 1/16 dowel as the spar and 1/16 bamboo as the outline. They are covered on both sides. The ribs are shaped with a cambered section as shown on plan. The best method of construction is to shape the ribs after the tail has been constructed. Note that the stabilizer must be placed on before the rudder, and that there is a brace leading away from the stabilizer to the tailskid.

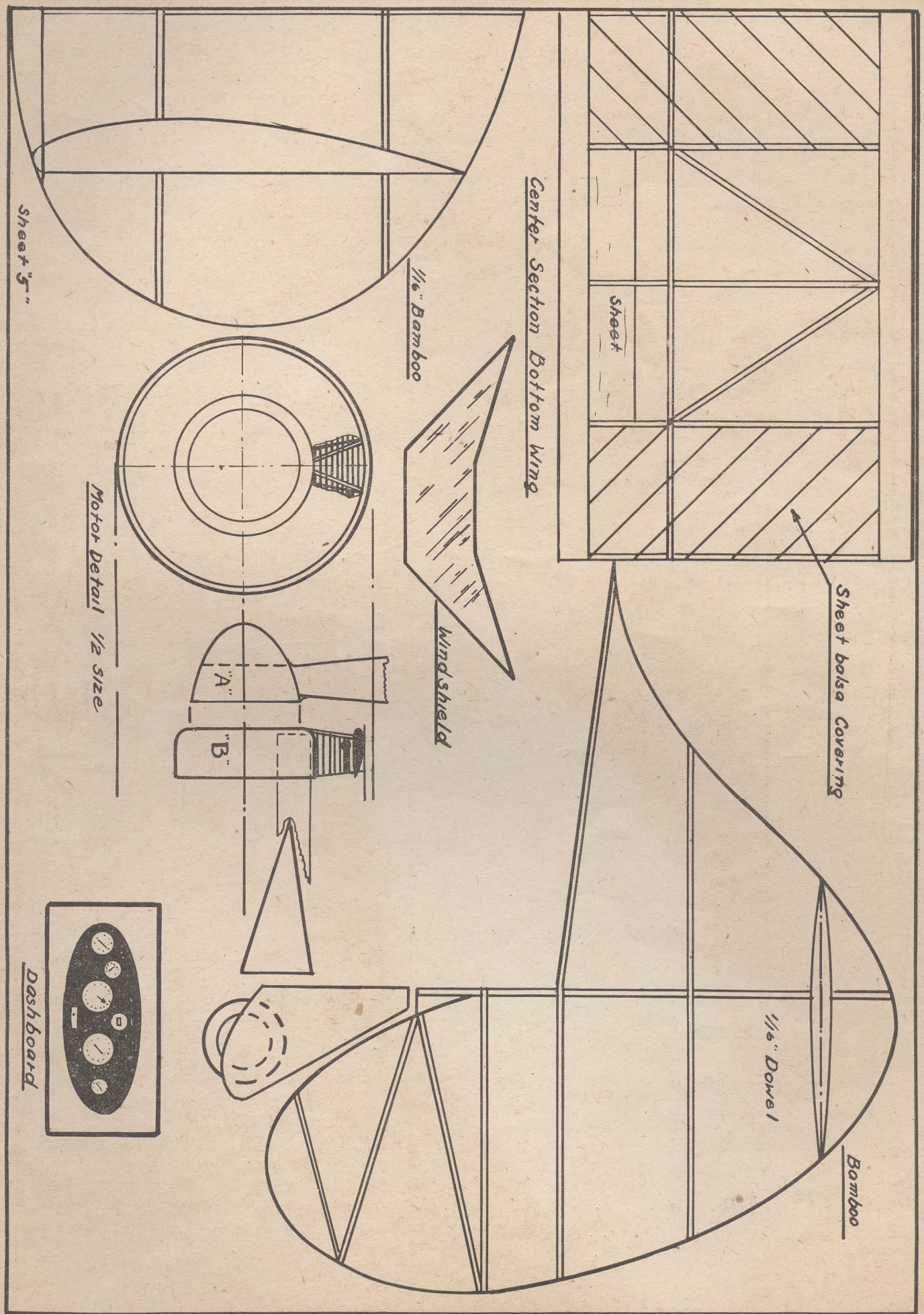
(Continued on page 92)


SHEET "1" 4-25-34
Strut
Front View
"B"
"A"
Strut
Dihedral
28'0"
5'0"
1'2"
Scale ½" = 1'2"
Top View
Pants
Machine Gun
Anti-Drag Ring
Red
White
Blue
Light
Bottom Wing
Top Wing
3'
52'
20'10"
Bamboo
Exhaust
Side View
Step
Cabane Strut
Motor Stick
Strut
B/J-XFJ-2
By Forum Fliers
27" Wing Span

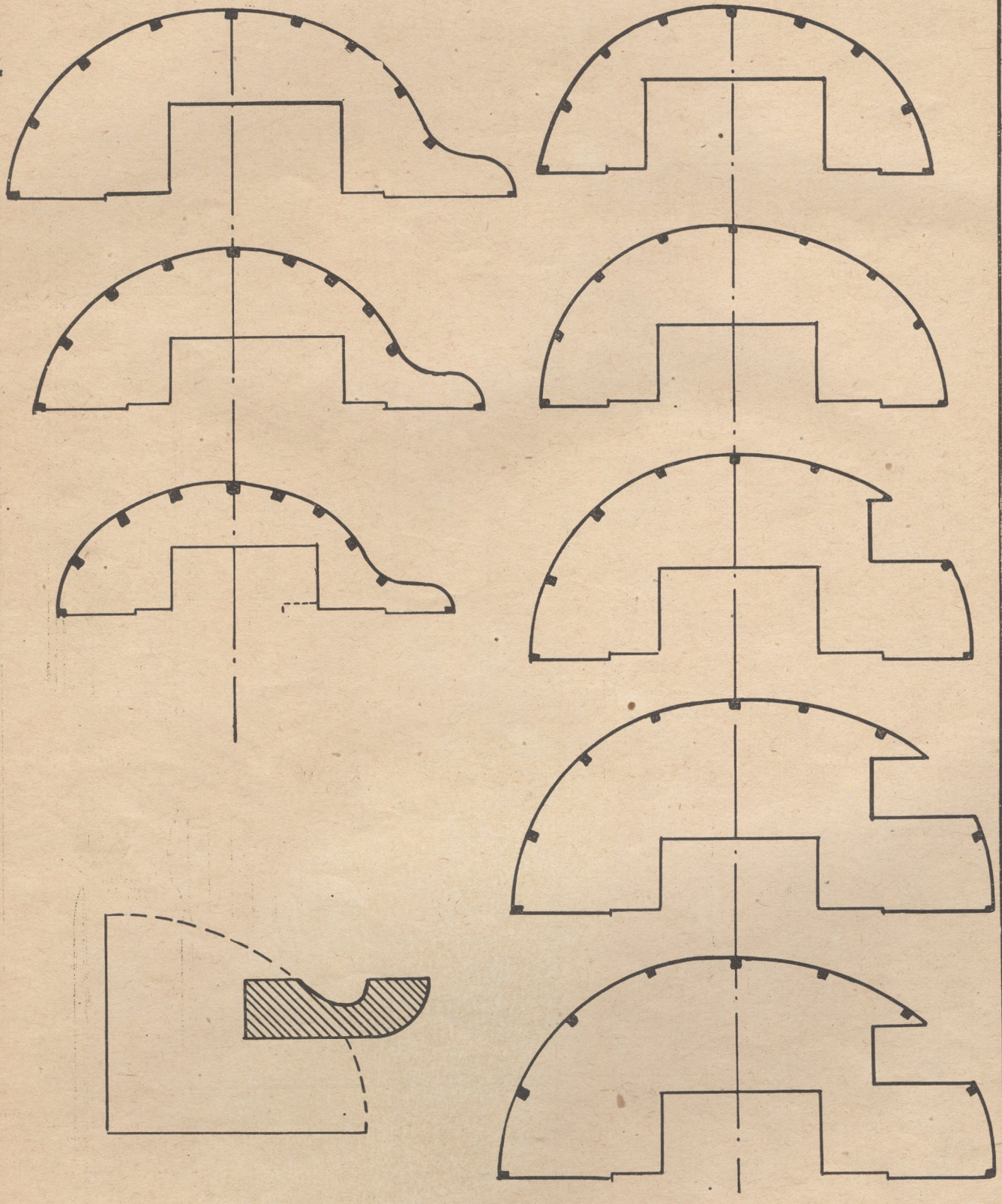

SHEET 2 A. ZIER
Make 2
Cabane Strut
1/16" Bamboo
1/16" Dowel
1/16" x 3/16"
Wing Fillet
Wire Fittings
Bamboo


Sheet 3
1/16 x 1/4
1/16 x 1/8
1/16 x 1/8
1/4 x 1/4
Position of struts
Bamboo
attach to sheet 5


Sheet 4
1
2
3
4
5
6
7
8
Jig ½ size
3 3/8"
5 1/16"
"A"
"B"

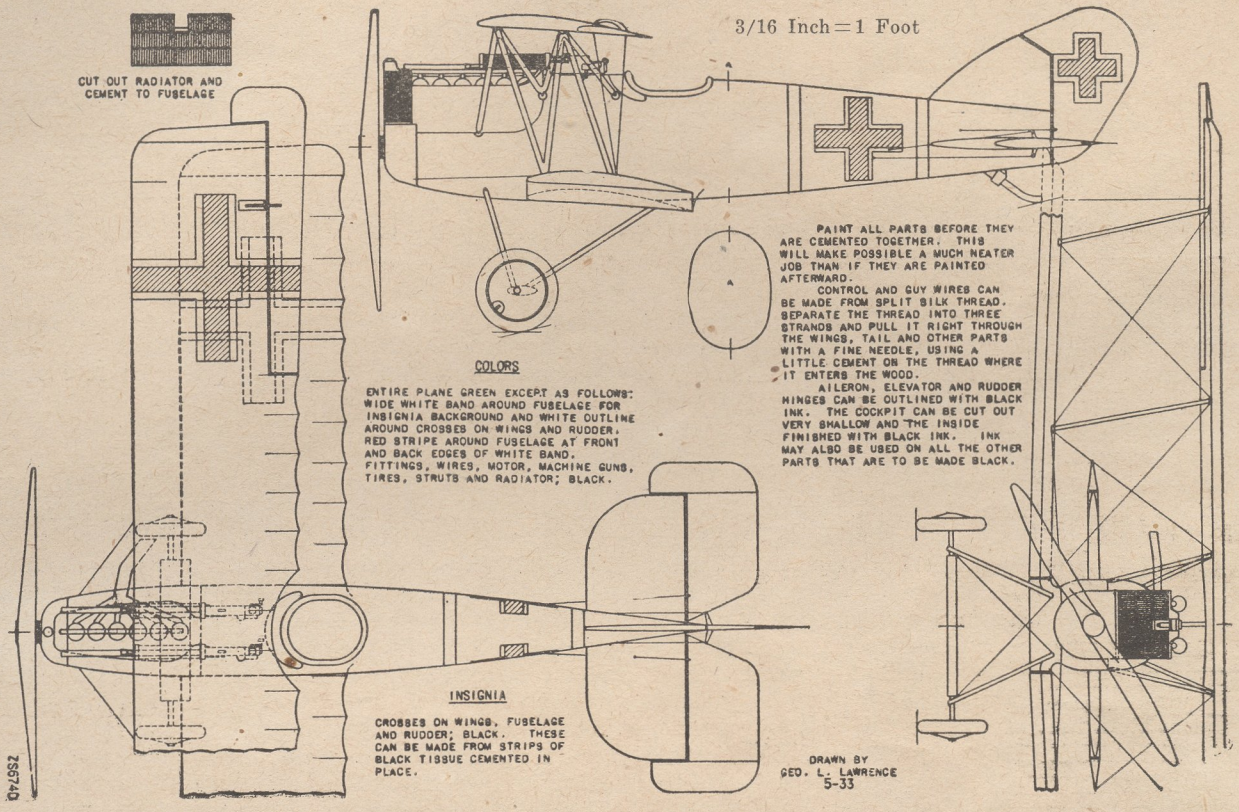

Sheet "5"
1/16" Bamboo
Center Section Bottom Wing
Sheet
Windshield
Sheet balsa Covering
Motor Detail 1/2 size
"A"
"B"
1/16" Dowel
Bamboo
Dashboard

Sheet "6"

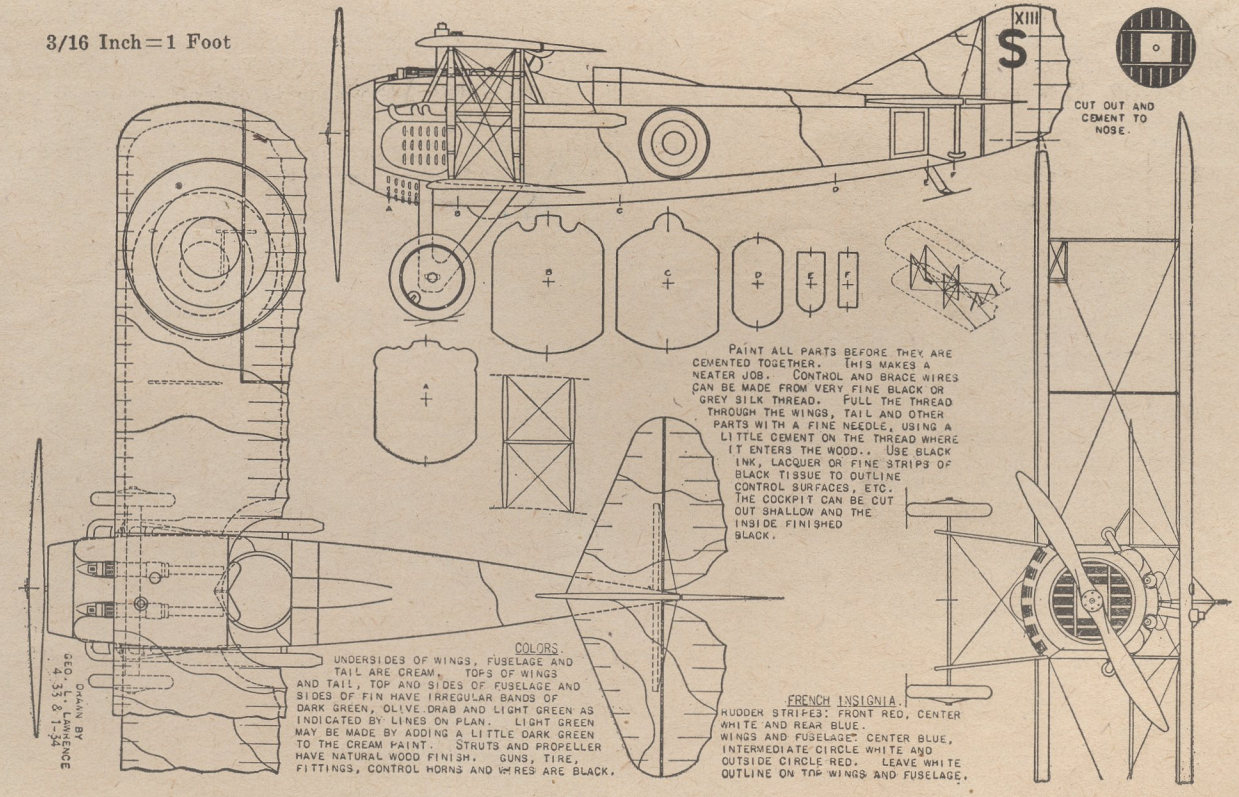


Build These Two Famous Wartime Planes!

PFALZ D-XII—German Pursuit Ship

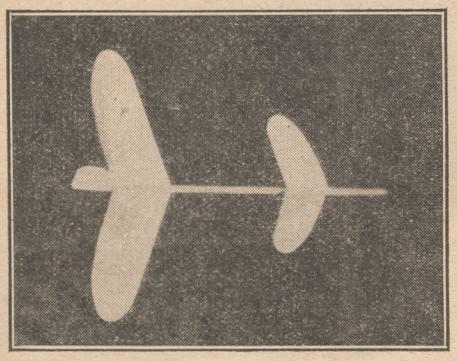


SPAD XIII C1—French Pursuit Ship

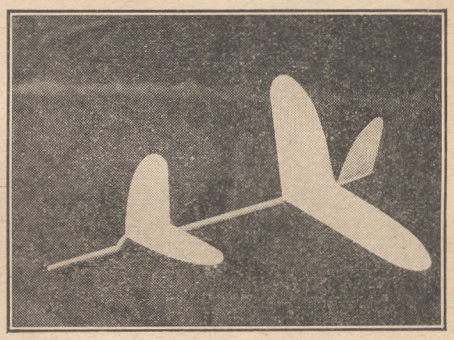


See Page 70 for Photographs of Models Built from These Plans!

Flying Aces Indoor Contest Glider



A glider must be constructed just as carefully as a built-up model. Follow these directions and plans, and you'll have an excellent glider of the pusher type that will win you a prize in any indoor glider contest. Try it and see!



By Julius Unrath

THE easiest way to win an award in a contest is to build a glider. The tedious job of covering a cambered wing with microfilm is done away with, because a glider is solid, not built up, like most indoor models. A glider, however, must be built just as carefully. The most difficult part of making a contest model is designing and adjusting it.

The model presented here this month was designed as a pusher, because of the many advantages I believe a model of this type possesses over a tractor. A tractor glider, because of the large frontal wing area, needs weight in the nose to balance it. A pusher, on the other hand, being just opposite, will not need this weight and therefore will weigh less and glide more slowly.

Another advantage of a pusher is that its glide is much flatter than that of any tractor, and still another is that it will pull out of a stall more quickly, using less altitude, and therefore will "hunt" less, if not adjusted correctly. Hunting is a fault due to stalling. A model that hunts will continually fly in a series of waves instead of in a smooth, flat course.

The glider described in this issue is capable of consistently good flights, a thing very necessary in a contest model. During the tests the model was timed in its first three flights as follows:

18 seconds—first
27 seconds—second
22 seconds—third

The best time reached was 29 seconds. As you can see for yourself, the model will usually fly around the 25-second mark, which will place, if not win the event.

Building the Model

THE fuselage of the Flying Aces Indoor Contest Glider is a piece of soft, clear, white balsa 3/16" x 5/32" x approximately 15". The rudder and elevator are 1/32" flat balsa cut to shape. The wing is 1/16" flat balsa sanded to an airfoil shape.

When all the parts are cut to shape, they should be sanded smooth and the corners rounded. The rudder is then cemented to the rear of the fuselage. While this is drying, the wing and elevator are each cemented to obtain the correct dihedral.

The elevator mount is cut to the shape shown in the drawing, then streamlined and cemented to the fuselage. The elevator is cemented to the top of the mount, with the trailing edge protruding in the rear. This is done so that the elevator can be warped for adjustment more easily.

The wing is cemented in a V-shaped groove to fit the dihedral. The model should now be doped, then sanded with very fine sandpaper. To adjust the glider for longitudinal stability, the nose is cut off—very little at a time—until the model glides smoothly. Finer adjustments are made by sanding the nose for balance.

QUESTIONS and ANSWERS

1. Is a three-bladed propeller more or less efficient than a two-bladed?—**John Mear, Dallas, Texas.**

A three-bladed propeller is less efficient than a two-bladed propeller because there is less space between the blades and therefore more disturbance. A three-bladed propeller is used when more propeller area is required without having to increase the diameter.

—

2. What proportion exists between the rudder, stabilizer and wing?—**Marvin Handler, Boston, Mass.**

The stabilizer is approximately 33% of the total wing area. The rudder is 15% of the total wing area. This data refers only to the plane when the wing is approximately 1/3 from the propeller. In case the wing is nearer, less area is required, and vice versa.

—

3. Does streamlining on a model aid in any way?—**Melvin Lawton, Omaha, Nebraska.**

Streamlining is only useful when traveling at a great speed. It becomes more effective as the speed increases. Since a model travels at such low speed, streamlining is of very little value to it. Slight as it is, however, there is a certain advantage in streamlining, and for this reason it should not be omitted from the model.

4. When did the plan of the Hall Racer appear in Flying Aces?—**Charles Sawyer, Philadelphia, Pa.**

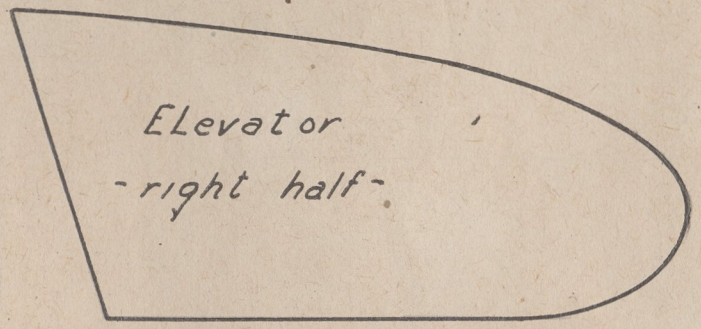
In the October, 1933, issue.

—

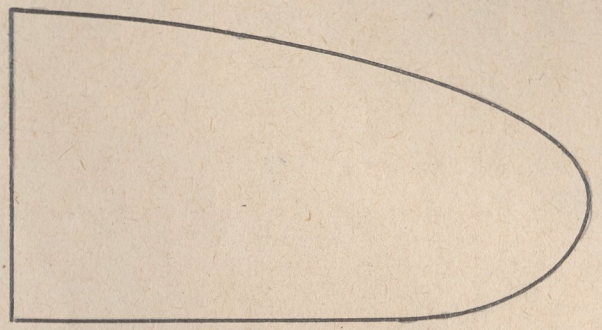
5. Is there any relationship between the number of strands of rubber used and the length?—**Walter Evans, Goldfield, Nevada.**

Yes. There is a certain relationship involving a rule set down by Johnson which runs as follows: "The length of the strand should be equal to twice the number of strands used." That is, if eight strands are used, the length of each strand should be 16 inches.

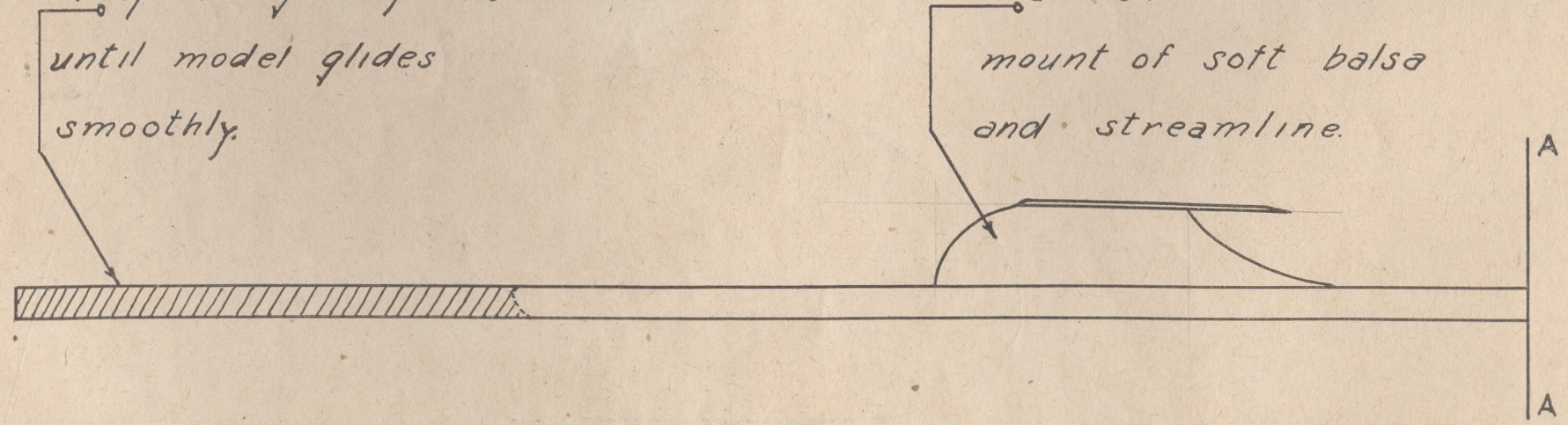
ANSWERS BY AVRUM ZIER



Make two and cement together to form a dihedral of 3/4".

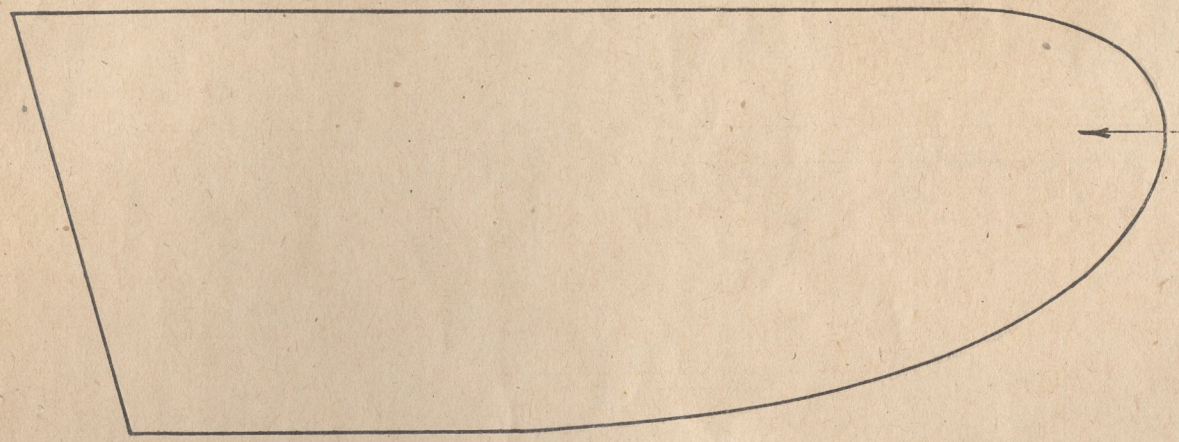


Rudder. Cement and fair to rear of fuselage.



Sheet - 1

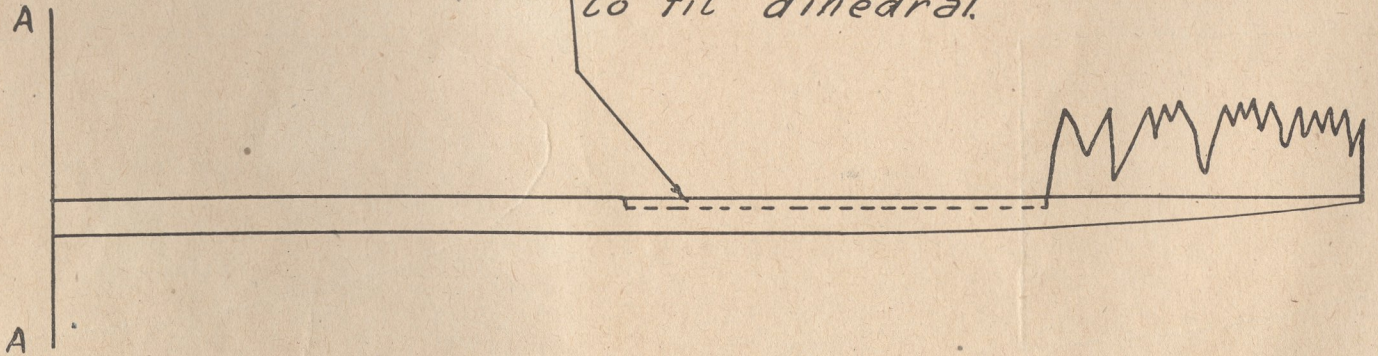
JULIUS UNRATH



Wing. -right half-
Comber to obtain
best results.

make two and cement together
to form a dihedral of 1."

Wing mount. A "v" slot
to fit dihedral.



Sheet - 2

JULIUS UNRATH

Principles of Model Building

By Avrum Zier

✪ ✪ ✪

Here's the third of a series of articles on propeller designing. This one sums up the subject by giving you a general survey of the problem of propeller carving. Useful information for every model builder!

IN the last two articles we have discussed the designing factors of a good propeller. This month we conclude our subject with a general survey of propeller designing in connection with propeller carving.

During the past few years great progress has been made in the model aeronautical field. In 1929, when models were just coming to the front, the world's record for indoor tractors was somewhere near 8 minutes and 30 seconds. Last year's record brought the mark up to a little more than double the previous one. This remarkable advancement can probably be attributed to the latest discovery of microfilm, that super light covering, and to the increased knowledge of model airplane designing on the part of the builder.

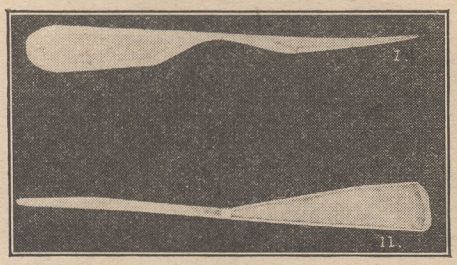
At the recent world champion endurance contest, in which I happened to be an official, I was informed by some of the leading model airplane builders that they depend a great deal on the design of the propeller. The propeller on such a model must contain certain characteristics which commercial ships do not have. It must have a large diameter, and must revolve very slowly, giving as few revolutions per second as possible. The advantage of such a propeller is obvious, since the slower the propeller revolves, the longer the model will remain sustained. Designing such a propeller is by no means easy, and requires many years of experience. However, by learning from experience, you may save yourself many disappointments.

The other week I chanced to come across a very interesting article on the making of indoor propellers for endurance models. This article was sent in by Glenn E. Walters of Grove City, Penn., and I am taking the liberty of reproducing this article because I feel that it will help many of my readers to lighten their propellers. He writes:

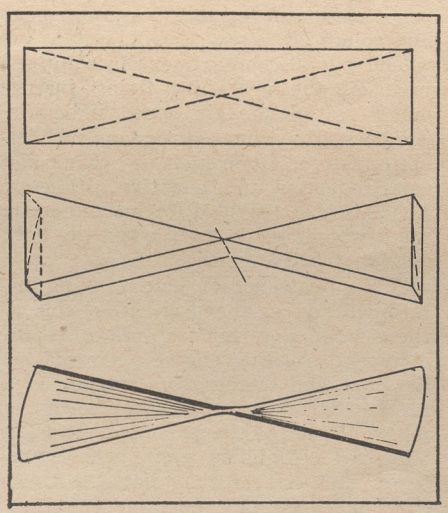
Here are two methods I have used to lighten propellers, and the results have been more than satisfactory.

