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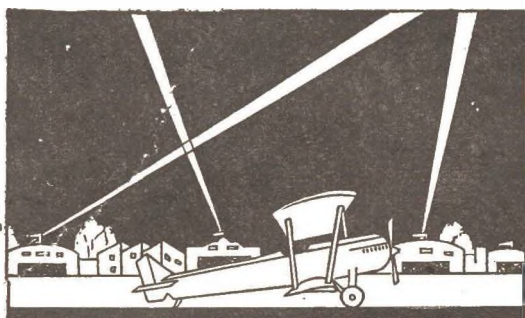
# FLYING ACES

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**SKY SKIRMISH OVER THE SUEZ CANAL**

PHILLIP STRANGE NOVEL, KERRY KEEN YARN, AND PHINEAS LAUGH  
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# FLYING ACES

**A. A. WYN, Editor**

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VOLUME XXII

DECEMBER, 1935

NUMBER 1

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Cover Painting by C. B. Mayshark

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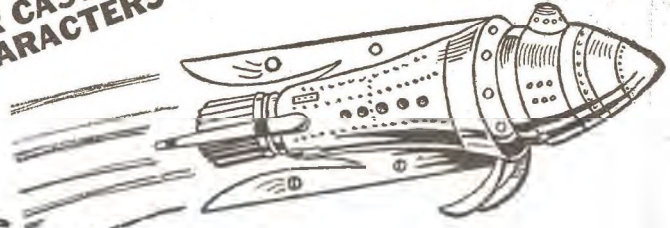
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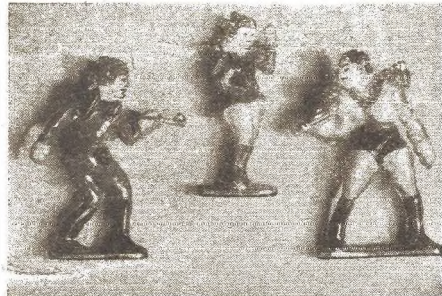


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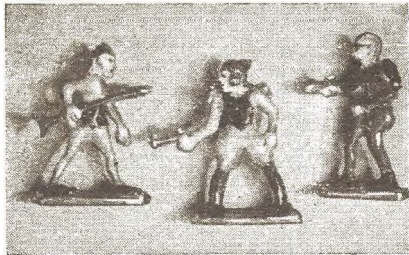
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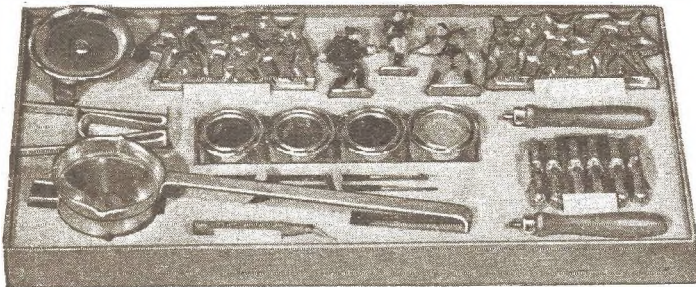
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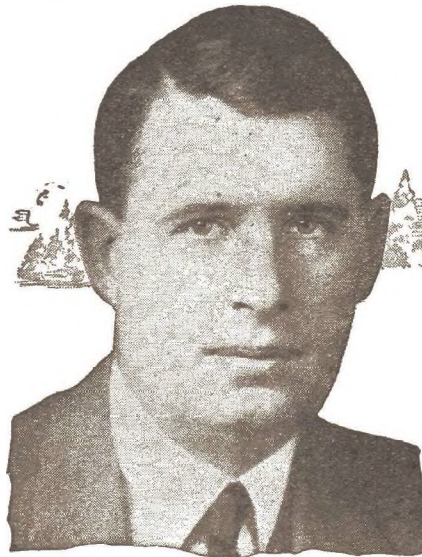
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- |                        |                   |
|------------------------|-------------------|
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| Instrument Specialist  | Aerial Mail Clerk |
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| Shop Foreman           | Radio Operator    |
| Hangar Crew Chief      | Airplane Mechanic |
| Traffic Manager        | Field Work        |

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- |                        |                   |
|------------------------|-------------------|
| Air Express Agent      | Private Piloting  |
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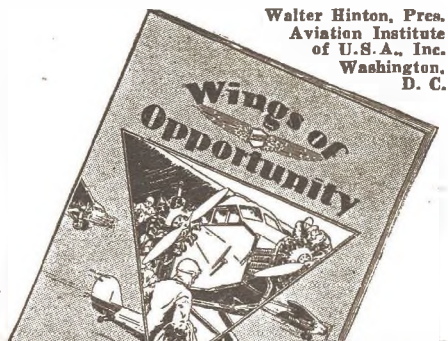
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# Devil of the Yellow Doom

## DEATH VISITS PARIS IN A FIENDISH GUISE

\*\*\*

Four twisted bodies lay huddled on a Paris airport, their flesh a deep yellow, their faces horribly swollen. No one who viewed these stark figures knew what manner of death had struck—and none was aware that this scene foreshadowed a ghastly slaughter. To Philip Strange, dubbed by his foes, the "Brain Devil," went the task of unraveling this knot of the Grim Reaper. But even a Brain-Devil would be off-guard at finding his most baffling barrier to be—  
a man already dead.

\*\*\*

### CHAPTER I

#### DEN OF DECEPTION

THE tiny room was dark, save for the small yellow circle on the wall where a peep-hole had just been uncovered. As the lone occupant bent for a cautious look, a mumble of voices and the tinny discord of a mechanical piano became audible from the room beyond.

In the dim-lit Montmartre den called the "Winking Owl," no one saw that furtive eye scan the smoky basement. The low-trimmed, swinging lamp had been carefully placed so that the tiny hole in the wall lay in deepest shadow.

The gaze of the unseen man passed over the mongrel throng—three grim-faced men in the shabby garb of Apaches; a girl with a painted smile, wearily drinking absinthe; two sullen *poilus*, former Montmartre thugs, back at their haunts on leave; and a dozing, tattered old cripple, his beard almost in his wine, one palsied hand gripping a walking-stick.

There were others in one corner, Apaches with their women, but the glance of the hidden watcher gave them a scant inspection. His probing eye shifted toward a table close to the zinc-covered bar. Three men sat there, one a French *capitaine* with the wings of a pilot on his sleeve, the others Yankee lieutenants. In face, figure, and uniform, the two Americans were perfect twins. Both had the same good-natured grins and devil-may-care expressions. Only a trained observer would have caught the difference. One face was a trifle less reckless, one voice less boisterous.

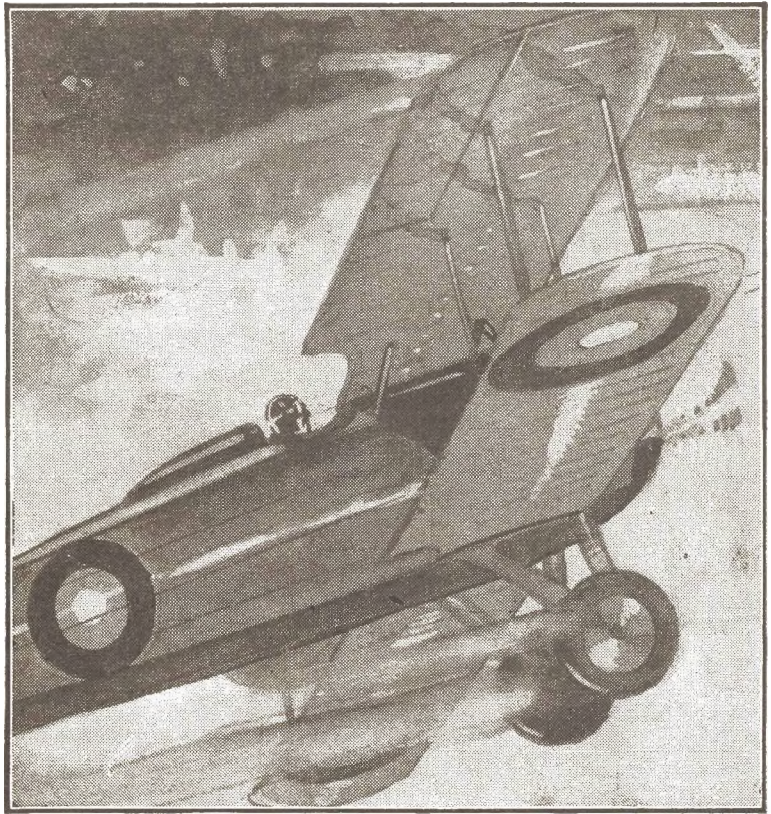
The man at the peep-hole turned quickly as a faint buzzing sound came from behind him. He felt around in the darkness, picked up a telephone.

"Eighteen," he whispered, in French.

"Has Q-9 reached there?" asked a low but sharp voice.

"Yes, with two American pilots alike as peas—"

The man at the other end of the wire drew a harsh breath. "Then he succeeded! Those two are the Jay twins, the aides Captain Strange sometimes uses."



Illustrated by Eugene M. Frandzen

Strange's ungloved fingers squeezed the trips. Two scarlet lines sprang from the throbbing guns and he saw his tracers streak into the black ship. As he fired, he glimpsed the second Boche diving again on the blimp.

"Himmel!" said the hidden observer. "What if they suspect this place—"

"You fool, Q-9 brought them there on the pretext of seeing an Apache den. Be ready to help him. I mean to find out from them where that meddling Brain-Devil is hiding."

"I understand," said the man in the darkened room. He put down the phone. Crossing the room, he unlocked a narrow door. Leaving it ajar for a hasty exit, he hurried back to the peep-hole . . . .

"Fortunately, *mes amis*," the black-haired *capitaine* chuckled, "I know Leon, the proprietor, so you can be sure this is not the cheap brandy he sells to the rabble."

"Let's hope so," Noisy Jay said with a grin. "My stomach's delicate."

"Like a goat's," growled Tom Jay, lifting his glass.

"Speaking of goats," said Noisy, unabashed, "lamp the beard on the old boy just leaving."

Tom glanced aside. The tattered old cripple was limping by, leaning on his stick. The wine seemed to have been too much for him. Just as Tom looked around, the ragged figure swayed and lost his balance. Before Tom could move, the cognac glass was knocked from his hand. The old man lurched heavily against the table, and with a crash the other two glasses and the bottle fell to the concrete floor.

"You clumsy fool!" snarled the *capitaine*.

He sprang to his feet, snatched at the cripple's stick as though he would break it over his head. With surprising agility, the other man leaped back, jerking his end of the cane. A slender blade hissed into sight, revealed itself as a sword. A hand no longer palsied drove

# GRIPPING "PHILIP STRANGE" MYSTERY NOVEL

By Donald E. Keyhoe

Author of "Weird Wireless," "Squadron of Masked Men," etc.



the tip to within a fraction of an inch of the *capitaine's* throat.

"Stand still!" came a sharp command. Green eyes, swift and alert, shot a glance about the den. "The first move, and I slit *Herr Muller's* throat!"

A deathly pallor came into the spy's face. As though paralyzed, he stood there, glaring over the empty sword-cane. Two of the Apaches had jumped to their feet, only to stand rigid at the threat from the man with the sword. With a quick movement, the pseudo cripple thrust his left hand under his coat and brought out an automatic.

"Here, Noisy, cover those rats!"

At that suddenly-familiar voice both of the Jays started in amazement.

"Phil!" Noisy burst out.

THE tattered figure had straightened. Through his astonishing make-up came a hint of lean features beneath. Muller's eyes almost popped from his head. "Captain Strange!" he whispered.

The green eyes of the G-2 ace burned into the German. "Yes, *mein Herr*—but you can give up hope of the reward."

Tom Jay had sprung to Strange's side as Noisy faced the snarling Apaches. Strange spoke to him without taking his eyes from the spy. "There's a Renault outside. Start the motor and be ready!"

As Tom raced for the door, Strange caught a furtive movement at his left.

"Watch the bartender!" he flung at Noisy.

Noisy wheeled, trying to cover both corners. Strange had a swift feeling of menace from back in the gloom.

He dropped the tip of his sword to Muller's heart.

"Follow me! Noisy, get back to the steps!"

With the spy following the sword point as though mesmerized, Strange backed to the entry. He was almost at the steps to the street level when he saw something gleam in the shadows. Flame spurted from a pistol stuck through a hole in the farther wall.

A bullet plunked into the door-frame, two inches from Strange's head. Noisy Jay whirled and fired as another shot blasted from the peep-hole. Muller had hurled himself back as the first shot came. Strange feinted a lunge, sprang toward Noisy.

"The light! Then run for it!"

Noisy's gun roared, and the oil lamp\*disintegrated with a crash. In the split second before darkness came, Strange saw an Apache leap with a knife in his hand. His sword flicked out like a streak of light. Steel blades clashed with a ringing sound. With a lightning twist, Strange snapped the Apache's knife from his grasp. His slender sword plunged fiercely in the gloom. A cry, a sobbing gasp, and a dark shape slumped to the floor.

Outside, an engine roared. Strange jumped backward, sword jabbing to left and right. A bottle crashed against the wall close by. He heard Muller's hoarse voice, a sudden rush of feet. A face, barely a blur, loomed out of the dark at one side. Strange caught the dull glint of a gun. Before he could lunge, there was a blasting roar from behind him. In the flame from Noisy's pistol he saw that pale blur turn in to a scarlet ruin.

He whirled, seized Noisy's arm and dashed for the street. The Renault's motor was throbbing. Tom Jay let out the clutch as Strange and Noisy tumbled into the rear. The closed car bounded forward, whirled on two wheels into the black maw of an alley. A few moments later it careened into the Rue D'Orsel.

"Slow down," ordered Strange. "You'll have the *gendarmes* after us—and this car is stolen."

"Holy smoke!" said Tom.

Noisy was profanely picking himself up from the floor, where the last wild turn had spilled him.

"Would you mind," he demanded of Strange, "explaining what the hell this is all about?"

"I supposed by this time," Strange said dryly, "you might have a dim suspicion. Your German spy friend was about to poison or drug you."

Tom glared around at his twin. "You poor sap, I thought you knew that bird."

"He said we'd been on a binge together," Noisy retorted. "How can I remember everybody I get tight with?"

"You're both a credit to G-2," snapped Strange. "I've warned you a dozen times that Paris is thick with spies." He peered out at a crossing where a blue-green light made a faint, eery glow in the darkness. "Tom, head south till you come to the Rue de la Fayette, then turn west."

He bent over and lifted a musette bag from the floor. Taking out a make-up kit, he dipped a cloth in some pungent liquid and wiped it over his face. The hollows and lines vanished and the bits of crepe hair which formed the beard came off in his quick-moving fingers. Another application of the liquid to his hands, and the gnarled and heavy veins disappeared.

"I still don't savvy all this," complained Noisy.

Strange bent to place his gray wig in the kit. "I spotted Muller on the Champs Elysees yesterday, and last night in this make-up I trailed him to the 'Winking Owl.' I guessed it was a spy nest, so I kept watching him. Do you remember a funny-looking shavetail who bumped into you near the Crillon tonight?"

"Yeah, the dumb hick. I was about to sock him—"

"I'm glad you didn't. I was the hick."

"You?" yelped Noisy.

"Yes, I was trying to warn you against Muller. That fat-head M.P. who interfered made me lose sight of you till you jumped into Muller's taxi. I took the first machine I found and followed. There was no time to get police, so I changed back to the beggar's outfit. That's all—except that you two owe me a sword-cane."

Noisy sighed mournfully. "Guess we're just a couple of dumb clucks."

"Speak for yourself," snorted Tom from the front seat. "I'd never have gone if you hadn't claimed that bird was a long-lost buddy."

STRANGE drew a folded uniform and puttees from the musette bag. Long practice at quick change showed itself in his swift-moving fingers. In an incredibly short time the beggar had become an Air Service captain. Strange switched on a tiny light in his make-up kit, inspected himself in his special mirrors.

"A bit rumbled, but then Colonel Jordan isn't a stickler for appearances."

Noisy looked somewhat startled.

"That's funny, I was just going to tell you Jordan wanted you—" he swore in sudden exasperation. "Hang it, if I live to be a hundred, I'll never get used to that mind-reading business of yours!"

His tone was half-bantering, but Strange caught the resentment back of it. A shadow crossed his face in the brief instant before he switched off the light. All his life, he had had to guard against losing friends because of the uncanny powers his brain had developed.

"It wasn't telepathy this time," he lied carelessly.

"I knew the Chief was in Paris. I saw you two on a sort of drinking-search tour, and I surmised he'd told you to look for me."

"That's a hot one," Tom Jay said in disgust. "We're hunting you, and you trail us. Why didn't you show up and save us all that trouble?"

"You were doing pretty well, and besides, I still had a couple of days leave." Strange looked back at Noisy. "Jordan tell you what he wanted?"

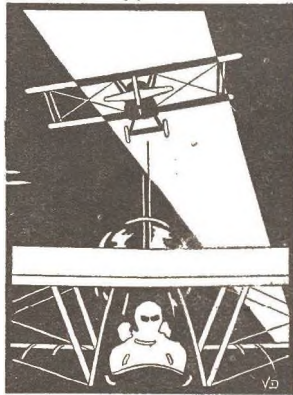
"You know blamed well he didn't," growled Noisy. "You think it makes people feel better if you ask questions instead of coming right out with what they are thinking."

Noisy's accusation was true. Strange had caught the Jay Bird's thoughts as though he had given them tongue . . . That Colonel Jordan, the Chief of G-2, had dashed into Paris three days ago . . . That he had held mysterious conferences with Major Andre, at the *Surete* . . . That the colonel had been—to use Noisy's unspoken words—"hopping about like a Mexican jumping bean."

"You're a hell of a guy!" Tom snapped back at his twin. "Here Phil just saved our skins because he was smart enough to savvy that Kraut—"

"Forget it," grunted Strange. "As for telepathy, I've told you before it's nothing mysterious, just an instinct left over from primitive days when there wasn't any language. Animals have similar instincts—look at the homing pigeon, or a dog that finds its way home after being carried several hundred miles away."

"Maybe so," Noisy said dubiously. "But I still think you're half-brother to the devil. And one of these days



I'll bet you'll read somebody's mind and get a terrible shock."

"He will if it's a goofey one like yours," cut in Tom.

"At least it won't sound like an empty rain-barrel," responded his twin.

"Time out," Strange intervened. The car had reached the Rue de la Fayette. "Go straight out to the Porte de Pantin," he directed Tom. "Then head for the Third Paris Defense field."

"But Colonel Jordan wants to see you down at the *Surete*," said Tom.

"No, he's at Third Defense," Strange answered before he could check the words.

"I saw him two hours ago, and he never mentioned it," Tom objected. "How do you know he's gone out there?"

"I can't tell how I know," Strange said irritably. "Confound it, I just know he's out there!"

He regretted the outburst as soon as he spoke. But it had happened before, that sudden flash of annoyance at being pressed to explain what he himself did not quite understand. Usually it was irritation at the inquisitiveness of some one he did not like. Sometimes it was caused by a brief hatred for the gifts, which, from his childhood, had set him apart.

Tom drove on in silence for several minutes. Then Strange spoke in an almost humble voice. "I'm sorry, old man—my nerves seem on edge tonight."

"It's okay, Phil," Tom said without rancor. "I just couldn't understand, knowing you hadn't seen him."

"When you get to know a man well," Strange said quietly, "your minds sometimes are linked together, especially if you are close friends." He hesitated. "More than once, I've been sure you two were at certain places, and later I found I was right."

"Judas Priest!" erupted Noisy. "If I were a woman I'd hate like the devil to be married to you!"

## CHAPTER II

### YELLOW DEATH

STRANGE chuckled, and the tension was gone. He sat back, gazing into the night. The car passed through the long, darkened street. The old fortifications had been left behind, and Tom was driving through the bumpy streets of a village near the drome, when from the direction of Vitry searchlights began to stab at the clouds. Archie batteries started a deep-throated rumble.

"That's queer," said Tom. "Wouldn't expect a raid on a night like this."

"Too bad it's not closer," Noisy said sarcastically. "Those searchlights might help you find a few more bumps."

"Listen!" Strange interrupted.

An odd clanking became audible above the boom of the distant guns, as though a chain were being dragged over the cobblestones. There was a sawing sound, a crash, followed by cries of alarm. Tom jammed on his brakes, and all three jumped out. The queer clanking sounded again, this time at one side of the dark street. Sparks flew from the stones.

"What the devil?" yelled Tom.

A frightened villager ran up the street, half-clad.

"*Mon Dieu!*" he groaned. "My poor little shop—the roof—it is half torn off!"

A bang of metal on metal cut short his lament. Fire spouted up in a small geyser, a hundred feet ahead. A lamp-post had been broken off, and the gas ignited. By the glare, Strange saw something like a double anchor jerking its way through a fence. A rope stretched up into the night. With a hasty word to the Jays, he sprang to the wheel of the Renault. The twins leaped to

the running-boards, and he sent the car bouncing over the cobblestones.

"What was it?" shouted Tom.

"A balloon grapnel," Strange said swiftly. He turned on the headlights in defiance of military orders. He could see where the sharp prongs had torn a gap in the drome fence. The car swerved through the break. Strange stared into the gloom above the headlights. Something was wrong, he knew, even if it were a French blimp, as he suspected. Grapnels were used only in emergencies, and the silence of the engines was ominous.

He pounded the klaxon horn, and in a few seconds lights showed from the squadron hutments to the right. A searchlight flickered out and swung toward the car. As Strange twisted out of the glare, the beam lifted to follow the rope which curved from the sky. The gray, fat belly of a blimp showed just under the low clouds. Strange recognized it as one of the French night patrol craft, used for low altitude work over Paris to detect stray lights which might guide German bombers. He sent the Renault racing after the grapnel, for the breeze was taking the blimp straight toward Bobigny.

"What are you going to do?" shouted Noisy.

"Bring that thing down before the grapnel kills somebody," Strange answered grimly.

The grapnel was now but fifty yards ahead. As it dug into the grassy earth he hurled the Renault over the half-buried prongs. There was a loud scraping and the front axle passed over the hook. Strange put his foot on the brake. With a savage jerk the blimp hauled the line taut. Strange let the car be dragged for a short distance, then bore down on the pedal. The brakes were locked, but the balloon still moved in the breeze, jerking the Renault forward a yard or two at a time. Strange was momentarily expecting the front axle to shear off when a lorry filled with *poilus* rumbled out from the squadron motor shed.

As the men transferred the grapnel line to the heavier machine, a motorcycle raced up to the scene. A skinny French lieutenant bounded from the side-car, began to sputter in broken English.

"Why you stop ze blimp, *que?* You crazy *Americains* zink eet funny, *non?*"

STRANGE did not answer. His green eyes were following a searchlight as it tilted up toward the blimp. The *poilus* had brought the balloon down to three hundred feet. The light fastened on the small, open car suspended beneath. Suddenly, the French officer stiffened, and a gasp went up from the *poilus*.

A ghastly, yellow face appeared in the brilliant light. Even at that distance, there was something to chill the blood—a queer and horrible blankness, like a face devoid of features. The sinister figure dangled half out of the car, head and arms limply hanging against the side. The swaying blimp imparted a gruesome movement, like some hideous puppet controlled by invisible strings.