1—First carve the propeller in the usual manner. Then, using a pencil, mark out a section on one of the blades to be cut out. This section should begin about 1 1/4 inches from the propeller hub and end 1/4 inch from the tip. A margin of 1/4 inch or less should be left on the leading and trailing edges. When you have the section from one blade cut out, reproduce the other blade in like manner. Now balance the propeller and cover on one side with superfine tissue. Since the blade is very thin, it makes no difference which side is covered. Using this method, the weight of a 10-inch propeller carved from a block of balsa was cut nearly in half, and the weight of a 12-inch propeller was cut down to .004 ounces.

2—This type of propeller is constructed in the same manner as the single surface wing, except that the leading and trailing edges are set at an angle to each other. The material for a propeller of this type consists of two spars, a quarter-inch square of 1/16-inch sheet balsa, two pieces of 1/64-inch sheet balsa for the tips, and one or more 1/64-inch ribs in each blade as shown on photograph.



Showing how the center of the propeller becomes wider as it propagates toward the tips of the blades.



Various steps in the carving of a simple type propeller.

The following data was observed in comparison with the ordinary carved propellers:

Type of Propeller	*Weight in Ounces*
Ordinary Prop. 12"	.016
Type 1—made from above	.012
Type 2—built up	.009

To resume our general discussion, the usual endurance propeller is carved to a very thin blade, and very often sanded to such an extent that the light can transverse the thick film of balsa. Many model builders cut their propellers at the center and reglue the blades in a sweep-back fashion, subtending an angle of about 160 degrees with the plane of rotation. This type of propeller is found to be very efficient. Try it sometimes on your endurance models.

The amount of pitch actually depends upon the model involved, and there is no definite law by which you may derive the pitch other than by the application of technical formulas. My advice to the builder is to construct various types of propellers, and, by a process of testing and eliminating, obtain the one with the highest factor of efficiency.

Some time ago we spoke of cutting the center of the propeller down to its minimum width. That is, the center of the propeller as it propagates toward the tips of the propeller blades becomes wider. The reason for this is to cut down the resistance as well as propeller torque, which is only a hindrance to the model. In the photograph you can clearly see it illustrated on propeller marked No. 1.

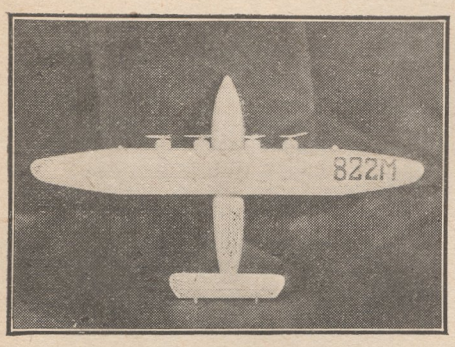
The selection of the wood for a propeller is a vital factor. The wood should not be too hard and not too soft. It should never contain notches. After you have selected your wood, draw two diagonals across the block as shown on drawing. The place at which they intersect marks the center of the propeller. Before any work is continued, the builder should insert a pin to designate the position of the shaft. With the aid of a sharp knife, cut away all the excess wood outside of the line. The next step is the actual shaping of the propeller, and this must be done with great care and accuracy. Be sure, when you carve the propeller, to shape the blade to cross-sectional view as can be observed on a wing section.

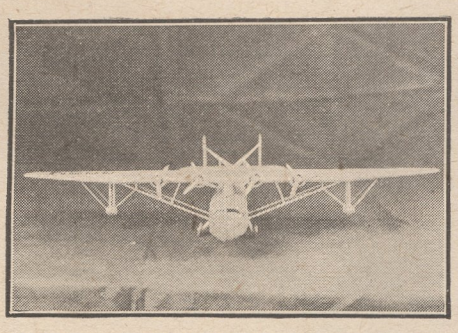
The preceding paragraph illustrates the method to follow when carving any propeller. The one just explained is known as a simple type propeller, and is mostly used on baby R.O.G. models. In one of our articles we mentioned the term "mean equivalent blade element." We said that this term applied to a point located 3/4 to 2/3 from the center of the propeller. At this point, the pitch of the propeller is determined with many other characteristics. By making this point the widest on the blade, the propeller will be found to be very efficient.

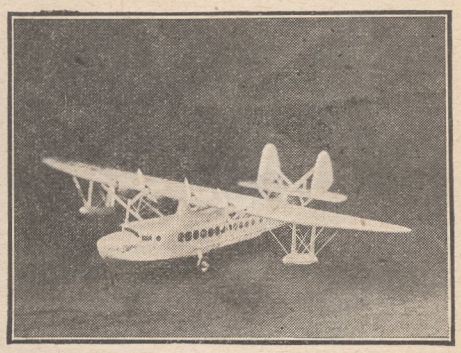
Another method of constructing propellers is the use of steamed balsa wood. The best way to accomplish this method is to place the sheet balsa out of which you are going to cut the blade in very hot water and leave it there for a rather long time. After you remove the balsa from the water, bend it over an object shaped to the desired curve, and tie it down with gauze. Set it away to dry for about two days. After all the water has evaporated and the wood has regained its original hardness, remove the gauze, and the blade will remain in the same position that you have set it. The blade is inserted into a hub and is twisted to the desired angle. To reinforce the blades against breakage, run through a strip of bamboo along the back of the blade. This has been found very efficient and has saved model builders many hours carving new propellers.

Here's the Sikorsky S-42

By Jesse Davidson







This month we present plans for building a model of the latest thing in flying boats—the four-motored Sikorsky S-42, which has been much in the news. As you can see from the pictures above, this ship makes a beautiful and impressive model, which will be an addition to any collection.

✪ ✪ ✪

THE Sikorsky S-42 four-motored flying boats, which have been ordered by the Pan American Airways for its South American line, are soon to be put into regular service.

The construction of this type of flying boat, a departure from the conventional Sikorsky outrigger tail and short-hull type, was based on specifications set up by the PAA engineers and its technical adviser, Colonel Charles A. Lindbergh.

The S-42 is built entirely of metal. Chrome molybdenum is used throughout for fittings, while 17 ST duralumin is used in the skeleton construction, and sheet metal for covering of the hull, wings, tail surfaces, etc.

A large wing flap to aid in slowing up landings is hinged to the trailing edge of the center wing panel between the ailerons. The rear portion of this structure is covered with fabric where the wing loading is comparatively light. In the S-42 construction, a new flush riveting process was followed, and more than 340,000 rivets were used throughout the boat.

The four Pratt & Whitney Hornet S3D1-G motors are faired into the leading edge of the giant wing, thus obtaining a minimum drag as compared with the mounted engines on the previous Sikorsky designs. The Hornets each develop 650 h.p. at 2,150 r.p.m. at 5,000 feet. Three-bladed Hamilton-Standard controllable pitch metal-propellers are used on each engine. Cowlings are also placed over these engines.

The center motors are situated 13½ feet apart, while the outboard motors are spaced 12 feet from the inner two. A novel arrangement has been provided to permit mechanics to work on the engines without building a special scaffold. In the leading edge of the wing is a hinged section which can be swung down, thus providing a platform.

All the latest improvements in providing safety, speed and comfort are utilized. The glass used throughout the ship is shatter-proof. The circular windows in the hull are sealed, but the pilots' windows may be slid open. Ventilation in the main cabin is secured through air ducts, the air being brought through from the streamlined turret between the wing and the cabin roof. Through this turret, also, the control cables for the ailerons, flap and engines, as well as the electrical wing-light system, are housed. The cabin is soundproof and well insulated against heat and cold.

The pilots' compartment is equipped with all the necessary flying instruments—altimeter, air speed indicator, compass, directional gyro, four tachometers, rate of climb indicator, bank and turn indicator and sensitive altimeter. Space is also provided for an automatic pilot, which will be used when the S-42 goes into active service.

A duplicate set of actual flying instruments is arranged on either side of the control cabin for each pilot. All instruments reading engine performance, pressure and temperature gauges, etc., are located on a bulkhead between the pilots' cabin and the passengers' and in view of the flight mechanic, who is stationed just aft of the pilot's seat. In case of fire, an emergency lever within reach of the flight mechanic's hand will completely smother the engines with an extinguishing chemical. Fuel is carried in wing tanks and fed directly to each engine.

A seventy-pound radio, identical with the one carried by the Lindberghs on their 30,000-mile aerial route survey, is carried aboard the S-42. Having a 20-watt-power output, it can transmit and receive messages while the ship is in the air or afloat.

A 225-pound anchor and 150 feet of stainless steel cable are carried in the bow of the ship and may be dropped through a hatch under the port side of the hull just above its normal water line.

Following are some figures concerning its proportions:

Wing span	114′ 2″
Length	68′ 8″
Tail span	34′ 2″
Tail chord	82″
Rudders space	18′ 4″ apart
Height of ship measured at rudders	24′

The Model

A NEAT-LOOKING model with a 14 3/16 inch wing span can be made directly from these drawings by doubling the size of each part of the plan. The dimensions given in the drawing are full size. Use any kind of soft wood you desire, though balsa is preferable.

Wings and Tail Surfaces

THE wing is made in one piece. The airfoil section is obtained by using the same curve as shown in the side view of the wing. Notice that it has a slight under camber. The top of the wing is perfectly straight while a dihedral is built in. The entire wing should be cambered first and later the dihedral cut in shape.

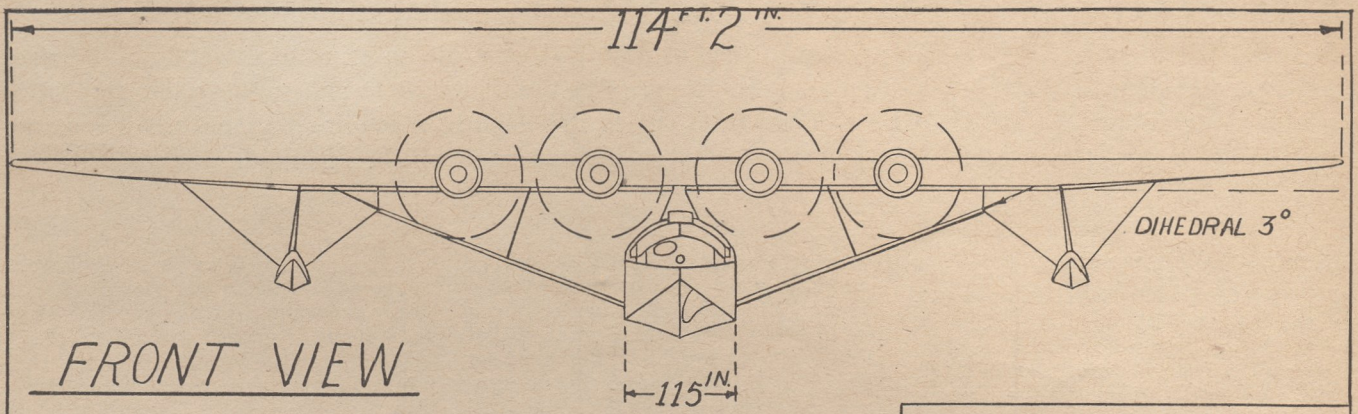
Mark off the positions where the motors will be placed. Then cut out the leading edge part of the wing to the shape of the streamlined end of the motor nacelle so that the nacelle will fit snugly into the wing. Apply cement all around and fill in any holes with a little plastic wood. The position of the ailerons and the decelerator flap can be grooved with a three-cornered file to represent them. The tail surfaces are cut to the necessary size and shape and streamlined.

The hull is cut out of a block of wood. Trace top, front and side views on the smooth sides and cut out with a sharp knife. The pilots' cabin may be cut out and an instrument board put in. Two seats and a set of controls may also be installed. Windows for the sides and roof are made of celluloid.

The turret, on which the wing rests, is glued to the top of the hull. This is streamlined after it is cut to shape and proper size. The outboard pontoons are held in place by struts suspended from the wings. All struts should be stream-

(Continued on page 94)

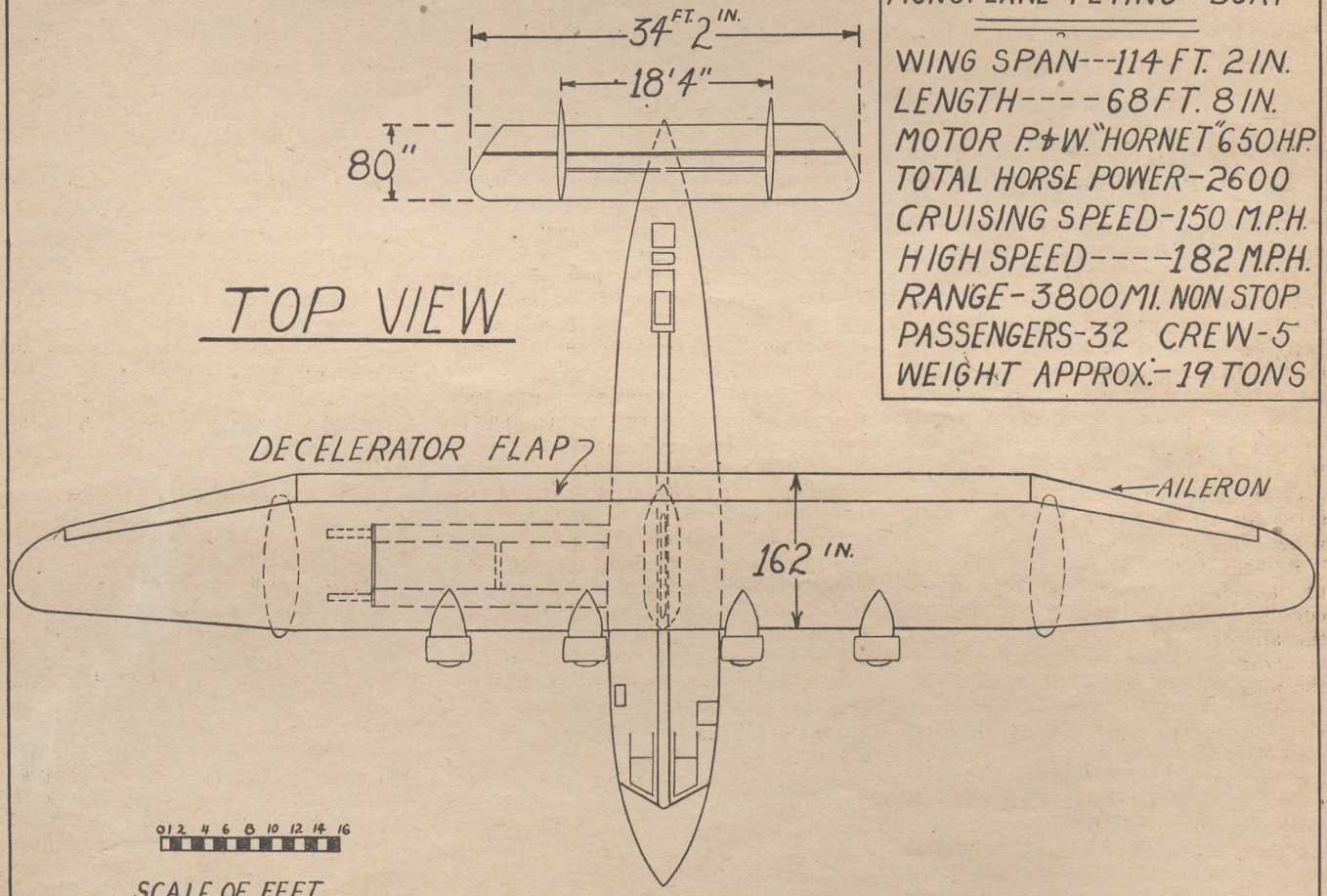
Here's the Sikorsky S-42



FRONT VIEW

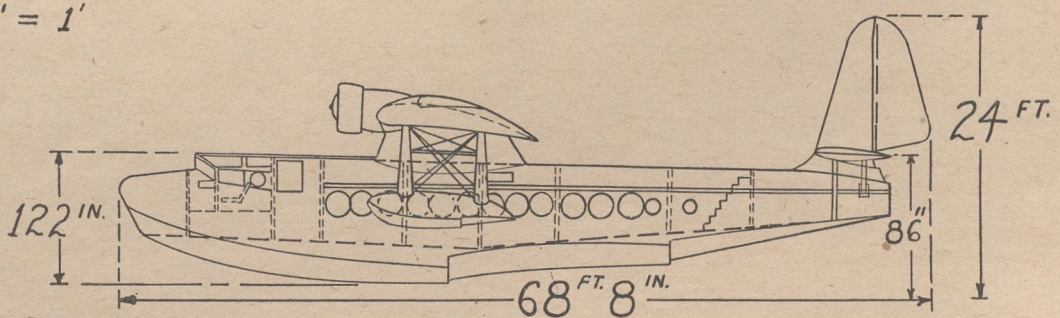
SIKORSKY S-42
MONOPLANE FLYING BOAT

WING SPAN---114 FT. 2 IN.
LENGTH----68 FT. 8 IN.
MOTOR P.&W. "HORNET" 650 H.P.
TOTAL HORSE POWER-2600
CRUISING SPEED-150 M.P.H.
HIGH SPEED----182 M.P.H.
RANGE-3800 MI. NON STOP
PASSENGERS-32 CREW-5
WEIGHT APPROX.-19 TONS



TOP VIEW

SCALE OF FEET
1/16" = 1'



SIDE VIEW

1934

JESSE DAVIDSON

From the Model Builder's Workbench

In this department FLYING ACES presents a fund of practical, concrete information direct from the model builder's workbench. Model builders are requested to send in their own hints and suggestions, and for all usable contributions, FLYING ACES will pay from one to five dollars, depending on length. All contributions should be typewritten, if possible, and none will be returned.

✪ ✪ ✪

How to Make Hard Curves Easily

SOME planes, such as the Bellanca and the Curtiss Robin, have peculiar curves in one longeron, while the other longeron is nearly straight. When the sides of a model of one of these ships are taken from the construction board, they have a tendency to spring out of shape. I had this trouble recently and originated a method of construction that does away with this possibility and does not use a multitude of diagonal braces. The successful method is as follows:

The plans are fastened to the construction board and covered with transparent waxed tissue. A piece of the covering tissue is pinned over the side view of the fuselage. The outline of the fuselage is made with pins, and the covering tissue is tightly stretched. Longerons are cut to fit.

The longerons are then given a coat of cement on one side, and this side is laid next to the covering tissue in between the pins. The pins make the longerons conform to the required curve. The rest of the side pieces are likewise cemented to the covering.

When the first side has been completed, the opposite side is built directly over the first. The longerons are cemented together with a small drop of cement at each joint, besides being cemented to the short fuselage struts. The two sides are thus built as one.

The next step is to cover the as yet uncovered side. This is done while the two sides are still cemented together. The sides are then pinned down again until they are completely dry. When dry, the sides are split apart, and the top and bottom struts put in. Work then proceeds in the usual way.

This method of procedure is quite a help in building small scale models and in building indoor endurance fuselage models. It eliminates doping and shrinking, since the covering is stretched when the wood is fastened to it. This is a great help with small fuselage crates. This method is a good one to use when making rudders and stabilizers.

THOMAS MCGARRY.

To Conquer Prop Torque

EVERY single propelled model has prop torque, which tends to bank the model to the left, provided the propeller is righthanded. The usual remedy for this problem is to warp the rudder to the right, or to give the wings wash-in and wash-out.

These devices eliminate the torque and hold the model on a straight course. But when the propeller unwinds and the prop torque decreases, the warped rudder or warped wings tend to swing the model to the right when it is gliding to a landing. This is because there is no torque to equalize the warped surfaces, and the model then spirals down with one wing very low, or spins into a landing, and ground loops. This spoils the beauty of the flight as a whole.

Recently I have been experimenting with a simple method to offset propeller torque. I built a Boeing P12B and set all the surfaces in line (wings, tail and rudder), not taking into consideration prop torque. I centered my attention on the nose block through which the prop shaft revolves. Instead of boring a hole at right angles to the nose block, I bored the hole out of the center line so that the prop shaft, when looked at from the top view, pointed to the right. Then, when the propeller is attached to the shaft, the propeller is not in line with the fuselage, but is turned to the right. About 3/16" out of line would be sufficient.

Now, if all the surfaces are in line, the rudder or wings will not have to be warped because, when the model is in flight, the propeller will be pulling towards the right while the wings will tend to bank to the left. Since both forces are acting at the same time, a straight flight will result. A good landing is insured, since the glide will not be affected by warped surfaces.

HY LOSCHIN.

Tips on Models

AN important point in model building is getting the body alignment perfect, and blocking it up right when making the model. A misshaped fuselage makes a tedious covering job and sometimes slightly interferes with flying. Worst of all, it makes a valuable model look cheap, and weakens it.

Some models are largely rectangular in shape (width and height) with a few semicircular formers on the top and bottom. On a model of this kind, the two sides are each made right on the plans and then attached by means of the top and bottom formers. This style of model does not require blocking up and is therefore simple to construct.

Then there is the model with the round fuselage, which you cannot construct by working on the plans. One of the best methods I found for making it is this: Before vainly trying to attach stringers and longerons to the round formers, cut a 1/8" by 1/8" notch in the top, middle of the inner hole in the round former. Do this to each one, and in the notch place a 1/8" by 1/8" motor stick.

Now your formers are all secured together by means of the motor stick, and they are all perfectly aligned. Then you are ready to attach the longerons and stringers to the formers. When the body is completed, every piece will be in its right position, and the covering of the model is a comparatively simple job.

When a flying model does not do well in distance flights, it is generally because entirely too much model cement has been used, adding too much weight to the model. Another thing to remember is not to take a scale flying model too seriously. Putting on every detail (numbers, signs, etc.) frequently makes the plane too heavy a load for its propeller to pull.

Landings are a good test of flying models. I have watched quite a few two-to-three foot planes make a perfect flight in the air, but suffer bad landing gear crack-ups on the smooth cement surface of a wide driveway. The weakness lay in the main landing gear, which was of soft balsa without any rigging or bamboo braces. Another fault was the extraordinarily short distance between landing gear and fuselage. One good landing gear style is 1/16" by 1/8" balsa with threads to the lower wing (if there is one) and 1/32" bamboo glued to the landing edge of the landing struts. Another consists entirely of 1/16" stripes of sandpapered bamboo without rigging. One made of reed of a soft nature is also good, because the reed acts as a shock absorber.

Recently, on a giant gasoline-driven model, I noticed a particularly good shock-proof landing gear. It consisted of a cedar block about 1½" around. This was hollow, and in it was a little spring. Then the main strut of bamboo was about ¼" around. When the wheels touched, the main strut slipped in the larger one, preventing a jerky landing.

It's up to the model builder to use his experience and his practical "building" sense. This often results in better models than ones made by slavishly following every detail.

ANONYMOUS.

Indestructible Balsa Wheel

TO begin with, the diameter of the wheel should be cut out of a piece of balsa one-quarter of the diameter. Next, this disc of balsa should be rounded to represent a tired wheel. A fairly heavy disk of aluminum, one-half the diameter of the wheel, should be cemented to the center of the wheel. A 1/16" hole is next drilled through the center, after which a piece of 1/16" O. D. aluminum tubing is inserted and flared at each end.

JULIUS UNRATH.

JOIN THE FLYING ACES CLUB

the largest aviation club in the world!

No Dues, No Red Tape How to Join

To advance the cause of aviation, over 30,000 men and women, boys and girls, without any limitations of age or race, creed, color or boundary, have joined together to form the Flying Aces Club.

It is easy to join, to become a regular member of the famous F.A.C., the largest aviation club in the world. Just clip the application coupon at the bottom of the middle column on this page, fill it out and mail it with a stamped, self-addressed envelope for the return of your Official Membership Card. There are no dues of any kind, no red tape . . . . nothing to keep you from going ahead and qualifying for your Cadet and Pilot Wings, your Ace's Star and, perhaps, the highest award of all, the Flying Aces Club Distinguished Service Medal.

If you are interested in any phase of aviation, fill out the Membership Application Coupon and mail it . . . . now, before you turn the page.

Get Your Own F.A.C. Stationery!

You can now order direct from us your own official F.A.C. stationery. The paper is of high quality, the Flying Aces Club letterhead attractively hand-lettered. And the price to you is amazingly low!

100 Sheets, postpaid for 25c

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Official F. A. C. Pennants

6 for 10c, 20 for 25c

COUPON
No. 21

Save This Coupon for

CADET WINGS

of the Flying Aces Club

All members who have Official Membership Cards are eligible for Cadet Wings. This coupon, with two other similar coupons from any other two issues of FLYING ACES Magazine and 10c, entitles members of the F.A.C. to Cadet Wings. Do not send in this coupon alone. Save it until you have three of them. Then, send them in all together with a self-addressed envelope and 10c to cover cost of wrapping and mailing. Only one pair of Wings to a member. If you lose yours, send 25c for new ones.

Canadians send International Reply Coupon for 15c. British send one shilling in coin or International Reply Coupon for one shilling.

Honorary Members

President and Mrs. Franklin D. Roosevelt

Casey Jones	Rear-Admiral Byrd
Wiley Post	Capt. Edward Rickenbacker
Al Williams	Colonel W. A. Bishop
Col. Scaroni	Major G. A. Vaughn, Jr.
Gov. Gifford Pinchot	Mrs. Gifford Pinchot
Major von Schleich	Willy Coppens
Lieut.-Col. Pinsard	General Balbo
C. E. Kingsford-Smith	Josef Veltjens
G. M. Bellanca	Amelia Earhart Putnam
Capt. Boris Sergievsky	Senator David I. Walsh

Official Charters

F.A.C. Flights and Squadrons are recognized only when they have been awarded Official Charters. These Charters are illustrated to depict the various steps of advancement in aviation, and the wording is in keeping with the high ideals and purposes of the Club. They are printed on a very fine grade of paper and the names of the Squadrons are hand-lettered. Charter applications must always be accompanied by a complete list of members with their addresses. For the Flight Charter send 25c, for the Squadron Charter 50c, to cover costs.

The Ace's Star

The Ace's Star is awarded to regular members of the F.A.C. who have qualified for their Cadet and Pilot Wings and who have succeeded in enrolling five new members in the Flying Aces Club. Each new member must fill out the Application Coupon below. Get five of your friends to do this, send in their applications all together and win the F.A.C. Ace's Star.

The Highest Award

The Flying Aces Club Distinguished Service Medal is the highest award of the Club and is given to those whose work on behalf of the F.A.C. is "beyond and above the call of duty." It has been awarded for obtaining prominent men and women as Honorary Members, for exceptionally successful activity in the promotion of the Club, for outstanding work in covering the secret assignments of G-2.

August Application for F. A. C. Membership

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 .....

Street .....

City ..... *State* .....

Mail this application, and with it, enclose a self-addressed, stamped envelope. Canadians send an International Reply Coupon worth 5c. British send a similar coupon worth sixpence.

Form a Flight or Squadron

Today, interest in aviation is growing rapidly. There are more flyers, more passengers, more gliders, more model builders than ever before. Thus, it will be easy to get together a group who are just as keenly interested in aviation as you are.

To organize a Flight, you must have at least 6 members, including yourself. For a Squadron, you need 18 members. Flights and Squadrons conduct meetings and activities according to the wishes of members. GHQ has established no rulings in this respect. The entire idea of the Club is a common meeting ground in an international organization of aviation enthusiasts.

Many fine friendships have been formed through the Club. Many have found the incentive to fly. Many makers of aviation history have lent their names, given their advice and best wishes to the F.A.C.

You can start a Flight or Squadron of your own. Tell your friends about the F.A.C. and its official magazine, FLYING ACES. Tell them about the largest aviation club in the world and ask them to join up. It's easy. You can do it.

Remember this, however, whenever you write in to GHQ and expect an answer, send a self-addressed, stamped envelope for your reply. This is important.

Volunteers for G-2

G-2, the Inner Circle of the F.A.C., is open to a restricted number of members who are qualified for Secret Service work. Those who are chosen will have unusual opportunities to win the Club's Distinguished Service Medal.

All who are accepted for this work will be given a secret number, an identification card and a secret code. Assignments will be made by letter and code.

If you wish to volunteer, send a letter stating your qualifications to GHQ.

COUPON
No. 18

Save This Coupon for

PILOT'S WINGS

of the Flying Aces Club

All enrolled members who have already won their Cadet Wings are eligible for Pilot's Wings. This coupon, with four other similar coupons from any other four issues of FLYING ACES Magazine and 10c, entitles Cadets of the F.A.C. to Pilot's Wings. Do not send in this coupon alone. Save it until you have five of them. Then, send them in all together with a self-addressed envelope and 10c to cover cost of wrapping and mailing. Only one pair of Wings to a member. If you lose yours, send 25c for new ones.

Canadians send International Reply Coupon for 15c. British send one shilling in coin or International Reply Coupon for one shilling.

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

Flying Aces Club News

From one end of this country to the other—and all around the world—the name of the Flying Aces Club is winning more and more fame. This month all you old members—and there are now more than 30,000 of you—will be glad to welcome into the Club many new honorary members, among them Captain Boris Sergievsky, Russian war ace and recent world's altitude record-breaker in the famous Sikorsky S-42. That's just one of the many Club news flashes we bring you this month! Let's go!

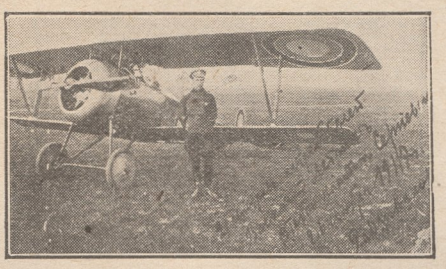
HAPPY LANDINGS on the Flying Aces Club tarmac this month, F.A.C.'s! Before we begin to pass on to you the good news that has come our way since last month, we have a word to say to the new members and all those readers of FLYING ACES who have not yet joined this, the largest aviation club in the world. If any of you want information on how to join, how to win your Cadet and Pilot's Wings, Ace's Star and Flying Aces Club Distinguished Service Medal, just turn back to Page 65 of this issue. There you'll find all the information you want, stated clearly. Be sure to follow all the rules, and you'll be the kind of member the Flying Aces Club wants.

First, we want to welcome the new honorary members of our great Club. Probably most of you know the name of Captain Boris Sergievsky, pilot for the Sikorsky Aviation Corporation, whose picture and letter to you appear on this page. Just a little over a month ago, Captain Sergievsky, in the new Sikorsky S-42, broke the world's altitude record by making a 21,800-foot flight up into the skies. And say, you model builders—any of you who want to have a solid model of this great record-breaking flying boat, turn to Page 62 of this issue, where you will find plans and directions for building the Sikorsky S-42.

The picture of Captain Sergievsky which appears here was taken standing in front of the plane which he flew during the World War, when he served as pilot in the Russian Air Force. His has been a long and glorious career in the air, and his flying is still winning him glory.

Louis Northrop, leader of the Bridgeport, Conn., squadron of the F.A.C., was instrumental in bringing Captain Sergievsky into the Club. Northrop reports that Mayor Jasper McLevy of Bridgeport has also joined up. "I wish to thank you for honorary membership in the Flying Aces Club and express

Here's a great advertisement for our Club! Above you see F.A.C. Cadet Willie Pawlomicz, of Morrisville, Pa., holding a model of an autogiro which he has built and which tows after it the name, Flying Aces Club.



Captain Boris Sergievsky, flyer in the Czar's Air Force in Russia during the war, and now pilot for the Sikorsky Company, joins the F.A.C. Above is a picture of Captain Sergievsky in front of the plane he flew during the war. Today he flies the new Sikorsky S-42, and recently broke two world's altitude records in that plane. See his letter to you below.

The Flying Aces Club

Gentlemen:

Thank you for electing me an honorary member of your Club.

To promote aviation and active flying is my life's work, and I am only too glad to join an organization which has promotion of flying as its main aim.

(Signed) BORIS SERGIEVSKY.

to you my desire for your success in promoting the interests of aviation," Mayor McLevy writes. That's a good, lively outfit up there in the Nutmeg State. Carry on!

All the new honorary members aren't from Connecticut, however. Senator David I. Walsh, of Massachusetts, writes that he is very glad to join the Flying Aces Club. His membership comes through the Winthrop, Mass., Squadron, led by David Score. From Louis Wozniak, leader of the Albany, N. Y., squadron, comes word that John Boyd Thatcher, Mayor of Albany, has joined our Club, and Walter W. Schrieber, head of the Syracuse, N. Y., squadron, has heard from the Honorable R. B. Marvin, Mayor of Syracuse, that he is glad to lend his support. Incidentally, F.A.C.'s who live in the north section of Syracuse and students of the North High School should get in touch with Schrieber at 1025 Oak Street, with regard to joining his squadron. Sheldon W. Govier, Democratic Ward Committeeman of the Ninth Ward, Chicago, Ill., has also joined up, as has the Mayor of Welch, West Va. Elmer Wyatt, of Welch, West Va., is heading the F.A.C. Squadron there.

From away out west comes good news, also. Paul Guerrero, who has started an energetic squadron in Tacoma, Washington, writes us that the Honorable Clarence D. Martin, Governor of Washington, is glad to be an honorary member of the Club. Guerrero has not only started a squadron in his home town, but, through correspondence with friends and relatives in Santo Domingo, has started a group of F.A.C.'s there.

Charles F. Mancke, of Spokane, Washington, sends us some interesting dope on Pilot "Nick" Mamer, who has just joined the Club as an honorary member. Mamer is a World War pilot and veteran flyer. Learning to fly at the age of 18, he has flown 8000 hours over a period of 17 years, ranging from the Arctic Circle to the Canal Zone, from the Atlantic to the Pacific, and has carried 50,000 passengers without mishap to himself or to them. After the war, during which he was a member of the Seventh Aero Squadron, he went into barnstorming, and later won fame by making the first commercial flight from St. Paul to Seattle over the Northern airway—an aerial trail blazer—and in 1929 was again a headliner when he staged the first non-stop 7500-mile flight from Spokane to San Francisco to New York, refuelling in the air. His is a great history.

There are some other news flashes from the various squadrons about the country. Colonel "Chuck" Davis reports that every town in his entire division has at least one squadron, and summer plans are developing rapidly. John Murphy, of 1473 Irving St., N.W., Washington, D.C., writes us to pass along the word that all Washington F.A.C.'s who want to join a "Full of Life" Squadron should get in touch with him. In this group is a licensed pilot who has a Challenger Biplane which can be used by the squadron. Another member, a reserve officer in the Infantry, will give lectures, and still another has a new Taylor Cub which can be used. Sounds lively for you birds in Washington, D.C.

A new squadron has been started by William Tymeson and Walter Smith in Troy, N. Y., and still another up in Presque Isle, Maine. The Maine squadron is under the leadership of Harry E. Murphy, and the membership is already twenty-two. Good going, you downeasters! Up in Yonkers, N. Y., Maurice Commanday, of 18 Ridge Road, is interested in organizing a Photo-Collecting Squadron, and wants to have all would-be members let him know. He has seventeen members now, but wants to make this a large group. Out in South Bend, Ind., the F.A.C. Squadron, under the able leadership of De Vearl Quier, holds meetings every Thursday evening, and plans almost immediately to have clubrooms where the members can build models and spend their leisure time. That's a good start, you South Bend F.A.C.'s. Have a central place to meet and you'll get organized much more quickly and accomplish more.

That's all for this time, but we have a lot more hot news coming next month.

Message to G-2 in Code D. X. I.

41-guy, map, foe, foe, bus, tip, bar-5-22-BAG, BAR, SPY-69-92-138-spy, bus, spy, gas, bus, tip, bar-5-SKY, C.O. 138-16-hut, foe, bus-5-22-dud, bay, fog, gun, rip-hut, foe, bus, bar? 11-58-16-168-oil, bay, bar, air-mec, bar-47-mec-fog, rev, mec, foe, fog, bus-mec, bar-air, rev, bus, rip-147. 177-17-124-tip, bus, sky, bay, dud, mec, tip, dud, rip-184-rib, tip, hut, spy, rib, air, dud, rip!

Airmail Pals

The department for all of you who want to swap letters with other F.A.C.s. All requests for Airmail Pals must be written on a separate sheet of paper, and will be printed in the order received.

Makes His Own Designs

Dear C. O.:

I'd like some Airmail Pals from wherever your magazine goes, and I'm sure that's pretty far away. I have made many models, every one different from the original plan. I make stunt changes with wings and rudders. For example, I have made a Fokker and Spad with sweep-back wings. Is anyone else interested in this kind of model making? If so, hop on to my tarmac for a while.

WILLIAM BIKFASY.

674 N. Main St., Wellington, Ohio.

A War Veteran's Son

Dear C. O.:

I would like to hear from boys and girls, but as far as the girls are concerned, I prefer ones who are interested in model building and the collection of war plane parts. I have a strip of fabric with a German cross on it and a hand grenade from France. My old man was in company A-145-U.S. Infantry, and he got me the grenade in person. I am 15 years old, myself, and have blond hair and brown eyes, if that means anything.

Yours for quick answers,

JOHN YETSON, JR.

2267 West 91st Street, Cleveland, Ohio.

A Chute Expert

Dear C. O.:

I have built 22 models, from a six-foot wingspread to a half-inch spread. I also have a speed boat and a two-place special factory-built Heath. I have made 5 chute jumps, and I broke an ankle on the last one. I also have 75 solo hours to my credit. If this makes me an airman, let's hear from boys and gals interested.

GORDON LAMBRECHT.

5829 So. Turner Ave., Chicago, Ill.

"Lone Limey"

Dear C. O.:

Can a "Lone Limey" living in Canada find a spot on your tarmac? I am 18 years of age, five feet nine, with dark hair and green eyes. Also, I might add, a broken nose, obtained in a motorcycle race crash in the Old Country. I'm an aeronautics fan and have been up a couple of times. I've done lumberjacking, too, and have some snaps of myself taken while engaged in the art. How'm I doin', pen pushers? Please write and let me know.

Yours to the last tracer,

"WINDY" MULLINSON.

C/o S. C. Dyer, R.R. No. 1, Amaranth Sta., Ontario, Canada.

A Record Flight

Dear C. O.:

I am fourteen years old, but that's nothing. I have made a hot air balloon which took me aloft twelve feet. To anyone who writes me, I will give instructions for making a similar balloon. I have ascended eleven times and my total flying hours in it are about five minutes at the most. Come on, buzzards! Give me a knock-down.

NORMAN BISHOP.

7 Lake Ave., Haverhill, Mass.

He Doesn't Trust Girls

Dear C. O.:

When I am not boosting FLYING ACES, I play football and basket ball. I am five feet tall and weigh 104 pounds. The boys call me "Chunky" because I love to eat.

I am anxious to have some Airmail Pals, but they must be boys, as I don't trust the girls.

Yours in aviation,

HERBERT J. HEROLD, JR.

331 President St., Charleston, S. C.

One for the Opposite Sex

Dear C. O.:

I am practically a Christmas present, since I was born on December 25th, 1922. I am blond and a cadet at Hill Military Academy, Rocky Butte, Portland, Oregon, and I'd like to correspond with an F.A.C. of the opposite sex.

Model building is my chief hobby, with airplane pictures holding second place. To the first ones who write, I will send a picture of myself in full dress uniform.

Yours,

CADET MORRIS.

Warren, Idaho.

Would Rather Write Than Eat

Dear C. O.:

Put me down for Airmail Pals of both sexes. I am eighteen and a half, five feet nine, have blue eyes and am fond (I should says nuts) about motorcycling, flying, building models and collecting stamps. Boy, that is some sentence!

Kidding aside. I wish you'd all write to me, because I could spend all my time writing letters.

CHARLES BEY.

401 Ninth St., West New York, New Jersey.

A Sea Peelot

Dear C. O.:

I have been in U.S. Navy aviation for six years, and flying is my goal in life. I'm going to be at the U.S. Fleet Air Base for two years. Among the other planes here, we have a T.4M. bomber and a P.H.I. Flyboat bomber.

I'll be glad to give more information to any pen pals who will use the Airmail base to write to me.

Aloha!

RUSSELL T. MILLER.

U.S. Fleet Air Base, Pearl Harbor, T. H., Hawaii.

All Questions Answered

This section of FLYING ACES is at your service, F.A.C.s. Send in your questions and requests for air information, and we will be glad to answer them here in the order received.

Peter Hoppin, Staten Island:—It would be impossible for us to reprint all FLYING ACES covers on the back cover. That space is sold to advertisers. The S.E.5 was designed at the British Royal Aircraft Factory, a government plant. They also put out many others, such as the R.E.8, the B.E.2-C, the F.E.2-B, and several other designs.

—

Robert Cobby, Erskinville, Sydney, N.S.W., Australia:—If Captain A. H. Cobby is your uncle, you have a real ace in the family. He was a member of No. 4 Squadron, R.F.C., and is credited with twenty-eight victories.

—

Paul Burgdorf, Mineola, L. I.:—It is hard to find out how many pilots were killed in the World War, but probably between forty and fifty thousand on all fronts. Glad you like my stories.

—

Vernon Callis, Manchester, Conn.:—You can get a private license when you are eighteen years of age. Use your Flying Aces Club card to obtain permission to visit any air field. Other members do, and have no trouble. Major Mickey Mannock was England's greatest ace, in my opinion.

—

Andrew Wilson, West Lebanon, N. H.:—The Handley Page carried about three thousand pounds of bombs. All sizes and types were carried, depending on the work required in the raid.

Herbert Fisher, Vaudreuil Station, Canada:—Thanks for your long letter. We'll see that you get more pictures of German ships in the new magazine. Real photographs, too. The holes in the Spandau gun covers were just to allow better air cooling in the air.

—

Edward T. Petch, Cleveland:—Your letter has been taken up and considered. I'll see what I can do for you in the matter of making models for the artists. But most of them have them, I believe.

—

Harold Krizer, Newark, N. J.:—None of the ships you mention were used to any great extent on the Front, although you are not exactly clear about which Schutte-Lanz or L.V.G. machine you mean. The DeMarcay was not used on the Front, and there were only a few Kondors.

—

Russel Dodson, Detroit:—Captain Ball did not shoot down Immelmann. The famous British airman was on leave in England when the German ace was shot down. Lieutenant McCubbin got him. This is the true story.

—

Ted Forden, Markench, Sask.:—Thanks for your interesting letter. Glad you like FLYING ACES so well. The Ronald Press, 15 East 26th Street, New York City, can supply good books on aerodynamics and meteorology. Write them for their catalogue, mentioning this magazine.

Helen Grune, Oak Grove, Oregon:—Lieutenant Frank Luke is the second ranking ace in the American Air Service, with eighteen victories to his credit. I do not know anything of the German, von Richter. Do you mean von Richthofen? He was credited with eighty victories. The insignia you included in your letter is of no particular country. I saw the picture from which you obtained it. It was just a drawing to illustrate a fight.

—

William A. Moyer, Allentown, Pa.:—The Pennsylvania National Guard uses several types of planes, mostly Curtiss two-seaters.

—

Robert Broder, Keyport, N. J.:—The Hell-Diver is a two-seater. It has a top speed of about 150, and the latest models now have pants on the wheels.

—

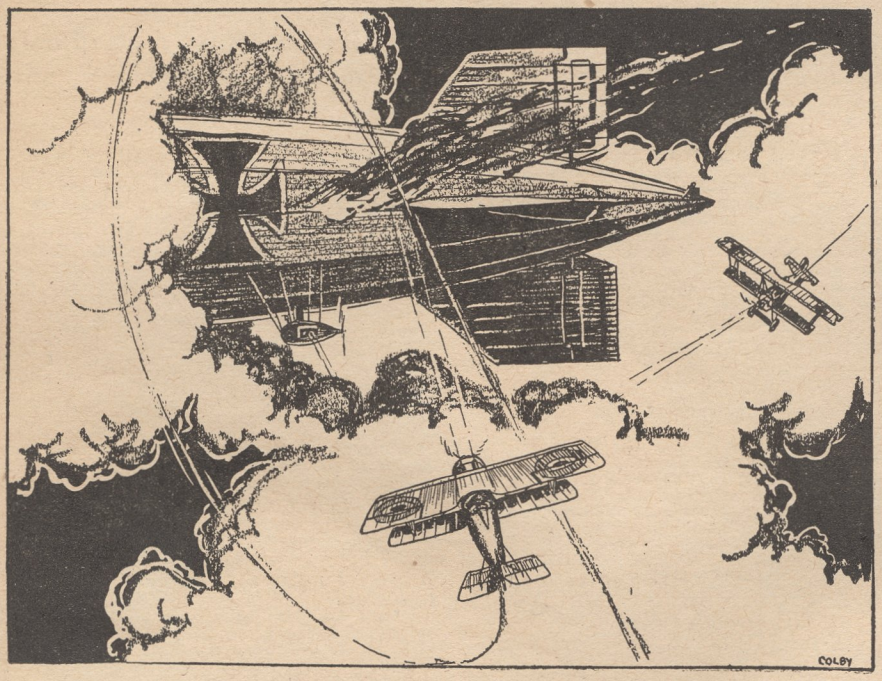
Henry DeMass, Michigan City:—There are no official offices in Germany or England where war-time photographs of planes may be obtained. Read our advertising columns. You may see some advertised there.

—

James Ostrosky, Newport, R. I.:—The poem was interesting and the pictures were, too, but we cannot reprint pictures cut from other magazines. You must send real photographs, to get reproduction. Remember that, you birds, when you send pictures in.

By ARCH WHITEHOUSE

MISSING WORDS CONTEST, No. 4



Win a Flying Scale Model *of the* AIRSPEED COURIER

in Missing Words Contest No. 4

FIVE PRIZES

First—Flying scale model of the Airspeed Courier, with a 24-inch wingspan.

Second—Regulation flying helmet and goggles.

And Three Prizes—Kit for Fokker D-8 model—guaranteed to fly.

To Win This Contest:

In the above picture the artist has told a story—and the same story is told in words below. Some of the words have been left out—for example, Nieuport is the word missing from the first line of the story. What you should do to win this contest is fill in all the missing words to fit the picture above. Send us the list of missing words, in their correct order, with a letter telling us whether you would like to see in FLYING ACES stories and articles about future wars—and why.

Here's the Story:

Returning from a high patrol in his speedy little.....
"Chuck" Bradley sighted a giant German.....
bearing on its sides the hated black maltese.....
He gunned his roaring motor and bore down upon it, firing his.....
The gunner located in his cockpit in the Zep's.....
returned his fire with a stream of bullets from his.....
while the gunners in the egg-shaped motor.....
under the airship's hull opened their observation window and.....
their Spandaus at him as he approached. Rising in a tight.....
"Chuck" came at them again, and with huge satisfaction saw.....
creeping along the side of the Zep just forward of the horizontal.....
with which the Zep is kept on an even keel in.....
By now the huge airship was disappearing into a huge cumulus.....
leaving behind it a long trail of black.....
that led Chuck's eyes over to the right, where he saw a German.....
bearing down upon him. He at once recognized it as a.....
by the fact that it had.....
as well as no interplane.....
Knowing that the Zep was doomed and would explode, he waggled his.....
bedecked wings and headed for home, down through the fleecy.....
content that he had rid the skies of one more.....
whose huge black cross.....
would no longer strike terror to those who had heard the drone of its.....
as it passed overhead on its way to drop its cargo of death-dealing.....
upon the homeland of the pilot in the victorious little.....

Don't Forget:

The winners of the contest will be judged by the correctness of their list of missing words and by their letters. All decisions by the judges will be final.

Be sure to mention in your letter the name and number of this contest, and the issue in which it appears. All answers on Missing Words Contest No. 4 must be mailed by the time the next issue of FLYING ACES is on sale. Send to

Missing Words Contest No. 4
FLYING ACES Magazine
67 West 44th St. New York, N. Y.

Citations and Awards

of the Flying Aces Club

The Distinguished Service Medal of the Flying Aces Club has been awarded to the following members of G-2 for exceptional services to the club:

JOHN PERRY
WALTER LARSON
JACK BROWN
CLYDE ALLEN
ELWOOD CAMPBELL
CHARLES BOYD
ROLAND LA MARCHE
NESTOR CAMPAGNE
ROBERT FREEMAN
ALFRED STRACK
FRANK RIDDER
ALEXANDER TAYLOR
RAY BARRETT
LLOYD LA PLANTE
SALVATORE ARICO
HAROLD HOKE
LOUIS BERTIN
GEORGE STAROS
EUGENE MULCAHY
CHARLES AMES, JR.
HARRY PERLMAN
PAUL PAYNE
ANTHONY ZISEK
BERNARD GIANNUZZI
JOHN CAZZALINO
DONALD HOPKINS
FRANK LUNIEWSKI
ROBERT SCHUBENBURG
JOSEPH THOMAS
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HENRY REINKE
FRANCIS LAFFERTY
EDWARD A. ALLEN
SETON NORRIS, JR.
ROBERT LISTER
WILLIAM BARRY
CHARLES DUNCAN
EILEEN MACPHERSON
FRED VOORHEES
LOUIS GREGORY
ADAM BADELA
CHARLES HOFFMAN
HAROLD SMITH

The following members of G-2 have been cited by the Flying Aces Club for exceptional services to the club and are being considered for the Distinguished Service Medal:

RALPH GRAHAM
ROBERT GIVENS
BERNARD MEYER
EDWARD RICHARDSON
F. L. PIET, JR.
ROBERT SCOTT
CATHERINE MERCHANT
GEORGE MINDE
CHARLES PELANT
DONALD KEYNTON
CHARLES TIBBITS
CHARLES HUPPMANN
KENNETH CLIFTON
HOWARD SIMPSON
ERWIN TRAGER
FRED SMITH
GEORGE WILLHAUCK
SAUL MYRON
WALTER HELD
T. RON DUDLEY
A. A. JACOB
G. IMLAY
EARL HOASE
JACK EDMONSTON
CHARLES HANEY
LEO HERSHKOWITZ
ADOLPH BETTERINI
CHARLES BREMA
JACK WARD
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E. BEYER
TOM SMIDOWICZ
EDWARD MEDELISA
RUSSELL FE'EREISEL
E. VANDERVEEN
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THOMAS SHELDON
THOMAS DAVIS
WARD LANITOT
JOHN KUCER
WALTER ANNER
GEORGE MARVIN
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EUGENE MONK
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MERRIL GOSS
BILL GREENWOOD
JOHN MCCANN
SAUL WHITE
MORRIS MASKARON
RODERIC PENFIELD
LOUIS PAOLILLO
EDGAR DRAKE
MICHAEL TENNANT
LAWRENCE CABOT
EDWARD MCKINLEY

Legion of the Lost

(Continued from page 6)

it's almost—supernatural."

Strange started to speak, then remembered those desperate moments when he had been under Rawlins' guns. Bell looked at him sidewise.

"You've only heard part of it. Two days ago they began raiding dromes and headquarters. The first was a small outfit, the observation unit at Les Graims. It was only a flight, and isolated, as you know. A Breguet two-seater landed just at dawn, apparently for fuel. The mechs were putting ships on the line, and some of the outfit were puttering around. Suddenly the man in the rear pit of the Breguet turned his machine guns loose on the whole crowd. At the same time the pilot fired a rocket, and down came this mob of killers.

"Some of the groundmen at Les Graims tried to reach their guns, but that devil in the Breguet mowed them down. Three or four of the Spads also strafed everybody in sight. While they were doing this, the rest landed, and with them were two more Breguets. The observers in the two-seaters had their Lewises dismounted, and they hopped out to finish the job. The pilots of the other ships had automatic shotguns. It was a regular slaughterhouse when we found the place."

"How do you know exactly what happened?" Strange asked tensely.

"One man pretended to be dead. They bayoneted him, but he was still living when we got there. I happened to be at the 98th when some peasants brought word of it, so I saw the field right after—" He broke off, shivering.

"This blue death?" Strange queried in a low voice.

"No—that's new tonight. Before, it was just plain butchery."

"They haven't killed all their victims," General Thorne cut in. "When they raided Fifth Corps headquarters and the G-2 field at Bouilly, they made off with half a dozen Staff officers and Intelligence men. A pilot who managed to escape just as it started said they were knocked out, or at least subdued, and then put in the rear of two-seaters or tied onto the Spad's wings."

"But surely they have lost some men in those fights," Strange exclaimed.

"They take away their dead—just as they took those prisoners," said Thorne grimly. "That's why we haven't been able to tell who they are."

Strange did not answer at once. He was gazing into space, and his green eyes had an odd gleam.

"So they take away their dead," he muttered. "I've been a fool. We should have brought that Albatross pilot's body."

"Why?" asked Thorne, blankly.

"Didn't you notice the way he and Rawlins moved and spoke?"

"They both seemed terribly excited."

"Excited? More than that, sir. I don't know about that other, but Rawlins used to be a plugger type, steady but slow. Anybody in Air Intelligence

Don't Miss

the Next FLYING ACES

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William E. Barrett, James Perley Hughes, Casey Jones, and Model Plans for the Lockheed Orion

10c
AT ALL NEWSSTANDS!

could fly better and shoot faster than he could. But you saw what happened in the air, and how he pulled those guns."

"Like greased lightning. He must have fooled you before, Strange—must have been pretending."

"No, something's happened to him—something frightful."

Tom Jay's face had a thoughtful look.

"You know, Phil," he said, "what Rawlins reminded me of there at the last? He moved so fast he was like one of those trick movies, when they speed them up to make people jump around."

Strange sat up quickly. "Tom, I believe you've hit—"

A smothered cry from Bell cut him short. "Stop the car, for God's sake!" the major cried hoarsely.

"What's the matter?" demanded Thorne, as the machine jerked to a halt.

"Look—down the highway!" groaned Bell.

Strange bent forward and stared with the others. They had come to the end of the wooded lane, where it joined with the east-and-west road. Half a mile away, heading west, the other cars and the motorcycle were going down a slight slope. And plunging down at those cars was a score of hurtling ships.

"The Murder Patrol!" Thorne whispered. "Good Lord, they're dropping bombs!"

There was a burst of flame and smoke in front of the leading car. The machine veered to one side, went into the ditch. Another bomb exploded behind it, as the occupants sprang out.

The roar of engines and crash of bombs came up-wind with a dreadful din. Suddenly the rattle of machine guns added its chant. Through the smoke Strange saw one car hurtle onto its back. Gray Spads were diving, Vickers hammering fiercely. Above the slaughter, a lone ship pivoted. Strange thumped the driver of the car.

"Back up! Step on it!"

The car roared swiftly back into the lane. Strange turned to Thorne.

"That spotter would have seen us, and we couldn't do those others any good—"

"He did see us," groaned Bell.

The lone ship was gliding toward the spot where the lane met the rutted, narrow dirt road. Strange swore.

"Get out, everybody!"

As they sprang out, he vaulted over into the driver's seat. The others yelled at him, but he threw the gears into low and jammed down the throttle. The car lurched out of the lane, skidded into the east road, away from the scene of butchery.

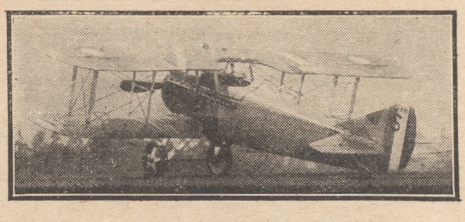
CHAPTER III

ESCAPE!

STRANGE cast a look over his shoulder. Four ships were pitching after the fleeing car. He looked ahead, saw a bend in the road. An incline appeared as he swung around the turn. He opened the door on the right, stuck the wheels into the ruts in the road. Waiting till a ditch showed ahead, he tumbled out of the car, banging the door behind him.

He struck rolling, in dense grass which grew about the ditch. With a prayer that he had not been seen, he lay there, motionless. The plunging Spads roared down toward the road and the tac-tac-tac of machine guns broke out. He held his breath, but no bullets thudded near him. The screech of diving ships grew louder, then dwindled. They were following the car.

Here are the finished models of the two famous wartime ships, plans for which appear on page 57 in this issue. Above is the Pfalz D XII, well-known German pursuit plane, and below you will see the Spad XIII C1, French pursuit ship. Follow the three-view layouts on page 57, and you'll have models that look like these!



He lifted his head cautiously, saw a small bomb slither down from the wings of a Breguet. It hit beyond the lurching car. Another bomb fell. It, too, missed, but now the car was nearing a turn. Two Spads shrieked down, with Vickers grinding. The car missed the turn, crashed into a little gully.

For half a minute, the Spads raked the empty machine. Then a bomb struck squarely beside it, and the shattered wreckage burst into flame.

The killers circled for a moment, then zoomed quickly into the north. Strange saw them join the rest of the Murder Patrol, then streak away into the haze. He stood up, began to walk back to the junction. Halfway there, he met Thorne and the rest.

"Thank Heaven!" exclaimed the general fervently. "We thought they'd got you."

Strange explained what he had done. The others gazed down at the smoking wreckage.

Noisy Jay was looking off to the north. "Maybe Taggart's outfit will see them and cut them off," he ventured.

Strange looked at him inquiringly.

"They've put Captain Pete Taggart and a bunch of aces up on Montalier," Noisy explained, "primed for getting this murder mob."

Strange nodded thoughtfully. "A good idea. But there ought to be more than one squadron to go against this pack of killers."

"I'll double it," muttered Thorne. "It will mean robbing the squadrons we have left, but we can't sit still and do nothing. He gazed up and down the road. "Speaking of that, we can't stand here. Bell, what's the nearest chance for transportation?"

"S.O.S. depot, seven kilometers east, sir. But there ought to be trucks along here soon."

Thorne hitched his belt. "Maybe," he said. "Meantime, we'll walk."

They had covered five of the seven kilometers when a French lorry appeared from the other direction. After an argument, and the display of Thorne's insignia, the driver turned and took them to the depot. Here they obtained a car, and forty minutes later were drawing up near a timbered slope at the edge of a little French village.

"What's this?" demanded Strange, as they turned and halted at a sentry-box almost hidden in a ravine.

Noisy Jay turned from the front seat. "Second Corps HQ," he grinned. "The Staff has modestly retired from the public view."

"Shut up, you punk," growled Tom. "I didn't notice you hanging back any."

The car went past another group of sentries, stopped under a wire net on which small branches and leaves had been fastened. Machine-gunners loafed near a Browning at one side, and farther on Strange saw another emplacement. In a minute they came to the entrance of a large dugout. Though it was obviously of the specialized headquarters type, the entrance was a bare hole in the side of the slope. More armed men were stationed here.

Near by, the dynamo on a power-plant truck was whirring, furnishing electricity for the underground headquarters. Farther on under the nettings were a row of tents and a cook-house.

Strange peered down the ravine, past a third machine-gun nest to where camouflage curtains hung down over a road.

"Isn't the old 81st field just beyond there?" he queried.

"Your memory is still good," said Noisy. "It's right there, and it's being used for the honorable Jay Brothers' ships—also a few lowly courier planes."

Strange followed Thorne and Major Bell into the dugout.

"Second Corps moved here by order from Chaumont," Thorne told Strange in a low tone. "As you may have heard through British Intelligence while you were in London, we're set for a Hun push in this sector. This HQ is the key to the counter-offensive, and if that damned Murder Patrol should wipe it out—" He shrugged expressively.

"I thought the push was expected a little farther north," said Strange.

General Thorne paused at the top of the steps leading down to the second level.

"It was, but agents have been bringing back information that proves the Boche were bluffing. They also tried a bluff to the south, to draw attention from this drive. No, the main action is coming right across from here."

They went down the heavy concrete steps, into the well lighted stronghold. An officer emerged from a passage to the left, halted quickly at sight of Thorne and saluted.

"I've bad news for you, general. Both the Sixty-fifth and the Thirty-third—"

"I know," said Thorne huskily, "and but for Strange here—"

The other man gave an exclamation. Strange recognized Colonel Jordan, his Chief in G-2. The bulldog features of the Intelligence chief were a picture of sudden relief, as he saw his star agent.

"We'd given you up," he said. "I checked your departure from Le Bourget, figured you had landed at the Thirty-third just in time to be killed."

"Then you know about when it happened?" Strange asked quickly.

"Between three and four o'clock, this morning. A message went through around three, and at four we couldn't get any answer to another call."

"That's about right," agreed Thorne dully. "You see, Strange, that's how we happened to be there. We'd had a report on the Sixty-fifth, and we began calling other dromes at once."

THEY went into the mess. The Jays and Major Bell ate ravenously. Strange kept seeing the tortured face of Trent, the bayonet driven through his body. He took brandy and coffee, listened absently while Thorne told Jordan what had occurred.

When the general described Rawlins' appearance and his lightning actions, Jordan's eyes bulged.

"You must have seen somebody that looked like him. Why, they used to call him 'Pokey' Rawlins at G. H. Q."

"It was Rawlins," Strange put in, quietly, "but not the Rawlins we knew."

Thorne put down his coffee cup abruptly. "I thought you said—"

"I mean, something had changed him so that he was like a different person. What mission was he on?"