"*Sacre nom!*" whispered the French lieutenant. His face, as he turned to Strange, was suddenly pale and sick. "What awful thing is zis?"

Strange lowered his eyes from that silent figure above. They showed no trace of emotion.

"Have the blimp hauled down near the searchlights," he commanded. He spoke in French. The lieutenant





obeyed as though glad of a stronger mind to take charge. The truck driver started in toward the buildings, towing the blimp slowly. Strange and the Jays took the Renault and drove quickly to the line. As they stopped near a hangar, Strange saw two Spads and a D.H. The engine of one Spad was idling. All three ships carried American cocardes.

Four men with flying-suits stood beside a dapper little French major, staring up at the approaching blimp. One of the four was bow-legged and stocky, with an underslung jaw and a pugnacious face that would have given strong competition to a prize bulldog.

"There's Colonel Jordan," muttered Tom Jay, tearing his gaze from the now half-shadowed blimp. "You were right, Phil."

The G-2 colonel had already recognized the Jays. He strode over quickly, followed by the major. Strange saw that the little Frenchman was *Commandant* Andre, head of the *Surete* air intelligence, with whom he had had more than one dangerous adventure.

"What have you two idiots done now?" Jordan barked at the Jays. Then he saw the G-2 ace. "Strange!" He thrust out a thick-fingered paw. "I was afraid the Boche had got you."

The French major's bright eyes searched Strange's face.

"What now, *mon ami*, that you go around snagging our patrol blimp?"

"Then you couldn't see from here?" Strange said gravely. At their blank looks, he explained in a few words.

"*Le diable!*" Andre cried. He whirled to look at the blimp. The truck had been driven between two hangars, and the ground men were hauling down the balloon. Again, as the searchlight shifted, Strange saw the dangling figure. A second later the blimp rolled in a cross-current of air. Strange shouted at the handling-crew, but his warning came too late. The *poilus* had jerked on the line.

Like a dummy, that limp form came tumbling down. Some of the watchers broke and ran. Strange restrained a shiver at the ugly sound of the impact. After all, the poor devil was already dead. He turned to Andre.

"Better keep everyone away from the body. There may be some disease."

The order was quickly given. Strange pressed forward as the craft was grounded. There were four men in the blimp, slumped in death. The vague blankness which Strange had noted in the first man's features was now horribly clear. Something had swollen those faces till they hardly resembled anything human. Their eyes were now but creases in yellow flesh, their mouths and nostrils likewise all but lost from view.

Underneath the starboard engine, one of the men had collapsed upon some ballast bags. Another lay with a wrench in a monstrously swollen hand. The other two had died at the controls. There was not a thing in sight to explain how they had met their end.

Strange turned and saw Andre's horrified look.

"A post-mortem is the only thing which will tell what did it," he said, adding in a low voice, "I'd suggest handling them with rubber gloves."

Andre nodded dazedly, looked around for the squadron commander. Strange joined Jordan and the Jay twins while the flight-surgeon sent for gloves and stretchers. The searchlights had been shuttered, and hooded working-lanterns lent a ghostly atmosphere to the scene. And now one of the waiting Yankee pilots approached Colonel Jordan.

"I guess this changes your plans, sir," he said in an awed voice.

"Yes, you'd better switch off your engine until—" the G-2 chief stopped short, as a rocket went streaking up from behind a hangar. "What's the idea of that?" he barked.

AS though in direct answer, a roar of diving planes swelled above the drone of the idling Spad. Another rocket shot into the night, leaving a trail of sparks. Strange had whirled as the first rocket went up. He was half-way to the rear of the hangar when he heard the thunder of engines. He turned and raced toward the line.

Just as he reached the Spad, he saw a flash of gunfire beside a searchlight truck. In an instant the shutters of the huge lamp opened, and its white radiance flooded the blimp. Strange swore under his breath. Then there were two spies on that drome!

Only a moment did the beam rest on the captive blimp. There was a scuffle at the truck, and the light was hurriedly pointed skyward. But the damage was done. Standing on their props, three black-nosed Fokkers dived at the balloon.

Strange vaulted into the pit of the Spad, snapped his belt. A hasty flip of the throttle cleared the half-fouled plugs. One of the Yank pilots dashed up.

"Pull the chocks!" Strange shouted.

The man recognized him and swiftly obeyed. The trembling fighter roared out onto the field. One of the hurtling Fokkers twisted aside in its dive. Twin Span-daus blazed through its prop, and tracers smoked into the ground close to the Spad's wing-tip. Strange rammed the throttle full on. The Spad charged through a red hail, then black wings flashed past as the Boche was forced to zoom.

Eyes slitted against the wind, Strange held the ship close to the ground. Off to one side, *poilus* had scattered in panic under the German guns. A blast from one of the Fokkers lanced through the gray balloon. The second Boche opened fire.

The Spad was fighting to lift itself into the air. Strange threw a swift glance over his shoulder. The third German was sweeping down at his tail. He waited a second longer, then with a lightning flick of controls whirled in a fierce chandelle. That amazing turn, with the wings almost scraping the earth, caught the Boche off-guard. He skidded wildly as the two planes plunged toward each other.

The Vickers were already charged. Strange's ungloved fingers squeezed the trips. Two scarlet lines sprang from the throbbing guns, and he saw his tracers streak into the black ship. The German zoomed frantically. Strange dived beneath and raced toward the other ships.

A Chau-chat gun was flaming from a ground emplacement. One of the Fokkers whipped around for a savage burst at the gunners. The second Boche was diving again on the blimp. Strange pressed his face against the Aldis sights. The rudder shifted precisely under his feet, and a dark shape leaped into line with his sights. The trips went down again under his firm touch. Into the tail of the Fokker hammered hot Vickers lead.

The pilot whirled, a stunned look on his face. Before he could kick aside, that deadly fusillade had jumped from the tail to his cockpit. A red-hot torrent poured into his body. Struck dead instantly, the German jerked forward under the blast. The Fokker pitched down as his body fell on the stick.

(Continued on page 58)



# Sky Skirmish Over the Suez Canal

STARTLING STORY BEHIND THIS MONTH'S COVER

By C. B. Mayshark

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**A** BLOODY war that will draw in all the nations of the world—a conflict that will drain civilization of its youth—a conflagration that will make the World War seem like a series of practice maneuvers! All that, and more, is what many experts insist is now in store for us.

There is no doubt but what the Italo-Ethiopian situation is the gravest impasse that has confronted Europe's statesmen since 1914. Proposals and counter-proposals have devolved into quibbling and bickering. As this is written, peace moves have been of no avail, and instead of the positions of the various nations becoming clearer and more easy to define, they have now been tightened in a web of confusion. It is extremely difficult for even those "on the inside" to make an open-minded analysis of the situation. Indeed, most reports are colored so that they overly favor either one faction or another. It is clear that it would be ridiculous for us to attempt to predict success for either side. Moreover, it is not our purpose to pass judgment as to right or wrong in this imminent war or even to vouchsafe an opinion as to the outcome. We seek to offer only a purely fictional viewpoint dealing with possibilities.

Newspapers are replete with news of the British Fleet maneuvers in the Mediterranean Sea. There is not one iota of a doubt in anyone's mind as to the purpose of the operations. As a matter of fact, the British Government finally acknowledged the fact that the operations were other than routine. During the summer, the Italian Government has transported hundreds of thousands of troops and millions of dollars worth of war materials through the Suez Canal to the territory adjacent to Ethiopia.

The Suez Canal is controlled by the British, and one might think they would be happy at the thought of the increased traffic and the correspondingly increased revenue. That, however, is a much too simple conclusion. The problem that the Suez Canal offers is much more involved than that, for this thin strip of water is the key to the widespread British Empire.

As a matter of fact, the British are so adverse to an African conflict that there has even been talk of closing the Suez Canal. Should things come to a head, it is very likely that the Canal will be closed. Certainly the repercussions of such an act would be far reaching, and it was this thought that gave birth to the idea for our cover this month.

Assuming that the British have denied the Italians access to the Suez Canal, we can likewise assume that the Italians will retaliate. Let us suppose that a flight of flying boats has been dispatched from a base in Italy to proceed to the Canal region to force access, or gain it by intimidation. But a British aircraft carrier is found lying in the mouth of the canal, and with the first appearance of the Italian planes, orders are issued for flight preparations of several British two-seaters. As they take the air, the Italians veer off. Perhaps they did not expect any stiff opposition. However, the British are determined. The orders read that the aircraft carrier must remain in the mouth of the Canal and deny the entrance of any ship flying the Italian flag. Nor is the British Naval commander taking any

chances on being bombed by the persistent Italians.

Sensing the fact that they must beat down the British two-seaters before they can accomplish their purpose, the Italians swing into action with a vengeance. Attacking in an echelon formation, they sweep in upon the British with all guns roaring. The leading Italian ship is the first one to become entangled, and the two-seaters pounce upon it with the vigor of tigers.

Banking and climbing with everything they've got, the British ships finally manage to attain a position of advantage. But the Italian flying boats are fast and easy to maneuver, and the two gunners in the bows of the twin hulls spray their opponents with lead. The bomber officer inside the Italian ship is also on the job and several bombs are released. As shown on our cover, these projectiles have caused a conflagration among buildings on the shore, but thus far the aircraft carrier has not been touched.

But how long can the British planes protect their mother ship—or, on the other hand, how long can Il Duce's machines be effective? Will some of those bombs blow the carrier to smithereens? All that is only a matter of conjecture. In an air battle, anything can happen. Nor does victory always go the strongest.

**T**HE armaments of Italy and Great Britain present a truly interesting picture. England is admittedly the strongest on the sea, but the question of strength in the air is something that requires careful analysis. Italy possesses approximately 1,600 service planes and the home flying fields of most of the Italian squadrons are within easier striking distance of most of the areas where hostility is likely to occur than are the air forces of Great Britain, which is naturally forced to keep a good part of her air strength at home. Most likely the only British planes which would see any real action are those carried by King George's aircraft carriers and by his other naval vessels.

At the present writing, it would seem that a war between England and Italy would be a war involving ships and airplanes. There is nothing which would be indicative of the outcome of such a conflict. Certainly, Italy's submarines would supplement the fight of the Italian airplanes and surface craft, but on the other hand England's ability to blockade Italy and thus inflict severe damage on Italian commerce must be taken into consideration.

Such a set-to, however, may never come to pass at all. The League of Nations is making a concerted effort to preserve the peace of Europe—and of the whole world. There is always a chance that the various overtures which are being made will finally be successful, and it is our devout hope that this will be the case. Yet, if worst comes to worst, it is likely that the conflict will be of short duration.

The Italian ship shown on this month's cover is a Savoia-Marchetti S-55. It is a long range bomber and one of the most airworthy—and seaworthy—of the Italian flying boats. The British planes are Hawker Ospreys. They are two-seater, fleet reconnaissance ships and possess the fine features of performance that are to be found in all Hawker aircraft.



Joseph Nieto Photo

Left: This picture, the only authentic photograph of the Red Knight after death, substantiates the statement that he was shot through the head. Note the bullet hole just left of the nose and the bruised chin where the Baron crashed into his cockpit coming. Previous stories have always stated von Richthofen was shot through the chest.

Right: Here's the famed-flyer's grave at Bertangles where he was buried with full military honors by the British. The cross was made from an old R.E.8 four-blader. The Recording Officer who took charge of the burial stands beside the crypt, which was opened several years later when the remains were removed to German soil.



Joseph Nieto Photo

# Who Slew Baron von Richthofen?

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NEW EVIDENCE CONCERNING THE GREATEST  
MYSTERY OF THE WAR

By Arch Whitehouse

THE ghost of Baron von Richthofen is stalking the skyways again. As certain as the seasons, he comes back and holds the stage, for men continue to ask the same old question:

"Who killed von Richthofen?"

From his vaunted post in Valhalla, the Baron may be smiling enigmatically—as he smiled in most of his photographs. He alone holds the secret of his glorious end on April 21, 1918. That was the day when a young man swept down out of the sky in a battered Camel to save the life of a pal by pouring a burst of bullets into a scarlet Fokker triplane. And at the same time that the young man pressed his trips, two Australian machine gunners who lay in a sap-head near Vaux-sur-Somme raised the muzzle of their Lewis gun and also fired at a low flying triplane—and watched it stagger to earth.

These two "Suicide Squad" members received the Distinguished Conduct Medal. Captain Roy Brown—the man in the Camel—was awarded a bar to his Distinguished Service Medal. And ever since, the question has reverberated down the years:

"Who killed von Richthofen?"

Initially, the resume just given represented all that was actually known concerning the death of this man who had been credited with eighty victories in the air. The rest was all hearsay. There used to be ugly stories concerning his end—for example, those to the effect that he was shot down in a disabled plane between the British first and second line, and that on his attempt to leave his cockpit and make for a shell hole, he was

shot down in cold blood by infantrymen. Even in Germany, this fabrication has been denied and discredited.

Now, as the years roll away, new and interesting evidence crops out tending to substantiate one angle—that von Richthofen was not shot down from the air, but from the ground.

The writer wishes to take this opportunity to explain that he in no way is attempting to discredit either side. Personally, I would like to drop all this, but our readers from all over the globe simply will not let us. I was always under the impression that the Red Knight had been shot down from the ground and it was only years after the war, that I learned that Captain Roy Brown, of 209 Squadron, R.A.F., had been credited by many for the finish of the Bloody Baron. I will say this, however: Not one word has ever come to my attention indicating that Brown ever *claimed* credit for downing von Richthofen.

In his report on the fight—and his reports were usually pathetically modest—Brown said: "At 10:35 I observed two Albatrosses burst into flame and crash. . . . I dived on large formation of fifteen or twenty Albatross scouts, D-5's, and Fokker triplanes, two of which got on my tail and I pulled out. Went back and dived on pure red triplane which was firing on Lieutenant May. I got a long burst into him and he went down vertically and was observed to crash by Lieutenant May and Lieutenant Mellersh. I fired on two more but did not get them."

The time, place, and machine details given in Brown's report tally exactly with what was believed to be von

Richthofen's finish. But on the other hand, all Australia claims credit for the von Richthofen victory; and as we have stated so many times before, two men were given the D.C.M. for the work.

But here comes another queer angle: The men who were given these medals were named Evans and Buie. Remember that—then read the following official account of the action written at Bon-nay on the very day of the death by Donald L. Fraser, Brigade Intelligence Officer of the 11th Australian Infantry Brigade:

"About 10:45 a.m. on April 21st, I was in the wood at J.19,c.75.63 (a map reference indicating a point near Corbie) and saw two aeroplanes approaching, flying westward directly toward the wood at a height of about 400 feet. I had noticed that the leading machine carried British markings, and just as it reached the edge of the wood, I heard a strong burst of M.G. fire coming from the direction of the southeast corner of the wood. Immediately afterwards, the red painted enemy machine appeared overhead, flying very low, about 200 feet above the ground.

"I lost sight of the British machine as my attention was concentrated on the enemy plane, which was flying as if not under complete control, being wobbly and irregular in flight. It swerved north, then eastwards, rocking a great deal, and suddenly dived out of sight with the engine running full open.

"I ran out of the wood and over to where it had fallen, about 200 yards away alongside the Bray-Corbie road. About six men reached the wrecked plane ahead of me.

"I immediately undid the airman's safety belt and got assistance to pull him from the wreckage, but he was quite dead and was considerably cut about the face—apparently shot through the chest and body.

"I searched the dead airman, taking his papers and personal effects and giving them to Captain Milliard, of the 11th Brigade, who turned them over to our German-speaking Corporal Peters. The Corporal's investigation identified the famous German airman, Baron von Richthofen. I reported this to General Cannan and the Third Australian Division promptly. On General Cannan's direction, I went out to get particulars of the machine gunners who had brought the plane down and found Sergeant Popkin, of the 24th Australian M.G. Company, at his anti-aircraft post (J. 23.b.3.7). I congratulated Sergeant Popkin on his successful shot and afterward found out that two A.A. Lewis guns belonging to the 53rd Battery had also fired on the ship from an acute angle."

*(Note that this is the outfit to which Evans and Buie belonged—the men who received the D.C.M. and who probably received this consideration when it was found that von Richthofen had been struck by a bullet that travelled across his*

**Baron von Richthofen, greatest of the German aces, still retains his fame as the most colorful figure in all air-war history. His life story is known to millions, but the enigma of his death is still as puzzling as ever. In this dramatic article, Mr. Whitehouse considers several bits of new testimony regarding the death riddle—additional "pieces" for this baffling jig-saw picture which may never be completed.**

*breast from the right to the left side. This bullet could have been fired from the 53rd Battery's guns and could have hit von Richthofen in this manner if his ship was being violently maneuvered, as no doubt it was.)*

Fraser later explains that he believed that Sergeant Popkin actually hit von Richthofen first, but he is most insistent that there

were only *two* planes in the sky at the time of the event—not three.

General Monash, the leader of the Australian forces, gives an even more puzzling account. In a letter to his wife, he explained that the event had taken place over his 11th Brigade headquarters and that von Richthofen was shot down by an Australian cook and his K.P. assistant, the two using a Lewis gun mounted on a pole outside the cookhouse. General Monash also declares that the Red Knight was diving on an R.E.8 and that all the machine guns in that area opened fire. Von Richthofen's engagement with the R.E.8 was broken off, states the General, when a lucky burst from the cook's gun brought him down. Then, to make it all the more mystifying, he states: "Before the machine could be approached, the enemy artillery put down a circle of shrapnel all around the wrecked ship and maintained their fire for more than an hour while members of von Richthofen's flight circled round four or five times and then majestically flew away."

Next comes George M. Travers, a lieutenant of the 52nd Battalion, who claims to have been on Corbie Hill. He also states that there were only two planes, the one flown by May and the scarlet Fokker. May's guns were

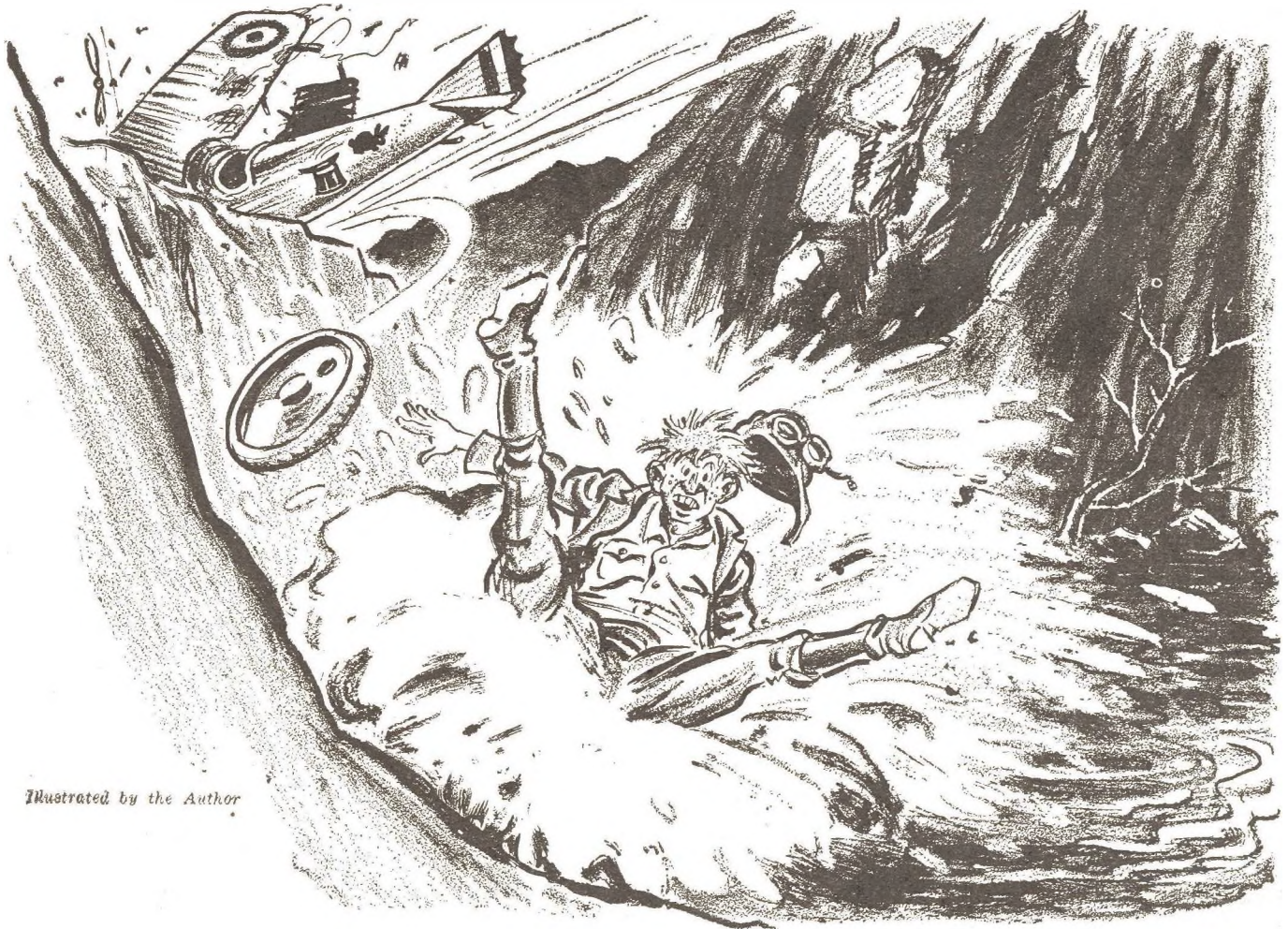
*(Continued on page 83)*



*Joseph Nieto Photo*

In this picture, Albrecht von Richthofen, the Baron's father, is seen seated fifth from the left, bottom row. The Baron, with bandaged head, is behind him. The second man from the left, bottom row, is Lothar von Richthofen, the Red Knight's brother, and the flyer in the upper left-hand corner holding the dog is Karl Almenroeder, the Baron's pet protecting tail-man. We are reminded that on July 16, 1917, a year before his death, von Richthofen also had a close call. Then, too, he left his formation and the security of his tail-man—and Flight Commander A. E. Woodbridge, of No. 30 Squadron, R.F.C., nailed him with lead. The Baron managed to get down safely, but he spent several weeks in the hospital and was never again the same old killer.

The Spad hit a high bank—and Phineas unceremoniously kerplunked into a water-filled hole.



# Fallen Archies

WHIZZING "PHINEAS" WHOOP

By Joe Archibald

Author of "Sea Gullible," "One Hun, One Hit, Three Errors," etc.

**"POWERFUL KATINKA"** had been upsetting the Allied apple wagon for days. Powerful Katinka was the name of a Heinie gun battery which had been set up about a mile from Mont Sec. The Yanks had christened it thus. It was no ordinary Archie battery but one that was more efficient than it had any right to be in the year 1918. The brass hats at Chaumont suspected that the Krupps had uncovered a tow-headed Teuton prodigy who had passed trigonometry at Heidelberg with an average of one hundred and fifty per cent. When shrapnel could tag a Spad, flying top speed, two out of three bursts, then something had to be the matter. In three weeks time, Powerful Katinka had sent five Allied ships to the cleaners via the scrap iron route. Of course

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The brass hats decided their auto was running on gas—but they didn't mean gasoline! And though Phineas always claimed his ghost would come back to haunt Major Garrity, what chance had the Boonetownite's spectre in competition with the ghost of last month's English breakfast?