The G-2 colonel scowled. "He claimed to have a lead on one of von Stark's contact men," he replied. "That was a month ago. He seemed so positive that I gave him a free hand."

"Who is von Stark?" demanded General Thorne.

"One of the shrewdest man in German Intelligence," said Jordan. "We're almost sure he's one of the so-called 'supervisor' spies, with hundreds of men under his control."

"He's a cunning, cold-blooded rascal," Strange said musingly, "devoid of mercy, and possessed by a terrific, ruthless ambition. The time I crossed his trail I saw him deliberately sacrifice five Boche agents to raise himself a notch in the *Nachrichtenamt*."

He turned as a sudden commotion sounded out in the passage. A Staff captain hurried into the mess, saluted the general.

"Begging your pardon, sir, but Captain Taggart is here. He's excited about something, says he has to see you."

"Bring him in," snapped Thorne.

Taggart came in hastily. He was a big man, with an air of power about him. He took off his flying gloves, swept the group at the table with a glance. When he saw Thorne, he drew himself up quickly.

"Never mind the formalities," said Thorne brusquely. "What's happened?"

"I just got the word—by the wireless on Montalier, sir—about the two squadrons." Taggart paused.

"Yes, yes! Go on!"

"Have you got any line on them, sir?" the big captain said eagerly. "That killer mob, I mean?"

Disappointment registered on Thorne's rugged face. "No, Taggart. I hoped when you dashed in here you had some news."

"I have, sir," said the big man hurriedly. "Only I thought maybe you'd already learned something more important."

"What do you know?" demanded the general.

Strange had been listening, like the others, but now he carelessly took out a flat metal case and extracted a cigarette. Under cover of lighting it, he palmed a pencil and tiny pad which he kept in the case. He inhaled, blew a cloud of smoke, then lowered the hand with the cigarette so that it covered the other. Instantly, his pencil moved over the pad, scribbling swiftly. When Strange lifted the cigarette to his lips again, the bit of paper was below the edge of the table, being pushed into Noisy Jay's fingers.

"I may be wrong, sir," Taggart was saying, "but if you'll let me have those other ships and men, I'll raid that spot inside of an hour. If they're hiding there, we'll blow them to hell-and-gone."

Strange leaned forward, just as Noisy Jay pushed back from the table and sauntered toward the door.

"I beg pardon," he said coolly, "but I didn't get the location of this place you suspect."

Taggart had cast a sharp glance at Noisy, but now he stared at Strange. Strange looked toward Colonel Jordan.

"The captain doesn't know me, sir," he remarked. "Would you mind explaining my usual G.H.Q. connection?"

The bulldog face did not change, but Strange knew Jordan had caught his meaning.

"Taggart, this is Captain Neville of G-2," the colonel said formally. "Any questions he asks you can be considered official."

Strange's green eyes shifted past Taggart toward the door, then back almost in the instant to Jordan.

"No, colonel, you needn't bother with pretense here." He smiled at the big captain. "That's a fake name for certain purposes. I'm Captain Strange."

The effect on Taggart was electric. He jumped back, then with a tremendous effort tried to hide his consternation.

"So I was right," Strange said grimly. "He thought I was dead."

Taggart's eyes were blazing with an odd, fierce light, but his voice held dogged restraint as he spoke.

"Whom do you mean?" he said tensely.

"The one who sent you here," returned Strange. "The one who told you to trap another squadron!"

A sound of animal rage burst from the big captain's throat. He whirled his hand down toward his hip. There was a yell behind him, and a squad of men threw themselves upon him. Taggart went down, cursing madly.

"Watch out for the gun!" Strange leaped to his feet, hurdled the table. He seized the captain's right wrist, gave it a furious wrench. The pistol clattered upon the concrete. With an oath, Taggart threw off two of his assailants, staggered to his feet. His huge fists crashed on one man's jaw. A savage side-swipe hurled Noisy Jay into a corner.

Jordan and Tom Jay leaped into the fight. Taggart went to his knees, fought up again with a madman's strength. Strange watched his chance, sprang in for a sudden hold. Taggart's head came back with a snap. He groaned and sagged to the floor. Breathless, the others flung themselves on him.

"GET some ropes," Strange snapped at a staring orderly in the doorway. He turned and looked down at the gasping figure. "He'll be all right in a little while—as far as his neck's concerned."

"What did you do?" demanded Tom Jay.

"Jiu jitsu," Strange said tersely.

Noisy came forward, rubbing the side of his head. "I wish you'd pulled it a little sooner," he complained. "He damn near cracked my skull."

"Forget that! We've got to move fast." Strange flung a significant look at Jordan, and in a moment the room was cleared of all but the original group. "General, what did Taggart ask you?" he questioned Thorne.

"To send the Forty-ninth to rendezvous with his squadron of aces at 15,000 feet over St. Barvilliers. He said he suspected a place in the heart of Lagneux Forest, across the German lines."

Strange made a quick estimate.

"At least twenty miles from Montalier. Major Bell, will you send a wireless to Montalier, saying the Forty-ninth will be there at the rendezvous in exactly forty-five minutes?"

"What are you up to, Strange?" demanded Thorne.

"I'm trying to save men from being killed, sir. Every second may count."

Thorne nodded at Bell. "Shoot it out," he ordered.

"Wait," snapped Strange. "Send another message, by phone, to the Forty-ninth, and have the entire squadron here as fast as possible."

"Here?"

"On that field, at the end of the ravine." Strange jerked around to Colonel Jordan. "They told me some men were captured by this Murder Patrol. Do you know the names?"

"I can get them in a couple of minutes."

Strange nodded, and the colonel hurried out. Strange beckoned to Noisy Jay.

"Get onto a phone and see if any trace has been found of the two missing squadrons. Tom, you hop to it and help him."

As the door closed, Thorne looked sharply at Strange.

"I want the straight of this. First of

all, how in Hades can Taggart be a traitor?"

Strange faced him grimly. "That's one reason I got rid of the crowd. We've got to face an ugly fact. These men must be considered as though they were the most ruthless Huns alive."

"I don't understand—"

"Look at Taggart's eyes, sir."

Thorne leaned over. The big captain, still dazed from Strange's blow, glared up like an animal at bay. His eyes glittered with an eery light.

"Good God, his eyes are the same as those others were!" exclaimed Thorne.

"Exactly. This man is no more Taggart than I am, to all intents and purposes. Something terrible has happened to him. All his reactions are speeded up to a frightful pace, his brain most of all. So was Rawlins' brain. Rawlins was thinking so fast I got just one thought at the last, and that only by a tremendous effort. I can't catch Taggart's at all."

Thorne's rugged face was suddenly white and old.

"This is awful," he whispered. "What can have done it?"

"I don't know, sir. But the worst of it is that he's been turned into a killer, and set against the Allies."

There was a pound at the door. Thorne answered, and men came in with ropes. Taggart was stirred to hasty resistance, but the men overpowered him and bound him securely into a heavy chair.

"Keep him carefully guarded, every second," Strange ordered sternly. He picked up Taggart's gun, after one of the men had put it on the table. The butt was covered with a tight-fitting rubber sleeve extending up to the trigger guard.

"That's odd," muttered Strange. He shoved the weapon into his flying-coat pocket, went out into the passage. Colonel Jordan was coming from the Intelligence room with a memorandum. Strange scanned the list.

"I know all but this Major Ellis," he said crisply. "What does he look like?"

"Thin, bald, about forty," replied Jordan. "He was the coordinator at Fifth Corps. It's worried G.H.Q. If the Boche should force him to talk—"

"I don't think that's why they wanted him," Strange said. He went into the Communications room, where the Jays were working on calls. "Any luck?" he inquired.

Tom shook his head.

"Get on your flying-gear," commanded Strange. "I want every man I can get."

One of the men at the switchboard turned to General Thorne. "G.H.Q. calling you, sir," he said.

"Put it on the Air Officer's phone." Thorne turned to Strange. "What are you going to do with the Forty-ninth?"

"Go to Montalier, to see if I can get a line on Taggart. Also, I want to see those aces."

"But if they're going to that rendezvous—"

"We'll be there when they come back. I'll send word by wireless if I turn up anything important."

Thorne strode toward another room. Strange and the Jays went down the passage. Major Bell came hurrying after them.

"The Forty-ninth's on the way," he announced.

"Good, I'll need you to okay my orders when they come." Strange stopped at the foot of the concrete steps, handed Jordan's memorandum back to the stocky G-2 colonel. "I may be wrong," he said in an undertone, "but if I were you, I'd flash word through the whole A.E.F. to arrest any of those men if they ever show up."

"But what on earth—"

"You saw Taggart," Strange said shortly. He mounted the steps, leaving Jordan frowning thoughtfully. Joining the Jays and Major Bell, he went down the ravine, under the camouflage curtains, to the former drome of the 81st. The Jays started their Spads. Strange commandeered a courier pilot's ship. All three engines were warmed by the time the Forty-ninth swept down and landed.

At Bell's summons, the pilots left their engines idling and gathered about Strange. Strange's orders were brief.

"Follow my lead. When we get to Montalier, be ready for an attack. If I fire a red flare, shoot up the place till there's not a man left."

"But, for the Lord's sake," protested Judson, the squadron commander, "that's one of our own outfits."

"Maybe not," said Strange grimly. "All right, men, let's go."

CHAPTER IV

MASKED MURDER

HE took off first, and the Forty-ninth swept into the air behind him. The Jays, according to plan, flew high at safety. Strange climbed in a wide spiral, led the ships above the thickening layer of clouds. Straightening out, he flew to a point he estimated to be up-wind and two or three miles from Montalier. Then, slanting gently through the clouds, he headed toward the flat-topped little peak. The squadron raced down behind him, plunging in good formation.

Strange's mouth was a thin, hard line. He might be leading them to sudden death, but it was better that this group die than that the horrible thing he suspected should succeed. He thought of the Jays. He could have left them behind, but every gun might count. He had no right to spare them.

"Gone!" he grated into the roar of the engine. There was not a ship left on the plateau drome. His green eyes flitted around the sky, probed upward. It might be a trap—but how could they know that this squadron was coming?

He pulled up at five hundred feet and warily circled the field. There was no place of concealment. There at the right were tool-sheds and material huts, and farther along, the outbuildings of the huge, old crumbling chateau which had once been the home of a French marquis.

Strange circled once more, hand on his trips. The place seemed absolutely deserted, but he harbored a deep suspicion. He came to a sudden decision. Plunging over the huts, he fired a burst into the ground before them, banked sharply and drove another burst close to the chateau entry. Nothing happened. He curved back, signaled for the other ships to circle while he landed. His Spad moaned down, stopped near the tool-sheds. A quick inspection showed that they were empty. Gun in hand, he went toward the huts.

Here he found signs of disorder, and at one spot a dark stain on the floor. A door had been splintered by bullets, but there was no one there. As he came out of the last hut, he signaled to the low-flying ships. The squadron strung out and landed, one plane close behind another. The Jays dived down and completed the group. The last engine was switched off, and for a moment there was silence.

Judson swung his lanky form out of his cockpit, gazed around curiously.

"Where's everybody?" he asked.

"They must have been tipped off," Strange said glumly.

"Tipped off? I don't get it," grunted Judson.

"Unless I'm badly mistaken, this was the base of your killer mob," Strange answered.

Judson started, and the rest of the pilots looked around uneasily. Strange went on crisply.

"They may have left some men here to try to catch us off guard. If so, they're in the chateau. Spread out, and we'll surround it and close in."

Five minutes later, searching parties entered the various doors. Strange was in charge of the group at the main entrance. The door was open, and he could see into the gloomy hall. He led the others inside, divided them and began to search the rooms on the right. The first had evidently been the owner's study. Wrecked bookshelves and battered furniture showed the ravages of war. A torn operations map had been tacked onto the fine paneling of the wall. Glasses and a bottle of wine stood on a scarred desk, and another bottle lay on the floor.

Strange opened the door to the next room, a drawing room. This, too, had suffered, but he had time for only a glance at its ruined splendor. One of the men with him gave a hoarse shout, and he wheeled to see a figure on the floor at one side.

He bent over, turned the man on his back. A gruesome blue face stared up at him. There was a bullet-hole above the right ear.

"Graham!" whispered one of the men back of Strange. "The blue death's got him!"

"One of Taggart's pilots?" Strange asked quickly.

"Yes," the other man said hoarsely. "He was—there's another one!"

The second figure was lying under a library table, his face blue like Graham's. One of Judson's men whirled in panic. Strange gripped him fiercely.

"Stay where you are!"

The pilot cowered. Before he could answer, there was a shout from another

part of the chateau. Strange opened a door to the hall. Judson appeared, breathing hard, face ashen.

"We've found—good heavens, it's hit here, too!"

"How many bodies did you see?"

"Three—they're just like these." Judson gulped. "They're Taggart's men. The rest must be around somewhere."

"We'll soon know," grated Strange. "I want this place searched from top to bottom."

THERE were no more bodies found, nor was anything discovered which gave a clue to the disappearance of the officers and men who had been stationed on Montalier before Taggart's squadron arrived. The group finally gathered in the long drawingroom.

"We're staying here," Strange said curtly. "Those butchers may be back, and if they show up, we'll give them a hot reception."

Under his direction, machine guns which had been mounted in pits around the chateau were brought inside and placed at various windows. The planes were aligned for a swift take-off. A man was put on the wireless set, and word was flashed to Thorne at Second Corps headquarters of the action taken. In a few minutes an answer came.

"Do you need reinforcements?"

"Ask him to have the nearest outfit standing by for emergency call," Strange directed. Then he left the wireless room and went up to the third floor, where an observation turret had been constructed. Judson and Noisy Jay were there, surveying the countryside through powerful telescopes. Strange took one of the telescopes and slowly rotated it around the horizon. He gazed toward Lagneux Forest, saw only a dark expanse.

"Boy, these sure are some lenses!" exclaimed Noisy Jay. "I can see a wart on a Kraut's nose, over there in the front trenches."

"What's that — down there on the rocks?" exclaimed Judson.

Strange swung his telescope down steeply to the edge of the small, blind canyon at the side of Montaleir. A mass of tangled wreckage met his gaze.

"It's a crashed ship," he said. Then he stiffened. Through the powerful glass, he could see the pilot's body where it had pitched against the jagged rocks. The battered face was blue. He silently relinquished the telescope to Judson. The squadron commander swore in a low voice, as he focused the glass.

"The blue death again! Now it's hitting them in the air."

Strange looked for a long time into space. At last he turned to Noisy Jay.

"Find Tom, and both of you start your ships. I want you to take a message to the G-2 chemical lab at Chaumont. Tell Tom to see General Thorne and have some sandwiches and coffee made up. He can bring the stuff back in the rear seat of that D. H. at the courier field."

"But there's plenty of food here, and the wine cellar still has a keg or two."

"We're not touching that." Strange scribbled a message. "Bring the answer back. Don't trust it to wireless."

Noisy departed, and in a few minutes the Jay Birds' ships roared up from the little plateau. Strange went below with Judson, arranged for a constant double-watch on the telescopes, with orders to report at once any planes approaching Montalier.

The day dragged on. Wearied by the loss of a night's sleep and forty-eight hours of activity, Strange lay down on a couch in one of the rooms. He was awakened by the sound of a plane. He jumped up to find the room in darkness. He went out to the main entrance, saw that dusk was falling.

Tom Jay was just arriving with the food. There had been a delay, and then the D. H. had been flown off by a Staff officer and his pilot. Tom had had to get another ship. Strange and Judson helped themselves to sandwiches, a thermos bottle of coffee, and sat down in the study. Tom and the others went on to the half-wrecked dining-hall at the rear. Strange lit a candle.

Judson glanced around uneasily. "This place is getting on my nerves," he remarked.

"I'm going to send for another squadron," Strange said, after a pause. "I have a feeling we'll need it."

They ate without speaking for a few minutes. Suddenly, Strange glanced up, stared at the other man.

"It's quiet as a tomb in here."

"It's been that way—"

"No, I mean the pilots. Do you hear them?"

"They've probably sneaked down for some of that wine," muttered Judson.

Strange jumped up.

"The fools! I told them not to touch it." He strode out into the gloomy hall. No light showed from the dining-hall. In growing alarm, he hurried toward the rear of the building. As he neared the dining-hall door, he heard a muffled cry. It seemed to come from the big room. He ran forward, brought up with a crash against the closed door.

Another cry, heavy with fury, sounded from within as he tried to open the door. It was barred. He threw himself against it, but it held solidly.

Abruptly, he became aware of figures near him in the darkness. He spun around and jumped to one side. A black shape hurtled past him. He snatched the gun from his holster, fired once. A hoarse voice screamed, and he heard the figure drop. Then another voice snarled something he did not catch, and he heard the swish of a gun swiftly pulled from a holster.

He sprang aside, ducked low and ran. A gun blasted twice, and he heard bullets spatter against the stone floor.

"Alive, I said," a fierce voice shouted. "Alive—do you hear?"

Strange fired straight at the sound, and the voice clipped off with an oath. Then it seemed to Strange that a dozen men threw themselves upon him. He was borne to the floor with terrific force, and only the fact that one man fell underneath him saved his skull from being crushed. Snarling like wolves, his captors tore and beat at him.

"Get him up!" came the voice which had spoken before. "I tell you I want him alive."

"Yes, Master," came a hoarse answer. There was a fast-clipped command, and Strange was jerked to his feet and dragged toward the door of the study. When he reached the room, he saw Judson lying over the desk, a gash on the side of his head. A glaring figure stood watch over him, pale face twitching, eyes alight with an evil flame. A black full-face mask had slipped down and to the side, its elastic broken.

Strange was shoved into the room. To his amazement, he found there were but three of his captors. A fourth man followed them in, masked as were the others, but it was plain that he was the one who had given the commands. Like the others, he wore an American uniform.

As the fourth man saw Judson, he swore furiously in English.

"Will I have to let you die again," he rasped at the pale brute standing guard, "or will you understand you are not always to kill?"

A coldness surged around Strange's heart. "Let you die again." What madness was this?

The pallid face twitched again, but with sudden, terrible fear.

"No, no, Master!" the man cried out. "I meant to do your will. But he fought—"

The one he called "Master" leaned over Judson. "He will live. Take him below."

A look of vast relief swept over the other man's twitching face. He stooped, and apparently without effort lifted Judson in his arms. Throwing him over his shoulder, he hurried out into the hall.

THE masked leader stepped across the room and took Strange's gun from one of the three who held him. He slipped the magazine from the butt, counted the cartridges, looked into the chamber.

"So it was you, *Herr* Brain-Devil, who fired at me. I thought it might have been a wild shot from one of my men. And that would have been unfortunate —for them."

The three holding Strange shivered. Strange tensed. One of them was pressing against his side, near the pocket where that other gun reposed. He pulled around to ease the pressure. Instantly, the hands that held him tightened like bands of iron. He winced.

"I warn you, *Mein Freund*," the leader said silkily, "not to resist these men. It is dangerous."

Strange looked coldly into the eyes that showed through the slits in the black cloth.

"You can take off the mask, von Stark, if you're wearing it for my benefit."

There was a brief silence; then the other man laughed.

"You have an excellent memory for voices, Captain Strange." He carelessly reached up and took off the mask, revealing a hard, determined face and a mouth like a trap.

Strange did not answer. Von Stark made a sign to the three men, and they loosed Strange. The Prussian smiled.

"Don't make the mistake of trying to escape, captain. It might be fatal, for these men are trained to kill." He beckoned to one of them. "Take word to the chief of Group A to bring his pilots for those planes outside. I want them flown to the base at once."

Strange hid a start. Then Montalier was not the base, after all. Von Stark eyed him with a cool smile.

"I was afraid you might suspect the truth."

Something raced into Strange's mind. He scowled to hide any gleam that might have come into his eyes.

"Secret rooms? I should have guessed," he muttered.

The Prussian gazed at him shrewdly; then his lip curled with contempt.

"I always said the great Brain-Devil was overrated," he sneered.

"At least," Strange said in a purposely blustering tone, "I followed your trail here."

Footsteps sounded in the hall. Men in American Army uniform marched by in a column of two's. They all wore helmet and goggles, but no flying-suits or coats. Strange's pulses quickened. His guess must be correct—and yet, how had he missed. . . .

He stiffened as he caught a side glimpse of one man's face. Frank Hersey, American ace! Hersey had been reported a prisoner in Germany two months ago. Then that was how. . . .

"Take the prisoner below." Von Stark's voice broke in on his startled thoughts. "But first, unmask."

The two men took off their masks, the Prussian meantime covering Strange. Von Stark looked keenly from one face to another.

"Listen carefully," he snapped. "This prisoner is of utmost importance to my plans. He is not to die."

Strange heard the hoarse breathing of the two men. He stole a sidewise glance, saw they had livid, twitching faces like that of the man who had slugged Judson. Hersey's had been like that, too. Their eyes were glittering fiercely, but the look they gave von Stark was one of fear and awe.

"Guard him carefully," the Prussian ordered. "If he resists, choke him into submission. But if you kill him—"

"We will remember, Master," one of the two said hastily, as von Stark paused. As they started out with Strange, a slender youth in the uniform of a German *Leutnant* hurried into the study. His eyes, Strange saw quickly, held only a look of normal alertness.

"A message was coming in, *Excel*—Master," he corrected himself. "It was from their Second Corps—"

That was all Strange heard, for an engine roared into life just then, outside the chateau. Another Spad's engine thundered a moment later, and soon there was a din of bellowing Hispanos. Strange's captors paid no attention, but marched him toward the rear of the building. He went the first hundred feet almost eagerly, glad to be out of the study before von Stark realized his omission. A search would reveal not only the gun in his pocket, but also the means on which he based . . . .

"Which way?" said one of his captors to the other.

"Through the dining-hall, if the panel is still open."

Strange let them shove him into the large, high-vaulted room, saw with swift relief there was no one in it. At one end, a rectangular panel had been swung open, disclosing a passage leading downward between two walls. He went along docilely, head hanging with apparent hopelessness. By the flickering candles on the table, he watched the feet of the man on his left.

One, two—one, two.

With a frantic lurch, he threw his weight to one side, kicked back with full force at the man's knee-cap. Shrieking, the man let go of Strange's arm, staggering back. Strange snatched the gun from his left pocket and whirled.

The second man had tightened his hold. Strange fired point-blank. A stunned, incredulous look came into the man's bright eyes, and he suddenly slumped to the floor. The first man, with a cry of fury, launched himself at Strange, despite his shattered knee-cap. Strange fired again. A sinister black hole appeared in the man's brow. Without a sound, he pitched forward on Strange's arm.

Strange dropped him to the floor, spun around toward the dining-hall door. As he did, he saw the face of the first man he had killed. It was turning a ghastly blue.

He stared down at the butt of the gun. Covered with rubber, so that none of the poison from the bullets could get into a scratch on the owner's hand. The hunch that had caused him to send Noisy to G-2 was right.

He sprinted for the hall, looked hastily up and down. The engines were still roaring outside, but the sound was lessening in volume. The ships must be taking off. He turned and ran desperately for the side entrance. He had to get one of those ships!

CHAPTER V

CAMOUFLAGE CANYON

ONLY three ships remained on the ground when Strange reached the front of the building. One of them trundled out and took off as he dashed toward the spot. There was no light, but the twilight held still enough gray to show two or three figures beside the last two planes.

One of the men turned abruptly and saw him. He gave a yell, drowned by the roar of the nearest ship as the pilot taxied out. Strange ran madly for the last plane. A pistol spurted. He whirled, fired twice. One man fell, doubled up. The other stumbled to his knees, moaning. The pilot of the last plane had jumped up in his cockpit. Strange leaped for the wing, drove the butt of his gun through the man's hasty guard, slammed it straight to his head. The pilot somersaulted out in a heap. Strange whipped the throttle open and raced the Spad down the field.

Rockets were streaking up from the base as he zoomed. He backsticked into the midst of the milling planes. One of the nearer pilots was staring down and did not see him. The other cut in sharply. Strange renversed, dived below the other ship and swiftly lost himself in the whirl of Spads.

One of the ships rolled its wings in a signal, and the others fell into three columns. Strange found himself in the middle of the second line. He followed the ship ahead. The leader was gliding swiftly, close to the sheer rock wall.

Strange's eyes glistened. It was the canyon! The base must be under some amazingly clever camouflage. He followed the other ships closely, his blood on fire. In a few moments he would spot the exact location. Then a swift getaway, and a race to bring a raiding armada. . . .

He sat up, rigid. The ships weren't landing! They were diving straight for the head of that narrow, blind canyon.

It was too late to turn. Already, the frowning walls were flashing by on both sides. To zoom would be to be spotted instantly by the men above. He gazed desperately into the darkness of the canyon. These men must be mad. He could barely see to fly between the rocks.

Then, as though just switched on, tiny red and green lights appeared, marking the left and right sides of the canyon. They led down at a slant, forming two almost solid lines of color.

A dull white glow loomed out of the shadows, and almost at once the ship ahead slowed its speed. Strange jerked his throttle, barely missed colliding with the other plane. The ships ahead were leveling off, at the very base of the rocky wall that formed the end of the canyon. He saw them sweep into the vague white light, pass out of view.

The plane before him was landing. He leveled off, glimpsed a wide opening, irregular in shape. The floor of the canyon led straight on into the lighted spot.

Strange gritted his teeth. He was caught, and by his own lack of vision. A cavernlike hollow under Montalier, an extension of the little canyon—the thing was plain as daylight. A blind canyon—only the thorough Boche had been careful to investigate it fully.

The Spad flashed under something that looked like a canopy. He stabbed a swift look at it, saw it was some kind of curtain which could be dropped over the entrance. That wrecked ship they had seen on the rocks! It must have been a plane from the Murder Patrol. The pilot must have been trailing that mob and had been shot down by poisoned bullets.

The Spad's wheels rumbled upon the rocky floor. He bent over, anxiously searching to find a clear path ahead. It was not difficult to see. Soft light from hooded reflectors cast a guiding beam straight beyond the entrance for all of four hundred feet. The ships ahead were turning alternately to right and left, and as they turned, their wings

were seized by little groups of waiting mechanics.

Strange ruddered left, as the man ahead turned right. Men caught the wings as the ship slowed, brought it to a jerky halt. It was swung around in a twinkling, so that its nose pointed diagonally back toward the landing lane. The others were being turned in the same way, ready for taking off quickly.

With a swift, furtive glance, Strange surveyed the hidden base. Above was nothing but blackness. He could only guess at the height of the rocky dome. The cavern was larger than he had thought at first; it was like the huge chalk caves farther north on the Front, one of which, he knew, housed three thousand German soldiers.

Along one rocky wall he saw a long line of fuel drums. The floor had been marked off with luminous paint, dividing the cave into sections, each one lettered. Near the entrance was a group of men in German uniform, two of them officers, the rest armed guards. On both sides of the entrance were machine guns, pointing toward the canyon.

As the last plane landed and rolled on toward the rear of the cavern, the men at Strange's wing tips shoved his ship forward. The Spad was moved into a position a hundred feet from the entrance. The others which had landed first were being placed in similar positions, three or four near the huge, jagged aperture, staggered beyond his plane.

Strange shot a feverish glance toward the take-off lane. It was a chance in a hundred — only inches to spare. He gunned the engine, and the Spad lurched out. The mechanics yelled at him wildly, and the group near the entrance whirled. Strange threw the ship around into the take-off lane. As he jammed the throttle open, an alarm bell rang furiously. A Boche leaped to a switchboard.

Down flashed the camouflaged barrier!

Rage at his failure gave Strange a mad inspiration. The rudder snapped over under a savage kick. The Spad swerved toward the group of Germans. Terrified faces loomed up before the flashing propeller.

Then, like a Juggernaut, the ship ploughed into the men. Strange heard their screams, saw a Maxim crew go down. The propeller flew into bits. Then the Spad screeched into the switchboard men and crashed on into the wall.

SPARKS flashed from a tangle of broken wires, and all the lights went out. Strange scrambled out of the ship. His head was whirling from a bump he had received, but he tottered on blindly. As his brain cleared, he saw an eery picture. Glowing hands were dancing about in the darkness!

He stared, then realized that the pilots wore luminous-painted gloves for purposes of identification. He dodged toward a spot where no hands showed. Some one bumped him in the blackness. He jumped aside, pushed on in the dark, hoping to find the entrance. He might get past that heavy curtain.

"Guard the door!" a brassy voice bellowed above the tumult. "Shoot any man who tries to get out."

Strange halted. Escape was impossible now. His wits alone could save him. He saw a flashlight weaving over the wrecked Spad. Turning hastily, he hurried in the opposite direction. He brought up with a jolt against a fuel drum. That meant he was at the right-hand wall. He followed along, sensed a gradual curve. The noise around the entrance diminished. He looked back, saw more flashlights bobbing.

Silhouetted by the flitting beams were scurrying men, ships, outlines of partitioned supply sheds. Farther on the left, he glimpsed the vague bulk of what appeared to be a small hangar. But there was no need of a hangar in the cavern. He made his way toward it, partly because it offered concealment.

His groping hands touched canvas. He edged along, trying to find a break in the smooth sides. He had gone about thirty feet when a string of lights went on behind him. He threw himself flat. Then, as no alarm came, he cautiously raised his head.

He was lying beside a large tent, facing in the direction of the entrance. A hundred feet away and on his left was the row of gas drums which had guided him along the wall. A group of ships, in echelon, stood beyond the supply sheds. Strange recognized their squadron insignia. They were the missing planes of the Thirty-third and Sixty-fifth. Nor were they the only ones beside the ships which had just been captured. With growing consternation, Strange saw a second group, made up of French and British planes, on the other side of the take-off area, massed back of the newly acquired ships of the Forty-ninth. There were almost a hundred planes in the cavern!

The side of the tent blocked his view of the other half of the cavern, but he could see forward to the entrance. Men were working around the wrecked ship and the switchboard. In a minute, more lights went on. Strange gazed up, saw that they were suspended from ropes running across the cavern. He wormed forward to the front of the tent, trying to see where the wires led. If he could wreck the lighting plant permanently. . . . .

He froze as the other half of the cavern was revealed. In the foreground was a prisoners' pen, and inside it were the pilots of the Forty-ninth. Germans were herding the last few through the gate, while still other guards stood watching with automatic shotguns poised. Strange saw Tom Jay, his face distorted with anger as a burly German shoved him along.

The door of the pen was closed, and a Maxim trained on it. Above, bright lights blazed. Strange took a hasty glance about, saw that no one was coming toward the tent. He swiftly surveyed the rest of the cavern. At the left of the prisoners' pen, not far from the shattered switchboard, was a double row of tents. Two or three Germans were standing near one of the small shelters, and Strange guessed that these were quarters for the Boche force, at least the enlisted men.