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Chaumont could only think up one slogan. Get that blankety-blank gun! They had not thought up how. That was up to the Air Force.

Rufus Garrity was unfortunate enough to have attained the rank of Major. He was even more unfortunate when the Wing dealt him to that corner of the hectic war zone where Bar-

Le-Duc basks in what the French call sunshine. For it was the same place where Lieutenant Pinkham was tossed after he was snagged out of a pilots' pool.

"Well," Phineas observed one night at mess, "the brass hats said they didn't care how we got the gun, haw-w-w-w-w! It is my talents, then, that will not know their own strength."

"I suppose you have got it all written down, you

muzzle head," Major Garrity bristled. "Would you mind showing me the recipe?"

"I would like to go over solo tomorrow and look for it," Phineas retorted. "The bombers ain't even been lukewarm yet. They have hit everything but Joan of Arc's birthplace tryin' to strike it. I suppose you have noticed that it has been quiet for the last twenty-four hours? Or have you?"

"Go ahead," Captain Howell said, "I ain't listenin'."

"I bet it means," went on the unabashed flyer from Boonetown, Iowa, "that maybe one of the two-seaters hit close to it by mistake so they're goin' to move it. Maybe they were chased by a Fokker an' dropped what bombs they had left. It's the only way those big-crate bums could tag anythin', haw-w-w-w-w! It is like keeping your eggs in the same basket too long in the same place as maybe somebody might drop an anvil in it by accident. Haw-w-w-w!"

"Why, sure," agreed Bump Gillis blandly. "Now what was it you said?"

"That's teamwork," Phineas howled at the C.O. "They don't pay any attention to me."

"Which proves they are of sound mind," the Major clipped. "Now about this gun—"

"Oh, pardon me," Phineas sniffed, "did I change the subject? Excuse me as it is hardly nothin' I know about hooked rugs." He got up and kicked back his chair. "Do I go up solo tomorrow or don't I? Huh, maybe I ought to write it down what I ask you as—"

"Get out of here!" Garrity yelled. "Sure, go ahead and fly solo—so low the Kraut infantry can hit you with bricks! The law of averages ought to start working my way pretty soon!"

"Oh, I've got nine lives," Phineas informed him. "Haw-w-w-w! Did I ever tell you about how my Ma got scairt by a tabby cat just before I was born? But if I have lost count of the ones I've used up and I go west tomorrow, lookout, Major, as remember what I always promised. I'll come back an' haunt you, haw-w-w-w! Thanks for everythin'. *Bon swar, bums!*"

"Hey-y, half-wit!" Bump Gillis called to him. "You left a letter."

Howell gestured to the Scot and grinned. "Maybe it's from a dame—that letter. Pull it out an' we'll read it. If it is, we'll send it to Babette an'—"

Having ignored his hutmate's hail, Phineas Pinkham went on his way. Bump grinned and yanked the folded paper from the envelope. A puff of dust came with it. Bump's mouth opened wide and his nostrils quivered like those of a scared mule. He sneezed into his cup of coffee. The contents geysered and sprayed Howell and the Old Man plentifully. Howell likewise sneezed and blew a cigar stump loose from Garrity's lips. Everybody sneezed. Eyes watering, faces the color of ripe tomatoes, the pilots got to their feet and groped their way toward the door. Glad Tidings Goomer, mess attendant, shuffled out of the kitchen door laden with a big pitcher of water. He stopped, his big nose twitching like that of a rabbit on the scent of delectable cabbage. Suddenly a sound like an elephant trumpeting into a megaphone belched from Glad Tidings. The pitcher of water popped out of his hands and went through a window that was not open.

"Are they dumb!" grinned Phineas as he increased his pace. "They should know my handwritin' by this time. Haw-w-w-w-w! Well, I'll just get my bicycle an'

pedal toward where my Babette waits for me."

"I'll kill that guy yet," exploded Bump Gillis.

"You ought to get sub sedse id your thick skull," the Old Man was raving. "Eved if he put dowd rosary beads sub place I would nod touch theb for a thousa'd francs. I—er—ah-h-h-h-h-chew-w-w-w-w! I'll skid hib alive, the hobely ape! Pingab, you—a-h-h-h! Chew-w-w-w!"

LIEUTENANT PINKHAM turned a deaf ear to the sounds issuing from the drome of the Ninth Pursuit Squadron and pedaled his way toward Bar-Le-Duc. Darkness was coming on fast and was bringing a thin mist along with it. It was just such a night when odors carry and the Pinkham proboscis had been designed so that it could undoubtedly out-smell a beagle hound. Said nose began to sniff when its owner had eaten up a mile of road.

"Phew!" Phineas erupted. "Somethin' has forgot to git buried, it smells like. An' it seems to be comin' from straight ahead—ugh! Maybe it's the Jerries movin' up someplace, haw-w-w-w-w!" As he pedaled on the obnoxious nocturnal aroma waxed stronger. The pilot from Boone-town screwed up his face and got off his bicycle. "If I don't git off," he ruminated, "the smell'll knock me off."

Phineas walked along another half mile until his eagle eye spotted something in the high bushes on the side of the road. He leaned his two-wheeled chariot against a tree and went into the ditch to investigate. There he found a wooden case one side of which had been bashed in. Holding his nose, Phineas gingerly examined the contents, some of which had spilled out. Smoked haddock! It had been exposed to the elements for quite some time and the result did not remind one of attar of roses by any stretch of the imagination.

"Boy!" exclaimed the explorer. "An' I been blamin' Bump Gillis for not changin' his socks often enough every time the wind was just right. I got to apologize to him, haw-w-w-w! It must of fell out of a truck an' it looks like the Limeys missed their haddie for a lot of breakfasts. Huh, well—it might come in handy, at that. I'll just cover it with some branches and stuff."

An hour later Phineas arrived in Bar-Le-Duc and lost no time in reaching the domicile of his light of love, Babette.

"Bong soor," he said in greeting to the little French ma'amselle. "Has what I have been expectin' arrived?"

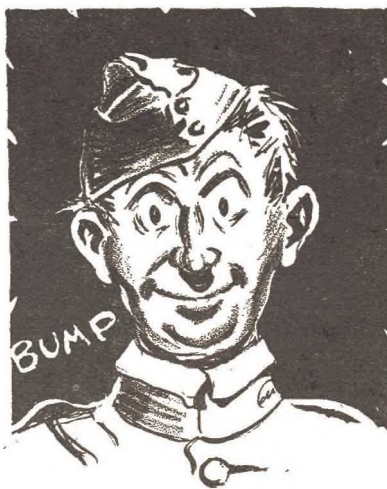
"*Mais oui,*" said Babette, "an' it ees crazee, Phenyas. All ze time as it goes along you get eet ze more cookoo in ze head." Suddenly Babette sniffed suspiciously. "What ees eet ze smell?"

"Haw-w-w-w-w!" guffawed Phineas, examining something that sat on a table. "I was just passin' by the fishin' bank," he explained. "Boy, I want to hear this on the victrola, Babette, don't you?" He placed a disc on the machine he had been looking over, applied the needle, and switched on. The sounds that emanated from the record were strange indeed.

"Ees eet enough that I hear you wizout zat theeng," Babette complained. "What ees eet ze awful smell? Phenyas, *vous ees cafarde.*"

"I never heard that word but I bet it means I'm crazy," the Yankee Romeo yipped above the din of the record. "Don't I git insulted enough without you doin' it? Boy, this is spooky, ain't it?"

"Bah," said Babette and she pranced out of the room. "You come an' smell like ze sweel can an *aussi* mak' ze



awful noise. Bah!"

"Well, I guess I know when I ain't welcome," concluded Phineas and shut off the record. He wrapped up the two black rubber discs in a sheet of paper, gathered the little square box under his arm, and took his departure. "I bet if I walked out of a glue factory you would expect me to smell like lilies of the valley. Well, it ain't any trouble for me to find another dame. Adoo!"

In high dudgeon Phineas headed back to the drome, one hand controlling the handlebars of the bicycle. "That's dames for ya," he muttered. "I wish somebody in this *guerre* would git a sense of humor."

Two miles out of Bar-Le-Duc the smoked haddock began to remind its custodian of its presence. Phineas stopped off, grinning good-naturedly, and removed a couple of slabs of it. Then he continued on toward the drome. A quarter of a mile from where Major Rufus Garrity held forth, Phineas again dismounted. He walked toward the northern boundary of the flying field, climbed a high tree, and secured the square box to a high limb.

"That is that!" he chuckled when he had returned to earth.

Back on his means of locomotion burdened only with two well-seasoned strips of smoked haddock wrapped in paper, the errant pilot pedaled onto the drome. He ditched his bicycle and then took a look at a big car that was standing outside the French farmhouse where Major Garrity suffered his headaches. Sergeant Casey cut across Phineas' path.

"D'you smell anythin', Lootenant?" he queried.

"Why—no—the air is sweet like baby breath," replied Lieutenant Pinkham, sniffing at the ozone. He continued on his way to the big U.S. boiler. "Brass hats," he commented, "an' crabbin' about Powerful Katinka again, I bet. Haw-w-w-w!" He turned back to Casey and yelled, "Where's the driver of this jilopi?"

"Gittin' a cup of java in the groundmen's barracks," said Casey, eying his superior suspiciously.

Phineas stopped beside the car and looked into the back of it. Sergeant Casey mumbled something under his breath and went on his way to a hangar. When the Pinkham scion walked into the Frog farmhouse he did not have the haddock. The pair of colonels holding forth in Garrity's office looked as serious as a five-alarm fire. They were sipping cognac.

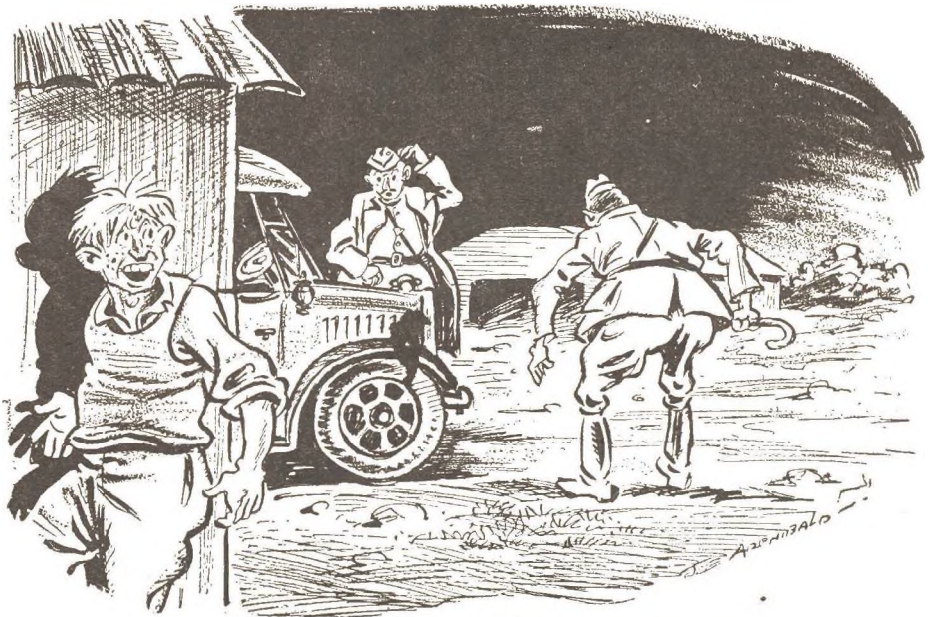
"It's gone," one was tossing at the Major. "They've moved it. Bombs were getting too close to it, I'll wager. The Krauts figured that sooner or later—"

"There," Phineas coughed out, "that is just what I said, I leave it to anybody. Boys, it's good to see a brass hat who agrees with me. I was tellin' the Major only tonight—"

"Shut your big mouth," the Old Man yelled. "You fresh—!"

"Did you ever learn to salute?" huffed a colonel importantly. "Stand up and—"

"Ha ha," laughed Phineas, "imagine that! I could've sworn I saluted you both. My mem'ry ain't what it used to be. Tomorrow I'm going solo and will spot that Jerry gun for you, sirs. It was only maybe two hundred years ago that the Pinkhams was spottin' blockhouses for Daniel Boone. Every war has had a Pinkham of some kind in it."



"Getting worse, Henry," said one of the brass hats.

"Can't you stop him, Garrity?" blustered a brass hat. "By—!"

"Only with prussic acid," the C.O. retorted. "And then just for over night. Get out of here, Pinkham! Report to me in the morning."

"Awright," Phineas snapped and went out.

"You smell anything?" inquired a colonel, nostrils dilated.

"Seems to me I do," confessed Garrity. He yelled for Glad Tidings Goomer, mess attendant. The sad-faced hash slinger popped out of a door and saluted six times.

"What's that smell?" bellowed Garrity.

"Huh? I dunno. Maybe it's what we et tonight. That stew is gittin' worse, sir, all the time. Or else maybe it's—"

"Clean up that kitchen," stormed the Major.

**A**N hour later the brass hats got into the car and drove away. They made the chauffeur stop at the edge of the field. They got out and sniffed at the air.

"It's getting worse, Henry," declared one, his voice carrying to where Phineas Pinkham was leaning against a hut. "Simply awful, what?"

"You think it might be gas?"

"Haw-w-w-w-w!" exploded Phineas Pinkham.

"What was that, Henry?"

The brass hats piled into the bus and it rolled on for about a hundred yards. Then they stopped and climbed out once more. The Old Man and three pilots were watching from the door of the farmhouse.

"That smell gets less the farther away that car goes," Bump Gillis said.

"By cripes, I smell a rat," raged Major Garrity. "Where's Pinkham?"

"I'm right here," yelled Phineas as he strode onto the scene. "What you got on me now? Nothin', that's what! I don't know a thing. It ain't no use to ask as—haw-w-w-w-w! Look!"

The brass hats were getting into the car but they had big handkerchiefs tied over their noses.

"Boys, that'll do no good," said Phineas. "I—er—I mean, how could you stop a smell like that, huh? Why—er—huh—"

"A rat was it you smelled?" Howell tossed at the Major. "That smell has got to be from at least a defunct elephant. Phew-w-w-w!"

"Pinkham," Garrity roared apoplectically, "you know

something about this. You—by cripes, I'll—if you've—"

"That's right," wailed Phineas indignantly, "blame me. Always blame me. You saw me come in an' go out. Did I do anythin'?"

The Old Man swore and went into squadron headquarters. Phineas walked on toward his hut. An hour later he was summoned forth by an orderly. Five minutes after that Major Rufus Garrity was eyeing him like a lion looking at a wart hog.

"So you didn't know a thing, eh?" he shot out. "They found a ring in that car after they found the fish. The Limeys said they saw you wearing it once. The brass hats stopped at the Bristol outfit and almost tore the car apart before they found the fish. Well—?"

"Oh, them blabbers!" erupted *Herr* Pinkham, "that's beef-eaters for ya. Awright, I did it. But I'll get even with them pip pip, cheerio bums. You wait! They can't prove anythin' by the ring. I can say I lost it someplace and somebody else must've picked it up. I hope some of them Limeys put it on and press the sides of it. Haw-w-w-w!"

"Why you—!" The phone buzzed. Major Garrity picked it up. Phineas yawned and leaned against the wall.

"You what?" Garrity cut in. "The ring—you mean—huh? Pinkham? Why—I—what's that? Don't you insult this outfit! You put it on and—what? So are you!" He slammed down the receiver.

"That pink-eared fathead," Garrity hooted, "callin' us—"

"We'll get 'em," Phineas said. "They can't—did he get sprayed with red ink from that ring? Haw-w-w-w!"

Phineas emerged from the Operations office a minute later. He was brushing pieces of crockery out of his hair.

"That is assault!" he yelped at the convulsed pilots in the big room. "I will have him up on charges!"

"That was a pretty geranium that was in that pot, too," gasped Bump Gillis. "Now we have no home touch here. Ha ha ha!" He rolled off his chair.

Phineas hooked a finger into the collar of his tunic and fished out a clod of dirt. Howell's mouth was open when he threw it. It was quite a shot.

"Eatin' dirt!" Phineas chided him. "Why you'll git worms!"

Captain Howell coughed up the dirt and made a flying leap at Lieutenant Pinkham. Phineas stepped aside and pushed the door open. The leader of "A" Flight went through it like a flying squirrel. Phineas went out the back way yelling, "Crash siren!"

Major Garrity barged out of the Operations office. "Ship comin'? Where—light the flares! Don't stand there, you dumb clucks! Everybody out! Hurry!"

"Haw-w-w-w-w-w!"

Major Garrity stiffened. His whole frame seemed to inflate from jowls to shins. Bump Gillis became alarmed as the Old Man shivered like a ship when it strikes a reef. The head of the Ninth was never any nearer to a stroke.

"That's enough," he yowled. "It's all I stand. I'm gettin' out of the service. I'll chew cordite. I'll chop

a hand off. Oh, I'll think of something!" Swearing, he ran back into his sanctum and slammed the door.

**D**AWN. Phineas Pinkham, assuming a mien of innocence that would have made a new-born lamb look like a wolf, strutted out of his hut dressed for the airways. He went into the farmhouse where three other Spad pilots were gulping down hot java.

"Where the hell do you think you're goin'?" Captain Howell cracked.

"Solo," retorted Phineas sweetly.

"After what you pulled last night? You're nuts if you think the Old Man—"

"Ask him," Phineas suggested. "If you want to take a chance of waking him up, haw-w-w-w-w! It is a morning he wants to sleep late. I would rather try to file the hangnails off a Bengal tiger that has an ulcerated tooth. But if you want to blab like the Limeys—"

"Aw, let him go," another pilot interrupted testily. "Maybe a German Von will kill him for us."

"If one does," Phineas flung at the speaker, "remember, I will come back and haunt you. Adoo." He went out to where the Spads were warming up.

Phineas had painted a new insignia on his bus, a rabbit jumping out of a silk hat. Sergeant Casey began to argue when the Boonetown trickster climbed into his crate and yipped, "Contact!"

"You can't go out without them other guys—er—looyes. You—"

"Look here, are you forgettin' your place?" Phineas asked with great dignity. "You want to look out or you will get a severe reprimand, Sergeant. I am soloing today. Git busy, slave!"

"Oh, awright," came from the resigned Casey. "To h—!" He shoved an ackemba toward the Spad's snout. "Spin the prop for the lieutenant!" He said something else when the prop was revving fast enough to drown his words. They would not have looked very well in print.

The Spad shot away. Phineas circled the field once when he got aloft, then pointed the prop boss toward the palpitating front. The groundmen watched the ship nose toward the carpet when it had eaten up two or three miles of ozone.

"He's forced down," Casey hollered. "Ha ha, I hope he lands on a cement walk! Well, I didn't see nothin' an' you guys didn't neither, see? We'll wait an hour before we send the meat wagon out. Then it ought to be too late. Come on, police up around here. This dump looks like—"

However, Phineas Pinkham had landed as lightly as the proverbial feather. In a field a quarter

of a mile from where he had his store of over-ripe smoked haddock. As he walked to the spot he drew a length of heavy twine from his pocket.

"I'll show them blabbin' Limeys," he growled. "Then I'll go huntin' Powerful Katinka. Haw-w-w-w-w!"

The amazing disciple of Merlin, Houdini, Herman the Great, and all other pioneers in the art of making things seem what they are not, pulled camouflage away from his case of fish and then began a very unpleasant task. He tied a heavy spike on one end of a long piece

(Continued on page 78)



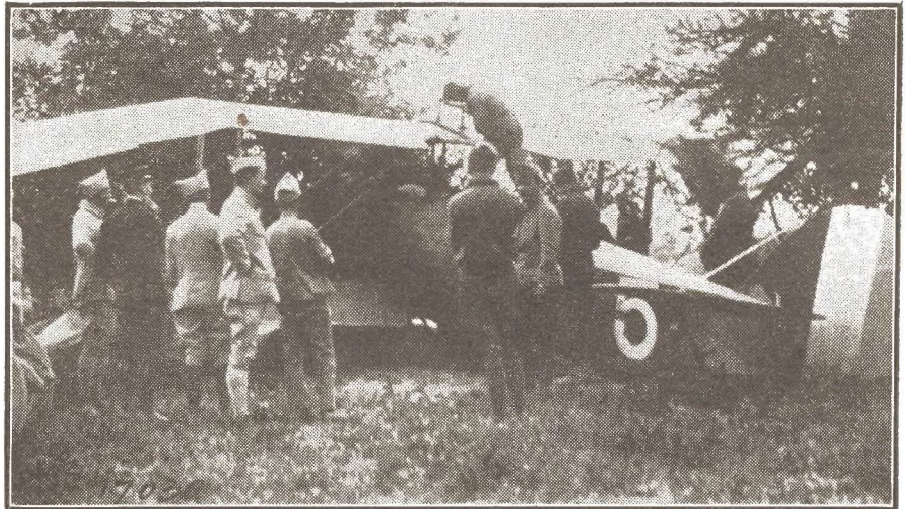
BLAM! "Powerful Katinka" keeled and cement flew in chunks.



# Snapshots of the War

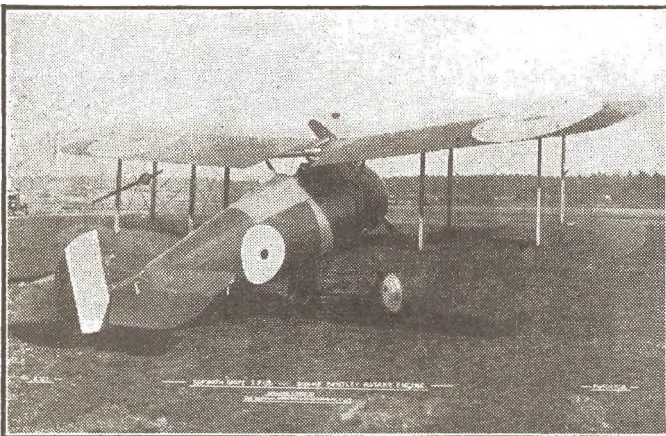


A little-known German ace, Oberleutnant Maz Ritter von Mulzer, one of the crack pilots of Max Immelmann's staffel. Von Mulzer, who was present in the air when Immelmann was killed, denies that the "Eagle of Lille" was shot down by an Englishman. He claims his ship broke up in the air.

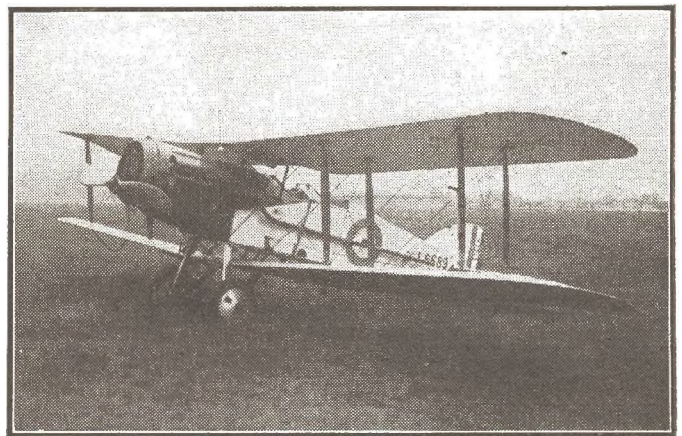


Signal Corps, U.S.A.