Back of the pen he saw a Diesel-driven dynamo set. To the right, diagonally opposite the prisoners, was an area filled with cots. There was a barbed-wire fence around it, and two Maxim crews lounged over guns in front of it. Twenty or thirty men were gathered back at the end of the enclosure. Strange caught a glimpse of khaki uniforms.

A string of lights near the Diesel unit led back to a crevice in the cavern wall. Steps were visible, leading upward. Strange's eyes narrowed. The connection with the chateau!

He had hardly surmised this when a man appeared from the crevice, carrying a burden. Strange started as he saw the unconscious figure of Judson. It had taken less than ten minutes for that pale-faced brute to carry Judson down here. At that rate, von Stark might appear at any time.

He slid back along the edge of the tent as still another row of lights went on. They would be searching for him. If he were to succeed in his sudden scheme. . . . .

"What happened?" a voice demanded in German.

He twisted around, gun in hand. No one was near him. Then another voice spoke, inside the tent.

"One of the old ones must have gone mad. I tell you, *Herr* Bischardt, when they get to that last stage—"

"What can you tell me?" the other voice cut in roughly. "I am the one who thought of the idea and carried it out."

"I grant that. But if those devils should ever turn on us—"

"Impossible. This one who crashed into the switchboard must have been miscontrolled. Their orders must be precise, or they will run wild. But we're wasting time. Bring in one of the new ones, and we'll get to work."

"*Ja, mein Herr Doktor.*" Footsteps sounded on the loose gravel inside the tent, died away. Strange waited a few seconds, then pulled the bottom of the canvas up a few inches. The interior was dark, but by the light dimly shining through the canvas top he saw that the place was empty. He rolled inside, stood up and made a quick inspection.

It was a weird scene that met his eyes. At the back of the tent was a platform, on which was an altar that glowed with luminous paint. Behind it was a black curtain, like a stage backdrop, and on it were painted mystic symbols and stars, all grouped around the glowing outlines of a life-size skeleton.

On the platform, near the altar, was a battered pine coffin. The lid had been wrenched off, and there was earth clinging to the sides. The rest of the tent was empty.

THERE was something grotesque and yet sinister about that elaborate scene of mummery. Strange stole forward, noiselessly stepped to the platform. One of those men had walked to the rear of the tent. He must be back of the platform somewhere.

There were steps at the back, and then Strange saw a slit in the black curtain. Gripping his gun, he warily stepped through. He found himself in a canvas-walled passage. It ended at the door of a solidly built frame structure. He listened at the door a second, then pushed it open and swiftly entered.

A tall, gray-haired man was arranging straps at the side of an improvised operating table. As Strange came in, he glanced carelessly over his shoulder. Thick-lensed glasses covered his eyes, making them appear small and fierce. But as they dropped to the gun in Strange's hand, a look of panic shot into them.

"*Hulfe!*" he started to shout, but Strange drove the gun into his solar plexus and he stopped with a gasp.

"Another yelp like that and I'll hand you a little present," Strange told him grimly. "In case you're interested, this gun is loaded with your damned poisoned bullets."

The German's pouchy face turned yellow. "*Ach, Gott,* have mercy!" he begged. "I have only obeyed orders. I didn't want to do it—"

"Shut up!" rasped Strange. "I heard you outside." He prodded the man away from the table, made a swift survey of his surroundings.

A small cabinet stood against the wall. Through its glass door Strange saw a few surgical instruments, mostly hypodermic needles. Bottles ranged along a top shelf, and there was a locked section below. Through a door on the right he saw a small room cluttered with wooden coffins. A door on the left led into a passage. His eyes flicked back to his captive, to the rubber-gloved hands held high in the air.

"So you're *Herr Doktor* Bischardt," he muttered.

"*Ja,* but don't kill me. I'll do anything."

"Then talk—and talk fast. What kind of drug have you given those men?"

"Only something to—to make them think they are Germans," faltered the *Doktor.*

Strange's free hand shot out. He shook the German furiously. "The truth, damn you!" he snarled.

"It—it is something I made by accident," Bischardt said hoarsely. "I was trying to find a harmless drug to make our own men fight fiercely. But the High Command refused to let us use it—"

"Because it would kill them," rasped Strange.

Bischardt cringed, eyes on the pistol. "Not unless they had too much," he croaked.

"The rest of it," grated Strange.

"We—we tried it on prisoners. Von Stark had it done secretly. It speeded up all their senses. They could hear and see—even think so fast that—"

"I know that. But how are they kept hypnotized all this time?"

Bischardt started. "How did you know—"

"Quit stalling," snarled Strange.

"The drug puts them into a blank daze for the first few minutes," faltered Bischardt. "They are easily hypnotized. Von Stark has done that. I had no idea he was going to do such a thing when—"

"And you keep them drugged?" demanded Strange furiously.

"We have to," whispered the *Doktor,* cringing again under Strange's glare. "The effect dies out, otherwise. Von Stark has forced me to increase the dose each time. And the hypnotic suggestions are always repeated then."

"Making killers out of them!"

"It is not the hypnotism alone," said Bischardt huskily. "The drug does something. It brings out the primitive, murderous impulses—the old idea of Dr. Jekyll and Mr. Hyde. Von Stark only directs them. He gives the orders, not I."

"And they obey because they think he's raised them from the dead."

"*Lieber Gott,* how could you know? *Ach!* You saw the altar and the coffin. Yes, when they recover, they find themselves apparently brought back to life. They think he is a supernatural being—"

There was a rapping at a door somewhere down the passage. Bischardt stiffened. Strange's eyes bored into him.

"Whoever it is, get rid of him."

"*Was ist?*" the *Doktor* called out, his voice not quite steady.

"We have the first man here, *Herr Doktor,*" came the voice of the man who had been with Bischardt in the tent.

"I am not ready. Take him back. I will send word."

"But his Excell—the Master said—"

"Do as I tell you," groaned Bischardt. "I will be ready soon."

Strange heard the men moving away. He whirled so that his face was but inches from Bischardt's.

"How many doses before those men die?" he rasped.

"It — it depends." Bischardt was trembling. "The test group, the first ones, lived two weeks. Von Stark has been easier with these others, sending different men out each time."

"To make it seem that there was only a small group," said Strange fiercely. "But there's something back of it all. What's the answer?"

Bischardt backed away, his pouchy cheeks suddenly dead white. At the same instant Strange had a feeling of menace, some peril behind him. He took a step forward, then with a lightning movement swung the frightened *Doktor* around between him and the door.

Simultaneously, a pistol roared. Bischardt groaned, started to fall. Over the stricken man's shoulder Strange saw von Stark with a smoking gun. As he lifted his pistol, there was a crash from the passage and a clatter of booted feet. He jumped back, fired twice into the onrushing Germans. Then the hammer fell with a futile click on an empty chamber.

Von Stark bawled a swift order as the Germans closed in on Strange. A *Leutnant* with poised Luger lowered it reluctantly, and his men hustled Strange across to face the Prussian. Von Stark's hard mouth was like a steel trap.

"It seems I underestimated you, after all," he said harshly. He motioned to the *Leutnant.* "Handcuff him, and then send for those two I designated from the ones just captured."

STRANGE'S wrists were manacled, and he was pushed back against the wall. The *Leutnant* gave an order, and his squad went out. Von Stark looked down at Bischardt's body.

"Too bad," he said, without emotion. "If the fool had kept his face straight there at the last, he'd be alive."

The *Leutnant* glowered at Strange. "This pig ought to be shot, *Herr Excellenz,* he said, "for causing the *Doktor's* death."

"I have a better use for him," said von Stark grimly. "And I can get along without *Herr* Bischardt. He showed me all I need—"

A blistering oath, in English, interrupted him. Strange turned startled eyes toward the door. There was only one voice like that, and Strange would know it anywhere.

At the point of guns, General Thorne and Noisy Jay were hustled into the room. Thorne's rugged face was like a thundercloud, and Noisy was white with rage.

Strange gazed at them, dumbfounded, and as the others saw him, they stared in equal amazement.

"Strange!" whispered Thorne. "I hoped you had escaped."

"Handcuff this one," the Prussian said coolly, pointing at Thorne. "And strap that young *Schwein* to the table."

Both Strange and Thorne lunged forward as they heard the last, but the Germans drove them back with Lugers. Noisy struggled fiercely, but in a few moments he was fastened to the table, helpless. Von Stark went to the cabinet and took out a hypodermic syringe, unlocked the lower section. As he caught the curious eyes of the guards on him, he spoke in an undertone to the *Leutnant.* The squad was sent out, the *Leutnant* taking his place watchfully before the two manacled captives.

Von Stark swabbed a spot on Noisy's bared arm with alcohol. He was filling the syringe with a measured number of drops from an amber bottle when a man in the uniform of an *Oberst-Leutnant* came in from the platform entrance. He walked with a stiff, military stride, and his cold, stern face reflected his years in Prussian service. He gazed sharply at Strange, opened his eyes at sight of Thorne's insignia.

"*Himmel*—a general!" he exclaimed in surprise.

Von Stark's hard face relaxed into a grin. "He will make up for that other plan we thought ruined, von Grendzen," he said. "Fate is good, after all."

"You mean the six we were going to send back with false reports to trick them?"

"What else? The fuming general happens to be the American Chief of Air Service, and that green-eyed devil beside him is Captain Strange."

Von Grendzen forgot his military bearing and gaped. "Then it was the Brain-Devil who wrecked the switchboard and killed the entrance detail!" he said suddenly.

"For which he will pay fully. After he goes across and tells their Intelligence the false reports I give him, he will come back, and I shall make an experiment with him. I have often wondered how a man would act, with the full dose of this drug — under proper control, of course."

"I thought you found out, last night, when that *verdammt* spy in the checkered Albatross fooled us."

Von Stark's face darkened.

"He was not hypnotized, and he took it on purpose so that he could outwit us and escape. This Brain-Devil will have no chance to do his own thinking."

Strange thought desperately. He knew hypnotism, even mass control, as taught him by his Hindu *guru* in Yoga. There must be some weak link in the chain von Stark had forged about those pilots; some way to plant a suggestion in his own mind, to block the Prussian's control once he was under effect of that drug.

"But the general," said von Grendzen. "Surely you aren't going to give it to him? The High Command said it was to be used only—"

"They need not know," snapped von Stark. He looked abruptly at the *Leutnant*, who was listening wide-eyed. "Go order another subject brought from the pen, and wait at the door for him. I'll cover these two prisoners."

The *Leutnant* saluted and went out. Von Stark waited till he was out of earshot.

"I am going to give these two the full amount of the drug," he said bluntly, motioning to Thorne and Strange with the gun he had picked up. "They will do the work of a dozen killer units. Under hypnosis, the general will go back with word of a huge air concentration well inside our lines, and he'll order a raid. We'll have a huge force waiting above, and cut them to pieces. The killer units we intended to turn loose on those squadrons will be released for wiping out three times as many headquarters and communication centers as we planned."

"*Gott*, you think fast," said von Grendzen admiringly. "One would think you had taken some of that devilish stuff yourself. But what of the Brain-Devil?"

"He will dash into their G-2 with proof of a terrific drive in the middle of the sector, as we have already made them suspect. Their G.H.Q. will pull divisions from both sides, leaving us huge gaps for our two armies to drive through. With the twelve killer groups we'll have when I finish with those swine in the pen, their Staff officers will be killed and all communications cut. Once our armies strike, it will be a regular rout."

Strange listened coldly, but Thorne grew purple with sudden passion.

"You damned Kraut butcher!" he roared. "Before you get me on that table—" He lunged fiercely at von Stark.

The Prussian sidestepped, whacked the barrel of his gun along the general's head. Strange jumped, but it was too late. Thorne moaned and slumped slowly to the floor. Von Stark glared over the gun at Strange.

"I can do without you, if I have to," he snarled. Then, as Strange slowly backed away, he tossed an aside at von Grendzen. "Go tell *Leutnant* Mayer to come in here."

Von Grendzen nodded.

"Also see that there is a full force above, in case any more fish come to our net," added von Stark.

CHAPTER VI

"STRIKE FOR YOUR LIVES!"

VON GRENDZEN went down the hall, and Strange heard the door open. He watched von Stark like a hawk, but the Prussian never took his eyes away, and he could see readiness for murder in their cold depths.

"*Danke, Herr Oberst-Leutnant*," came Mayer's voice. "But the prisoner had just arrived, anyway."

Feet shuffled along the passage toward the lighted room. Strange heard von Grendzen go out and close the door. He tensed for one mad spring. Here would be his last chance.

"Lay off pounding my ribs with that gun," came an angry voice from the passage. Strange started. Tom Jay's voice! He flicked a look at von Stark. Did the Prussian know there were two Jays?

Von Stark had stepped back a few feet. As the *Leutnant* and his prisoner reached the door, his eyes shifted toward them, though his gun was still pointed at Strange. Suddenly he gave a start, as he saw Tom. Instinctively, he flung a swift look back at the table.

In that second Strange leaped. Crash! His upraised, manacled hands came down with savage force. Von Stark tried to dodge, but the bunched steel links raked fiercely across his head, and he wilted to the floor.

As Strange sprang, the *Leutnant* had cried out hoarsely. From the corner of his eye, Strange glimpsed a flash of hands and arms. Before von Stark had hit the floor, he spun around with manacles lifted again. But there was no need. The German's gun was on the floor, and he was sliding slowly down with his back against the wall, a dazed look on his stolid features.

Tom Jay dived low and scooped up the Luger. He swung it around, then gazed blankly at Strange.

"Phil! Where in—Judas! I thought you were one of the Forty-ninth."

"Hey!" Noisy Jay struggled suddenly upon the table. "How about letting me out of this strait-jacket, you two?"

Tom's face blanched as he saw his twin. "Noisy!" he groaned. "They've got you, too."

"Not so loud," whispered Strange. "Sneak back and bolt that door at the end of the passage."

Tom sped away, but was back in a moment. "Two or three Heinies just outside," he said in a low tone, "but they didn't hear anything, I guess."

"Search that lieutenant," Strange directed swiftly. "You'll find the key to these handcuffs."

Strange held out his hands, let Tom unlock the manacles. Then he quickly released Noisy.

"You two get to work on Wild Bill," he ordered. "Von Stark knocked him out." He crossed to the door that led to the tent passage, barred it, then tore off his flying-coat. He ran his long fingers down a seam, plucked a flat, compact make-up kit from between two folds.

"Tank Heaven they didn't search me carefully," he said.

"What are you doing?" yipped Noisy.

"Making up to pass as von Stark. Watch that *Leutnant*—he moved!"

Tom Jay calmly rapped the German on the head with the Luger. "Back to sleep, Fritzy," he growled.

"This is no joke," snapped Strange. "There'll be another prisoner here in a minute. I've got to be ready." He whirled to the glass cabinet, on the lower shelf of which was a mirrored back. He shot a keen look at von Stark's now bloody face, worked in similar lights and hollows, traced the hard lines like those about the man's mouth. As by magic, the face of Philip Strange vanished and there grew the ruthless, determined visage of the Prussian agent. As he worked, Strange whispered orders.

"Drag von Stark into that room with the coffins. Be sure he's out. Noisy, strip that *Leutnant* and put on his uniform. Then lug him in with von Stark. Thorne's coming to. Watch him, Tom, so that he doesn't groan or make some noise."

"What's all this getting us?" said Noisy anxiously, as he pulled on the *Leutnant's* blouse.

"Out of here—or a gut full of lead!" rapped Strange. He bent hastily over Thorne, whose manacles had been removed. "Going to be all right?"

Thorne lashed out with a big fist, and Strange barely ducked the blow.

"You yellow-bellied Hun—" Thorne began fiercely.

"It's Phil, sir!" Tom Jay said hurriedly. "He's made up for von Stark."

Thorne gazed up blankly, then gripped their outstretched hands and pulled himself to his feet.

"I'm still a bit groggy," he muttered, "but if—"

They all went taut as there came a peremptory pound at the passage door. Strange gestured the others back, strode down the hall. Concentrating every effort, he spoke in as near a duplicate of von Stark's voice as he could.

"Who is it?" he growled.

"Von Grendzen," came the clipped, military accents of the *Oberst-Leutnant*.

Strange's first scowl changed to a twisted grin as he stood there in the darkness. He held von Stark's gun out of sight, opened the door.

"I'm glad you're back," he said gruffly, motioning the German ahead into the passage. He barred the door again. "I can use you very nicely."

"Use me? I don't understand—" The words broke off sharply as von Grendzen

felt the cold steel at the back of his neck.

"Keep going, and keep quiet," Strange ordered.

VON GRENDZEN gave a little whimper and stumbled into the operating room. As he saw Thorne and the Jays, he jumped back. Strange shoved him to the center of the room. Grimly, he picked up the syringe which von Stark had filled. The German's eyes filled with terror, as Strange approached him.

"*Mein Gott*, von Stark, have you gone mad?"

"I am not von Stark," grated Strange. He let a few seconds pass, while horrified understanding crept into von Grendzen's face. "I am going to give you a chance for your life. One trick, and I'll pump this whole syringe into your arm."

Panic raced over von Grendzen's face. "What do you want?" he said in a choked voice.

"I want all those hypnotized pilots brought together in the tent," snapped Strange, "and without guards."

Von Grendzen stared at his made-up face. For a second, a faint, crafty light came into his eyes, then vanished. Strange pretended he did not see.

"You can call in one of the men outside, and send word by him," von Grendzen said huskily.

"Second, I want the camouflaged barrier lifted at the entrance, and every ship in the place started."

The German's jaw dropped. "There are not enough mechanics. We were going to use the gunners—" He checked himself abruptly.

"When you pulled off the big coup," finished Strange coldly. "Well, we will use them tonight."

Von Grendzen looked down fearfully at the hypodermic needle.

"They would suspect something — leaving the prison pen unguarded." The words were dragged out unwillingly.

"We will leave one Maxim, then. And now, come along while we give these orders."

"We?" said von Grendzen, paling.

"Yes," grunted Strange. "You will speak them from the door at the end of the passage. But I'll be right there, with this needle on your wrist. You see, *mein Freund*, I will take no chance of their seeing this imperfect make-up in bright light, as you hoped."

"*Zum Teufel!*" moaned the other. "They will kill me if I do this."

"Take your choice," Strange said coldly. "That—or this." He shoved the needle toward the German's arm.

"I'll do it," groaned von Grendzen. "I'll have a chance, if I can get up to the plateau."

Mumbling, he went into the hall. Strange held his arm in an iron grasp, every nerve suddenly taut and quivering. One spark of courage in this frightened Boche, one bit of hysteria . . . .

But von Grendzen's dread of the sinister drug had cowed him utterly. With Strange at his side, he gave the orders to the group of Germans standing in the half-light at the rear of the shack. Only one man questioned the orders, an *Uber-Leutnant* who had evidently just arrived.

"But the rockets that were fired above may bring more planes, *Herr Oberst*. To send a patrol without the lookout's signal—"

"Do as the colonel says," ordered Strange, from back in the shadow. He took a step forward, just enough for a brief glance from the *Leutnant's* startled eyes. "It is my order."

The *Leutnant* snapped into a hasty salute. "Your pardon, *Excellenz*. I did not see you."

"Rush the orders," growled Strange, and, pulling von Grendzen back into the hall, he silently locked the door.

When they reached the main room, Thorne and the Jays hurriedly emerged from the coffin room, where they had hid.

"Well?" demanded the general.

"So far, so good," muttered Strange. "I'll need you with me." He turned to the Jays. "You'll have a risky job, but it's our necks, if we make one tiny slip."

"Shoot," said Noisy, and Tom nodded quickly.

"Take those two guns." Strange indicated von Stark's and the lieutenant's pistols. "Don't remove those rubber butt-covers."

"I know — poisoned bullets," said Noisy. "I doped it out when I saw the lab report. You were right — aconite mixed with Philippine *dita*. That's what turned them blue."

"Then you know what you're up against. That stuff kills instantly," Strange went on tersely, gave them instructions in a low tone. As he concluded, a murmur of voices became audible from the direction of the tent. It swelled quickly.

"Get out by the rear door and be ready," he told the Jays. Then he whirled to von Grendzen, whom Thorne had been watching closely. "You think you're fooling me, you rat! But you're going out behind that platform, and if this fails to go through—" he handed the syringe to Thorne — "general, be ready to give it to him—right in the neck!"

Von Grendzen's eyes went sick with dread. "Wait, wait!" he moaned. "I meant to tell you—"

"So there is a ritual," s n a r l e d Strange. "Quick, what is it?"

The German told him in a shaking voice. The drone of voices became a rising storm, out in the tent. Von Grendzen whitened.

"They'll be clear out of hand in a minute. Without anybody to control them, they'll start fighting among themselves and—"

Strange darted a quick gaze into the coffin room, looked at von Stark and the *Leutnant*. Then he opened the door to the tent and ran for the slit in the black curtain. The next instant he was on the platform by the luminous altar.

BEFORE him was a mass of glaring faces. Near one side, four or five men were s n a r l i n g at each other. Strange could feel the terrific tension in the air—the tension of minds keyed to a frightful pitch, seething with murderous emotions.

"Silence!" he shouted sternly.

There was, on the instant, an eery hush. Those strained faces turned toward him, some of them white and twitching. Eighty faces or more—eighty pairs of wild and glittering eyes. The Murder Patrol in force! The dreaded killer mob was facing him!

Only one light, and that one subdued, shone on that weird assemblage. Strange silently blessed the mummery of von Stark. Bright lights—those super-sensitive eyes—they might see through the make-up and spring upon him like wolves.

"I am your Master!" he intoned solemnly. His heart pounded within his breast. Hypnotized men but with senses sharp as razors—would they find some flaw in his voice?

"We hear, Master!" From eighty throats it swelled out into a mighty chorus. The vibrations shook the top of the altar, sent a thrill through Strange. "We live only through thee."

Outside, an engine sputtered. In a moment others began to roar. Strange raised his hands in a commanding gesture. The Murder Patrol pushed forward, crowding about the platform. He saw Frank Hersey's strained, grim face, saw a dozen others he knew had been reported prisoners or killed in action. At one side was Blount, the missing G-2 major, and around him several French and British pilots.

A veritable legion of the lost—men whose souls had been stolen!

Suddenly he saw that the front flap of the tent was being raised. With a start he glimpsed a dozen German officers and as many enlisted men, all staring in at the scene. A Maxim had been moved up near the entrance, and the crew stood close to the gun.

Strange swiftly masked his dismay. One of his orders had gone wrong, but there was still a chance. He gazed down at the hypnotized men. With their super-hearing they could catch his words even if he did not speak loudly.

"You are in danger," he said rapidly. "Prepare to strike for your lives."

The Germans in the entrance edged forward, trying to hear. Strange glared at them and they halted.

"Forget all I have ever told you," he went on hastily. "You have been—"

From behind the black curtain came a muffled cry. He raised his voice swiftly.

"Blot it all from your minds! Be ready—"

Crack! A pistol shot rang out, somewhere in the cavern. The Germans started, whirled toward the entrance of the tent. Vaguely above the din of engines, there came the clamor of voices. Strange leaped from behind the altar. At the same moment there rose a warning shriek from the operating shack—a shriek in von Stark's fierce voice.

"Seize him! He is not the Master!"

The Murder Patrol surged forward, staring wildly at Strange. Behind them, the Germans had spun with startled faces.

Strange glared down at the hypno-

tized mob, threw into that savage look every ounce of his mesmeric power.

"You are Allied pilots! Kill the Germans behind you!"

For one stunned moment, the livid faces stared up at him. A German *Leutnant* screamed and ran for the Maxim. With a roar like a mighty flood, the killer mob whirled and struck.

The first knot of terrified Germans went down in the mob's mad rush. The Maxim crew plunged down at the gun. A murderous hail burst from its flaming muzzle. Four or five Allied pilots went down in that vicious blast. Then the maddened throng swept over the screaming gunners.

Strange wheeled and sprang back into the passage that led to the shack. Von Grendzen lay on the ground, but there was no sign of Thorne. He kicked the door open, dashed into the shack. A quick glance showed that its rooms were empty.

A furious uproar was swelling through the cavern. The brassy voice of an amplifier cut through the din.

"Gun crews, surround the altar tent!"

Strange smiled grimly. It was too late now. No power on earth could stop that frenzied pack. He sprang to the instrument cabinet, snatched a surgical knife. As he turned to run, his eyes flashed over an open door below. The drug supply—the amber bottle was gone!

WITH an oath, Strange charged out through the rear door. The body of the German guard lieutenant lay on the ground, and farther on was one of his men.

A khaki-clad swarm was racing away from the prisoner's pen, scurrying toward the ships. Strange sprinted around behind them, tore at full speed for the entrance. As he ran, he tried to wipe the make-up from his face. If one of those Yanks saw him and took him for von Stark . . . .

Br-r-t-t-t-t-t-t! A Maxim stuttered venomously, not far from the entrance. Strange swore. A German crew was raking the howling mob from a distance. A spotlight abruptly flicked from a pole toward the center of the cave. Another burst snarled from the pivoting Maxim. A dozen pilots went down, like wheat before a scythe.

A lithe figure suddenly dashed out of the shadows. As Strange saw the *Feldgrau* uniform, he whirled and lifted his knife. Just in time, he saw the other man's face, and knew it.

"*Noisy!* Good Lord, I almost—"

"*Spion!*" cried a furious German voice. An enormous Boche leaped from the half-wrecked switchboard. He snapped his Luger upward.

With all his might, Strange hurled the knife. It gashed through the German's throat, and blood gushed from his mouth. Strange seized the dying man's Luger, fired swiftly into the Maxim crew. The spouting gun went dark.

A rifle cracked, and a tumbling figure in field-gray fell from the spotlight platform. Strange shoved Noisy toward the first row of idling ships.

"Grab a Spad. You won't have a prayer if the mob sees that uniform."

The Jay Bird scrambled into the ship, sent it roaring for the entrance. Strange wheeled, saw a milling crowd of pilots near General Thorne. Thorne was waving his hands madly, but in the clamor his words were drowned.

Another burst of gunfire crackled, near the crevice in the wall of the cavern. The Germans were fleeing up to the plateau. Spat! A bullet thudded into the switchboard, missing Strange by inches. He spun, saw a khaki-clad man running for a ship. As the man vaulted into a cockpit of a Spad, he saw it was von Stark.

He fired, but the Spad was starting to move. His shot went wild. He charged through a group from the Forty-ninth, seized the first ship in the line. It was a mud-brown Nieuport. Jaw set like a rock, he hurled the ship after von Stark. Now that Bischardt was dead, the Prussian alone knew the secret of that drug. Von Stark had to die!

The jagged walls at the entrance flashed by as the ship gained speed. Into the canyon he thundered, lifting in a swift zoom. The red and green lights were on, and, guided by those lines, von Stark was hastily climbing.

Strange felt for the trips on his stick. The Vickers trembled, thrashed out their fiery hate. The Spad nosed down with a jerk as though caught in that first hot blast.

Strange tensed. A trick—but what? Then suddenly he knew. A loop in that narrow canyon! Von Stark would be on his tail.

Down pitched the Nieuport's nose, into a screeching dive. Eyes glued to the plunging shape below, he waited, fingers taut. It would be any instant. Now!

Back came the stick. The Nieuport screamed up between the narrow walls. Wings barely grazing the rocks, it whirled in a fast, tight loop. Scant seconds before von Stark's loop ended, the Nieuport leveled out. Grimly, Strange clamped his trips. Straight under his guns, the Boche was caught like a rat. Strange saw him shake as the hot slugs pierced his body. Then von Stark sagged down and the Spad slued off on one wing.

Fifty yards away, the ship crashed into the rocky walls and fell in a mass of flame. Strange zoomed up out of the canyon and slowly circled, waiting. A Spad was plunging down at Montalier, guns spraying the few fleeing Boche who had reached the open plateau. Noisy Jay, on a private strafe of his own.

Strange looked down into the canyon, where von Stark's ship was blazing. Planes were flitting above the spot, climbing one after another. They spread out as they reached the throat of the canyon, fell into a ragged formation.

The last ship zoomed and joined the roaring armada. The leader rolled his wings, and they straightened into the south.

Strange smiled slowly. Wild Bill Thorne was leading his men back home—the missing squadrons and the Murder Patrol they had sought—but a Murder Patrol no longer. His words had ended von Stark's hypnotic spell. But it would be days before that sinister drug lost its entire effect.

God help the Boche who crossed them in that time!

Renegade Raiders

(Continued from page 24)

around these grills that the greatest activity seemed to be going on. Doors were clanging open and figures came out into the sunlight and blinked a moment with unbelieving eyes, then dashed off among the trees.

"Those must be the bear pits," whispered Jordon. "I've read about them. Punishment cells. Look, there's the Shark. He seems to be superintending the job."

"I'm gonna pop him an' see who's behind that mask," muttered Rafferty, as he brought the automatic up.

Jordon reached out and pressed the gun back to the ground. "Don't be an idiot," he said. "The others would spray us with lead. You'd never live to see who was behind that piece of sharkskin. I'd like to know, too, but we'll have to wait for a better chance to find out."

"Some of those guys they're letting out of there are goofy," scowled Rafferty. "Murderers, sharks, and nuts—what a mess!"

"Look, Rafferty," said Jordon as he watched a tall convict open another grill. "That must be the long-lost brother."

Rafferty watched as a slender man dressed in the cotton trousers of a convict stepped up out of the ground and grasped the Shark by the hand. "That's right, and those other two birds with the striped pants must be the others the Shark mentioned."

Keeping hidden, the two men worked their way slowly toward the gleaming white building at the crest of the knoll. Behind them, another burst rang out; then two more followed at regular intervals. Jordon stopped and listened. A single burst clattered into the hot air from somewhere down near the beach. "That's a signal," he muttered. "Look out, Spike!"

Jordon dropped to the ground as an angry burst of lead snarled through the bushes. He looked up in time to see Rafferty bring his gun up to his hip and press the trigger. He heard something crash to the gravel and saw Rafferty's face break into a broad grin.

"There's one of them. Right through

the bean, too." Rafferty took a step forward and then turned. "Here, take this pea-shooter an' I'll get his. Hey, you!" Rafferty's voice brought a blue-clad officer to a stop. "That's my meat. I got him."

The officer looked down at the dead man and then up at Spike. "So it was you who killed him? I thought for a moment you were one of them, but I see you are the aviators."