This is how an American observation plane landed at Comme de la Saints, France, after an aerial battle in which the main wing spar was cracked. Pilot Lieutenant W. Brown, of the First Aero Squadron, was fortunate enough to get it down safely. It all happened on July 6, 1918. We're wondering, incidentally, whether Lieutenant Brown is still alive to tell us more about this fight.

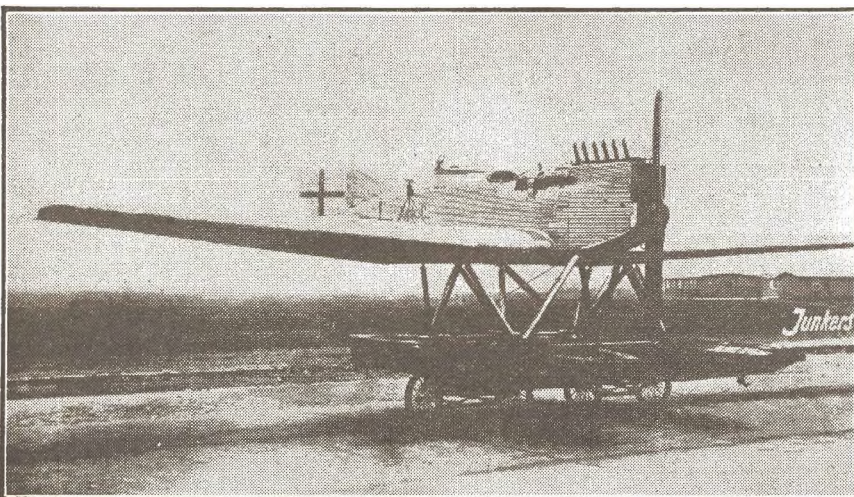


Here's the much-discussed Sopwith Snipe, the fastest and finest ship on the Western Front. In a machine of this type, Major Billy Barker outmaneuvered sixty Huns and destroyed seven of them before he was so badly wounded that he had to withdraw from the scrap. A beautiful little job, the Snipe!



"Flight" photo

The heartbreaker for the Germans—the old Bristol Fighter that broke the streak of the single-seater era! Here she is with her 275 h.p. Rolls Royce "Falcon" engine. She did 132 top at her best and could be stunted like a Spad. Many declare that the old "Brisfit" won the war in the air.



In comparison with the craft above, note this German Junkers, one of the early attempts to put over the all-metal and armored idea. This machine was probably the first real attack ship, being expressly designed for trench strafing. It was turned out by Professor Junkers and financed by Tony Fokker, who at that time was flirting with the all-metal notion.

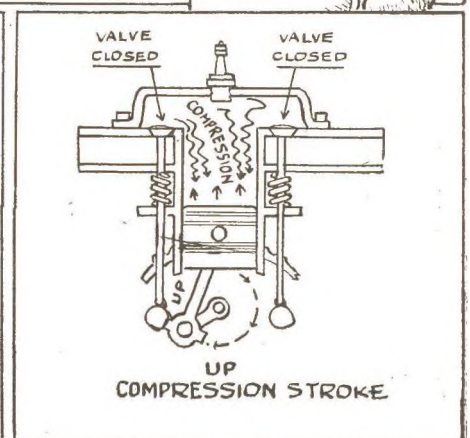
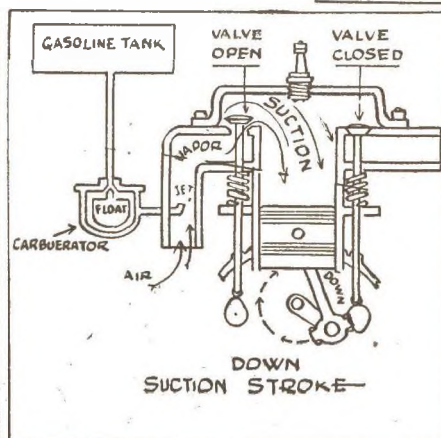
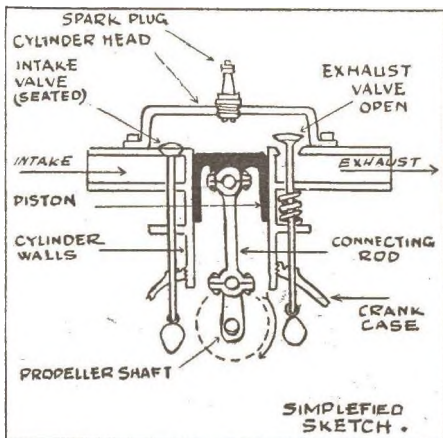
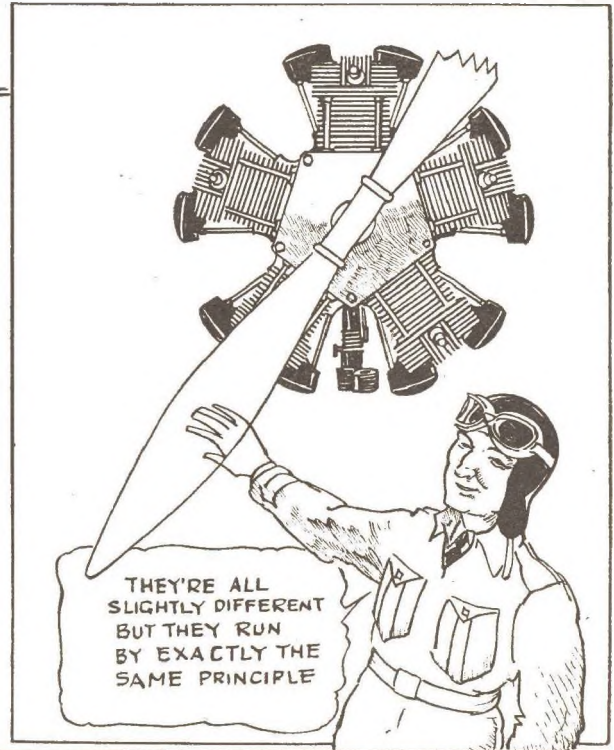


They took 'em young in the German air service. This is another of Max Immelmann's group who covered himself with glory—and medals—before the war ended. If there's anything they left off his left breast, we'd never know it. But who ever heard of him? He's Unser Erfolgreicher Kampf Flieger Leutnant Gustav Leffers.

**T**HERE'S lots o' people flyin' around in airplanes with very little knowledge of the gasoline engine and what makes it tick. Nothing in the world pays better dividends for a little kindness than one of these babies. Also, there is nothing in the world that can do as dirty a trick in return for neglect or abuse.

At the right, we have a sketch of the Lambert R266, a sweet little power plant which turns up 85 horse power at cruising speed and weighs a little more than 200 pounds. Most radial, air-cooled engines have odd numbers of cylinders so, regardless of the position of the propeller, the odd cylinder provides assurance that there is no "dead center" in the firing cycle. Thus, all cylinders have fired once at the completion of two rotations of the crankshaft.

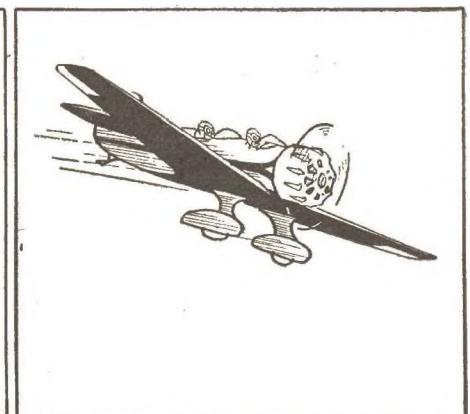
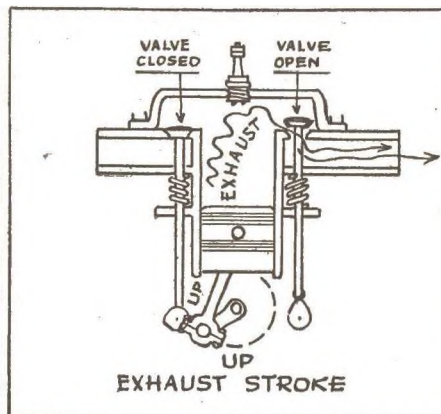
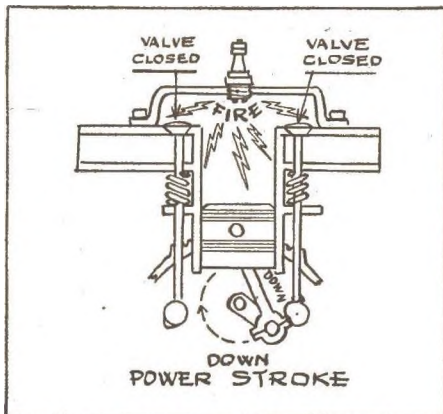
To explain this more fully, suppose we number the cylinders of our Lambert 1, 2, 3, 4, and 5. Now, after cylinder 1 fires, cylinder 3 fires; and after cylinder 3 fires, cylinder 5 fires. In short, the order calls for the firing of *every other* cylinder. Thus, the second cylinder from our number 5, which has just fired, is number 2, and the second from that is 4. Number 1, of course, follows 4—which completes the cycle. Each cylinder has now fired once, and the crankshaft has rotated twice. Thus, the cylinder firing order is: 1, 3, 5, 2, 4—and back to 1.



IN the four stroke cycle engine, a cylinder doesn't fire each time the piston goes up and down. It fires on every other downward stroke.

THE vaporized gasoline is drawn into the firing chamber through the open intake valve on the first down stroke of the piston. This is called the *Suction Stroke*.

NOW, as the intake valve closes, the piston comes up and compresses the mixture of gasoline vapor and air, making it very explosive. This is called the *Compression Stroke*.



THEN, if the timing is correct, the piston starts down from compression and a spark is discharged from the spark plug. This spark explodes the mixture and the explosion forces the piston down. This is called the *Power Stroke*.

HERE, the exhaust valve is released and the piston starts back on the up stroke. The fumes of the burned fuel are forced through the open valve and out through the exhaust manifold. This is called the *Exhaust Stroke*.

YOU student pilots should develop "motor sense." You should get the "feel" of your engine because it's your best friend. It'll pay you back with interest for a little thoughtful consideration. Don't fail your motor—and it won't fail you.

# Legion of the Flame

## KERRY KEEN ENCOUNTERS THE TORCH-BEARERS OF WAR!

\*\*\*

THE corridor of the Army and Navy Club was a bedlam. Men in uniform, civilian clothing, and incongruous combinations of both, huddled in groups about loud-speakers. Some ran about making frantic inquiries for information as they stuffed their nervous fingers under the still-sticky flaps of telegram envelopes. Others sat in the big chairs of the New York club staring at newspaper headlines—pathetically helpless.

There was no sense to it all. No reason. America was not at war—but war had struck America. There had been no warning, no frantic mob spirit of 1917, no intimation that war was at hand. No one even knew who the enemy was. But the enemy had struck!

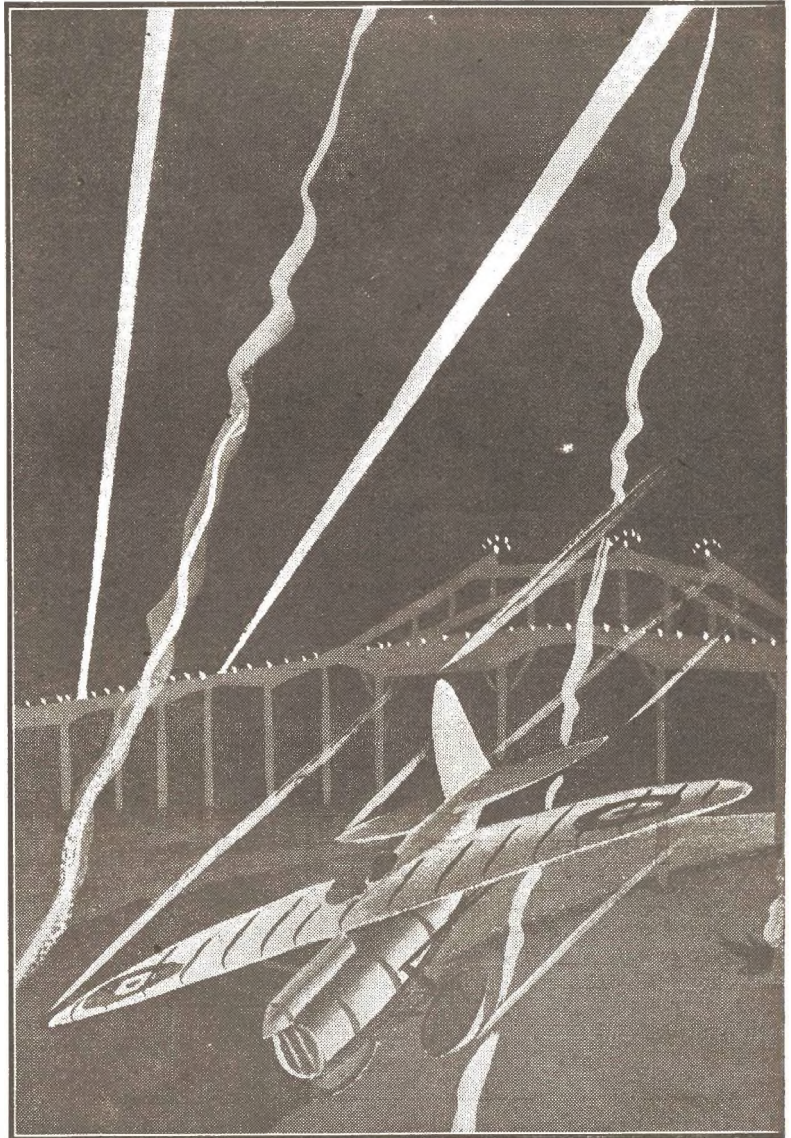
There had been no warning—except that strange radio signal that had been caught by a young amateur across the river in Weehawken. Two nights running he had tuned it in at 23.61 meters. On the third night he advised the Intelligence Officer at Governor's Island. Then, next morning, the young amateur was riddled with a burst of machine gun bullets as he stepped out of his home, and forty-eight hours later, Governor's Island was a shambles, as a result of an aerial bombing raid, staged with startling swiftness and accuracy. As far as could be understood, the machines engaged in the lightning-like raid carried British, French, and Italian markings.

The unfortunate part of this tragedy lay in the fact that twelve hours before the raid the machines of the Second Corps Area together with four National Guard units under the same jurisdiction obeyed a mad order given by Brigadier-General Alton Fullard and flew out to sea on a secret mission to a point far beyond their range—and they had never come back! Eight complete squadrons wiped out with hardly a word to indicate what had happened.

New York, the Metropolis of the nation, was left defenseless.

No wonder men who had seen war on a dozen fronts were stupefied. No wonder men dropped exhausted into the club chairs of the Army and Navy Club. Even these hardened—

But suddenly a low ripple of expectancy flittered through the crowd in the club lobby. A man in Air Service equipment, with crisp, iron gray mustache clipped in military fashion, strode in. His jaw jutted out like the turret of a gunboat. His eyes were small, dark and set close together. He flipped a short swagger-style cane up to his right eyebrow in response to a number of salutes.



Illustrated by C. E. Mayshark

“Steelback” Fullard was what the boys out at Mitchel Field called him.

He strode on, avoiding the glances of the men about him. One or two actually tried to intercept him and ask for information, but he flipped the leather bound stick in a manner that indicated that he had no wish to speak to anyone.

“The yellow dog!” a young Navy Ensign snorted under his breath. “If he don't turn in his resignation and get out of the country tonight, someone ought to shoot him.”

Brigadier-General Fullard stalked on past the elevator and strode up the stairs. He wished to avoid the two Army Majors who were waiting to go up to the emergency Corps Area office. Up three flights he climbed, then turned down the corridor, inserted a key in the last door, and pushed it open. He went on into his sitting room and switched on a light.

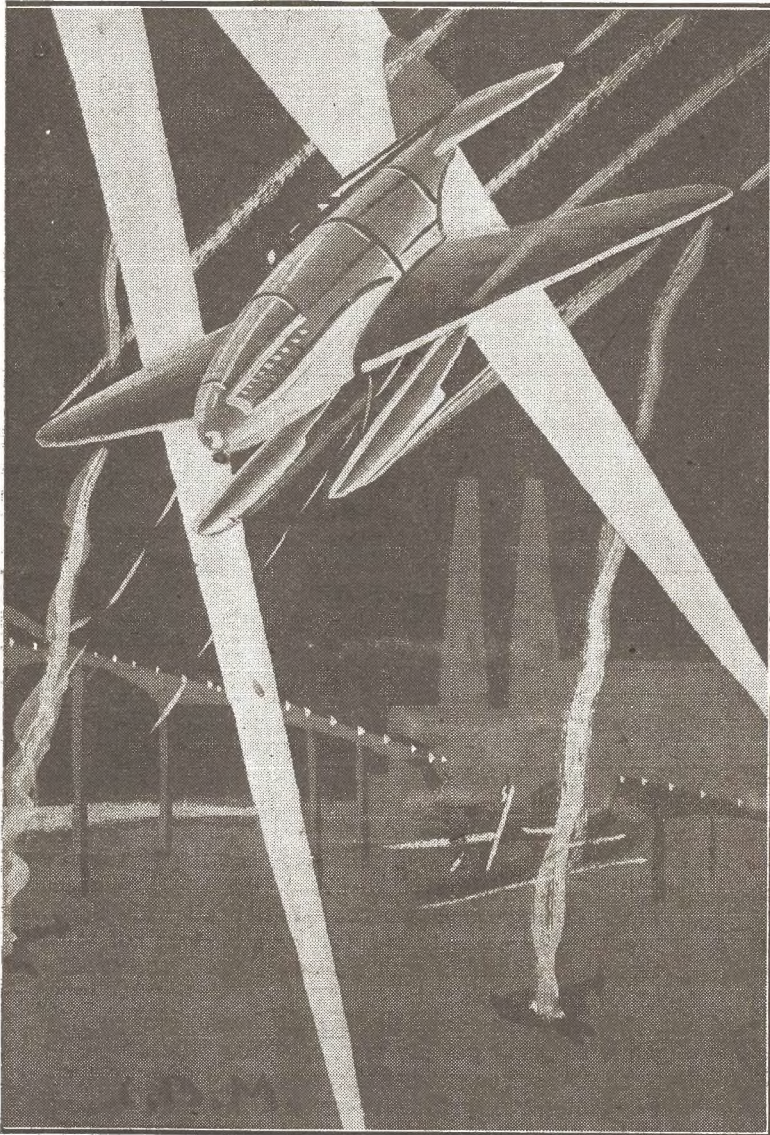
A man in boots, Bedford cord breeches, and khaki shirt stood in the shadow between the two windows that looked down on the street.

For a moment Brigadier General Fullard stood petrified. The man in front of him smiled—a viperish smile.

# DRAMATIC "GRIFFON" NOVELETTE

By Arch Whitehouse

Author of "Guile of the Griffon," "Red-Heads of Death," etc.



As Barney dived the black amphibian upon another two-seater, the fires of wrecked planes lit up the Jersey meadows. One of the main supports of the aerial highway had been hit—a long section of the Skyway lay tangled in the mud.

"Who are you? . . . What are you doing in this room?" snapped Fullard, peering toward the man in the shadows. As he spoke, his hand moved toward the bell-button on the wall, but a glinting weapon in the hands of his "guest" halted him.

"Keep away, Fullard," the man said. "It's all over—this time."

"Brainard!—Brainard, you swine!" gasped Fullard. "Then it was *you* who . . . who gave that order and sent those men to their doom."

**T**HE man before him nodded. It was the nod of a man who has won—a patronizing gesture that burned the nerves of the Brigadier-General. Then the man crouched and jerked his gun trigger. There was a low "plop" and something caught Fullard in the face.

Then the General's assailant darted to one side, lowered his gun, and stared at his victim with cruel interest. The Brigadier stiffened, struggled to keep his feet. His eyes went glassy. Blood trickled down his

Out to a "dead spot" in the Atlantic roared America's proud squadrons of the air—ordered to a watery grave by their own commander. And now from the sky a ruthless, unknown enemy struck, pouring destruction upon defenseless New York. True, America was not at war. Yet flames leaped from the canyons of Wall Street and airports nearby lay in utter ruin. There had been no warning of this holocaust—none save the meager messages intercepted by a lone radio amateur. And the body of that amateur now lay huddled on a doorstep—riddled with bullets!

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face, ran along the curve of his jaw, and dropped off the prow of his chin.

Fullard tried to speak, but no sound save a choking gurgle came from his mouth. The man before him only watched with diabolical interest the effect of the shot. Then satisfied, he stepped forward with fiendish calm, curled a cruel right-hand blow, and felled the tottering Brigadier like an ox. Then he unbuttoned the fallen Army man's coat, slipped it clear of his limp arms, and with a cruel smile pulled it on. Finally, he made a hurried examination of the room.

His eyes searched the walls, floors, and furniture in a vain search for something. At last, consulting the watch on his wrist, he gave up and went back to the distorted body on the floor. A quick flip and he had removed the identification bracelet around the Brigadier's sun-tanned wrist and transferred it to his own. Then he drew a small pocket-knife from his breeches pocket and went across to the pine-paneled wall. He found a small hole that had been started there. For two or three min-

utes he worked on it, then took a small metal slug from his pocket and forced its round-nose end into the wall. He carefully collected the slivers and shavings that had fallen and put them in a small sheet of paper which he twisted up into a tiny lump. With a last glance at the body on the floor, he went into the ante-room, and picked up the Brigadier's trench coat and hat.

Tugging the cap down over one eye, "Steelback" manner, and swinging the trench coat over his arm, he took up the swagger stick, glanced at himself in the mirror, and marvelled at the striking resemblance he made to the man who lay dead in the other room. Then he walked out.

**A**T his Graylands home on Long Island, Kerry Keen sat before elaborate radio equipment. For three hours he had sat thus, with the dial of his set tuned to 23.61 meters, checking the incoming signals back and forth with every bit of equipment available. Finally he

decided that the mysterious messages were coming from a station located somewhere in the lower part of Manhattan. Again and again he re-checked his directional beam control.

Across the room, Barney O'Dare was taking down notes on another set, which was tuned to commercial stations that were giving out the amazing details of the latest air raid that had destroyed Floyd Bennett Field and had blown up the National Guard hangars at Miller Field, Staten Island.

Keen studied the notes as Barney passed them over to him. He frowned and seemed unusually tired. He had enjoyed no sleep for more than forty hours.

"The set has a decided Marconi twang," he said for the tenth time in an hour.

"So? . . . Well them Limey planes are all fitted with Marconi sets made at Electra House in London.

"Bah! You Micks would blame it on the British. I tell you every British service ship has been accounted for."

"But some of these babies had British markings, didn't they?"

"Paint's cheap! Wait a minute. . . . Hello, he blew it at last. He's getting out."

"Where is it?" asked Barney anxiously.

"Somewhere down near the Battery. He told them to come in from the North River side—an Autogiro, I'll bet a hat. Get that bus out, Barney!"

"There's two hundred buildings down there around the Battery," Barney sniffed. "You'll never get him."

"I'll bet a buck there's only one offering a roof big enough to take a chance like that. If they can do it, we can. Get going."

Keen hurled himself away from the radio with a weary groan. He pulled a black coverall out of a closet, pulled it on. Then he took out a parachute, helmet, goggles, and black gloves. Finally, he slipped a scarlet mask in his breast pocket and gave the room a careful look-over before he left.

Inside the secret hangar Barney already had a sleek, black amphibian on the turntable. The motor ticked with a strange hiss. Keen snapped the lights off and Barney pulled the lever that opened the hidden door through the fantastic rock garden. Silent, well-oiled gears raised the massive doors and the folding-wing job rolled onto the foliage-shielded ramp. When the doors had closed behind them, Barney drew back two long levers which unfolded the wings and Keen rotated two cranks that shoved the tips out three feet further.

The mystery ship taxied down into the water and took to her floats. The motor, muffled by the latest Skodas, purred like the power-plant of a \$10,000 car. Keen guided her out into the open water, took her off carefully, and climbed until the altimeter showed 3,000 feet. Then he cut out the mufflers, and the black plane hurtled along at 250 m.p.h. toward the tip of Manhattan.

He held her to a course which avoided the swaying blades of light that criss-crossed about the sky from Fort Hamilton and Fort Hancock. When more beams hurriedly broke out from Fort Slocum, outside New Rochelle, and a test burst fanged out from the Anti-Aircraft battery at Fort Wadsworth on Staten Island, Keen doused the navigation lights and shut the motor off. He glided the craft for two or three miles, then

cut in the Skodas again. At last, he curled clear of Sandy Hook and eased toward the tip of Manhattan.

"Still fighting the remains of the blaze at Governor's Island, Barney," he muttered to his gunner.

"An' look ye at Bennett Field. Still burning!"

"We'll get the devils, Barney."

"Ay, and get a packet ourselves, too, I'm figuring."

"Shut up, Morbid. This may be a lark before we get through."

Ay, an' yer lark might turn into a buzzard before yer can say 'Abyssinia'."

**B**RR-OOOM! The A-A guns had rasped out again and their ship danced in the concussion. Keen, however, held to his course and actuating his flaps eased down at a ridiculously low speed. Like a ghost, the black plane approached the tip of Manhattan which was now in shadows since nearly all of the lights had been doused by a government order. A large blaze, however, burned in the financial district and threw a pall of smoke across toward the North River.

"Where the hell you goin'?" demanded Barney.

"Taking a look around," smirked Keen, sending the slow-flying amphibian down into a scarf of the black smoke. "See that building facing the Aquarium . . . down there?"

"The new Navigation Building?—why that's full of steamship agencies and shipping firms. What's the idea?"

"Look at the roof! Half a block long—and as level as a table! Now hold tight!"

Barney gulped as he watched Keen maneuver the ship down. They cut in from the Jersey side and pierced the thick blanket of smoke, expecting any instant to smash into the granite walls of a skyscraper, but Keen held her firm, nose on the circular Aquarium, then he put her into a daring side-slip. The black plane slid toward the top of the building. The flaps braked her, and she dropped with a crunch on the pebble-coated roof. Keen rammed on the wheel brakes and held his breath. She came to a dull crunching halt not ten feet from the retaining wall that overlooked the lower end of Greenwich Street.

"Whew! You take the biscuit, boss," gasped Barney when he could get his breath. "Now what?"

"Plenty! You get her turned around first. Then have everything ready for a take-off. If any other ship tries to land here . . . a 'Giro, for instance, let her have a drumful. Give me a few minutes and I'll be back with you, but you must be prepared to take her off. Get that?"

"Oooof!" spluttered the still-trembling Barney.

While the Mick struggled to get the tail around and back the ship as near to the wall as possible, Keen slipped out of his parachute harness, drew on his scarlet mask, and ran along the edge of the retaining wall. His fingers worked like lightning as he felt for wires—airial wires.

At last he found what he was seeking—a four-strand antenna hung over star-shaped porcelain insulators in the typical Navy manner. The joints were properly soldered and shielded. The lead-in carried through bakelite fittings and was carefully protected as it ran over the retaining wall.

"Neat job," agreed Keen. "It would never have been noticed from above. Direction most suitable for receiving short-wave signals from out at sea. Now let's find where the lead-in goes."

He leaned over the wall and peered down. The insulated lead-in wire trailed down to a window two stories below the roof. There was a light in that window—a remarkable fact, considering that nearly all the windows on that side of the building were in darkness.



Keen studied the situation a minute, then coolly climbed over the edge of the wall. He was like a cat in his movements now. All the weariness of the hour before seemed to have been dissipated in that tingling flight from Long Island. He found the indentations in the brick facing, steadied himself. His lean fingers caught the top of the wall and with a last glance at Barney, who was climbing back into the amphibian, he started down the buttress.

A slip would have meant death—death hundreds of feet below. But Keen was planning minutes ahead and he lowered himself step by step with amazing skill. Once he was level with the window-sill of the lighted room, he stepped lightly across and held on by the sash that was partly open. He waited a moment and listened while he got his breath. There was no sound inside. No talking. He smiled at the break Fate had given him. He did not get many. Keen had to *make* his breaks.

Quietly he raised the lower sash so that there was room to enter. Then he drew his gun and flicked the shade cord so that the roller dog allowed the linen shield to screech up with a crisp flap.

The scene that met his eyes almost made him fall back.

**F**ACING him in the center of the room, his back toward a large roll-top desk that was cunningly fitted with a complete two-way radio set, stood Brigadier-General Alton Fullard. Keen knew him from the many photographs that had appeared in the newspapers during the past three days.

Keen dropped into the room, completely covered in his black coverall and scarlet mask. In his hands he held a gun that squinted its lone orb directly at Fullard's belt buckle. The man in the Air Service uniform took three back steps, tried to get his hands on the radio set.

"Nothing doing, Fullard. I want to see that wavelength you were using. Edge off!"

"Who are you?" the man gasped.

"You've heard of me, Fullard, just as I have heard of you," Keen snapped, shoving the Air Service man away from the desk roughly. "Just as I thought. Working on 23.61, eh. You sent for help a short time ago, didn't you?"

"How do you know?"

"Ever hear of a directional antenna? I have one, and I checked every licensed station that is listed on that unusual wave band only to find that there were none in this area. But my instruments showed you were somewhere in lower Manhattan—though there was no way of finding out exactly where until you called for help and told your confederate that he was to come in to the roof from the North River side. This happens to be the only building in this section that jibed with the requirements for a landing. Now what about it?"

"You—you are the Griffon?" husked the man in uniform.

The scarlet-masked man only rasped on. "Why did you send the ships of the Second Corps area out to that ridiculous rendezvous 68 W. 36 N—a point at least 400 miles away from any land on the Atlantic seaboard? That meant a flight of at least 800 miles regardless of wind—and not one of those planes had a range of more than 600 miles."

"It was a mistake—a typographical error, I tell you."

"You lie! The position was pointed out to you on two different occasions and the impossibility of their return explained, but you turned down all suggestions. You *knew* they were going to their deaths!"

"It's a lie . . . a lie . . . a mistake in the Signal office."

"That'll be all, Fullard. You've written your own

sentence with that set there. You had that young amateur killed when he warned the Intelligence Officer of the 16th Regiment. You knew the net was drawing in then."

"If it's a matter of money," the man in uniform urged oilily, "there's plenty." The man in the mask stared down at the stack of bills that had been tossed over to him. He picked them up, stuffed them in his coverall pocket.

"Thanks! There're plenty down at Governor's Island who can use this. But you're not clearing off, Fullard."

The man in uniform blanched and backed away. "What do you want?" he husked, wild-eyed.

"The easiest way out. There's a gun on your desk there. Use that. They'll see that you are well covered up. You might even get a military funeral. They're funny that way in the Army."

"You mean . . . suicide? Like hell!"

"All right, it's up to you.

How would you like a court martial, muffled drums, ribbons removed, and a firing squad? That's the alternative, you know."

"I'll take that. Let's go."

"Fine. Lead the way to the roof."

"Who are you, anyway?" demanded the Army man again.

Keen flipped a card across the table. The captive picked it up and smiled. "I guessed it," he said, pocketing the card. "Come on." Then he



pulled his cap down over his eyes and slung the trench coat over his arm. Keen followed, his gun hidden in a fold of his coverall.

They went out into the corridor and mounted two flights of stairs. Keen wondered how he could turn him over to someone and still retain his masquerade. The Army man was wondering what the Griffon had on the roof.

They shoved the fireproof door open, stepped out on the pebbled roof. For a moment the Army man tried to focus his vision. Then he spotted the amphibian at the far end—and he knew he was sunk.

"Go on—over there. Get into that ship," ordered the Griffon.

But before either could take another step, there was a low moan above them. Something was descending on whirling rotors. Then from the far end of the roof a gun spat flame. Barney had seen it too.

Keen stood stock still wondering what to do. Then before he could make a move, the Army man swung his heavy trench coat out and smothered Keen with its wide folds. Keen fired once and threw the enveloping coat away. He saw the Army man climbing up on the parapet of the roof and stand erect with his arms up. Out of the smoky darkness above crept a black and gold Autogiro, a swinging rope ladder dangling from its wide-splayed undercarriage.

The next series of events happened so fast that Keen never quite decided which happened first. He saw the Army man grab the rope ladder and flip away. Then there was a blaze of bullets from the direction of the amphibian and the ladder jerked.

"No, Barney!" screamed Keen. But Barney did not hear.

The Autogiro staggered. The dangling figure, twisting not twenty feet above the parapet of the building, let out a low cry. Then the 'Giro slid away, its motor opened with a roar, and it climbed into the smoky mist.

(Continued on page 68)

# Japan—Air Titan of the East

In this, the second article on the air strength of the nations, is told the story of Japan's persevering rise in air power since the World War—a rise which now places Nippon third in military sky strength, with no less than 1,939 planes in her services. Mr. Martin will consider the flying forces of France in our January number. Don't miss it!

\* \* \*

By David Martin

WHEN one attempts to gauge the air strength of Japan, the data must necessarily be offered with tongue in cheek; for though Japan stands third in military air power, the figures at hand hardly tell the whole story. In our measurement of power, we must train our attention on the insistent aero growth enjoyed by the land of Nippon in the past ten years. First line aircraft leaped from a total of 328 to fully 1,939 in that decade—and even the most blase expert must raise his eyebrows in the face of such progress.

What a record! And the little yellow men are not thought of as being particularly mechanical minded. Certainly, their youths do not have the same broad opportunity to familiarize themselves with engines, cars, motorcycles, and the like, as does the young American, Englishman, or German. Yet we're asking ourselves: Where will the Japanese Imperial Air Service stand in power by the end of 1936? If it continues the pace chalked up in the last two years, it will lead the world!

At this writing, the strained international relations stirred up by the Italo-Ethiopian situation threaten to plunge the world into a Martian mess involving Britain, Italy, France, and possibly the United States. All this has diverted attention from the activities of the Japanese, which for many months elicited close scrutiny. America had watched the work of the Japanese flyers in the Shanghai uprising and later in the Manchurian land-grab with great care, but of late the European tangle has swung the needle of interest in another direction. The announcement of the under-cover German Air Service, the recent naval agreement between Germany and Great Britain, and the Italian move on

Ethiopia provided new and intense discussion.

But we must not overlook Japan which, you will probably recall, was the one great power that agreed to supply the Ethiopians with war materials! If an African war breaks out and Japanese ships become embroiled in the resulting blockade, you can prepare yourself for almost anything.

And if Japan is drawn in, you can bet all you own that the Japanese Naval Air Service will be in there with plenty to show for their efforts of the past ten years.

There's a story behind all this: After the Great War, in which Japan played but a modest part, her admirals and generals figured that the first line of defense had suddenly been taken from the laps of the navy and set down in the cockpits of the air service. Japan had no air service to speak of in 1918—but Japan was the first nation in the world to lay down a vessel originally intended as an aircraft carrier! Today they

have four of the finest ships of this type in any Navy.

But we are digressing. As soon as the Great War actually closed, Japan quietly saw her chance. There were hundreds of skilled pilots in the world, all looking for jobs. There were dozens of training squadrons with full facilities in Britain and France. Those young men who had suddenly been left without a war on their hands were delighted to go to Japan for a few months to teach young Japanese Army and Navy men how to fly. And when you were taught by a fresh-from-the-front ex-service man, brother, you were taught! These instructors had faced death, listened to the zip of lead, and seen the glare of tracers. They knew how to fly and—what few pilots seem to learn today—they knew how



First off, here's the Japanese Kawasaki 88-2, a two-place job turned out by the Kawasaki Dockyard Co., of Kobe. There are two models of this craft, one a light bomber and the other an attack ship. Both are powered with Japanese-made B.M.W. engines and carry three machine guns.

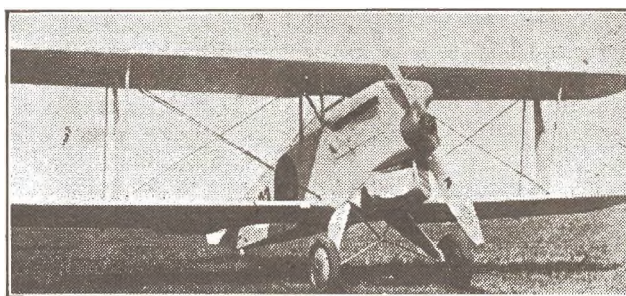


The Nipponese are decidedly interested in their country's air defense. These five trim fighting ships were purchased with money donated by employees of Tokyo firms. They're Army craft—four Nakajima 91's and a Kawasaki light bomber.

to crash. The era of parachutes had not yet dawned, remember; and while the parachute may be the aerial life perserver, the boys of the old days could do a lot of funny things to get down safely under conditions that would call for a bail-out today.

The Nipponese sopped all this up with a will. Frankly, the Japs I saw were real pilots. And I saw plenty of them getting the same courses in 1919 that we war flyers had been getting under more distressing conditions in 1917 and 1918. There's no doubt that Japan "won the war in the air," if you get what I mean. They got more out of it for a small outlay than any other nation.

After that, they were able to buy up the overproduction of British, American, and French aircraft factories at low rates. Once they had the machines and pilots they went to work in a businesslike manner and organized their Army and Navy Air Service. For like the United States, they make a distinct difference in the



Cream of the Japanese pursuit crop is the Kawasaki 92 fighter, shown above. This deadly craft has a top speed of 225 m.p.h. and can climb to 16,400 ft. in nine minutes. The power plant is the 450 h.p. B.M.W.

two types of service.

For one thing, they built up their Naval Air Service on British lines and even went so far as to employ thirty British naval experts to organize it. As everyone knows, the Japanese Navy is a direct copy of the British, and it was natural that they should continue this type of training and organization with the aid of men who had once built up the Royal Naval Air Service.

With the Army Air Service, however, they undertook different tactics. Here they employed French and German officers, and while the Navy used British and American machines, the Army devoted its efforts to French equipment. But still they were not satisfied. They wanted their own equipment, so with Government backing, several large manufacturing and shipbuilding concerns were given contracts to design and manufacture planes and motors. Following the usual Japanese tactics, they first purchased a number of manufacturing licenses on noted European and American motors and

## JAPAN'S AIR FIGHTERS

### Army Single-Seater Fighters

Name	Type	Motor	Armament	Speed	Remarks
Nakajima 91	Mono.	450 Jupiter	2 Vickers	198	French type.
Kawasaki 92	Biplane	450 B.M.W.	2 Vickers	225	Cream of service.

### Army Reconnaissance

Kawasaki 88-2	Biplane	450 B.M.W.	2 Vic., 1 Lewis	136	Also a bomber. (See below)
Kawasaki 88-1	Biplane	450 B.M.W.	2 Vic., 1 Lewis	142	Won military prize.
Mitsubishi 92	Mono.	420 Jaguar	2 Vic., 1 Lewis	136	British type.

### Army Day Bombers

Kawasaki 88-2	Biplane	450 B.M.W.	2 Vic., 1 Lewis	142	Carries 1,000 lb. bomb.
Kawasaki 93	Biplane	600 B.M.W.	2 Vic., 1 Lewis	?	On secret list.

### Army Long-Distance Bombers

Kawasaki DoN	Mono.	(2) 450 B.M.W.	?	?	Re-designed Dornier.
Junkers G-38	Mono.	(4) Junkers	?	?	Re-designed German air-transport.

### Navy Shipboard Fighter

Nakajima 90	Biplane	450 Jupiter	2 Vickers	192	All-metal fighter.
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### Navy Reconnaissance

Nakajima 91	Biplane	450 Jupiter	2 Vic., 2 Lewis	?	For catapult work.
Nakajima 90-11b	Biplane	450 Jupiter	2 Vic., 1 Lewis	160	Landplane version.
Kawanishi 90	Biplane	450 Jupiter	2 Vic., 1 Lewis	140	Twin-pontoon ship.

### Navy Bombers

Aichi 92	Biplane	600 Lorraine	2 Vic., 1 Lewis	?	Three-seater.
Kawanishi KF-1	Biplane	(2) 450 Jupiter	?	123	Flying boat.

### Navy Long-Distance Patrol

Navy 90-1	Mono.	(3) 700 Hisso.	6 guns	136	Flying boat.
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Number of Army squadrons—34  
 Number of Navy squadrons—40  
 Balloon corps—2  
 Airship squadrons—1

Aircraft carriers—4  
 Seaplane transports—2  
 Number of first line aircraft—1,939  
 Flying personnel—17,000



also complete planes. After British, French, American and German experts had shown them all there was to be shown on how to put this material into production, the Japs began making their own. So today they turn out fighting craft comparing favorably with first class Western planes.

That's how Japan came to be able to offer war supplies to Ethiopia—meaning planes, motors, machine guns, anti-aircraft guns, and modern rifles.

And now let's consider their Army Air Service.

The headquarters of the Military Aviation Arm is at Kojimachi, Tokyo, and the Director is Lieutenant-General G. Hori. The system includes four departments: General Affairs, Technical, Supply, and Inspection. There are four main flying schools at Shimoshidzu, where training, tactics, and reconnaissance are taught. The fighter training school is at Akeno, and at Hamamatsu they provide training in day and night bombing. Moreover, a headquarters field at Tokorozawa offers flight training and engineering.

The Military Corps usually consists of eight aviation regiments, two balloon corps, and the four main flying schools. About 1,000 planes of various types are now on hand. The eight aviation regiments consist of thirty-two squadrons. There are fifteen fighting squadrons, eight bombing squadrons, and eleven reconnaissance outfits. The balloon squadrons are usually quartered at Chiba.

The activity of the military squadrons during the Manchuria trouble so stimulated national attention that within a few weeks 150 planes, 60 anti-aircraft guns, many A-A machine-guns, searchlights, and motor-car equipment was purchased and donated to the government by public spirited groups.

Would any of our Lions Clubs or Epworth Leagues like to donate a new Boeing to our national defense? You get the idea—the attitude over there is different.

At present, most military aircraft are manufactured in the Government arsenals at Tokyo and Nagoya. The

Nakajima, Kawasaki, Ishikawajima, and Mitsubishi companies also manufacture fighting ships.

The Japanese Air Service (Army) uses Nakajima 91's and the Kawasaki 92 for their pursuit ships. You no doubt have seen pictures of them in this magazine before. The Nakajima is a high-wing monoplane powered with a Japanese-made British "Jupiter" rated at 450 m.p.h. It has a top speed of 198.7 miles per hour. No details of the armament has been disclosed. The Kawasaki 92 uses the Kawasaki-made German B.M.W. rated at 450 h.p. and it does 225 top. It won the recent Japanese military trials for single-seaters, competing against many fine machines. It's a stubby biplane of unusual maneuverability.

For reconnaissance they use the Kawasaki 88-2 and 88-1, both biplanes powered with the 450 B.M.W. They also use the Mitsubishi 92 monoplane powered with the Mitsubishi-made "Jaguar." The latter model does 136.

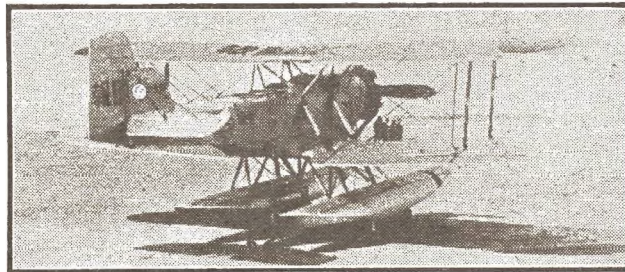
The day bombers are the Kawasaki 88-2 and the Kawasaki 93 biplane. This latter is a two-seater, all-metal job with a 600 B.M.W. motor and appears to be on a stringent secret list. Practically nothing is

known about it abroad, but we presume it is a larger version of the single-seater 92.

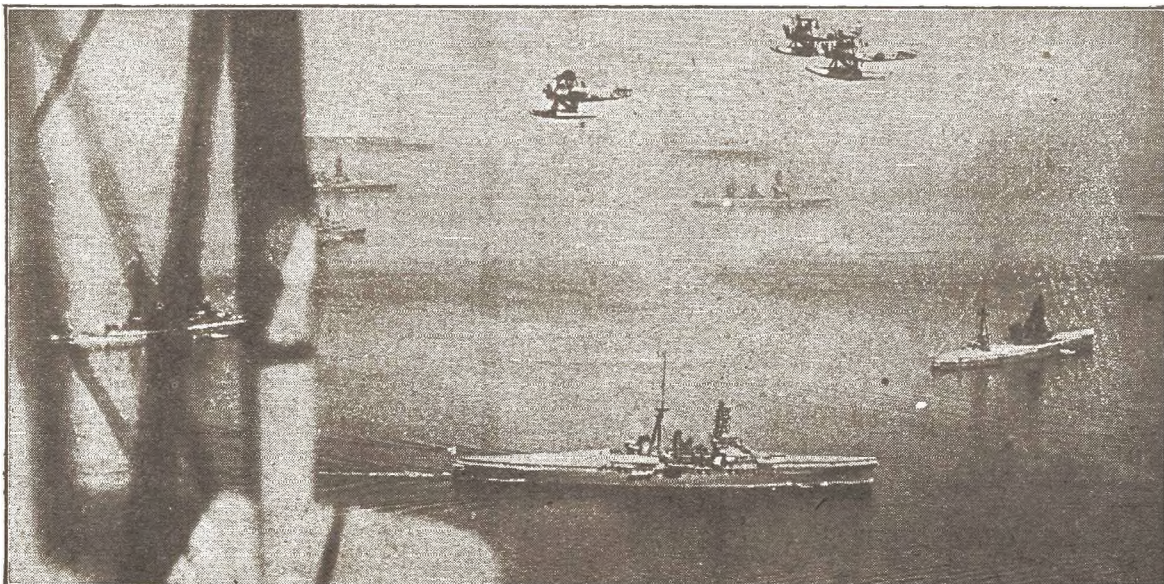
The long-distance bombers—and the pilots of the Japanese Air Service have to do a great deal of this sort of work in their training—use the Kawasaki-Dornier DoN monoplane fitted with two 450 B.M.W. motors. They also have the Junkers G-38 monoplane which uses four Junkers engines. This is the same ship as that used by the German Luft Hansa lines. It carries a disposable load of 20,100 lbs. at a speed of 134 miles per hour.