"That's us," grinned Rafferty, as he pulled the machine gun from the dead man's grasp. "Come on, you two birds. I'm headin' for the beach."

As the three men ran toward the beach, guns clattered off to the right of them. The men who had been covering the channel were working their way back to join their companions. Rifles snapped in answer to the Tommy guns, and now and then the animal-like cry of an escaped convict echoed through the trees.

"They've let all the lunatics out," panted the officer as he raced along at Jordon's side. "They came right up to the post and killed our commandant. The one in the gray mask shot him right in the face."

They came out on the ledge of rock just above the beach as the men were crowding into the boat. One man still stood on the shore holding the convicts at bay against the rock. In the boat they could see the red and white stripes of the three men the Shark had come to rescue. The Shark was now being helped into the boat by two of his companions.

"Wait until they're halfway between the bus and the shore," counseled Jordon, as he laid a restraining hand on Rafferty's arm. "We'll have them at a disadvantage then."

Sweat rolled down into Jordon's eyes as he watched the men push the boat out from shore and give a final look back toward the trees as if they hoped their companion, who they did not know lay spread out on the path, would put in an appearance. The oars bit into the water, and the boat moved sluggishly away from the pebbly beach. The gap widened. The three men crouched behind the rock heard the man Deschamps clearing the motors.

"Ready, Spike?" asked Jordon quietly as he brought his gun to bear on the boat.

Spike nodded, his fingers working convulsively around the trigger.

"Let 'em have it, then."

The gun in Rafferty's hands bucked as flame leaped from its muzzle. The water around the boat whipped into a spray. Spike moved the gun and the spray was gone. A figure in the stern slipped into the water, where it was greeted by the curving gray body. Jordon's gun barked, then the Frenchman's. Lead poured from the rock on the ledge into the boat on the water. Then the answer came from the water.

The ground around the three men leaped and churned as slugs came singing up from the guns in the boat. Burst after burst spattered against the rock and then whined off into the trees. Rafferty moved his gun to the side of the rock and pulled the trigger again. A fleck of gray stone jumped up into his face and left its mark in his skin. A trickle of blood ran down across the bridge of his nose. His gun barked its staccato song. Fire tipped the muzzle. It jerked in his arms, and then stopped.

Rafferty looked across at his two companions. "Fun's over, I guess. Clip's empty. How about you guys?"

"Seems like hours since our guns ran dry," said Jordon. "Think you got a couple. One of the birds the Shark came after went overboard, and the other sharks finished him."

While the three men with empty guns watched, the boat drew up to the side of the K 33 and discharged its passengers. A few seconds later the big boat had lumbered across the water and was in the air. For a second they watched it, and then the Frenchman spoke. "I think we had better move to another spot, don't you?"

They had no sooner found a new shelter than the K 33 was thundering toward the place they had just left. Guns began to yammer from the windows, and lead ate into the ground all around the rock where they had been hiding.

"We sure would have looked like sieves if we'd stayed there," Rafferty grinned as he watched twigs and stones leap into the air under the impact of the hail of lead.

The K 33 circled the spot once, while its guns spewed lead. Then it turned and headed west toward the mainland. It was soon a speck in the sky.

"An' that's that," growled Rafferty as he wiped the blood from his face. "Now what?"

Jordon had no answer as the three men walked back toward the buildings.

AN hour later they were sitting in the shade, talking to the commandant of the islands, who had come over from *Ile Royale*.

"And this is all we found on him," the officer was saying as he spread some papers and a few banknotes on the table. "There is no hint as to who the Shark may be, but I have heard of him before."

Jordon sat leafing through the stuff found on the dead man. Suddenly he picked up a slip of paper, studied it a moment and then handed it over to the Frenchman. "Got any idea about that?"

"No," he said. "We have been studying that. It must be a code."

Rafferty leaned across the table and looked at the paper for a few seconds. "I like crossword puzzles, but this one sure is a pip, isn't it?" He laid it back on the table, and the three of them bent over it. It was an ordinary bit of paper, but the combination of figures and letters had them guessing. They read: "D6Q091 529 Y7HE43E 48TY5 GQHI."

Rafferty read them over and over, then looked up. "Say, that guy I bumped off was the bird that was studying to be a stenographer. Remember how he was studying this book all the time?" Spike opened the book of instructions on how to operate a typewriter. He sat staring at a page for a while and then reached across the table to take the code from Jordon's fingers. "Anybody got a pencil?"

A pencil was produced, and while Spike fretted over the code, Jordon and the French officer laid plans for getting away from the island that night in a sailboat that was being brought over from the mainland about twelve miles away.

Finally Spike pushed the paper across to them. "Thought I had an idea, but it didn't work out. There ain't no such word as Cyapok—not in our language, anyway."

"Did you say Cyapok?" asked the officer eagerly.

"That's the word," said Spike. "Make any sense to you?"

"Why, that is a river over on the mainland," exclaimed the officer. "How did you get it?"

"Look." Rafferty drew the slip back to him. "See that D? Well, it's right over the C. I tried it both ways. Then the 6 is right over the Y, an' the Q is right over the A. Get the idea?"

By using the chart of a typewriter keyboard in the booklet they soon had a few words which seemed to make some sense.

"Cyapok two hundred right bank." The French commandant read the words over slowly once or twice and then looked up, smiling for the first time since the Shark's swiftly executed raid on the island. "As I see it, it means that their rendezvous is two hundred miles up the Cyapok River and on the right bank."

Tip turned to the commandant. "I don't suppose there's a plane any nearer than Trinidad or Belem, is there?"

The officer started to shake his head, and then thumped his fist to the table. "If I could get you one, would you go after them?"

"They've got our ship, haven't they?"

"Yes, and they have three—I mean two, thanks to our friend and his gun—of our worse criminals. One is a bomb expert and the other is one of the cleverest counterfeiters in the world. The world will be flooded with bad money again. I'd like to get them back or be sure that they are dead. We know one is."

"What about the plane?" asked Jordon. "You just gave me the idea you could lay hands on one."

"I can," retorted the commandant. "A two-seated fighting plane from Venezuela came down in our territory, and the pilot and observer are being held. I could arrange to loan you that ship. It has guns front and back."

"Lead us to it," said Jordon quietly, "and we'll try to return the favor."

The commandant started for the bullet-pocked office and then swung back to face the two men. "Look," he said, pointing to where a group of convicts were carrying three stretchers covered with white sheets. "The officer in charge of the island and two of his best men. They say that there are four convicts dead, too, to say nothing of the crazed men who are roaming the brush." The officer shook his head sadly. "Promise me you'll make every effort to get the Shark. He must not be allowed to go

free to do any more work like this."

"Get us to the mainland and into that ship an' we'll show you some action, won't we, Spike?"

The officer walked slowly toward the tiny administration building, while Spike crawled up to sit on the wall overlooking the sea. "Sure is hot here," he commented.

"Now you see why they call this the Dry Guillotine," answered Jordon as he looked out over the water.

MORNING found the two Americans looking over a trim little two-seater while the motor was warming up. Spike had already mounted the guns on the ring in the rear cockpit and had the mounting oiled until they swung without a hitch. He fired a burst into the steaming air and then grinned down at Jordon, who stood listening to the purr of the motor. "Sweet little bus, ain't she, Tip?" he called down. "Bet she'll do two hundred."

Jordon nodded as he pulled a map out of his pocket and laid it on the quivering surface of the lower wing. Spike crawled down from his perch and and bent over the fluttering paper. "Blue pencil mark the spot?" he asked.

"I hope so," said Jordon. "If this bus can travel as I think she can, we ought to be somewhere around there in an hour and a half. We'll cut cross country and come down on them from the west. They'll think we're just mail flyers lost."

"An' then what?"

Jordon shrugged his shoulders and stuffed the folded map into his pocket. "We'll look over the situation first and then try to figure out some way of getting that ship back. Think you could fly this thing back if we get hold of the K 33?"

Spike nodded. Jordon crawled up over the wing and dropped into the forward cockpit. Rafferty lost no time in scrambling up into the rear office, where he got himself settled on the folding stool just as Jordon gave the well-warmed motor the gun.

The ship cut a circle or two on the glassy water and then leaped into the air. Soon the drifting wisps of fog were streaming past their gleaming pontoons. Somewhere in the west was the Shark and his stolen ship. But they were headed his way and primed for action.

An hour and twenty minutes later, Spike leaned over the side, pointing to a tiny yellow spot on the carpet of trees below them. "See her, Tip?" he called over the cowling. "Down there by the river bank. They've got her partly hidden under the trees."

Jordon signaled that he had seen the wing tip of the K 33. Much to Spike's surprise, he kept the nose of the two-seater headed toward the east. Rafferty shook his head; then a smile of understanding crossed his face as he noticed that the nose of the ship was pointing toward the sky. "He's climbing her," he muttered. "Gonna climb and then come in from the other side with a dead stick." He patted the pistol grips of the two machine guns above him and nodded his head.

The ship bored on into the blue. Then Jordon cut the gun. The motor coughed once or twice and died away with a gurgle. The prop turned more and more slowly until it finally came to a full stop. Jordon went about the business of bringing that bus down to a dead-stick landing in a little backwater he had noticed some distance behind the spot where the K 33 rested on the river.

The pontoons hit the water with hardly a splash and the momentum carried them toward the mud flat where a big alligator was splashing his way to deep water at the approach of this strange monster.

The pontoons slid up on the mud bank, and the two flyers crawled out of their cockpits and jumped from the pontoon to the eddy bank.

"Now be as quiet as you can," cautioned Jordon. "We can't be more than a mile away from the place."

"Three quarters of a mile, to be exact, gentlemen," said a voice.

They whirled. Both of them looked down into the yawning barrels of four automatics, then up into the faces of four of the men who had been their passengers the day before.

"Now you will walk that three-quarters of a mile without any trouble, I hope," came the same even voice that Jordon had heard too often on the K 33. "The Shark will be agreeably surprised when he finds out who his visitors are. He still feels the loss of Marc, the man one of you killed in the boat yesterday. He does not like to work so hard to rescue a friend and then lose him so soon. There will also be a question or two to answer about Peters. Peters did not come back to the beach, and it sounded like his gun up there on the ledge yesterday. Come, gentlemen."

The two prisoners marched through the tangled underbrush, with four guns pointed at the middle of their backs. At last they came out into a clearing by the river bank. The first figure to meet their eyes was that of the gray-clothed Shark, who slowly got up from a folding chair and came toward them.

"Good morning, my friends." His voice was low and metallic. "I was hoping it was you when we saw your plane cross over here a short time ago. I put myself in your place, and as it turned out, you did just what I would have done under the circumstances. Now you are here." He turned to a slim man who had come up to his side. "May I introduce my brother?" The eyes behind the slits in the gray sharkskin twinkled.

Jordon looked the newcomer in the eye for a moment and then turned back to the masked man. "Who are you, anyway? Why do you have to wear a mask, even here in the jungle?"

Rafferty had edged closer to the man in gray. "Yeah, who are you?" he asked. His hand flicked through the air and snatched at the mask. It pulled away in his hand. "Good God!" Rafferty's voice ended in a groan.

Jordon's face paled as he looked at what Rafferty's quick action had disclosed. In front of them stood a man whose face was missing from the eyes down. There was no nose, no jaw, and where a mouth should have been, there was a gaping hole that went right back to the throat. Ugly purple-scarred tissue puffed up around the edges of the cavity that took the place of a human face. Only a pair of gleaming gray eyes indicated that the head belonged to a human being, and not a half-formed monster.

Rafferty stood spellbound, staring at the sickening sight before him. He was too surprised even to move as the man in front of him raised one of the canes he held in his hand and brought it down on his hair. Spike groaned and folded up as the heavy wood cracked down on his skull.

"Here, you can't do that!" Jordon took a step forward and then paused as he felt the telltale pressure in his back.

"Easy," a voice hissed over his shoulder.

Shark fumbled with the bit of gray skin. In a moment, he had it on again, hiding the gaping hole in his head from view.

"Men have been killed for doing just that," he snarled.

"I'm sorry," said Jordon evenly as he knelt down by the side of Rafferty. "He wanted to make sure of seeing your—"

"Yes, I used to have a face," sneered the gray man. "That was before the days when the wealthy pigs decided to start another war. I lost that face and became an outcast. I'm still an outcast, but I am getting my revenge."

"By killing people?" Jordon pressed his handkerchief to Rafferty's bleeding head.

"Yes," retorted the thin, rasping voice. "I start wars. My bomb experts throw a bomb at the right time and the thing is blamed on the other party. Then a revolution flares up, and while they are at each other's throats, my men and I, go about the country, robbing and looting. It is always blamed on the revolutionists."

"Why tell me all about it?" asked Jordon as he helped Spike to a sitting position.

Spike grinned faintly and looked up. "What happened, Tip?"

"You ask me why I tell you all this?" The Shark was bending over the two men. "It is because you will never get back to reveal what I tell you. You two will pay the price for Marc and Peters. I needed Marc badly. He was the best man at making powerful bombs I have ever met. Is Peters dead?"

"Dead as a smoked herring, brother," said Rafferty as he sat up and held his aching head.

"You have nerve, my friend," snarled the Shark. "But we shall see."

Jordon got to his feet. "Since you're so willing to answer questions I'd like to ask one that's a bit personal. How do you manage to talk? You have no mouth or lips."

The Shark hesitated a moment and then unbuttoned his gray topcoat. "You see, my friend, this little disk on my

throat. That picks up the sounds from my vocal cords. By the way, it is a product of your wonderful American engineers. The sound goes by these tiny wires to this little box inside of my coat. It is amplified there and then comes out through this little speaker. Clever, is it not?"

Jordon shook his head. "Not bad. That's what gives it that tinny sound, isn't it?"

"By switching this tiny lever, I can change it into a short wave radio transmitter," the Shark continued. "That is how I keep in touch with my men. I have them scattered all over."

"How are we going to send for ransom money?" Jordon asked.

"There will be no ransom for you," replied the Shark. "Come, I will show you." The Shark turned and walked toward the river bank. He paused in his awkward gait and looked up into a tree, where a monkey sat chattering. He pointed his gloved hand. The man by his side raised his gun and the monkey dropped to the sod. "Bring it along," came the crisp command.

The party stopped at the edge of a little plank dock. The Shark motioned the man with the dead monkey out on the planks and then turned to the two flyers. "Have either of you ever heard of a fish called the piranha?" The hard eyes gleamed through the holes in the mask. "Ah, I see that you have, Mr. Jordon."

Jordon's face had gone white at the mention of the ferocious little flesh-eating fish that inhabit the inland waters of South America. He had heard stories of their vindictiveness, and of how they could tear the flesh from the body in a few moments. He knew that the fish were small, but he also knew the power of their tiny iron jaws and razorlike teeth. Looking down at the shadowed water under the planks, he saw a shoal of them.

"You mean?" he said no more.

"Yes, the piranhas will have a full stomach tomorrow morning.

"Have you ever seen them at work?" He turned and signaled to the man on the planks. "Show them," he rasped.

The man held the dead monkey over the water and slowly lowered it into the sluggish current until only the curved tail was visible. Things happened fast. The tail jerked and twisted in the man's hand. The water boiled and turned a pinkish tint. The man grinned in anticipation as he held onto the twitching tail with both hands. Then the water became still. The tail stopped jerking. The man pulled the thing that had been a dead body out of the water. Now it was only a gleaming white skeleton from which every shred of flesh had been torn.

"You see, gentlemen?" the Shark swung slowly around to the two men who stood covered by the guns. "Tonight I shall tie you to that little raft. Four empty patrol drums support it at present, but when you are on it, we will punch a tiny hole in each of the drums. They will slowly sink under you. And then—" The Shark said no more. He motioned the two prisoners away.

NIGHT had come to the jungle. The inside of the hut in which Jordon and Rafferty had been held prisoners all day was still hot and stuffy. Outside, animals called through the tangle of trees. Jordon woke from a fitful doze and looked up into the eyes of the Shark.

"You will come now," he said in his queer voice. "Your bed awaits you."

Jordon got slowly to his feet and then leaped. He meant to make a fight of it, rather than submit to the death the Shark had planned for them, but a club swished through the air from somewhere in the shadows, and while he sank into the arms of one of the waiting men, he heard Rafferty call his name as if from a distance.

When Jordon came to, he was being tied to the damp planking of the little raft. At his side he could see the dim outline of Rafferty.

"They got us right this time. Hey, you, not so tight." Rafferty was struggling against the man who was pulling the raw-hide thongs around his arms and under a narrow board. "You're cutting into my arm."

"Pull it tight," came the metallic voice from the shadows on the shore. "See that both arms and legs are fast to the boards."

The man finished the job on Jordon and then stepped ashore.

For a second the only sound was the lapping of the water against the empty drums. Then a man stepped out on the raft and, kneeling down drove an awl into each of the containers. "There, that will do." He got to his feet and stood between the two men. "About four hours an' they ought to be lettin' the raft down. You won't be stickin' your nose into other people's business after that, because you won't have any nose." The man chuckled as he stepped from the raft.

"Good night, gentlemen," came the voice of the Shark out of the darkness. "I hope you enjoy your bed as much as I will mine. I shall be within earshot of the raft and hope to hear the end."

Jordon heard him get into a dugout. Then came the gurgle of the paddle as the Shark headed for their ship anchored about fifty feet away. A light shone in the passenger compartment for a while and through one of the windows Jordon could make out the figure of the Shark, sitting at a table. The light went out, and all was quiet.

"Rope hurting your arms, Spike?" asked Jordon, turning his head.

"It isn't rope. It's raw-hide. Worst stuff in the world to tie a guy up with. Cuts right into your flesh."

The blackness of the night seemed to settle down like a funeral pall. Animals crawled through the brush. Bats flickered through the air and brushed the faces of the two prisoners as the hours dragged by. Each man had thoughts of his own—thoughts he did not feel like sharing with the other. Once a jaguar came down to the bank and started to lap the water, but stopped drinking as it spotted the two men. Then it snarled and walked off into the brush.

"That thing sure had me scared for a second," mumbled Rafferty. "Have you noticed that this thing is gettin' lower in the water? Listen to those babies jumpin' around under there."

"I've been listening to 'em, Spike. Guess the blood from our cuts is dropping into the water and making them hungry."

Minutes dragged by. Water was lapping right against the underside of the boards now. Then Spike turned his head toward Jordon and said, "It won't be long now, Tip. I can feel them jumpin' up and grabbin' the strips we're tied with. Glad the boards are between us for a little while yet. Wonder which end will go down first."

Jordon said nothing. He lay looking up at the black velvet bowl of the night, thinking that he would never see it again. Under him he could feel the razor-jawed fish bumping against the boards as they fought over the drops of blood which seeped through the cracks.

Suddenly he strained forward. His right arm felt loose against the boards. He jerked it and it came free.

"Spike," he whispered, "they're eating that blood-soaked rawhide. My right arm's free. Try yours. One of my legs is loose, too. Maybe we have a chance, at that."

The water splashed and gurgled under the planks as the piranha tore the blood-soaked thongs to shreds. One by one, arms and legs came free, and the two men sat up on the raft. Jordon was the first to go into action. Inch by inch he moved toward the lower end of the raft. With the more even distribution of weight, it rose a fraction of an inch in the water. He felt for the rope which bound them to shore. With half-numbed fingers he tore at the knot. Bit by bit it gave, and at last Jordon let the wet rope slide through his fingers, and the raft began to drift.

"Watch your end, Spike," he called in a whisper. "Don't let it bump."

"Bump what? Oh, I get the idea."

Under the impulse of the sluggish current the raft drifted toward the shadowy hulk of the K 33. Under them, fish still threw themselves against the blood-stained boards. The water crept up around the drums again. It was a race against death—a horrible, ripping death of teeth-filled jaws. Inch by inch, the sinking raft drifted toward the K 33. Then it stopped. Rafferty had his hands on the Jacob's ladder and was pulling himself up over the side. He waited for Jordon to come up.

As Jordon reached the after-hatch, he pressed his hand over Rafferty's mouth and took it away when Spike nodded that he understood. The two men worked themselves into the inside of the hull, thankful now that the Shark had seen fit to take their shoes off before he tied them to the raft. They both knew the inside of the ship like a book and were soon in the cabin where they had seen the light a few hours before.

Then the metallic voice sounded out in the darkness. "Who's there?" it asked in a startled tone.

Jordon froze in his tracks, but Rafferty stepped forward and let drive with his fist in the direction of the quavering voice. It connected with bone and flesh. A sob came from the little black box on the Shark's chest. There was silence.

"Close the curtains," ordered Jordon, as he felt a shelf in back of him where he knew there was a flashlight. He held his hand over it, letting out only enough light to see by. "Tie him with that. Give him some of his own medicine." Tip tossed a couple of strips of raw-hide toward Rafferty. "Glad he brought some along."

In a few seconds they were in control of their own ship again.

"Now what?" asked Rafferty as he straightened up and looked down on the prone figure of the Shark.

"Get some of these guns together and see that they're loaded," snapped Jordon.

"An' then?"

"When dawn comes, we'll get out before any of them are awake."

"Okay, skipper," replied Rafferty as he picked up a machine gun.

Dawn came flaming up over the edge of the jungle as Jordon started the engines to whirring. Rafferty had already slipped the anchor and let the rope slide back into the river. "He's a wise bird, warmin' up the motors by taxiing away from here," he muttered, as he picked up a gun and laid its barrel on the edge of the hatch. "Now let somebody show up."

Somebody did show up. A figure came dashing out on the bank, shouting and waving its arms. The light was bad, but Rafferty let drive as the shadowy figure scrambled back out of sight and a flame-colored macaw rocketed into the air with a frantic chatter. A speck of fire popped from behind a tree, then another. Rafferty squinted along the black barrel. The muzzle became tipped with flame. The gun jumped and bucked, and the fire behind the tree was silenced.

The motors raced for a second and then died down. Spike looked along the tapered hull and wondered. Then a voice sounded at the foot of the ladder. "Everything all right, Spike?" It was Jordon.

Rafferty nodded and turned to let a burst go at the single occupant of the dugout which had put out from shore. The paddle flew into the air. The man half-rose in his seat, grasped at his stomach and then slumped forward on his face.

The motors opened up and fire flared back from their stacks into the dim dawn. The ship began to gain headway. A wide wake streamed out under the rudder. The K 33 bounced, slapped the water, and then got its stride. They were in the air.

THE river grew narrower as the K 33 clawed its way toward the rising sun. Rafferty slipped down into the cabin to take a look at the Shark. He grinned broadly as he caught the steely gray eyes of the man who was struggling against his bonds. "You have to know how to untie that stuff. We got a patent on it." He picked up a gun and went back to the after-hatch.

He was leaning over the side when he suddenly saw something off in the distance. Silhouetted against the shining surface of the river was a tiny spot that was coming fast and climbing as it came.

In a second Spike was racing toward the control cabin. "Tip!" he shouted as he slid the door open. "That two-seater is coming up behind us. They must have brought it around yesterday. It's that guy Deschamps. Keep your eyes peeled."

At his station at the rear of the ship, Rafferty stood on the steps and watched the rapid approach of the two-seater they had borrowed the day before. Now it was swinging up from the jungle, perhaps to turn the tables against them. "Wonder if he'll dare shoot while the Shark's on board," Spike muttered. His answer was a long line of curving tracer which passed under the hull of the K 33. The red two-seater overhauled them within the next few minutes and went screaming across the nose of the cabin job. It swung to the left in a climbing turn and then half-rolled on the K 33. As it came thundering down, Rafferty got a good look at the pilot and the man in the rear cockpit. They were Deschamps and the Shark's brother.

The crimson biplane cut around behind the big rudders of the K 33 and S-turned its way closer to the seaplane. "Just a little closer, son," muttered Rafferty, holding his gun out of sight beside him.

Suddenly Rafferty brought his gun up to the edge and let its barrel rest in the crook of his arm. A burst of tracer seared the air over his head. "Tryin' to scare me or hit me?" he yelled into the slipstream. "Well, you ain't doin' either one."

Another burst ripped out from the blunt nose of the two-seater. This time Rafferty ducked, and then snapped into position as the red job went into another climbing turn.

It turned so close this time that Rafferty could see the tip of the ailerons as the pilot laid the ship over on its side. His gun flashed up over the hatch, and chattered as he pressed the trigger. The red job wavered in the turn and then leveled off. Rafferty smiled grimly as he drew a bead just a little ahead of the two-seater. His finger pressed the trigger gently. His whole frame shook under the impact of the exploding shells. He held the gun down hard and kept her driving. He could see splinters flying from the struts and the red fabric puckering where his slugs ate their way through.

The red job started to swing under the seaplane but stalled halfway through the turn. Its nose shot into the air, and a wavering line of tracer curved around the hull of the K 33. Here and there a stray shot spattered through the metal fuselage. Then it turned over on its side, and the next second was on its back. The occupant of the rear cockpit slipped out, clutched at the cowling a second, and then went turning over and over toward the shining river below. A second later the red biplane went into a dive and shed bits of spruce and fabric as it hurtled down.

Rafferty leaned over the side and watched. His eyes narrowed as he saw the tiny white plume of the first splash, and then the geyser of water which the stricken plane tossed into the air.

"Little fishes, you're gonna get your fill, after all," he whispered as he examined the bullet holes in the hull a second and then slid the hatch-cover over.

Two hours later the big job slid into a landing at Cayenne to gas up before making the swing back to Miami. As the monoplane came to a halt and lay bobbing on the sunlit water, a white launch shot out from the shore. It left a curving, foam-flecked wake as it swung around in front of the ship, and Jordon found himself looking down into the muzzle of a repeating rifle. "Put your hands up, and tell us how to get into the plane," came a clear cut voice.

"There's a door right in front of the hull," said Jordon evenly as he leaned partly out of the window with his hands in view.

The launch slid around toward the nose as Rafferty leaned close to Jordon and whispered. "They're after the Shark, Tip. We forgot all about that little radio jigger he carries on his chest. He's sent out a call for help."

Jordon's jaws tightened as he watched the speedboat come in toward the K 33. "Duck, Spike!" he shouted as he pulled his foot across the throttle flap.

Rafferty was already into the companionway as the motors opened up. He heard a shot, and then the splintering of wood as the big nineteen-ton seaplane moved right up on top of the speedboat. A gurgling cry sounded through one of the windows and Rafferty looked out just in time to see a triangular fin cut the waters, leaving a red wake.

This time Jordon kept the ship underway and headed in closer to the shore, where he saw a launch with the French tri-color rippling at the bow. A few seconds later he breathed a sigh of relief as a French officer boarded the seaplane.

"We got him," smiled Spike as he led the way to the compartment where the Shark lay bound. He stopped in the doorway. A gasp of wonder escaped his lips. Then he pointed and whispered, "Look!"

The Shark was still and cold. A red blotch unevenly spread across his gray topcoat. The officer walked over to the seat and looked down. "Dead," was the verdict as he pulled a seat-cover over the form of the man who had given them so much trouble in the past twenty-four hours. "You have done good work, gentlemen. France will see that you are rewarded."

Rafferty pointed to a small hole in the ceiling. "His own men got him," he said briefly.

As they turned to leave the compartment, a messenger stepped aboard. "A

message has just been relayed to Rio for you, Mr. Rafferty, and I thought it best to deliver it to you here," said the man with the yellow envelope.

Rafferty snatched the message. As he read it, his face turned red. With a snarl he crumpled the paper and tossed it out the window.

"What was it, Spike?" asked Jordon.

"Townsend saying he'd be all ready to take us shark-fishin' the minute we got back." Rafferty turned and stalked toward the hatch. "I'm through with sharks," Jordon heard him muttering as he went up the steps.

Fangs of the Fleet

(Continued from page 37)

side in a brush-grown ravine at the head of the impromptu landing field, "Soon as daylight comes, get set to rush that ship."

"Can do," was the loyal Chinaman's imperturbable reply.

Skyball himself had fired the shack. He had decided upon the strategy when aides of Slake, aroused by the revolver shot, came battering at the barricaded door. Dumping the oil from the lantern, Skyball had struck and dropped a match. Waiting until the flames filled the place, he had jerked the cot away from the door.

He and Samshu Sam then had scrambled out of the small window and made their escape while their attackers swarmed in and rescued the injured Slake.

It was a well-planned strategy, but their escape was only temporary, he knew. With the coming of dawn, it was a certainty that armed searchers would be ordered to comb every foot of the island. Sooner or later, Skyball and his Chinese friend would be recaptured, and if Slake had the say of it, their fate would not be a pleasant one.

With this prospect, the return of the Skyway gave Skyball a glimmer of hope that he and Sam might make a getaway and spread the alarm.

During their long, anxious period of hiding in the ravine, Samshu Sam, in jerky pigskin English, imparted to Skyball what he knew of the Calasian plot.

Sam had come to the island a month before. Like everyone else in that strange colony, he was a virtual prisoner. Slake's only contact with outer world was by occasional flights in the red-winged plane. And it was in the shanghaied plane that the island colony was increased, one by one.

Something like two hundred men were there, Sam believed. Some of them, renegades, fugitives, soldiers of fortune, were loyal to Slake. This group guarded the others who had been brought there forcibly. All were pilots or aviation mechanics.

Their ultimate mission was only vaguely known. Slake had boasted of the Great Advance and had made cryptic allusion to Gori Khan, the Mongol leader, who was making a secret approach with a force of bombing planes, fuel and high explosive. Made ready for the murderous attack on the mainland, these ships, gathered in the Orient for secret shipment, would be manned by Slake's grim sky killers. Unwilling prisoners would be forced to their frightful duty.

With terror reigning along the western seaboard and cities laid in bloody ruins, Gori Khan's savage hordes would land and occupy strategic centers. Defenseless and isolated, California would furnish a firm foothold for the invaders.

And the fleet, unwarned and unsuspecting, was sailing for the Atlantic!

Skyball's brain whirled with the frightful prospects of the campaign Samshu Sam outlined to him. He was planning some ruse for the capture of the red-winged plane, now darkly outlined on the meadow two hundred yards from where he hid, when there came the murmur of voices. By the light of the burning shack he saw a procession approaching the plane.

Two men were carrying Slake on an improvised stretcher made of the cot. In the group he recognized Marie. They came to the Skyway and Slake was loaded into it.

Then Marie climbed to the controls and revved up the still-hot engine. With a groan of dismay, Skyball realized that his opportunity had passed. The injured Slake was being rushed to the mainland.

CAPTAIN QUADE, naval attaché to the American legation at Pieping, was ordered to take charge of the office of naval intelligence in the eleventh naval district at San Diego. He was transferred to his new post a fortnight before the fleet's scheduled departure from the Pacific.