They have a lot of these G-38's—so if you think Japan can't do a nice bombing job on short notice, look up the performance figures of this Junkers G-38 and get a shock. In addition, the Japanese have a number of De Havilland Moths for transport, ambulance, and certain communications work. They also use

(Continued on page 89)



Don't let those hieroglyphics on the tail fool you! The sky-hurlers of the Land of the Rising Sun are Airplanes with a capital "A," as is amply evidenced by this Kawasaki 90 Reconnaissance Seaplane. A 450 h.p. Jap-made "Jupiter" powers this baby, and two Vickers and a Lewis compose the lead-throwing equipment.



This shot of a recent Japanese Naval Review outside Yokohama harbor shows a flight of 600 h.p. Lorraine motored Aichi Seaplanes speeding over the battleship fleet. The Aichi's are bombing jobs.



# 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. No contributions will be returned unless a stamped, self-addressed envelope is enclosed.



"Himmel—Idt looks like der three-point landing!"

### NOT GUILTY

*R. A. F. Sergeant:* See a plane come down near here, sonny?

*Johnny* (nervously fingering his sling-shot): N-n-no, Sir. I've only been shooting at the windows in that empty house over there.

### FREE-DOM OF THE AIR

*Ace:* What is a Scotch airplane?

*Deuce:* Shoot. What is it?

*Ace:* A glider.

Dumb Dora thinks an outside loop is an aerial for a radio compass.

### NOT MUCH SENSE

*He:* Do you think airplanes will ever take the place of automobiles?

*She* (blushing): Silly! Who'd want to park in a damp old cloud!

### OH, BABY!

*Phineas:* When is a nurse like an airplane?

*Gillis:* Don't keep me in agony. When?

*Phineas:* When she's a twin-pusher. Haw-w-w-w!

### COMPETITION

*Lady:* How come you're a tramp?

*Hobo:* Crowded out of my profession. I'm a sky writer from Pittsburgh.

### GOT AWAY JUST IN TIME

*First Novice Pilot* (in a tailspin): Say, just look at the earth, will you!

*Second N. P.* (looking over side): Boy, we're lucky we left it when we did. It sure is acting queer!

### SPOT LANDING

"Joe's some aviator! He landed in a jailyard measuring 20 ft. by 30 ft."

"How did he do it?"

"Well, he flew too low over the city and the cops grabbed him."

### PROPHECY

*Nilly:* When I become an aviator they'll have a plane that flies itself.

*Willy:* Yeah, and when you're an aviator, they'll need one.

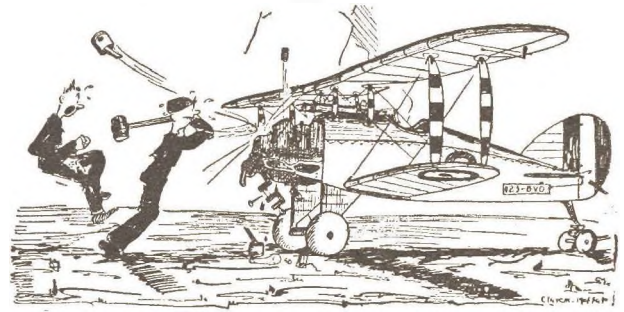
### TOO QUICK FOR HIM

*German Pilot* (in prison camp): Did you see the new Sop Snipe?

*Ditto:* Not in time.

### PERFORMANCE!

*Howell* (just back from a patrol): . . . I was flying along when all of a



"Orders is orders. The Lootenant said to break it in!"

sudden I saw a Fokker coming out of the corner of my eye—

*Phineas:* Gosh, how did it ever get there?

### WHY BOTHER?

*Greaseball* (to aviatrix about to take off): Say, the rudder on your ship's fallen off, miss.

*Aviatrix:* Oh, that's all right. It's in the back—nobody will ever notice it.

### CONTACT!

"This is my plane," exploded the pilot getting into his second-hand contraption. "And anything I say goes, see!"

"For gosh sake," spoke up the mechanic weakly, "Say 'engine,' mister!"

### FIRST CONFIRMATION

*Green Pilot* (radio-ing to other ship on first patrol): Say, Bob, are you all right?

*Second Pilot:* Sure, I'm Okay.

*Green Pilot:* Then that was a Kraut I shot down.

### WOOF!

*C.O.* (after pilot has crippled ship in landing): Where's your dog?

*Would-be Ace:* Dog? Whatya mean?

*C.O.:* Well, you're the first blind man I've seen that didn't have a dog.

### EXPEDITION

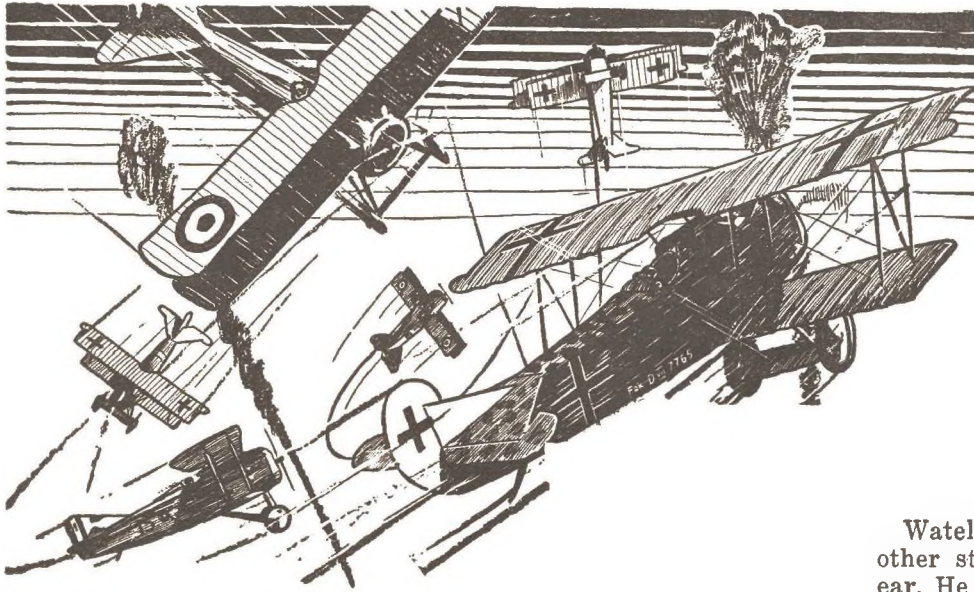
*Flyer* (after landing): Say, sonny, how far is it to Bunkville?

*Boy:* It's 24,996 miles the way you're going—but if you turn back it's only 4 miles.



Pilot: Saved, by George!

# Design for Killing



Wately fought to hold the men in their Fokker-blasting maneuver—but he had hoped for too much. The circle formation of Spads suddenly broke to the four winds.

CAPTAIN CARSON WATELY sat hunched in the pit of his riddled Spad and watched that hell swirl about him. His eyes were squinted—hot like glowing coals. The 169th Pursuit had more than they could handle. The truth struck like a dull, throbbing pain.

He hurled his ship across that fight. The checkered Fokkers were clever, damned clever. They didn't thunder across the air without rhyme or reason. They fought together like a well-oiled machine, and their system was taking its toll of the bewildered Spads.

Vimy Salzer went down in the oven pit of a flaming Spad. A hot lingering curse spat through Wately's lips. He caught a glimpse of Salzer's white, tortured face and his heart hammered hard. He'd show these damned Boches—he'd show 'em!

Across the flight, he could see Dell Freeman with his huge, square body bulging against the sides of his cockpit. Freeman was a wild, mad fighter without thought of fear. He had a notion that he was untouchable. And he fought with that idea foremost in his head. He was a hard man to handle, was Freeman, yet he was a fighter worth having.

For the past ten days, Freeman had got a victory on every flight. Ten confirmations within ten days. Today, he was out to make it eleven straight, and he fought with a wild abandon—fought like a wild man. Wately cursed him as he admired his courage. He needed Freeman to help him with the rookies. He didn't want to lose him by a crazy chance.

Beyond Freeman was Dobbins—a kid who had been raised in Wately's home town. The boy had the makings of a fighter. Right now, the kid was slamming through a brace of Boches and hammering out Vickers lead as he thundered through.

Then Wately hunched down. Spandau lead caught him in a crossfire. That was the way these particular Jerries worked. In pairs—bouncing a man about between them until he didn't know which way to turn, and then finishing him off.

Do ten victories make an Ace? Dell Freeman, fearless fighter of the 169th, had rung up ten in as many days. But out of the Eastern shadows roared the dread von Berger and his circus, Spandaus flaming, bent on smashing the Yank flyers while they were still green—green like Dell Freeman.

★ ★ ★

Wately kicked the rudder bar. Another stream of lead whined past his ear. He cursed, lunged back. Again he was at the cross-point of the four streams of fire from the two ships. He cursed and pulled the stick, kicking the Spad up. The hammer of the slugs

stopped. He whipped back and stiffened.

Below him, and to the left, a little drama leaped into life. Freeman, the bully, had whipped onto the tail of a Fokker. He was bearing down hotly for the kill that should keep his line of records unbroken. He wanted to make it eleven kills in eleven days . . . .

But at that very instant, to the right of Freeman, a Fokker had attached itself to the tail of Lieutenant Whipple's ship, with deadly intent. Whipple was sitting white and fixed in the pit. The slugs were hammering through his fuselage—eating their way closer—closer—closer to his hunched head. He suddenly lost his reason, and held that Spad in the death stream with a frozen hand . . . .

Freeman might have gotten the Hun who was peppering Whipple, or he could have at least driven him off. But he wasn't taking any chances. The kill in front of him was sure—he didn't want to spoil his score. That was the kind of a man Freeman was. His record meant more to him than saving a buddy.

Then Kid Dobbins came into the play. Like a catapulted thing, he hurled his Spad across the nose of Freeman's ship to blast the Jerry who was killing Whipple. So close Dobbins came to Freeman's screaming prop, that Freeman was forced to turn down slaunchwise and let his Jerry go.

Dobbins' guns were spitting flame. The Jerry was forced off Whipple's tail. Whipple pulled out with shattered control and limped toward home. Dobbins sent his Spad screaming in pursuit of the German who lifted into a cloud bank and was lost. Dobbins was lost with him. Freeman shook his fist at that cloud, shouted curses.

Wately knew that to stay in that sky was suicide. With heavy heart, he signalled his men home. Freeman followed reluctantly. His record had been spoiled by a mere kid.

Half way back, Wately jerked a look back for Dobbins but he wasn't there. A cold feeling crept up Wately's spine. He couldn't turn back now. Dobbins had taken

# THRILLING STORY OF WAR SKIES

By Orlando Rigoni

Author of "Suicide Spandaus," "The Scarlet Scourge," etc.

his chances, he'd have to play his string out. With a swift, tight movement of the stick, Wately sent his Spad screaming for the landing field at Passavant. He taxied to the line in a cloud of dust.

**T**HE men came down in his backwash. They crowded up. Freeman strode before Wately.

"Well, captain, I ain't exactly used to this kind of thing."

"Meaning what?"

"Meaning that we ran away from those Huns. Have you developed liver trouble all of a sudden?" Freeman said hotly.

Wately colored. His thin, rather bony face flushed all the way to his hair. "Freeman, you're a damned fool!" he snapped. "We hadn't a chance there in that fight. We've got to get organized. I know what's eating you. You're mad because you didn't make your kill today. Well, get this straight—I'm not risking the whole flight for the personal glory of you or anybody else!"

"I'd of got my kill if it hadn't been for that damned fledgling of yours. That's twice he's spoiled my game—"

Wately cut in swiftly, "you could have saved Whipple yourself, but you weren't thinking of anything but your record. The Kid did save Whipple, and in doing it, he had to cut across the nose of your ship. He took a damned long chance."

"I'll say he did," Freeman cried, "I nearly put Vic-kers lead into his worthless hide!"

A tense silence flung among the men. Into that silence, Wately's voice came cold and hard. "I wouldn't put it past you, Freeman."

Freeman snarled and turned into the crateshack to fix up his record-board that he kept on the wall. Wately followed the straggling flight over to the canteen. Dully, he wondered where the kid was. He ordered a cognac and drank it with a single gulp. That didn't help much. For ten minutes he stood there, glaring at his face in the cracked mirror behind the bar.

Suddenly, Freeman came in and braced his huge, square body against the bar. His shaggy head was like the head of a lion. It was set tight against his wide shoulders. There was an oil smear across his face from the stacks of his Hiss. He drank a brandy and smacked his lips. Then he turned toward the men beside him with a dramatic gesture of his hand.

"The kid came back just now," he snorted, "with a damned fine fairy tale. He said he got lost in that cloud and came out over Neuville. He said he got mixed up with von Berger's crazy circus and got away by the skin of his teeth. I don't believe a word of it. He had the jitters, maybe, or—well, he might have been trying to grab off a chunk of the glory soup all for himself."

Wately was facing Freeman. His slim body was drawn up rather stiff and straight. The posture matched his polished boots, and clean-shaven, sun-tanned face. Carson Wately was a military man. His words were swift, and hard.

"If the kid says he ran into von Berger's circus, then he did. If he says he saw pink elephants with wings,

than he saw them, too. I've known the lad since he wore knee pants. He's not the lying kind—none of the Dobbins ever were."

Freeman drowned his drink and smacked his thick lips. "So you're falling for his palaver, are you? You're crazy as hell, Wately. What would a crack outfit like von Berger's be doing down here against a bunch of green Yanks?"

"If we're a bunch of green Yanks, the war would be over sooner if there were more like us. We didn't do so bad against that *Staffel* at Etain," Wately said stiffly. The Germans are out to teach us a lesson. They figure that it's much better to blast us while we're green than wait until we become invincible."

Freeman spat. "I've heard a lot of that talk, Wately. You sound like old Shaggytop, from Mons."

"It isn't talk, Freeman. Outside of Richthofen, von Berger is the best man for the job."

"Tell you what I'll do," Freeman said grimly, "I'll just bet you fifty dollars, Captain, that the kid didn't see anything—not a damned thing!"

"I'll take that bet," Wately agreed quietly. "Just because the kid happened to spoil your record is no reason to be down on him. He's got courage and skill. Someday, he'll be showing you how to do your fighting, Freeman."

"Bunk!" Freeman cried, "he's just a dumb cluck that's run into a lot of luck. The next time he pulls any more fast ones on me, he'll find lead of a different brand coming his way. His story about von Berger is all poppy-cock to make a name for—"

A tight, flat voice in the doorway, said, "just what do you mean, Freeman?"

Freeman and Wately spun around. Dobbins, the kid, was standing in the doorway with his thin legs braced a little wide. His white, pointed face was streaked with blood that had dried and clotted. There was a burning fire in his squinted eyes.

Freeman tensed visibly. The kid crossed the floor and confronted him. "We were just discussing that pipe-dream of yours," Freeman told him with a half sneer in his voice.

Dobbins stiffened. "It wasn't a pipe dream, sir!"

"Then it was a wild grab at the glory soup!" Freeman snapped.

"I'm not grabbing at that kind of glory, Freeman. I hate grandstanding, and I hate a man who'll let a buddy die because he's out after glory of his own. I say, I saw von Berger—"

A mighty wrath surged to Freeman's face. He had set his heart on that record of killings. This kid, before him, had spoiled it all. Venom was in the words as they struck out, "you lie!"

**A**LMOST like a physical blow those words! The kid winced. Then his long arm shot out. The blow caught Freeman on the thick-corded neck!

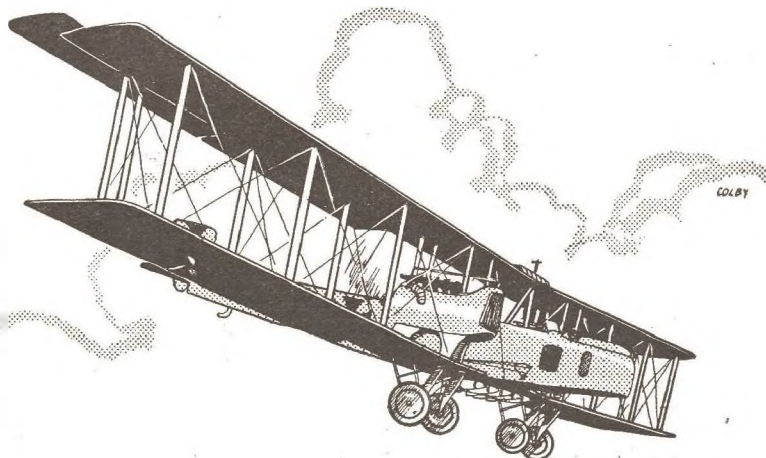
Freeman laughed—a laugh that was a loud, animal noise. He didn't change his position. His thick shoulders swung with his arm. Back of his fisted hand, was the two-hundred pounds of his hard body. Dobbins was lifted by that blow and flung across the room.

Wately leaped in front of Freeman. "Enough of

(Continued on page 85)



# War Planes Album



*GOTHA STANDARD*

## THE STANDARD GOTHA

WHEN one mentions a Gotha, we instinctively think of the standard Gotha—the pusher powered with the two 260 h.p. Mercedes. This isn't hard to understand, for this is the model that carried out the night raids over France and England and was best known to flying men. But Gotha also made many other models.

The firm originally was an old wagon works and in the early days of aviation—that is, a few years be-

fore the war broke out—Duke Carl Edward induced the firm to go in for airplanes and he also was the moving factor in launching an air school on the factory grounds. The ships proved to be good and by employing skilled pilots many noted European prizes were won. During the war, the firm initially financed other companies in the manufacture of aircraft until they discovered that a real long-distance bomber was badly needed. There is no doubt that they “lifted” many of the features of the

first Handley-Page, but lifting or no lifting they produced a fine ship.

The standard Gotha had a top speed of 72 m.p.h. at 12,000 feet. It employed the first tail-tunnel idea incorporated in a bombing ship. The wings had a span of 77 feet for the upper wing and 71 ft. 9 inches on the lower. The engines were set 14 feet apart and the air-screws were 10 ft. 2 inches in action-diameter. The ship carried a bomb load of 2,722 pounds and its weight fully loaded was 8,763 lbs.

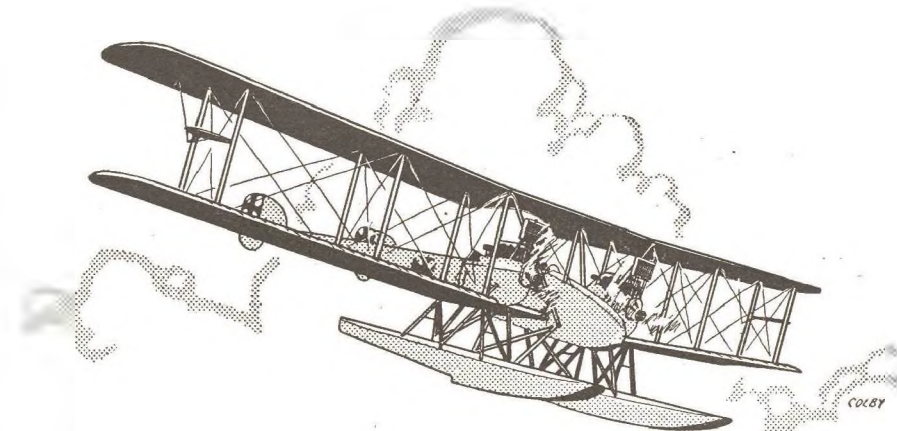
The feature of the ship which impressed the Allied flying men who first saw it was the sweep-back of the wings from the engine spiders and the large balanced ailerons set in the upper wing. The undercarriage followed the Friedrichshafen practice, carrying two wheels under each motor nacelle. There were two gunners aboard the standard Gotha, one in the nose and the other well down the fuselage. The rear gunner also manned the tunnel gun which fired under the tail. The pilot sat in the forward nacelle and alongside him the bomber-officer who was in absolute charge of the ship. The pilots on these machines were usually sergeants, while the bomber-officer was a commissioned man.

## GOTHA TRACTOR SEAPLANE

THIS is an interesting model of the Gotha line, inasmuch as we note that they have incorporated the twin-engine design into a giant seaplane. The floats show excellent streamline design and craftsmanship. The usual display of criss-crossed bracing struts, however, cluttered up the area below the fuselage.

The motors in this ship were set tractor fashion in complete metal cradles and the radiators were swung beneath the top plane. The wing section carrying the motor mounts was braced with a heavy metal tube faired to streamline section and running from the root of the lower front spar to the upper end of the inside interplane strut. The two together formed a splayed “M” design with an inverted “V” over the nose of the fuselage.

It will be noticed here that the forward gun cockpit has been dispensed with, much as in the 1918 tractor Gotha shown at the bottom of the next page. The tail assembly



*GOTHA SEAPLANE*

is interesting because so many ships today use the same idea. The tail plane was a wide monoplane airfoil and at the tips were braced fins and inverted “kidney” rudders. In general, this model was trim and neat in structure and probably had a fine performance. We have been told that it did well over 100 m.p.h. fully loaded.

The pilot sat in a wide control pit under the center-section and his

bomber-officer sat beside him. Apparently there was no forward-firing gun aboard, but the rear man handled two guns, one swinging to fire over the tail and over the top of the upper wing and a second to shoot down the usual Gotha tail tunnel.

Another model of this machine was made with the motors set in pusher position and also included a well-fitted front gun turret and bomb-release compartment.

One of the most amazing chapters of War-time history is the story of a wagon manufacturing concern that became one of the major aircraft building plants for the Imperial German Air Service—the Gotha company. The giant ships which this firm turned out were used in the attempt to overcome the terrible blows inflicted by the British Handley-Pages. But thanks to Allied night-flying pilots, they failed, though only by a scant margin. Here are some of the most interesting of the Gotha models.

#### GOTHA TWO-PLACE SEAPLANE

THE Gotha firm also made several single-engine machines, believe it or not, and this twin-float single-engined job, built expressly for the Turkish navy to fight the British Shorts in Mediterranean waters, is particularly interesting.

The machine was a wide-winged monoplane seating two. The pilot sat forward well under the center section behind the Mercedes engine. He had a fixed gun mounted on the right-hand side of the engine and firing through the prop with the Fokker synchronization gear. In addition, he had a heavy caliber gun mounted over the top center-section that fired over the propeller arc. An observer sat further down the fuselage and had one Parabellum gun.

Equipment included outside camera mounts, bomb racks, and wireless. The large tanks enabled the machine to carry out long-distance patrols, but it was not particularly suited for maneuvers or defense. The motor cooling system incorporated lateral radiators slung along the left-hand side of the fuselage beside the pilot's cockpit.

The tail was typical of war-time

practice—a massive fin to offset the surfaces presented by the sides of the box-like pontoons, an underslung balanced rudder, and a normal monoplane tail. The pontoons were built mainly for strength and endurance in landings and take-offs, with little effort toward real streamlining. They were braced with plenty of tubing. Performance details are sketchy, but 100 miles an hour was good below 5,000 feet. She had a ceiling of

14,000 and landed at 45.

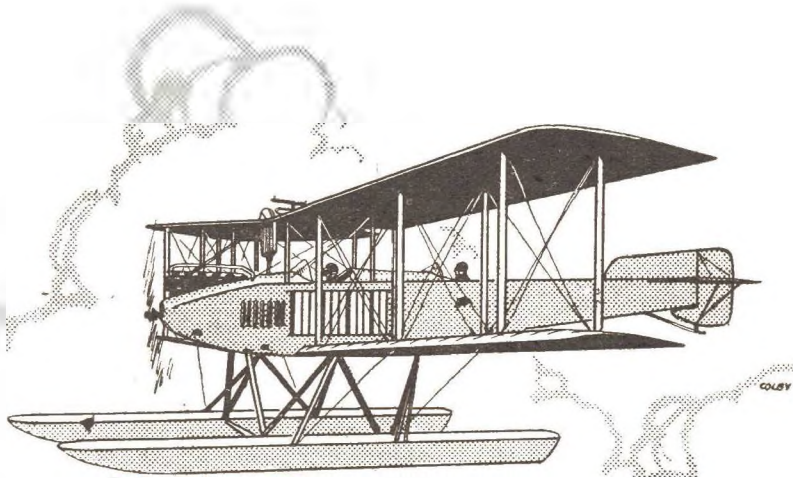
The wing bracing system consisted of three sets of interplane struts on either side, wire braced and mounted on steel center-section struts. The lower wings were bolted to the lower longerons and braced from the base of the inner-set of struts to the pontoon stay structure. From that point on they relied on broad struts, main spars, and plenty of piano wire.

top planes, and shorter, unbalanced ailerons on the lower.

The fuselage accommodated two pilots side-by-side and well up front, and it is assumed that a single forward firing gun provided the frontal attack armament. A gunner's platform was built a short way down the fuselage, and had a Parabellum gun.

It will be noticed here that the narrow Handley-Page type biplane tail was incorporated into the design, giving the rear gunner a wider arc of fire and narrowing the blind spot. Inside the fuselage was the bomber's cabin with the toggle-releases for dropping bombs.

According to figures issued by the Germans, the ship had a top speed of 115, but when a captured ship was tested out by the French, it could do no better than 98 full out. Nor was this the only misleading statement concerning the speed and climbing ability of certain War-time ships. Today it is just the opposite. Manufacturers, once they have sold certain models to their governments, are prone to give figures which fail to do justice to the actual speed of the craft in question.



GOTHA SEAPLANE  
TWO SEATER



1918 GOTHA

#### THE 1918 GOTHA

THIS bomber of the 1918 crop was unusual for the Gotha line inasmuch as the main fuselage had been cut down so that there was no forward nose turret. In all probability, this was done to eliminate possible injury to the forward gunner by flying chips of propeller blades.

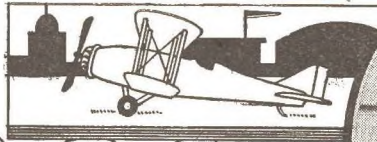
Looking at the ship from the front, one gets an impression of grim efficiency. The 260-horsepower Mer-

cedes engines were well faired into the spider-nacelles carried on the lower wing spars.

The first pair of interplane struts swept upward and outward from the base of these nacelles and ran to the upper wings. The next pair were less staggered and the outer pair perpendicular. An extra pair of lighter struts supported the overhanging tips of the top planes. Balanced ailerons were carried on the

# HAPPY LANDINGS

BY ARCH WHITEHOUSE



## Fighting Old Man Weather . . . Fireproof Planes Next? . . . The Case of the Diesel Engine

Both speed and gun-power have been raised by our enterprising designers, but how will they overcome "dat ol' debil" weather? Is Solene a real step toward safety from flames in the air? And what of the Diesel airplane engine that held so much promise?



**D**URING the late war, many a weary infantryman, standing in mud and water up to his hips or slogging along roads that were ankle-deep in mire, used to look up into the sky to regard with envy the airmen waging battle with the enemy. The air service was the suicide club of those days, but nevertheless numerous foot-sloggers gladly applied for transfers to the air branch to escape the filth and disheartening slime of ground action.

It was once said that bad weather "made" the R.F.C., for every crack gunner or pilot seemed to be a man who had seen service in the line under fire and had transferred "to get out of the mud."

Maybe the weather did "make" the war-time R.A.F. by providing that organization with man-power, but of late it is playing havoc with air defense organizations all over the world. Many of them will not admit it, but so far they have found no defense against "Dat ol' debil" weather.

The recent air exercises in Great Britain, which might have been staged anywhere by any country having an air service worth the name, brought out many interesting problems that will have to be overcome if we are to get the full value of our 200 m.p.h. fighters, our two-seaters, and our long distance bombers. The British maneuvers are pertinent because for some strange reason the British are not backward in explaining to the world the mistakes they made, the problems they faced, and the failures that cropped up. Complete details of the exercises were openly published in every magazine that cared to print them.

The British are a strange race.

But, as we have said, these mistakes and problems are common to any air power, and an inspection of the facts will bring out many points that should be considered by all air service officials.

In spite of all the original preparation, attention to detail, and selection of areas, the weather played merry Hades with everything. It should be noted, however, that the British went on with them, realizing that real warfare cannot wait for Old Sol. The R.A.F., divided into two groups, Defense and Attack, went about their work with a will, but regardless of any tactical findings, one thing is certain—Old Man Weather had two strikes

on both teams, and sometimes three.

A new system of standing day patrols with fighter craft was tried out, and while the weather was fair they managed to intercept the raiders. But as soon as the visibility dropped off or night fell, the bombers had an open path—or were only prevented from reaching their targets because of low hanging mist. The searchlights, probably the most powerful in the world, were utterly useless against poor visibility; and no interceptor can stop a raid if he doesn't know where the enemy ships are. The raiding bombers doused their riding or navigation lights once they reached the "danger" area, and while the anti-aircraft details tried to pick them up with microphones and tip off the defense machines, the actual success was negligible.

Much of the trouble seems to be based on the non-cooperation of the Air Ministry and the War Office. We can appreciate that over here. The defense of London, as far as the anti-aircraft is concerned, is in the hands of the Army, and the Whitehall officials could not see their way clear to let their trained gunners and searchlight men take part at that time. As a result, the searchlights were manned by inexperienced men—or weren't manned at all.

Actually, the defense side seems to have had the better of the argument, but no one seems to have considered that a full complement of experienced ground aids might (or might not) have improved their chances further.

The attackers, of course, got a raw deal because they did not get an opportunity to show how they could evade the trained forces on the ground.

It should be explained that these maneuvers took place over a period of three days, a period that saw practically all types of weather. Single-seater raids numbered sixty-seven, of which twenty-seven were intercepted. There were thirty-seven combats, and from what we can make out twenty-four of the raiders were "shot down." Most of the engagements took place between 12,000 and 19,500 feet.

All the problems involved should be interesting to Americans. If we consider air attacks—on the West Coast, say—we must keep in mind the fogs which frequently blanket the coast from Vancouver to San Francisco and on down. At least so I am told. And

the East Coast is surely no exception.

In such cases we have all the elements the R.A.F. faced in the recent maneuvers—fog, clouds, and ground mist which will play havoc with both attacker and defender unless means are devised to penetrate the fog or listening devices are designed that will positively pick up enemy motors and provide the defense fighters with their correct positions. Navigation lights, provided they are on, can only be seen up to a distance of about two miles, and only then from certain angles. It should be explained, however, that in most of the British cases attackers that broke through the defense, or evaded the searchlights and made successful raids on selected targets, were usually intercepted *on the way out*—which is hardly a victory for the defense.

Somehow, this all drains down to one point: The single-seaters either get, or miss, the incoming raiders. If they get them, O.K. If they miss them and then manage to shoot them down after the

damage has been done, we can hardly see the point in the light of defense. Perhaps our air defenses, like many other things, are no stronger than the man on the ground. If so, perhaps it's still simply a matter of offense versus offense, rather than defense versus offense, as far as our high-speed fighters and attack ships are concerned—while Mr. Weather is the third man in the ring. And in the meantime that big Boeing bomber with all the greenhouse gun turrets still looks tops to us.

#### HERE'S AN IDEA

**A**RE we at last attaining the fire-proof ship? Let's hope so! Adolph Prussin, a German-born inventor who spent many years experimenting in Great Britain and is now working with the Guggenheim School of Aeronautics, has devised a way to solidify gasoline and has made it proof against incendiary bullets. So far, the stuff has only been tested in a small single-cylinder

motor and the exhaust heat has been used to vaporize his bricks of fuel which are now known as Solene.

We have been informed that Clyde Pangborn has fired a number of incendiary bullets into blocks of this fuel—with no fire resulting. A few years ago if a fiction writer tried this one in a story, he would have been given a smug smile and a pitying glance.

Probably many an invention of this sort was first conjured up in the brain of some young air story writer.

#### THE DIESEL ENGINE

**W**E have often wondered what happened to the Packard Diesel engine which reached its greatest height of popularity somewhere about 1930. Many of our readers have, too, and we still get plenty of letters concerning it. After going through a lot of material, we have discovered that many well known engineers have come to the opin-

(Continued on page 90)

## The New Airmail Pals

**W**ELL, buzzards, as we go to press with this number, our new and quicker method of securing pen pals for you hasn't had sufficient time to get under way, but by the time the next issue reaches you the new plan will be whirring along under full speed.

Everything is in readiness here at GHQ! We have a batch of letters from some very choice pen pals still on tap here from previous mails, and the first letters received calling for these particular types of pals will be first served. For instance, a lot of you readers have written in telling us of your interest in solid models. It so happens that Bob Walton, Visalia, Calif., is a solid model enthusiast, so the first letter received from an F.A.C. head over heels in solid models, will receive Bob's letter, and *his* letter-will be sent to Bob.

We'll bet, too, that a lot of you readers are aviation photograph collectors. And speaking about photographs, we'll send the first letter received from a first-class picture devotee to Dick Meyers, of Allentown, Pa., who has four pictures of Wiley Post and his "Winnie Mae" that he's willing to swap for other interesting aeronautic "shots."

And are any of you musically inclined? If so, we're sure you'd enjoy corresponding with Herb Forbes, of Kendallville, Ind. His letter is all set here for a quick take-off, via the mail man, to the first musician who writes in.

If you'd like to exchange model building plans with an Airmail Pal, we have any number here all warmed up and ready to go. Take Phil Draushar, of Long Island City, for instance; Leland Stanford, Jr., of Honolulu—and a scad of others.

And speaking about Honolulu, that reminds us that we have a bunch of Pal letters from distant lands awaiting those self-addressed envelopes of yours. Bruce Davis is one of these. He's down in New Zealand waiting for a correspondent who likes to swap yarns, who's interested in amateur radio—and particularly someone who can tell him something about the late Jim Wedell.

Patrick Lynch, of England, is another. Pat will send copies of *Flight*, the British air magazine, to the first Pal who can send him any of the following back copies of FLYING ACES which have the War Planes Album

section intact: November 1930, December 1930, any 1931 issues, and the February 1932 number. So if any of you air fans have these copies for swapping purposes, write us enclosing a stamped envelope and we'll send your letter over to Pat Lynch.

We may even be able to find a Pal in just the city where you want one. Running our eye down the list here, we have the following on the Pal menu: Ashland, Ohio; Greensboro, N. C.; Philadelphia, Pa.; Wilmington, N. C.; Oklahoma City, Okla.; Erie, Ill.; Union City, N. J.; Palmyra, New York; San Bernadino, Calif.; New York City, N. Y.; Newark, N. J.; Des Moines, Iowa—and a whole flight of others. Name it and you can have it!

So come on, F.A.C.'s—let's get going! With this new method, every reader who wants a pen pal is assured of getting one he'll like—and getting one in short order!

#### HOW TO GET AN AIRMAIL PAL

**F**IRST, write a letter just as if you were writing to your new Pal—the kind of a letter which tells your age, your particular interests in aviation, your hobbies, what kind of a correspondent you seek, et cetera. Then, send this letter to Airmail Pals, care FLYING ACES, 67 W. 44th St., New York City. And *be sure* to enclose a stamped, self-addressed envelope.

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

First off, as the letters come in, we're going to take care of you scribes who have previously written to us, but whose letters are still on the unused file of the *old* Airmail Pals. So watch for the postman, buzzards—letters will soon be coming your way.

In the new Airmail Pals, you'll get a correspondent *pronto*, because just as soon as your letter reaches us, we'll mail back a Pal letter to you in the stamped, self-addressed envelope you enclose. ♪

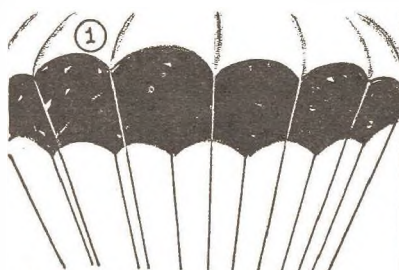


# Here and There in the Air

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



PARACHUTE TAKES JUMPER UP INSTEAD OF DOWN. . .



AMATEUR PILOT MAKES DAILY FLIGHT REGARDLESS OF WEATHER FOR ALMOST SIX YEARS. . .



NEW YORK PILOT CONDUCTS ANGLEWORM AIRLINE WITH 10,000 PASSENGERS DAILY



"THE AIRPLANE BIRD" PLANES HAVE NEVER BEEN ABLE TO FLY LIKE BIRDS, BUT THERE ARE BIRDS THAT FLY LIKE PLANES

Roy Humphries

### Stories Back of the Above Pictures

1—Imagine Soviet jumper Vokhonsky's surprise when, on jumping recently from a fast moving plane, he found the earth dropping away from him. Because of cross winds he went up for twenty-five minutes before finally landing eight miles away.

2—Dr. John Brock, Kansas City's outstanding amateur pilot, was recently honored at a Washington, D. C., dinner after completing his 2000th daily consecutive flight.

3—Men have never been successful in building airplanes that fly by flapping their wings after the manner of birds. The Albatross, however, switches the tables—for it imitates the plane by taxiing for 70 or 80 yards along the water before "taking off."

4—Fishermen at Montauk Point, L. I., N. Y., receive a supply of 10,000 Maine angleworms daily. Rolf Wilson flies regularly to Bangor for the Izaak Walton cargo.

### PLANE BECOMES NON-RIGID BALLOON

MOST of you readers are acquainted with flotation gear, that is to say the air-tight bags, included among the equipment of the Navy's land planes, which may be automatically inflated to keep the plane afloat if it lands on water.

What to do in case the automatic flotation gear functions while a plane is in flight has long been a favorite topic of conversation—and argument—among the flyers of VB Squadron Five, attached to the U.S.S. *Ranger*.—Until recently, pulling the bags off by diving the plane seemed to be the only solution, since the bags are too far out on the wings for the pilot to reach out and puncture them with a knife.

"The problem, however, is now solved," states a recent note from the *Ranger*, "and by our former A & R officer, too. Lt. A. C. Olney, now of the Naval Air Station, had one of our BF2C's out for a test flight, when, at 2,000 feet the gear functioned, the retaining plates snapped off, and the bags ballooned out tight as drums. After recovering from the initial shock of having his airplane develop a sudden case of the mumps, Lieutenant Olney discovered that, aside from his slightly ludicrous appearance, he had no particular worries; the plane didn't handle normally, of course, but it did handle satisfactorily. He returned to the station field and made a normal landing without further incident."

### NEW USE FOR AIRPLANE DOPE

SOME 500 years ago—before the time of Columbus—a member of an ancient American race died in Mammoth Cave, Kentucky, pinioned under a boulder. To this day his "mummy" has been preserved by the coolness of the depths in which he died.

Recently, CCC youths removed the boulder in order that scientists might study the body. And when it was found that further preserving agents were needed, the mummy was painted with airplane dope.

### EXPERIMENT IN PHYSICS

"FOR every action there is an equal and opposite reaction." One new air officer at the Navy's Pensacola, Fla., school recently became "drippingly aware" of this physical law, according to the Bureau of Aeronautics.

The student hauled his stick back sharply in making his first sea landing, and the result was a bounce of considerable magnitude. Immediately, he pushed her forward again with equal promptness and deftness—leaving the plane "pontoonless and serenely floating with tail over the dashboard."

CRADLE IN THE DEEP

**A**N ocean-going yacht owned by William K. Vanderbilt is said to be the only private yacht carrying an airplane for use by its owner. A specially-built cradle constructed on the after deck of Mr. Vanderbilt's vessel, *Alcor*, carries a twin-motored Douglas amphibian.

ZMC-2 HAS SIXTH BIRTHDAY

**T**HE Navy's metalclad airship, ZMC-2, recently observed the six anniversary of her first flight by a training hop from the Naval Air Station, Lakehurst, New Jersey.

Since taking off on her first flight from Grosse Ile Airport, Detroit, on August 19, 1929, the ZMC-2 has flown approximately 60,000 miles during 1,425 hours in the air.

Built by the Metalclad Airship Corporation of Detroit, the ZMC-2 was the first successful airship with the hull,

including the hull covering itself, built entirely of metal, for which "Alclad," an aluminum alloy, was employed commercially for the first time. In her construction, a special type of seam sealing compound was developed and a machine for rapidly riveting thin sheets together designed. Through her six years of service, a careful check has been kept on the behaviour of the various materials used in the airship.

The characteristics of the ZMC-2 are:

Volume .....	202,000 cu. ft.
Length .....	150 ft.
Diameter .....	53 ft.
Height .....	64 ft.
Gross lift .....	12,200 lbs.
Horse power .....	400
Useful lift .....	3,200 lbs.
Speed .....	52 knots.
Range-nautical miles (cruising speed) ....	600

The airship is operated from Lake-

hurst for training and experimental work.

NR-211

**A**MERICA'S most famous airplane license number is NR-211. This flying tag was initially used by Lindbergh on the Ryan plane he flew from New York to Paris in 1927. Then it was NX-211, for the Ryan was at that time an experimental job. In its present form, the number first appeared on the Lockheed Sirius seaplane which Lindbergh flew in several exploration ventures, and today, NR-211 appears on the Colonel's new Monocoupe.

FIRST LOVE

**T**HE famed Canadian War ace, Lt. Col. William A. Bishop, recently returned to his first love—flying. He took instruction in order to get back into the "feel of it." Receiving his pilot's license, he now commutes between Montreal and his home in Muskoka, Ont.

# On the Light Plane Tarmac

Side-slip into this corner, all you light plane fans! On this tarmac, FLYING ACES has set up a clearing hangar for facts and fancies about light planes and light plane flying.



**A**PPARENTLY, the Curtiss-Wright Corporation believes there is a growing interest in sport planes and light commercial machines for business executives—for Guy W. Vaughan, president of the noted concern, has disclosed that his firm is ready to market a new series of Whirlwind engines equipped with dynamic dampeners. These power plants will be particularly suitable for light planes, sport ships, or small cabin jobs. All the power plant lessons learned in modern transport aviation have been incorporated in this new engine, and as everyone knows, the heart of the plane is in the motor. Many manufacturers declare that the lack of suitable, reasonably-priced engines that will stand up under the limited mechanical servicing that the typical private plane demands has always retarded the production of low-priced, efficient airplanes.

**T**HE new Aeronca, one of the most popular light planes of this country, is the basic trainer of a new \$2-A-Week flying club that has been organized at Newark Airport by Milton Hertko, 11 Franklin Street, Hillside, New Jersey. The plan calls for twenty boys of high school age who can pay this low fee for flight training. So far, the idea seems to be going over well. Those interested in this plan, no doubt can get full information from Mr. Hertko. Girls, too, are welcome.

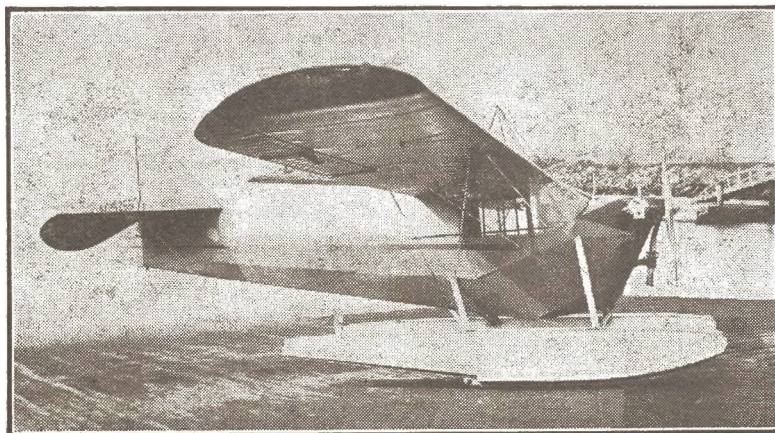
**G**LIDER enthusiasts who have considered adding small motors to their craft will be interested in the recent flight staged by Herr Robert Kronfeld, the noted German glider expert. He flew from Croydon, outside of London, to Paris, a distance of 235 miles, in four hours and ten minutes. He used what is known as a power glider—a soaring glider equipped with a 5 horse-power motorcycle engine. The actual cost of the trip was \$1.50 for fuel.

The complete outfit used by Kronfeld cost approximately \$1,375, but it is believed that under reasonably good production, the ship could be built for less than the price of a light car.

In the flight to Paris, Kronfeld reached a height of 4,000 feet and attained a top speed of 60 m.p.h. Actually, the trip involved bad weather, hail, and thick blankets of fog, but he landed at Le Bourget with little or no trouble.

**T**HE much advertised "Flying Flea," or the French *Pou du Ciel*, has been taken up with much enthusiasm by flight fans in several European countries. Already a com-

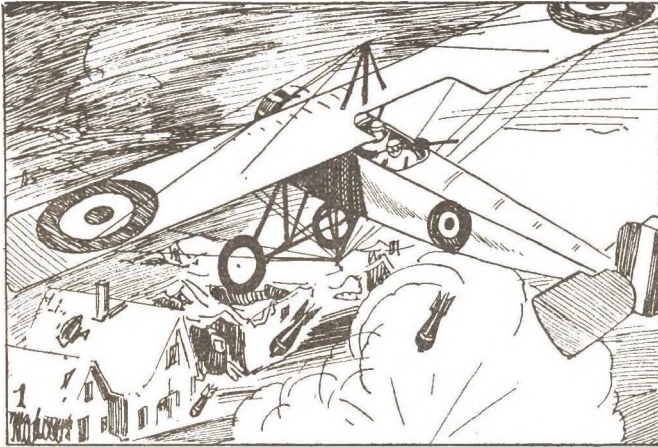
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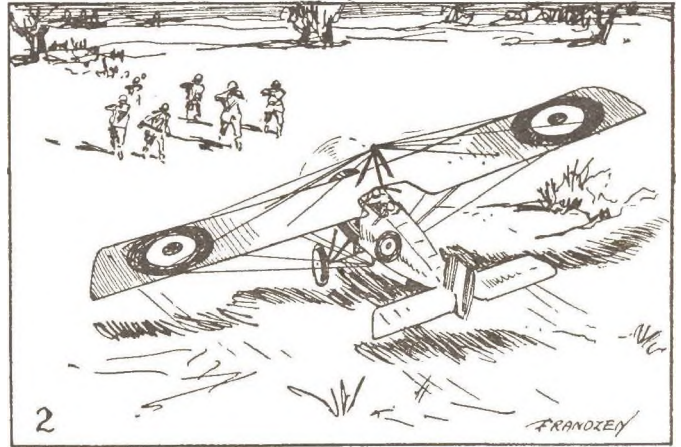
For years the Aeronca has been one of the most popular of American light planes—a real pioneer in the sport-flying game. And now here's the new Aeronca C-3 seaplane model that'll suit any sportsman for fishing or hunting. It has a top speed of 93 m.p.h. and a cruising speed of 85.