Quade was at his desk in the naval station at San Diego a few mornings later when his orderly announced that the fleet personnel officer, Commander Briggs, was on the long-distance wire.

Quade took the telephone. Briggs was talking from the fleet base at San Pedro. He had just come ashore from his interview with Admiral Regan over the deserters' report.

"I know it sounds trivial, captain," said Briggs, "but the admiral is all hot and bothered over a missing bluejacket, a flying a.p. who went over the hill at Clover Field. Wants your office to dig into it."

Quade hung up and caught the morning guard mail plane for San Pedro, reaching Clover Field at noon. He spent an hour in making careful but fruitless inquiries of field employees. He called the Santa Monica police chief and urged that department to increased efforts to find a man of Skyball Scotty's description. He queried the missing persons' bureau of the county sheriff's office. Then as he was about to leave Clover Field, he strolled into a hangar. His eye was attracted to a red-winged Skyway.

Quade had been a flyer in the World War, and he still had an interest in aircraft. He stepped beside the little cabin craft and looked inside.

Between the two cushioned rattan seats he saw something that brought a sharp gleam to his gray eyes. He opened the door of the plane and reached inside. His hand came out holding a neckerchief of an enlisted sailor. The neckerchief was crumpled and darkly stained with something that resembled blood.

An hour or two later Quade, who had stationed himself in the hangar office, saw the little Skyway wheeled out onto the apron. Watching from a window, he saw a girl in a flying jacket climb into the ship and revv it for a take-off.

When the Skyway hopped from Clover Field, Quade was at the stick of a rented Travelair. He climbed steeply and, remaining a safe distance above and behind, followed the Skyway to sea.

Before he hopped, he filed a hurried radiogram at the airport. It was addressed to Commander Briggs. It was brief and cryptic:

"Order V-S Squadron to immediate patrol of this area. Tail red-winged Skyway and arrest female pilot.

QUADE."

Minutes later, and well out from the mainland, he sighted a coastwise steamer and slanted down. Zooming the steamer's stacks, he dropped a handkerchief parachute weighted with a still briefer message:

"Radio commander battle force San Pedro. Quade sky-trailing Skyway westward over Channel Island area. Urgent."

Quade then shot steeply up again, putting his craft between Marie's Perdido-bound plane and the sun. He saw the white, upturned, wondering faces of the passengers on the steamer's decks.

DAWN filtered out of a clearing sky. As the pale light slowly grew, Skyball made out a group of tents crowded into a grove of low, stunted live oak trees. The encampment overlooked the meadow and was a pistol's shot distance from the smouldering ruins of the board shack.

The camp had been astir since aroused, shortly after midnight, by Slake's revolver shot. The activity increased now. Men were gathered in front of one of the tents. Rifles and sidearms were being issued to them. A short, heavy-set man in dungarees, bareheaded and with flaming red hair, was barking orders at them. His voice carried faintly to the hiding place of Skyball and Samshu Sam.

"Him Honolulu Hoffman, Numbah Two fella foh Slake," muttered Sam.

"They're coming to get us," said Skyball. There was a fire in a crude outdoor kitchen under the oaks, and he hungrily sniffed the smoke that drifted towards them. "If they get us, maybe we'll get some of that coffee."

Samshu Sam shrugged. "Mebbe no. Honolulu, him sore likee hell for losing damn good chow cookee, me."

The armed men spread out and advanced towards the brushy slope. As they neared, Skyball examined the revolver, a .38 Special, with four loads in it. There wasn't much chance to hold off those thirty or forty human bloodhounds with four cartridges.

The men left at the tents were apparently the prisoner element in the camp, the advancing posse their guards. Skyball huddled lower under a sumac clump, pulling Sam after him. Unless a searcher came very near, they could not be seen from the edges of the ravine.

He lay there breathlessly, half covered with dead leaves, while Honolulu Hoffman threshed past within a few feet of them. Once the red-haired Slake lieutenant halted. Skyball tensed, sure that they were discovered. Then the fellow shouted an order to some men near him and pushed on.

The searchers crossed the rise of the hill and vanished. Skyball raised on his elbows. "Here's our chance, now, Sam," he muttered.

"What you do?"

"We'll rush the camp. If we put a little fight into that outfit, maybe we can hold off this Honolulu hombre and his crowd."

"Can do, by golly!" Samshu Sam rose to his feet. Together they slipped from the thicket and advanced to the bottom of the ravine. They started across the open meadow at a run towards the oaks.

The men at the tents saw them at once. It was a breathless moment. One shout would have warned the searchers and brought them back, but there was no challenge as Skyball and his fellow fugitive darted across the impromptu landing field and reached the oaks. They scuttled into a tent close to the outdoor kitchen. A few others dived in after them.

There Skyball, assuming quick leadership, formed a hurried plan. "Keep us out of sight until this Honolulu bird returns with the guns. Then when I fire one shot, rush him and his gang. You outnumber them four to one."

The others assented. There followed a long wait, torture to overwrought nerves. The first rays of the rising sun were slanting across the island when the searchers began to appear over the hilltop. They combed the ravine closer this time. They heard Honolulu Hoffman shout, "Shoot the gob on sight, any of you. He's got a gat. But grab the Chink. I'll tend to him myself."

Peering from a slit in the tent, Skyball saw the searchers draw closer. Then another hoarse bellow came from the red-haired leader. "Hellamighty, they're on the island somewheres. We've hunted every inch of it."

"Every inch except them tents," one

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of his followers yelled. "D'ye reckon them mutts might of hid 'em—"

The big Hoffman barged through the wet grass, panting curses. He was in an evil mood. "You're crazy, Jones. Why'n hell would they of done a fool thing like that? But I'll have a look. You monkeys go take another turn around the island. Search the rocks along shore."

"Aye!" the man called Jones sang back.

Honolulu Hoffman stamped savagely into camp and flung himself in front of the tent where Skyball and the Chinese lay hidden under blankets. "Turn to, here, one of you mutts. Pour me some java."

A man at the fire poured a tin cup and brought it. Skyball again glancing out from the tent slit, saw Hoffman squatted, his rifle across his knees. He waited until Hoffman had the tin cup in his hand and had lowered his wolf muzzle of a face to the cup rim.

Then Skyball leaped, clutching the blanket. He jerked the big leader over backwards, in the same instant flinging the blanket over his head.

For all his weight, Honolulu Hoffman had the agility of a cat. As he came over on his back, he threw up his brogan shod feet. One thick-soled toe struck Skyball on the chest and sent him reeling.

Samshu Sam flung himself on the man struggling under the folds of the blanket. One hairy, tattooed fist of Hoffman's came free. Swinging wildly, it crashed against Sam's head. In the next instant Hoffman was over on his knees and up, gripping the rifle. Skyball, giddy from the kick, sprang again. They were in the tent now, struggling for possession of the gun. Sam had been knocked outside. He tried to dart inside to aid Skyball. With a roared oath, Hoffman kicked backwards. The heavy brogan scored again, and his foot struck Sam with an ugly thud. With a cry of pain the fighting Chinese doubled up and collapsed.

The man at the fire appeared at the tent opening, a heavy skillet in his hand. He raised it over his head and threw it. The missile was aimed at Hoffman's head, but chance saved the big man. He ducked his bullet head to butt Skyball in the stomach. The skillet grazed his shock of red hair and smashed against Skyball's shoulder. It broke Skyball's desperate hold on the barrel of the rifle. Hoffman locked a thick leg behind Skyball and threw him. In a twinkling Skyball was on his back and Hoffman sat astride of him. Hoffman raised his voice in a lusty shout.

"Jones! I've got 'em! Jones!"

He ripped open Skyball's blouse and recaptured Slake's .38—the weapon which Skyball wished now that he had used without compunction.

SKYBALL and Samshu Sam were prisoners and Honolulu Hoffman was gloating over the fate he intended to mete out to them when one of the last of the search party returned to camp at a breathless run.

"The Great Advance! It is here!" he announced. "The freighter is lying to, three-four miles out. She's signaling, Hoffman."

The news wrested Hoffman's attention from the two prisoners.

"Wig-wag 'em from the beach," he ordered. "Tell 'em to come to the anchorage and unload the gear. Lively, now! We gotta have a work party ready."

Hoffman was exulting in the leadership that had come to him through the absence of Slake. He roared orders and the camp was thrown into renewed activity as the shanghaied members were marched down to a cove where the lethal cargo of crated bombers and explosive were to be brought ashore. From where he sat, lashed with a rope to the base of a live oak, Skyball saw the freighter creep slowly inshore. When it was less than a quarter of a mile from the island's steep shore, he heard the rumble of the anchor chain and saw rust billow up from the hawse pipe. A small boat was lowered and chugged towards the cove.

As it neared the shore, Skyball saw a fantastically garbed man standing in the sternsheets. There was a royal boldness about his upflung head as he faced the shore. He wore his plundered silks with the grace of a leopard. He had the twisted, cordlike mustache of a Tartar prince. Skyball needed no one to tell him that was the mysterious Gori Khan, the mighty dreamer, come to conquer western civilization—Gori Kahn, scion of Genghis Khan and Kublai Khan, who once ruled Asia and half of Europe.

As the small boat's keel grated on the graveled beach, Gori Kahn sprang ashore, his face upturned at the sound of a nearing plane.

Skyball heard it, too. He squirmed around in his bonds and saw the red-winged Skyway slanting down towards its island roost. The Skyway circled once and landed. Before its wheels had stopped rolling, Skyball heard the high, thin whine of another plane.

Skyball looked up and saw a craft that he recognized as a Travelair rocketing down in a power dive. The door of the Skyway opened and Marie leaped out. The prop of her plane was still ticking slowly as she rushed towards the beach, crying out a shrill warning. The roar of the Travelair so filled the air now that Skyball could not make out her words, but he saw Hoffman gesture wildly. The armed guard about him went into action. Their rifle barrels flashed upward.

As the Travelair zoomed the field, the goggled face of its pilot showing over the side of the cockpit as he studied the strange scene beneath him, a volley crackled from the riflemen on the beach. The Travelair, with bullet holes ripped in both wings, flared skyward again like a scared bird.

Skyball felt some one at his shoulder. He turned and saw the man who had hurled the skillet into the tent.

"Sure sorry I missed that big lug," the man said in his ear. "Just as well, though, that he thought I slung it at you, or I'd be in the fix you are. As it is, things are better."

From the leg of his pants the man drew out a long knife. One slash of the sharp blade severed the rope that held Skyball against the tree. Skyball staggered to his feet, rubbing the numbness in his arms. He breathed a quick thanks to his rescuer and crossed to Samshu Sam, similarly bound at another tree trunk.

The two of them dashed out onto the meadow. There was no need for a word between them. The Skyway was still ticking, less than one hundred yards away.

Skyball, again at the controls, blasted the little ship for a short run down the slope and took off over the heads of the group on the beach. The rifles rattled, and a scattered volley of lead riddled wings and fuselage. One slug ripped into the cabin between Skyball and Sam, huddled in the seat beside the controls. Skyball's fingers itched for the feel of trigger trips. He longed to do a wingover and swoop back on that traitor horde, wing guns blaring death.

"Velly close squeak, by golly!" chirped Sam.

Skyball's gaze swept the sky for the Travelair. "And it isn't over yet. Who in seventeen hells can that bird be in the other crate?"

"Him flend in need," opined Sam.

A circling climb brought Skyball over the decks of the freighter. He studied the decks and what he saw there brought a startled exclamation from him. The ship wasn't the rust-streaked tramp she seemed to be.

Its decks were alive with men—not ordinary sailormen, but barbaric giants in the wolfish garb of outer Mongolia. Along the bulwarks and on top of the deckhouse were machine guns. Crews were crouched behind these guns, and their muzzles slanted hungrily upwards.

Almost in the moment that he sighted them, needles of light shot out from several of the machine guns. Skyball heard a tremolo thud in the engine nacelle. The engine coughed, sputtered and died. Arrested in a steep climb, the Skyway snapstalled and slanted towards the water on a helpless wing end.

Just before the impact with the surface, Skyball flattened out. The Skyway pancaked with a jarring, rending crash and a sheet of spray that immersed the cabin. Skyball's heart was a lump of ice. He had failed!

"Bust out and swim for it," he shouted to Sam. "It looks as if we're done for." They were down in easy range of that appalling battery of machine guns. A rippling stream of leaden death would kill them like helpless flies.

He abandoned the controls, pushed open the door at his side, and scrambled out onto a wing. He crouched for a dive when a new sound smote his ears—a sound that he knew as well as his own voice. It was a mingled, multiple roar, the song of many full-throated Wasp engines.

Shadows skimmed the blue of the sea and he looked up. He gave a shout that was both the relief from black despair and a battle challenge. The V-S squad-

ron—his own outfit. They were blunt-nosed Curtiss fighters, close-packed in attack formation. At dazzling speed they flashed down on the flagless freighter. A second more, and fanged death leaped out from the barrels of the .50-calibre Brownings that glinted on their wings. A hail of armor-piercing bullets wilted the scurrying hordes on the freighter's decks.

Steam spurted from the winch engine, and the anchor chain rumbled up in the pirate ship's stained hawse pipes.

With swallow-quickness the V-S fighters nosed towards the beach. The group there, spellbound for a horrified moment, went into a panic. Flinging their guns onto the sand, the armed guard scattered and ran for cover. A stream of .50-calibres smote the ground, and running men crumpled and fell. One tall, proud figure, arrayed in bright silks of the Orient, stood like a figure of doom until the blight from the sky mowed him down. A rivulet of blood trickled down to meet the lapping tide. The Calasian leader had gone to meet his forefathers on the distant shore of time.

Skyball and Samshu Sam swam ashore. They waded up onto the shingle beach as the first of the V-S ships set bounding wheels on the grassy meadow, and Honolulu Hoffman emerged from a thicket, waving his shirt on a stick—a white flag of abject surrender.

In the jubilation that followed Skyball's reunion with his wingmates, nobody noticed the lone Travelair, now a distant dot, speeding back towards the mainland.

Early in the afternoon, a group of civilian airmen, yawning at the eventless routine of their duties, saw Quade land at Clover Field in his rented Travelair. With parachute pack dangling from one shoulder, he dropped to the ground and went to the radio office. He filed his third message to the commander of the battle force, lit a cigarette, and strolled off to a waiting taxicab.

"What sort of a loonygram is this, anyhow?" growled the radio operator as he bent over his sender. Quade's message was cryptic:

"The air's damp and I'm dry. Returning to San Diego.

QUADE."

THE fleet sailed on the scheduled day and hour. At sea, in the office of the battle force commander, Briggs, the fleet personnel officer, brought a revised deserters' list.

"I thought you'd like to know, sir," Briggs reported, "that in checking this over I find that desertions are forty per cent under normal."

"That's better," said Admiral Regan.

"And may I ask, sir," Briggs inquired, "what happened to the man Scott?"

"Skyball Scotty? I thought you knew, Briggs. Hanged if he didn't go and get himself shanghaied again!"

"What? Shanghaied?"

"Exactly. By Captain Quade. Seems

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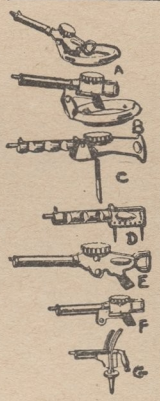

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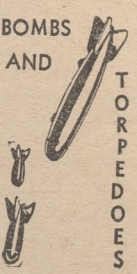

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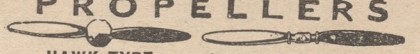

HAWK TYPE

2-Bladed		3-Bladed	
3¼"	.25c		
4 "	.30c	4 "	.35c
4½"	.35c	4½"	.45c
5 "	.35c	5 "	.50c
5⅝"	.40c	5⅝"	.60c
6¾"	.40c	6¾"	.70c
7 "	.55c	7 "	.80c

STANDARD

2-Bladed		3-Bladed	
1½"	.10c	1½"	.10c
2½"	.15c	2½"	.15c
3¼"	.20c		
4 "	.25c	4 "	.30c
4½"	.25c	4½"	.40c
5 "	.30c	5 "	.45c
5½"	.35c		
6 "	.40c	6 "	.60c
6½"	.45c		
6¾"	.50c		

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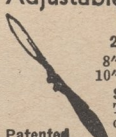

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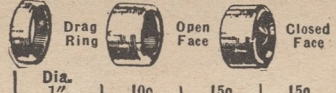

Drag Ring — Open Face — Closed Face

Cowls may be had in sizes up to 10" diam. Send for catalog.	Dia.	Drag Ring	Open Face	Closed Face
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	1½"	18c	18c	18c
	2"	20c	20c	20c
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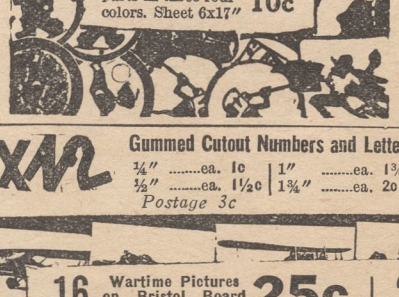

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1/16x1/32	23	5c	3/32x2	4½c
1/16x⅛	16	5c	3/32x3	6c
3/32x3/32	10	5c	3/32x6	12c
3/32x⅛	10	5c	⅛x2	5c
⅛x⅛	10	5c	⅛x3	7c
⅛x3/16	8	5c	⅛x6	14c
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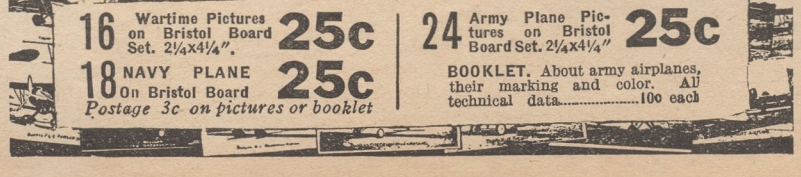

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that Quade insisted that Scott be transferred into intelligence. With all the dope that dame Marie spilled to them, they'll have excitement enough to last them until the fleet returns to the coast."

"Well, sir," opined Briggs, "fleet air lost a good man."

"Quite so. But I gained a good man, myself—and most unexpectedly."

"I don't quite understand, sir."

"You never do, Briggs." Admiral Regan pulled a bell-cord. With pleasing promptness, a figure in fresh pantry whites popped into the doorway.

"Sam," said the admiral, "how's it to mix a pair of *samshu* highballs, chop-chop?"

The prompt servitor saluted smartly. "Yessah, chop-chop, by golly!" grinned Samshu Sam, vanishing.

The admiral leaned back comfortably in his chair. "Sit down, Briggs. Yes, the whole affair turned out very nicely, and I got my old Yangtze mess steward back. Best little old mixer, Sam is, that I ever had!"

The Bulldog Brood

(Continued from page 32)

to cover, as he ripped shot after shot from his Colt. A German guard screamed and spreadeagled out in the thicket. Two Mausers roared, their reverberations waking the forest from its easy slumber.

Lew Connor got to his knees. He turned, and pressed the trigger of his automatic. A sneaking Hun soldier dropped as one of his legs buckled beneath him.

"Thanks, Connor," snapped the stranger. "That was a fool move to pull, but you saved my skin, I guess. Now get back. Follow my trail and you'll come to a clearing. Get aboard my plane and set the wireless in operation. Get through to 18th Wing and have them get in touch with Captain Jack Becker of 77 Squadron. I—"

"Becker? You mean Jack's alive? They didn't get him? Good God! I must have dreamed I saw him go down in flames."

"That was a Fokker you saw. Now shut up and do as I say." The voice was full of command, coarse and ugly, as ugly as the fighting face of the speaker.

"Move, Connor. That's an order, get me? You'll have these Huns back on us with supports. Get that message out to H. Q., then take off. I left the motor ticking over. Do you hear me?"

"I hear you all right. But d'you think I've got a yellow streak up my back? Hell! Old A Flight of 77 got a rough deal, but there was no yellow in her. I'm sticking. Who are you, anyhow? Don't seem to know the—the face. I'm obliged to you, but you're not giving me orders, brother. I'm staying in this shooting party." Lew got to his feet, and edged in close to the other, grabbing at the bole of a tree for support.

"So you're not taking orders from me, eh?" growled the newcomer.

The Germans had withdrawn with their wounded, and for reinforcements. Major Baldy Ward swung to face the crippled lieutenant. Ward's rough-featured face distorted. Hell! Here was another member of that old 77 Squadron who wanted a touch of discipline. He stuck his bulldog jaw in close to Connor's face.

"Get back to that plane, damn you!" he growled. "I'm your commanding officer. I came down here to try and rescue you, to give you and Becker a break, and here I find you telling me what you'll do. I'm Major Ward, Officer Commanding 77 Squadron, in the field. Get back to my plane and shoot that message. Tell 'em at Wing it's from Major Ward. I want action—get me?"

Lew Connor's sensibility had fully returned. So this was the new C.O. of 77! And he was starting his bullying right away. Hell, this was any man's land. Connor had guts. This major had guts. The lieutenant wasn't going to drag himself out and leave this bulldog man-rider to take the works. At any moment now, those Huns would return with reinforcements.

"Reckon I'm sticking — major," he snapped. "When and if we get back to 77, you can give me orders then."

Crack! A low, half-suppressed cry escaped Baldy Ward as he struck. Time was too precious to argue with this young hothead. It was a hell of a thing to do, to strike down a crippled fellow officer, he knew, but there was nothing else for it. Major Baldy Ward had set himself a job, and Connor was standing in his way.

Now he pocketed his gun and the lieutenant's. Stooping, he gathered Connor up into his arms, and slung the limp shape across his shoulders.

"So you wouldn't do as I ordered you, huh?" he breathed as he staggered out toward the small clearing. "I'll tame you at 77, if I have to tear you all apart."

Lew Connor awakened to find himself strapped in the cockpit of a Spad. He stared about him, half blankly at first. His head, his jaw, ached, and his leg throbbed, but his first conscious thought was that his leg was rebandaged, and firmly strapped.

Now he started as the thick-set form of Baldy Ward parted the thicket nearby. Connor retrieved a flash of the scene back in the woods, and a snarl split his features.

"Better wipe off that ugly look, Connor, and get going. I'll give you a start down the clearway," grumbled Ward. "Too bad some of you young bucks have to be manhandled before you begin to know the meaning of discipline. Now get out of this. I've wirelessed through to Becker. You take off and land anywhere you can inside our lines. Don't attempt to make 77 tarmac. There'll likely be a Boche dusk patrol up. D'you hear me? Do you hear those noises back in the woods? I've been scouting around. The woods are full of Jerries. Open up that Hisso, Connor, or I'll damn well make you!"

"But—major, I can't leave you like this," returned Lew, brokenly. His mind was beginning to change towards this pugnacious man-buster. He couldn't forget the blow which had knocked him out, yet here was a man who was saving his life at the very probable cost of his own.

Now he remembered. Baldy Ward, the iron-hearted instructor at Issoudun, the man-breaker, tamer and trainer of replacements, the man who had taken over 27 Squadron down near Verdun and washed out a whole flight before he got that Yank fighting outfit back on the records where every man could hold up his head forevermore. So this was Baldy Ward, now C.O. of 77!

"Right, major. I'm obliged to you for everything but that sock on the jaw," Connor breathed. "I'll go. But some day I'll ask for the chance to square with you for that knockout. I'll get help through to you, if it's the last thing I do. Stand by the chocks, sir."

The Spad cleaved the deepening sky. Lew Connor swung once above the woods. He waved an arm, then throttled in to the last notch. He had but one thought in mind now—the rescue of the gutty plugger down below at those woods.

BRIGHT, orange-red flashes first gave Jack Becker location on Baldy Ward. The skipper hurled his Spad down like a tumbling avalanche. His tires skimmed the uppermost tree-tops as he struck down, and now his Vickers commenced to spray lead. At least seven Huns were pouring fire into a small copse, from which Becker had seen a form dart.

A couple of dark blobs marked the forms of German attackers whom Ward had put to permanent sleep. Something in Jack Becker seemed to explode. Down below there was a man who had all the guts of a cage full of wild tigers. The bluff of the new C.O. back at 77 had been well done. It had completely fooled the skipper. Jack Becker had hated the man who had grounded him. Now he was beginning to see the light.

He kicked his ship around and went streaking down to a second attack. As he zoomed clear of the trees after his merciless dive, a thin smile of satisfaction was wiped from his features. Out of the east, bearing down at full gun, came three fast Fokkers.

Baldy Ward had seen, too. Becker shot a glance below. The Hun soldiery were scuttling for cover. A light flashed in the hand of the major. Ward was signaling.

"Thanks, Becker. Fokkers sifting down on you. Better clear now. Just wanted you to locate me. I'll be all right in the night. Nothing to be gained, you sticking round. Come for me at dawn, or a little before. I'll find cover. You got me, Becker. Move!"

Even in that broken Morse, Becker could pick out the meaning of Baldy's message. Again the major was only afraid that his orders might not be carried out. But Jack Becker hated to leave him down below. Baldy was ugly, right enough, but he was a man of guts, who showed by fighting example that he was no bluffer, and no mere swivel-chair disciplinarian.

Becker wanted to kick round and give fight to those bugling Fokkers, but in a flash he realized that Baldy's life hung on his own discretion right now. Baldy had saved Jack's life. It was up to the skipper to make sure that the major should be saved. He turned, and swooped in low. His own signal lamp was now flashing.

"Right. I'm going," he flashed. "What happened to Connor? I'll be back before dawn. Stand by."

"Connor safe. Back at H. Q. by now. Beat it before it is too late."

A deep sigh bulging his big chest, Jack Becker swung his Spad to westward and pushed his throttle lever forward all the way.

Cold, hungry, thirsty, and dew-drenched, Baldy Ward grunted as he dabbed at a trickle of blood which had recommenced to flow from a gash in his cheek. He now flailed his arms and stamped his feet. The long night had attempted to play havoc with his nerves. Twice through the night he had heard voices. A random fusillade of fire had crashed through the thicket in which he lay concealed, and one of the Mauser slugs had grazed his cheek.

The false dawn had come and gone, and now the fitful fire of artillery on both sides of the distant No-Man's-Land began to increase. The true dawn would come cracking open the eastern sky very soon.

A sudden crashing in the brush brought the major fully alive. His eyes slitted and his lower jaw firmed as he palmed both his and Lew Connor's guns.

"Throw-back to a bulldog, a curly wolf-hound and a—ugh!" he grumbled, bitterly. He had heard. But he shook the mood from him with a grunt of disgust. This was no time to become maudlin. The German guards were on the prod.

He slipped back, closer to the clearing from which Lew Connor had taken off. One thought bothered him. Should a German sky patrol come out right now, his chances of escape were completely swamped, and he wanted more than anything to get back to 77, to remould that fighting squadron into its old enviable form.

"Tcha!" He spat testily. Jack Becker was later than Baldy had thought. At the thought of Becker, a deep sigh shook the major. Becker was one of the big reasons he had accepted the assignment to take over 77. With Becker's help, he could put a pursuit squadron on Uncle Sam's records that would stand second to none. But Baldy's thoughts were cut into by a wicked bellow of fire. He dropped flat to the turf of the small clearing, and began to snake his way to cover again, lead thupping hard into the ground on every hand now.

Baldy had made the cover before the German guard came to view. They were too far off for him to open up counter-fire. He could only lie and watch them from behind a fallen tree. The minutes scudded by, and still no sign of Becker.

And then there blasted the roar of a sky motor. The major jerked up his head. His big frame had begun to ripple with a thrill of exultation, but this feeling was quickly chilled when he glimpsed a flight of dark Hun ships smudge the sky.

The dawn lights were toying with the eastern sky; the crescendo of artillery fire was increasing. Soon the eastern horizon would crack wide open, and then— Baldy snarled bitterly and sank back out of view again.

A slight movement off his right side caused him to swing round. His gun crashed. A German had set out to coil him in from the rear. Now the lid of hell's volcano seemed to blow up. Out of the thickets, from three points, German soldiers hurled themselves. Baldy backed against a heavy fir trunk and swung up his guns. The Fokker flight was swooping down.

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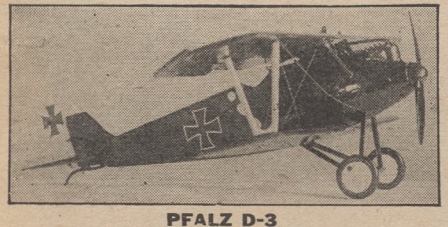

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The major's guns flashed flame. He dropped to a knee and began to pick out targets.

"It won't last long," he snarled. "Better take as many as possible. Come on, you fighting wolf-hound!"

And then the skies began to deluge ships, flame, and terror. Led by Captain Jack Becker, who rode a two-seater Bristol, a composite flight of 77's Spads thundered down to strike.

Baldy Ward's hoarse throat bellowed a broken cheer. Now he swung, at a crashing sound at his back. A Hun was getting to his knees as the major hurled himself through space. This sneaking Boche had stolen up from the rear, hoping to put the Yank out with a blow from the butt of a Mauser. Now Baldy's fingers sank into throat flesh. He was a snarling, fighting bulldog, his face pressed in close to the bulging eyes of the squirming man beneath him.

Danger threatened him from across the clearing, but the hellion C.O. had gone berserk. His ironlike fingers put on more pressure. He snarled at the man beneath him, whose attempts to counter were becoming more and more feeble.

The sudden roar of a close-in sky motor arrested Baldy's attention for the moment; then came the stuttering yammer of a machine gun. He pulled himself to his feet, and his guns flashed. Two Germans were diving headlong for the thicket, to escape the blasting fire from a Bristol which now taxied hard across the clearing.

Baldy's guns roared. He felt a bullet shock the side of his head. With a bellow of rage, he made a lunge forward, but pitched to his face, dimly conscious for a brief moment of the mad snarl of gunfire about him, before he dropped into the maw of unconsciousness.

"AND I'm telling you chaps that we've got a lucky break. Some of us are liable to get our jaws broken, and our hearts torn out, but old 77 Squadron's going back on the map." Captain Jack Becker was addressing an assembly of all ranks of 77 Squadron, at the recreation hut. "Men of such guts don't hit this earth every day, gang," he continued. "In Major Ward we've got one of the cream of such hellions. You'll find him tough, as hard as nails. In fact, I've heard him called a—throw-back to a—a—"

"A bulldog, a curly wolf-hound, and a —barrel of dynamite!"

All heads swung round on the door, in whose frame stood the bandaged form of Baldy Ward. The major had enough of his face and eyes showing through the bandages to give expression to his mood.

"At ease, boys," he grunted. "Don't look so sick. I've been called worse than that in my time. I heard what Captain Becker had to say to you. He's right. I reckon I am tough, but get this—a bulldog or a curly wolf-hound never asks any of their kind to do a job they haven't the guts to do themselves. I'll be leaving the squadron for a few days —until these scratches have been treated. Captain Becker will take over. When I come back, we'll start to revamp the old squadron, a squadron of which you ought all to be damn proud. Carry on, men. We'll get to know each other better, as time goes on. So long, and good luck!"

Baldy Ward hunched his heavy shoulders and swung out onto the tarmac. His shoulders were now convulsed with chuckles.

"By God, that's a rich thought," he told himself. "We'll work on that curly-wolf, bulldog idea. That'll be the insignia of our new squadron—a bulldog and a wolf with locked jaws. That's swell!"

He stepped into a waiting ambulance. His work of reorganization was already done. There wouldn't be any hearts or bodies to break in 77 Squadron. These were men, blown-in-the-glass sky hellions. They had responded at Baldy's very first call, and as the ambulance whirled him away, the big major continued to chuckle with the satisfaction of another, bigger conquest.

Intelligence Pest

(Continued from page 15)

the place and in a hurry. Then his eyes lit on something—the great head of a gorilla with gleaming eyes and pointed white fangs. Running over to it, Phineas lifted it from the floor. Attached to the head was a furry skin and great hairy arms and legs dangled.

"Manna from heaven," Phineas exulted just as there came a loud and insistent pounding on the floor above.

"The bums are tryin' to git the case open, haw-w-w!" he laughed as he got into the gorilla hide. "Well, Papa Heilmann, I am goin' to return your boogy suit after the *guerre*, thanks."

Outside the house, three members of the Boche patrol were lolling about indolently.

"Inside iss it somet'ing happens, *ja*," said one. "I bedt you *der Leutnant* they kill him yedt."

"*Ach, besser* iss it," grunted another. "*Der* deffiil iss he. Schmidt, *der Schnapps*, qvick! Already yedt you drink twicer as much as me *und* Hans. Here you shouldt giff it vunce—hic!"

"*Der* chill it takes off," replied Schmidt. "Here, you shouldt drown yourself yedt *und* stop bellyachin'. Bah!"

The bottle of *Schnapps* exchanged hands. The eyes of the three Krauts glowed in the mist.

"Ah-h-h-h-h-h!" enthused the latest imbiber of the liquid rejuvenator, "*Schnapps* iss *gut*. If anodder bottle I find, I drink it by meinself *und* say noddinks. Alvays Hans he iss *der* pig —hic—*ja!*"

Out of the cellar window of the house a big shape began to wriggle its way. Once through the window, it rose to its

feet, spread its arms wide and lumbered toward the three Boche. Hans saw it first. He dropped his gun, croaked *"Himmel!"* and headed for Munich.

Schmidt was in the act of draining the last drop of *Schnapps* from a bottle when the big glittering-eyed ape shuffled toward him. He let out a yowl, tossed the bottle into the air and legged it after Hans. The *Schnapps* bottle hit the third Heinie on the top of the head and laid him low just as von Schnoutz and the other Pfalz pilot came running out of the house.

"Pingham, vhere iss he at?" screeched von Schnoutz wildly. "The guardts they run, *ach du Lieber!* Vhat—ah—look, Rudolph, vun vild animal it iss. A big *ach, Dumkopfs* ve are. Start shoodting, Shoodt, Rudolph!"

"*Der* gun it iss empty yedt," groaned the pilot dismally. "*Ach*, Pingham, he iss joomp into *mein* Pfalz."

"Haw-w-w-w-w-w!" came the derisive taunt from Phineas as he legged it to a Pfalz and wedged himself into the pit.

The bulkiness of the gorilla suit came near spelling doom for the Yank, but after desperate squirming and gyrating he got at the controls and goosed the idling Mercedes engine. Down the hill galloped von Schnoutz. He ran himself off his feet and took a swan dive into a group of blackberry bushes. Rudolph threw a rock just as the Pfalz jerked away. The dornick bounced off the head of the *pseudo*-gorilla and Phineas did not get his senses assembled until he was up in the air a thousand feet.

"He ought to sign up with the Bostons after the *guerre*," commented the Yank, as he got his bearings and headed for the lines. "Ha, I wonder what the bums'll say when they see a gorilla flyin' a Pfalz? Not that they ain't called me that already."

PHINEAS headed home, comparatively safe from molestation, being in a Pfalz. Close to the Jerry trenches, he spotted four Kraut ships about two thousand feet above him. Dawn patrol was on. But what was that other object floating around? The Boonetown wizard gasped. A kite! And the four Jerries for some strange reason were pouring lead into it.

"H u h," muttered the sleuth from Boonetown, "they want to knock it down. I—I bet I know why. I said that little Frog garson was a brat! Lieutenant Pinkham, you have solved a mystery. Up an' at 'em!"

Without preamble Phineas pulled back the stick, pointing his prop boss toward the kite that swung lazily in space. There was a long string dangling from it. It had been floating over to Germany with the wind on its tail.

The Pfalz pilots paid no attention to the newcomer. They watched him take a wallop at the kite with his Spandaus and make a direct hit. The kite was fast breaking up. The framework was splintered. A piece of paper tore loose when Phineas' German lead spat through its superstructure. But in the next instant the brows of the other Boche buzzards got all wrinkled up in their hair. This Pfalz which had butted into their game did not dip down under or shoot over the kite preparatory to taking another crack at it. It bore straight at the flimsy target.

"Somet'ing it iss oop, I bedt you," roared one Boche pilot. *"Got im Himmel! Der* face! *Der* big ape it flies *der* Pfalz. *Ach du Lieber!"* And he roared after Phineas' ship, trying to convince himself that he had all his marbles.

"I'll try it," grinned Phineas behind his mask as he jerked the stick to the left. "If I kin git it against the wing, well—"

He sideslipped straight for the kite, crashed into it. Flimsy wood and paper parted. The kite's tail, made of heavy cord and trailing bits of heavy paper, fluttered right into Phineas' unlovely countenance. He made a grab for it. The rest of the kite broke up and slipped back into the slipstream, but Phineas held onto the tail of the kite and pushed it down into the pit. As he looked down to establish the lines, Spandaus sputtered.

"I am still in the fat," the temporarily unlucky Phineas groaned and made for the Allied side.

"Ach!" a Boche pilot snarled. "I vas right. Somet'ing it iss rodden. Pingham! He findts oudt aboudt *der* kite, *ja!"* He waved to his reluctant pilots and signaled for the kill. "Joomp on him! He iss nodt German. Shoodt!"

Four Pfalz ships pounded after the errant Yank. Two of them were faster than the ship he had purloined. It looked like the finale.

Rat-a-tat-tat! R-r-r-r-r-r-r-rat-a-tat!

"That sounds familiar," the gorilla-garbed Yank said as he swiveled as much as he could. "I—*wie Gehts!"* he yipped as he saw five Spads fall on the Pfalz. "It's Howell an' Bump an' the other bums to the rescue. I am saved! Wow-w-w-w-w-w!"

"It's a Pfalz ship," Howell was muttering to himself at the moment, "but the Boche are shootin' at it. There's a funny-looking thing flyin' that crate. I've got a hunch, but how in hell he ever—" The flight leader paused to crash lead into a Jerry. He swung around and gave help to Bump Gillis in putting a cross fire into another ship bearing the trademark of von Schnoutz. The fight was short and snappy. Bewildered, the Boche leader gave the signal to pull out. It was not that such heavy odds were against him. He wanted to think things over.

Major Garrity groped toward a tree to lean against it when he saw A Flight come back, herding a Pfalz ship in. When the ship got close, he looked up. A gorilla was looking down at him. The Old Man almost choked on a pipe stem, then got hopping mad. It was the first time in his life that he had ever seen a gorilla thumb its nose at anyone. It was a gorilla, but the major smelled a rat.

"That crackpot!" he growled. "If it's Pinkham—"

It was, of course. Three men had to lift the awful-looking pilot out of the

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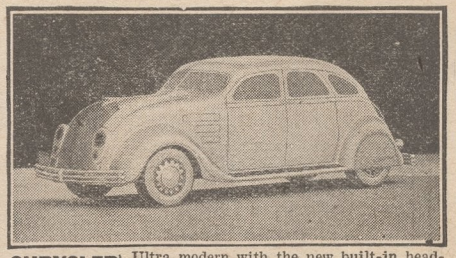

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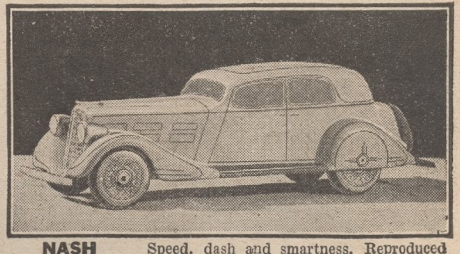

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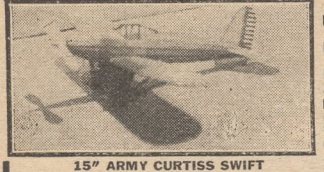

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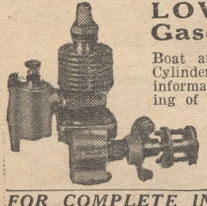

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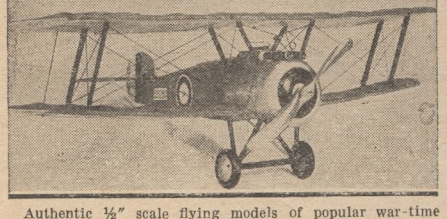

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Pfalz. It roared at them and beat its hands against its chest.

"Where is Tarzan?" came a muffled voice. "Where is good ol' Tarzan? I would scamper around some tree branches with my pal, haw-w-w-w! Do ya recognize me, major?"

"I did from the first," put in Bump Gillis. "You've changed for the better. I wouldn't take off that suit, if I was you, as I think ya look almost human in it."

Phineas threw back the head and grinned at Garrity. "In the pit is the tail of a kite. On it is tied a little wooden pill box, and it's how the Jerries have been gittin' word from their dirty bum spy. I got wise maybe ten minutes ago. You won't need no more fatheaded Intelligence bums loafin' around as I have got the works."

Bump climbed up to the cockpit, reached in and pulled out the long tail of the kite. Phineas took it out of his hand and jerked the wooden pill box loose. He ripped off the cover and drew out a folded piece of paper.

"There," Phineas said, "I bet you've got one of the greatest finds of the *guerre*. Well, I met von Schnoutz, fellers, an' he's no better competition than the other Heinie bums. Huh, well—"

"Nothin' but blank paper, you freckled fathead!" yelled Major Garrity. "Nothin' but a weight for the kite or somethin'. So, this is the bacon you brought home, is it? Ha, now I've got you! Blank paper, bah-h-h-h-h-h!" He hurled it away from him.

A lusty breeze blew the paper across the room. Very indignant, Phineas made a grab for it. As he did so, his knee came up against the table on which the experimental jug still rested. The jug crashed to the floor and its contents splashed out over the blank piece of paper and soaked it as well as the floor thoroughly.

"It's all wet, like the Intelligence Corps," growled Phineas disgustedly. "I—ah—er—hey, look! Lookit, everybody! There's colored pictures comin' out on the paper. Ha, major, now say 'bahh-h-h!' I bet it's the plans of the Frog tanks. Well, adoo."

The plans it was. The Old Man in a way was disappointed. But then again, what a laugh he would have on those smart eggs from Chaumont! Phineas paused in the doorway.

"See ya later," he called. "I bid ya all *bon* swar as I've almost found out how to make the horse disappear. Adoo!"

Build the Berliner-Joyce XR J-2

(Continued from page 50)

Motor

THE motor, which also includes the propeller hub, is a very important part of the plane, as far as the appearance is concerned, so great care should be exercised when building it. Obtain a three-inch motor and cut the cylinders off. Next, carve a block of wood to the shape of "B" as shown on plan, and glue the nine cylinders which you have cut off the three-inch motor around the block. On "B" cut out a section to admit part of the motor stick, which is securely glued in place. The hub is then constructed as shown on plane, Part "A."

After you have completed the entire motor except the anti-drag ring, the section "B" is then glued to the first former. Before the section "B" is permanently glued to the first former, take extreme care to make sure that all wire fittings are on the motor stick, as well as four strands of 3/16 in flat rubber.

The anti-drag ring is made from balsa by gluing together strips with the grain running so that the strip can be bent around the motor with the grain. Glue the two ends together and sand the anti-drag to a shape shown on the plan.

Landing Gear

THE landing gear is made in the usual manner. Obtain a soft piece of wood for the pants, and shape it as shown on the side view. Streamline the top and proceed with a smooth piece of sand paper to round off all the curves. Hollow out the inside so that a 1 7/8 inch wheel can revolve freely. Streamline all the strips on the landing gear. The method of assembling the landing gear on the body is explained in the instructions for six-inch solid model.

Assembling

AFTER all the parts have been made as instructed and covered, the next step is to assemble the entire ship in the following manner. First, glue the stabilizer in its place, making sure that it is in line with the body. The rudder is then glued in place and lined with the nose of the ship. Next comes the wing, which must be done very carefully. To line the wings up with the body, refer to the instructions on the solid model. Glue the two top wings to the fillet and set away to dry. Next attach the cabaine struts to the fuselage.

Following this, attach the center section of the lower wing. The landing gear is then glued in place as explained in the instructions for the solid model. Following this, glue on the two side bottom wings and insert the interplane struts. Rigging is accomplished either by thread or bamboo. More detail of assembling can be obtained by reading the instructions to build a six-inch solid model given below.

Building a Six-Inch Solid Model

THE six-inch model is constructed from the three view layout shown on sheet one. The drawing is drawn to a scale of 1/4 inch equals one (1) foot two (2) inches. When constructing this

model, great care should be exercised to obtain the correct measurements; otherwise the model will not be true to scale. For example, suppose the body is made 1/16 of an inch shorter, then the actual ship would be 3½ inches off. You can thus see the importance of following the plan.

FUSELAGE

OBTAIN a block of balsa corresponding to the dimensions of the body. With the aid of carbon paper, trace the side view of the body on the block. With a sharp knife, cut away all the wood outside of the line and finish it off to a smooth surface with sandpaper.

Another method by which the body may be carved is by the use of templates cut out of cardboard. Cut out the shape of the side view on cardboard and place it on the block. Cut all the excess wood around the template away and sand the body to a smooth finish.

The top of the body is streamlined as shown on plan. After both the top and side have been sanded down to shape, round off the body to a cross-sectional egg shape.

WING FILLET

GLUE onto the body a block of balsa that has the dimensions of the fillet. Round out the part that enters the center of the body. Fill in the seam with either plaster of paris or wood until the seam is completely filleted into the bottom. Do the same with the other end that enters toward the bottom center. (Refer to the cross section shown on plan.) The complete fillet should be made to enter the body gracefully. Sand the fillet and apply a few coats of banana oil until a smooth painting surface is obtained.

WING AND TAIL UNIT

TRACE the outline of the wings on sheet balsa with carbon paper and cut them out. Notice that the bottom wing is made in three pieces. Shape the wings as shown on the plan. Attach the top wing to the fillet, making sure that it is in line with the body.

A very satisfactory method to use when attaching wings is as follows: Draw two lines perpendicular to each other. One line is made to coincide with the center line of the body, while the other line serves as a guide to line up the wings. While the top wing is drying, construct two cabaine struts as shown on the plan. Attach the struts to the body. If the builder finds it hard to hold the struts in place until the glue hardens, he should pin the struts to the body.

While the struts are drying, you can start work on the tail unit, which consists of the rudder and stabilizer. The rudder and stabilizer are made in the exact same way as the wings. The struts are about dry now, so you can remove the pins and attach the center section of the wing. After you have set the center section in position, line it up with the top wing. The stabilizer is made next, while you are waiting for the center section to dry. After the section is dry, remove the pins and apply more glue.

The stabilizer is then set into the slot which you have cut in the rear of the body. Fill in the space left between the stabilizer and the body with either plaster of paris or wood filler. Glue the rudder next in place. While the tail unit is still weak, line it up. As you look from the front, the stabilizer should lie parallel to the top wing. As you look from the top, it should be in line with the rest of the body. Line the rudder up, in a similar manner except, of course, it should lie perpendicular to the top wing.

LANDING GEAR

FIRST construct the pants of the landing gear. The pants may have revolving wheels if the builder desires. Sand the pants to a smooth finish and apply a few coats of banana oil with sanding. Cut out all the necessary struts and streamline them as shown.

If you will glance at the drawing and follow me closely, you will grasp the assembling of the landing gear much better. The struts all lead away from the center of the pants, as you can notice. At the point where they lead away, a small round disk is glued, which holds the struts securely in place. The fore strut enters the body directly behind the former No. 1. The rear struts protrude back to the center of the bottom wing. (Refer to the three-view drawing.) With that clear in mind, proceed assembling the gear.

The motor or anti-drag ring can be made in various ways as long as it gives a realistic effect and contains nine cylinders. One way, the simplest of all, is to carve the complete anti-drag ring and motor out of one block, painting the nine cylinders on the front.

Placing on the bottom wings is next in line for completing the model. Be sure to have a slight dihedral on the wings, as shown on the plan. After the wings have dried in place, insert your struts as shown. Do not rig the plane until all the painting is completed. Sand the body around smoothly and give it a few coats of banana oil. After each coat, sand the body and wings down smoothly.

After you have obtained a smooth surface on the entire plane, paint the ship completely white, the color scheme for all Navy ships. The painting is the cover of the ship so you can obviously see why it is important. Trim the plane with an outline of black paint.

Parts such as ailerons, elevators, and rudders outline with a heavy black line. Details such as air vents and exhaust pipes should be outlined with a thin black line. Insignia are placed in the position shown on the plan. A very realistic effect may be obtained by using black dots to designate rivets. After the complete plane is painted, sand down the first coat and repaint it.

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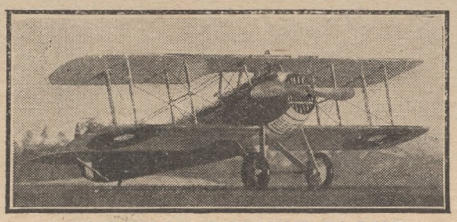

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Wings of the Northland

(Continued from page 40)

not stop these men. In the teeth of a howling blizzard, they dared all and hopped off. In a short time they were at the scene and the injured men were receiving medical attention. After being made comfortable for the journey, they were transported to the hospital in Le Pas.

That is the story that filtered over the wires from Le Pas—a story typical of the country and the men who fly there. To keep the letter of the law, Whiteway was kept in the hospital and then sent to trial. Then, in recognition of his heroic services, he was given a sentence that permitted him to leave the court a free man.

Back in his home on the Berens River, Whiteway can hear the roar of motors as the planes of the Spence McDonough Airways shuttle back and forth over the wild land. Wistfully he gazes up at them and wonders when he will be able to take another ride—one that will not terminate in sudden death. Silently he bends to his paddle, freighting for the Hudson Bay Co. He has not forgotten, nor is he forgotten.

Bill Spence lies at rest in an Ontario graveyard, but the planes of his fellow men roar on, enlarging and making more useful the science discovered by two American heroes of the air when they flipped a rickety contraption off the ground in 1908 at Kitty Hawk.

Here's the Sikorsky S-42

(Continued from page 62)

lined. The outer braces are wires and can be duplicated with 1/16" thickness bamboo.

Note the tail braces. These braces are also made from streamlined bamboo. The motors seem to be too tiny to build each cylinder separately. The leading end of the nacelle can be painted all black and touched up with aluminum or white paint to give the real appearance. Ring cowls are placed over the nacelles. They can also be made to give the same appearance by carving both cowl and nacelle from a single block.

Three-bladed aluminum painted props are fitted to each motor. Insert a pin in the center of each and fix so they will revolve in the slightest breeze. Assemble the model from these plans and check for alignment.

The entire ship is painted a bright aluminum color. The bottom of the hull, as well as the bottoms of the outboard pontoons, are painted black. The license number of this ship is 822M. It is painted on the top of the upper right wing and the bottom of the lower left, also on the outside ends of the rudders.

The PAA insignia can be duplicated and should be painted near the nose end of the hull. The port holes, if not bored directly through the sides of the hull, ought to be painted in black.

The Camera Gun

(Continued from page 28)

lined on him. Hurry before we heel over to keep him from shooting us with a burst of movie film as he dives.

Your "enemy" pilot has no gunner with him. His camera gun is fixed on top of the fuselage. He shoots it by pressing a bowden wire or electrical salenoid connected to the stick. He is aiming at us as he comes down in a powerful dive.

Over we go and you didn't get in a shot. Better luck next time. We'll try to get on top. Out of luck! he's too wise for us. He can maneuver his ship and climb faster than we can. Here he comes toward us on our tail. Line up your sights. Press the trigger.

Good work! You got in a couple of long bursts that time. You were "shooting" at the rate of 16 exposures per second. You'll get in more because there's 25 feet of film in the camera gun—enough for 1,000 exposures. If you can get in more than that, you can slip the extra film magazine in as easily and quickly as a magazine of clips in your automatic pistol. Even if you are unfamiliar with movie cameras, you can load this one in a fraction of a second.

Think you had him dead to rights in your sights? All right, we'll go down and develop the film and take a look.

Well, here we are at last, threading the little 16 mm. film into the projector. Now watch the screen. There comes the "enemy" ship down on you, but now it is just a three-by-four foot motion picture.

Notice the white cross hair lines and circles? They are called reticles and are made on the film. The cross hairs pass exactly through the center of each picture. Where the cross hairs meet is where your hit registered on the plane. In this case it was a light ray from a camera gun and not a bullet from a machine gun. The concentric circles are spaced a definite distance apart to help you to study your skill at machine gunner's marksmanship. They show clearly against both sky and the "enemy" plane.

What a beautiful bunch of misses! And is your face red? Whoa! This next burst is better. A few in the tail. Here are some in the fuselage. They show you were getting on to keeping your sights aligned even while the ship was sloping around.

Notice that after each series of shots on the projection screen there is shown a single exposure of a watch. A flashlight bulb in the camera throws a light on the watch. This makes it possible to photograph the watch automatically, thereby recording the exact time of each burst.

That's the stuff! Look at that last burst! The cross hairs meet on the engine, on the side of the fuselage. These last shots would have sent bullets ripping into the oil and gas tanks and the pilot's place. These exposures show exactly how many fateful hits you registered on the "enemy" ship.

Good work! You can qualify as an aerial gunner now. And you did it without firing a bullet—for you did it with a Fairchild camera machine gun.

Broncho Busters of the Air

(Continued from page 10)

the plane is satisfactory for Naval purposes.

The business of testing new airplanes is no armchair job. On the roster of the Caterpillar Club are the names of many of the men who do this work. Over in Arlington National Cemetery, grim white crosses stand guard over others who were less fortunate.

Falling seven miles in a blazing plane, holding the control stick between his knees while he fought the flames, was the thrilling experience of Lieutenant C. C. Champion.

Champion came out to the Air Station about sunrise one bright summer morning and prepared to make an altitude test on a Wright *Apache*, a new and tricky little fighter that had all the dynamic characteristics of the name it bore. Looking like an overstuffed gorilla in his altitude garb, he was helped into the ship by his mechanics. The cockpit was so small that he almost had to be fitted into it with a shoehorn.

Making a last-minute check of his instruments, Champion poured the soup to the engine and was off the ground in a hundred feet, going up like an elevator. In two minutes he was swallowed up in the deep blue of the sky.

At about 39,000 feet, the plane reached her ceiling and would not go any higher. As his oxygen supply was running out, Champion realized he had to get down from his high perch in a hurry, so he began a fast power dive. Suddenly there was a bang and the plane did a queer shimmy. Seven of the nine cylinders of the air-cooled engine had blown out. The flying metal parts tore large holes in the wings and fuselage. Immediately, flames leaped out from the engine, and the forward part of the ship became a roaring furnace. The rush of air swept the fire back toward the cockpit like a blow torch.

Champion climbed out of his cockpit and prepared to jump. Then he remembered that if he abandoned the ship, the barographs would be ruined, and as he had hopes of having established an altitude record, he wanted to bring them back with him. He crawled back into the blazing plane and fought to

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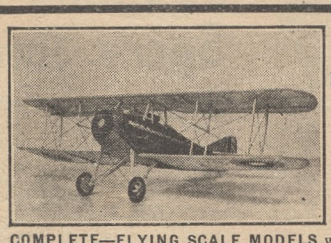

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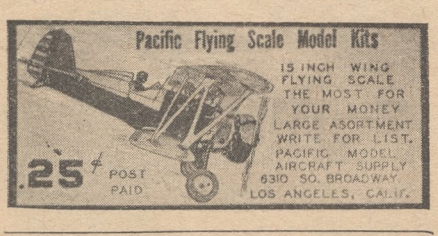

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put out the flames that were now licking at his very body.

He pulled the nose of the plane up, kicked the tail around, and did a violent wing slip. It worked. The flames were fanned away from the plane and the fire went out.

But, a few seconds later, the engine burst into angry flames once more. Again Champion was forced to slip and skid to put them out. Four times on that perilous descent the plane caught afire, forcing him to come all the way down in a dizzy sideslip.

As he neared the ground, he saw that he could not make the Air Station. Below him was a corn field, rough and furrowed. He would have to sit down there. Skimming along at seventy miles an hour, the airman did a beautiful bit of flying and made a perfect dead-stick landing.

Parts of the engine came to earth about a mile away, and some of them had gone through the roof and floor of a one-story building.

One of the wildest rides of all was that of Lieutenant Steve McClellan, who was assigned to test work on a radical new high-speed pursuit ship. The plane was built with the lower wings swept forward and the upper wings swept back. Seen in the air, it resembled a flying letter X.

There was a lot of gold braid at the Air Station on the day that Steve took the little ship up for its big test, for high-ranking officials were interested in seeing what it could do. Steve climbed high above them and prepared to do his stuff. He was determined to give them a good show. He did.

With the engine full out, he put the nose down in a vertical dive. The needle on the airspeed indicator fairly jumped. He was gaining speed so fast it could hardly keep pace with him. Straight ahead over the nose he could see the flying field below him. It looked about the size of a postage stamp, but it quickly spread all over the landscape as it tore at him. His speed increased like a whirlwind.

Suddenly there was a boom like the report of a heavy field gun. The wings had been carried away. One of them swept back over the pilot's cockpit, entrapping McClellan.

Fighting desperately, McClellan endeavored to free himself. He knew that the ground was coming up at terrific speed. Shorn of wings and tail, the fuselage resembled a huge bomb. The engine was still roaring wide open and the wreckage was doing 350. With almost superhuman effort, Steve shoved aside the wing that imprisoned him. A typhon of air struck him in the face and sent him sprawling out of the cockpit. An instant later, his parachute blossomed above him like a magician's carnation and he landed with a splash in the Potomac River. Freeing himself from his parachute harness, he struck out for shore. He had not even a scratch to show for his hair-raising escape.

It was just another episode in the routine of the Test Section—just another new ship that could not stand the gaff.

The nonchalant attitude of test pilots is something of a marvel to newspaper men. An incident which made reporters gasp, "What a man!" occurred not long ago when Lieutenant Fred Trapnell cracked up a fighting plane after pulling its tail off in a power dive. Trapnell had taken the ship up 20,000 feet and was diving vertically with a full gun. At 15,000 feet the tail gave away and the plane went out of control. Trapnell rode the plunging craft all the way down to 7,000 feet and then bailed out. He landed without injury. The plane plowed through a grove of trees, cutting a swath, and buried its engine in the ground. Flames immediately enveloped the débris and caused a forest fire.

When newspaper men arrived, they expected to find the pilot weak and shaken, with a harrowing tale to tell. Instead, Trapnell was entirely indifferent to his own terrifying experience, but immediately wanted to know if anybody could tell him the whereabouts of his dog that had been lost a few days before!

Thus, with the calm and regularity of a business office, goes on the thrilling work of testing Uncle Sam's Navy airplanes. The Flight Test Section is at present composed of five officers under the command of Lieutenant Commander G. F. (Jerry) Bogan, famous pursuit pilot.

A V.C. in Chains

(Continued from page 27)

Then a blast struck his cowl. His engine stopped, and his prop flew to pieces. He nosed toward earth, helpless in the face of crowding enemies. But the German fire ceased and the Pfalzes and Fokkers followed him down. Within a few minutes Robinson was a prisoner.

The only V.C. to fall into the hands of the enemy was a captive of the Germans.

Captain William Leefe Robinson did not know until years afterward that his capture had been a mistake. His life was spared because of a misunderstanding of orders. The pursuit squadron had been told to bring down Britain's noted V.C. They followed instructions and took him alive. That night Baron von Buttlar was told of the capture.

"And he still lives?" he asked, incredulously.

"*Ja, mein Freiherr,*" he was informed.

A shrug of the nobleman's shoulders was the answer. "Well," he said, "there is nothing we can do about it now—still, a V.C. behind barbed wire—it's as good revenge as one could ask. For my part, the feud is over."

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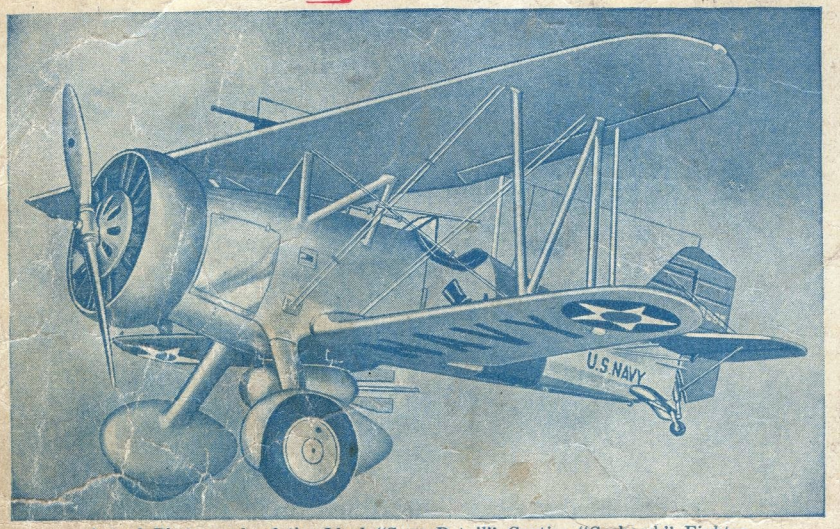

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