# Lives of the Aces in Pictures

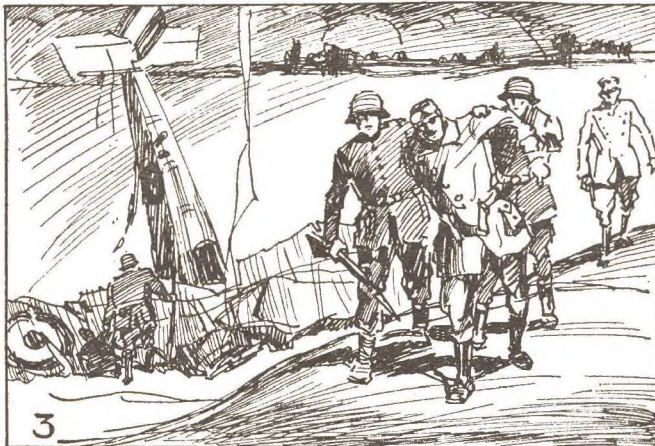
## XLII—Capt. Armand Pinsard, of the Cigognes—27 Victories



1—Armand Pinsard was an experienced French airman before the war. He entered aviation in 1912 after a brilliant cavalry career. Soon after the outbreak of the World War he participated in a bombardment of the German Headquarters while the Kaiser was visiting it. Pinsard was promoted to second lieutenant for his services in the raid.



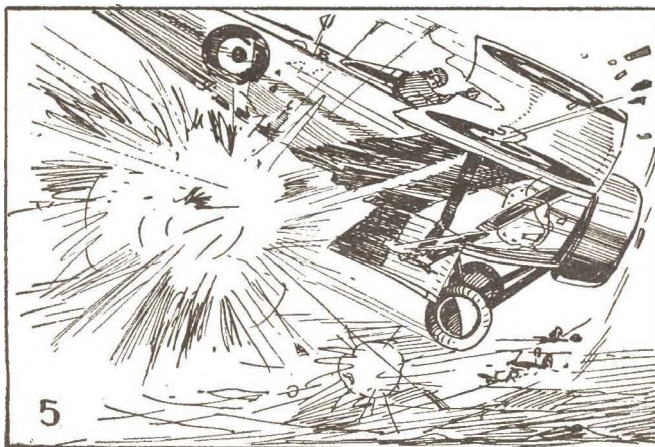
2—Engine trouble forced Pinsard to land back of the German lines during a reconnaissance flight. He worked over the balky motor while his companion made ready to set fire to the machine in event the enemy apprehended them. Pinsard miraculously corrected the trouble just as a group of Germans came upon them—and the Frenchmen managed to fly out of reach.



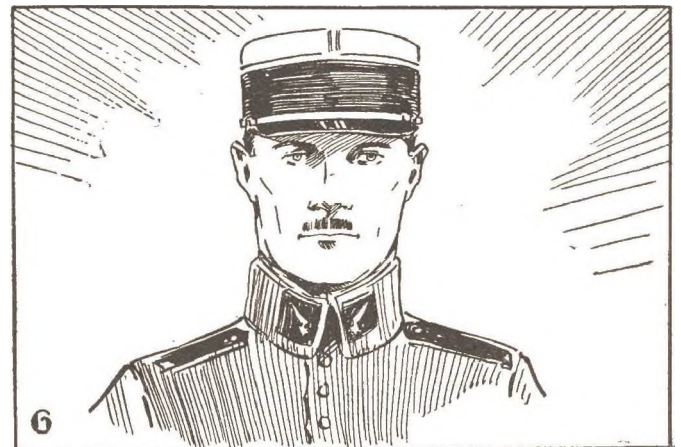
3—Later, Pinsard was again forced down by mechanical trouble, and this time he was not as fortunate. His ship out of control and no good landing field in sight, he came down among rocks and tree stumps in a terrible crackup behind the German lines. He and his companion were knocked unconscious and were removed to a German prison hospital.



4—Pinsard, on recovery, planned to escape from imprisonment. He was caught six times. Once he jumped from a moving train but was later caught and punished severely. In February 1916 he and a companion finally made a successful escape and walked 200 miles in fifteen days. They reached the Swiss border and freedom in a state of exhaustion.

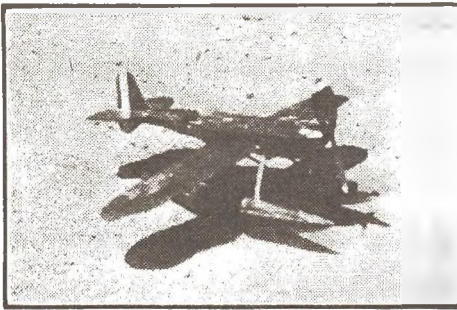


5—After leave to recover his strength, Pinsard went to a training school to learn the new methods of warfare which had changed since his long imprisonment. He was made a lieutenant in the Cigognes. One day his machine was struck by shell fire and damaged so badly that he was just able to gain his own lines when the plane completely collapsed.



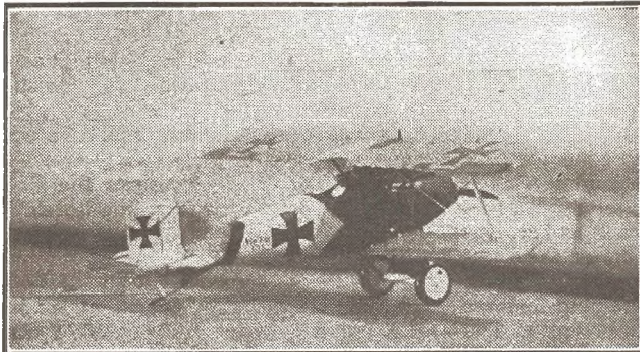
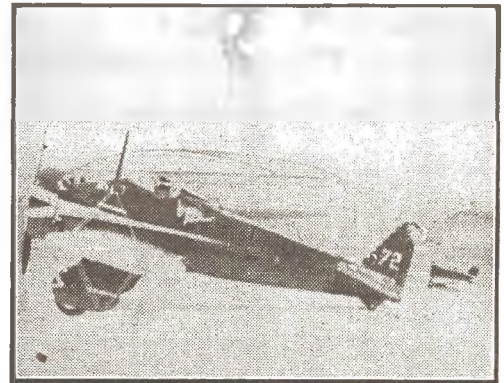
6—Armand Pinsard was born in May 1887. Upon his release from over a year's confinement, he quickly revenged himself by downing fifteen German planes before June 1917. He ranks high in the list of French aces despite his late start. The high honors which his country bestowed on him were a well-earned tribute to his heroism.

# With the Model Builders

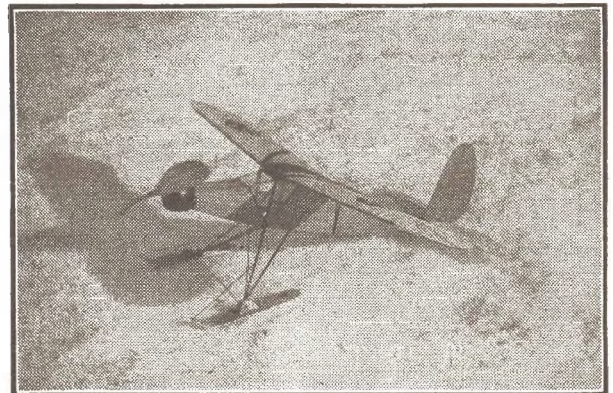


Left: Here's a neat Macchi-Castoldi racer built by David Willis of Decatur, Ill. The M-C, you'll remember, is the fastest plane in the world—the Italian job that did 440 m.p.h., all of which is traveling, and no mistake!

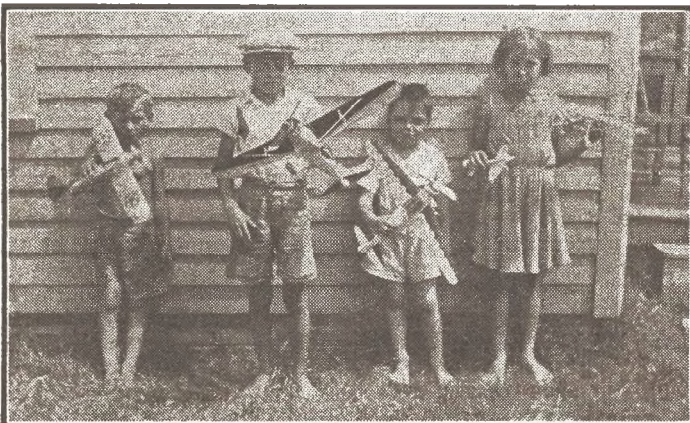
Right: And now a snappy Boeing P-26A, with a real airport background. This one was turned out by George Wagner, of Reading, Pa. George even goes to the extent of making pilots out of something or other. How do you do it, George?



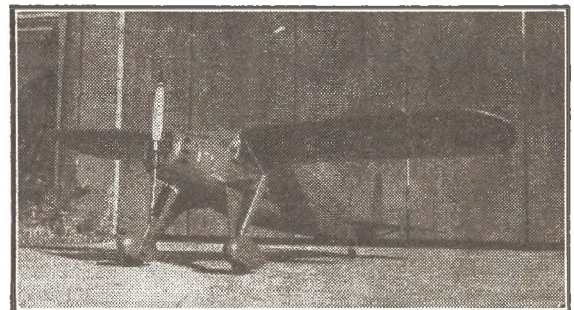
This Albatross D-3 was made by Arnold Smith, of Pittsburgh, Pa. It's one of the finest models of the famed war-time ship we've ever seen, and Arnold has taken rare care that his photography brings out the best in it—which is a tip to you model photo-ers.



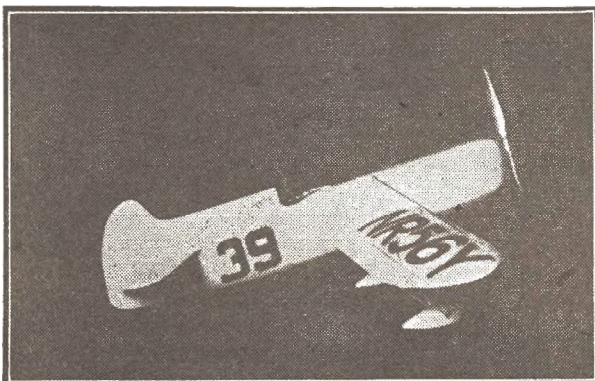
A ski-plane—and it reminds us that Winter is upon us. This zippy cabin job takes off from the snow, just as the Arctic planes do. Leslie Stuart, of Auburn, R. I., fashioned it from plans for a light seaplane. Darn thing looks perfect to us!



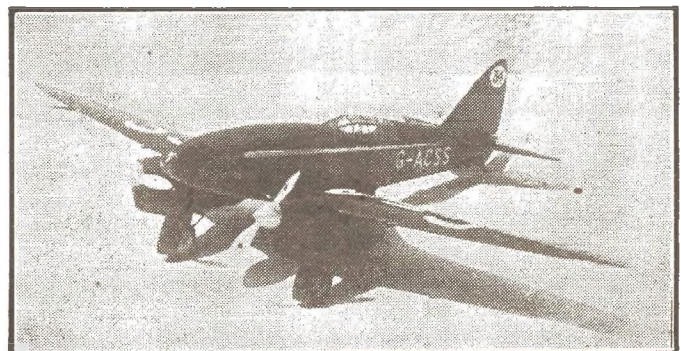
W. G. Sharp, who conducts a class in model airplane work at the Kannapolis, N. C., Y.M.C.A., sends us this photo of one of his younger groups. The models were made by Mr. Sharp, but the future flyers in this picture chipped in with some of the doping and detail work.



The Fairchild-24 is still a popular bus with the model builders. This snappy craft was made by G. Stewart, who runs the Stewart Model Shop in Bakersfield, Calif. The plane shows rare workmanship and careful attention to detail.

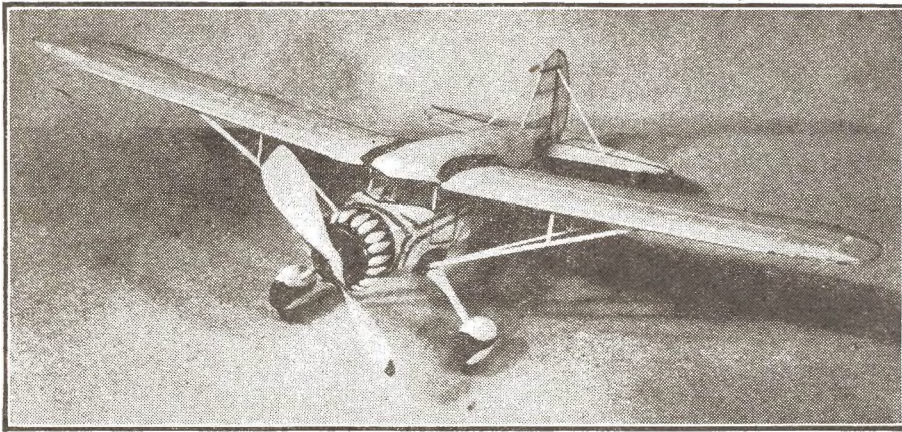


One of our F.A.C.'s, Frank Metcalf, of Oak Park, Ill., won first prize in Oak Park High School's aviation club contest with this trim, 23 inch, solid scale model of Benny Howard's "Ike." It's fitted with full controls, instrument board, aluminum bucket seat, and all. Ye Managing Editor of FLYING ACES sends along greetings—for he used to go to O.P.H.S. himself.



One guess who built this one! You're right, our old friend, Norman Sinclair, of Southampton, Eng. This model of the winning plane in the England-to-Australia race—the D. H. Comet—includes retractable landing gear and all the rest of the details. It has a span of 11 inches. Norman has also turned out the new Gloster Gauntlet.

# The Stinson Reliant SR-6



Here's Mr. Winter's SR-6 fitted with flying prop and all tuned for a fast R.O.G.! Contact! And now run your eye over its big brother, the real Stinson Reliant, pictured at the bottom of the page. You'll find that every detail of the model will "gee" with its counterpart.

## By William Winter

**T**HIS latest Reliant, like its predecessors, vaunts beauty, strength, and enduring performance. Indeed the Reliant type has been so successful that more than 250 of them have been sold since June, 1933. Moreover, the Lycoming motor has been used in more than 600 Stinsons, and it is estimated that this faithful power plant has a record of 80,000,000 miles!

With the 260 h.p. motor the SR-6 cruises at 133 m.p.h. The ship comes equipped with Smith controllable propeller, dual ignition magneto and multiple disc wheel brakes, besides other more conventional fixtures. In addition to the pilot the plane carries three passengers, 60 gallons of gas, 5 gallons of oil, baggage, and 80 lbs. of special equipment. With this load, the Stinson climbs 875 ft. per min., has a range of 500 miles, and lands in 225 ft. with the aid of wing flaps.

Our model, like all Stinsons, can be relied on to give abnormally long flights, and its beauty is only matched by its stability in flight.

### FUSELAGE

**N**OTE before beginning construction that a full list of materials is given at the close of this article. Incidentally, if you do not wish to mar your magazine, make tracings of the plans on any semi-transparent paper.

First, fasten the longerons of 3/32" to the bench on top of the side layouts. Cut all the cross pieces shown in that plan and cement them in place. When dry, remove the finished sides from the form and separate them from each other with a double edged razor blade. Cut all the cross pieces shown in the top view, and by the use of pins to hold the work in position connect the two sides at the widest points. When dry, fasten the remaining cross pieces in place and carefully check the alignment. It will be noted that the rudder post of 1/8" by 3/16" is attached so that its greatest dimension is crosswise on

the fuselage. It is best to bend the rear hook of .028 music wire and to fasten it in position at this stage of construction. It is necessary to crack and cement the longerons at the front of the fuselage, as shown in the top view, to attain the necessary shape. All fairing formers are cut from 1/32" sheet balsa. The notches should not be cut until the formers are in position and you are ready to fasten the stringers in place. All the formers are marked as follows: Top-T, Side-S, and Bottom-B. After the formers have been cut to shape, those on the bottom should be glued in place. The stringers of 1/16" sq. should now be attached at the positions shown. This order of construction is followed so that the stringers will not be "wavy" in appearance. The top fairing is done in like manner. The side fairing runs back as far as the third cross piece. T1, B1, and S1 form a perfect circle. The short upper stringers between T1 and T2 are inserted in place and require no notches. There are two doors, one on each side of the body. Block E is cut to shape from soft balsa, sanded and cemented flush with the front edges of T4.

To cover, use separate pieces of tissue for the flat portion of each side. Narrow strips of tissue will have to be cut so that the fairing may be covered in a ship-shape manner. As each strip is

An exact replica of a famous plane—a model that will fly with the same fine performance of the ship after which it's patterned! That's what you model builders say you want, and here it is in the Stinson Reliant SR-6. To make sure you won't go wrong, we give you nine full pages of plans, so follow Mr. Winter's directions and you'll have a fine craft suitable not only for flying but for parlor display as well. Go to it!

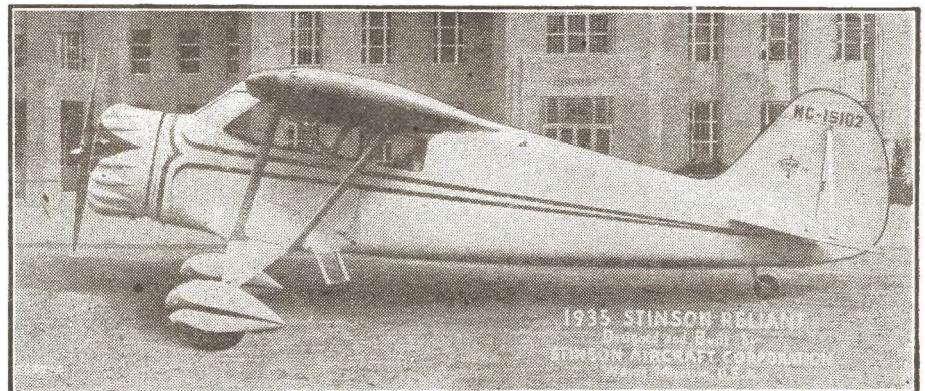


doped in place, the edges will have to be repeatedly trimmed. The finished covering is evenly sprayed and given a smooth coat of clear dope. The windows are covered with cellophane. The edges of the windows and of the doors are painted black with a fine brush.

### LANDING GEAR AND TAIL WHEEL

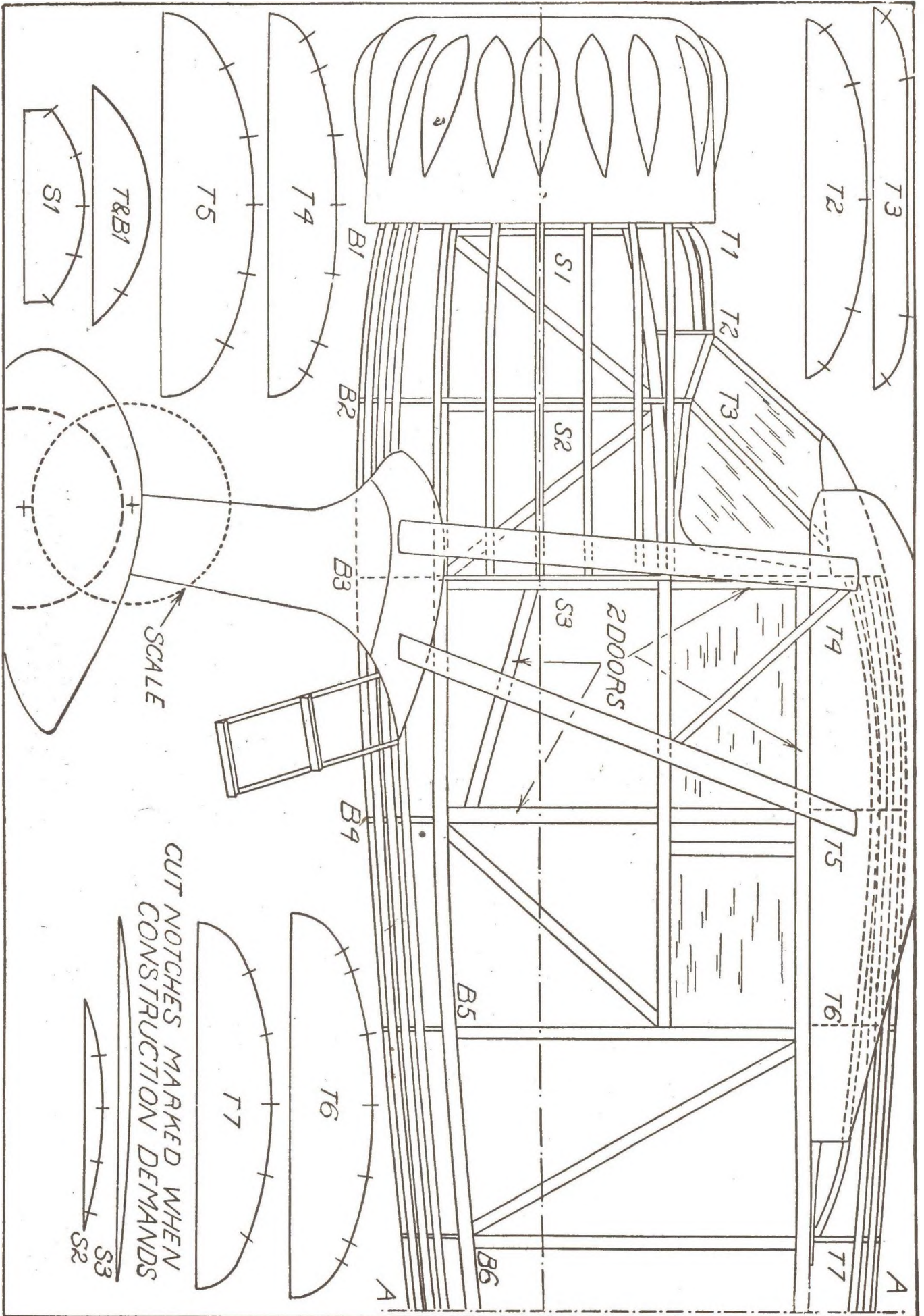
**T**HE fillet blocks shown on the front and side views are cut to shape from soft balsa 3/4" by 7/8" by 2 1/4" and sanded smooth. When finished, glue them firmly in place as designated. Note the holes made to receive the bamboo pins. The struts are cut to the dimensions required and streamlined from blocks of hard balsa 3/8" by 1 3/8" by 3 7/8". Cut the holes shown on the detail for the bamboo pegs. The pants are built up in three layers. The outside ones are 3/16" sheet. The center one is a block 2 15/16" by 9/16" by 1 3/16". The shaping is not done until the three plies have been firmly glued up. The 1 1/2" wheels rotate on short .028 axles and are mounted in the pants at the position shown. The struts are fastened to the pants and to the fillets with bamboo pins and with cement. The joint at the pants is braced with two pieces of .014 music wire as shown and bound with thread. The complete joint is evenly glued. The joint at the fillet is braced in like manner but with one piece of wire.

Streamline a small piece of balsa of the size shown in the tail wheel mount.  
(Continued on page 95)

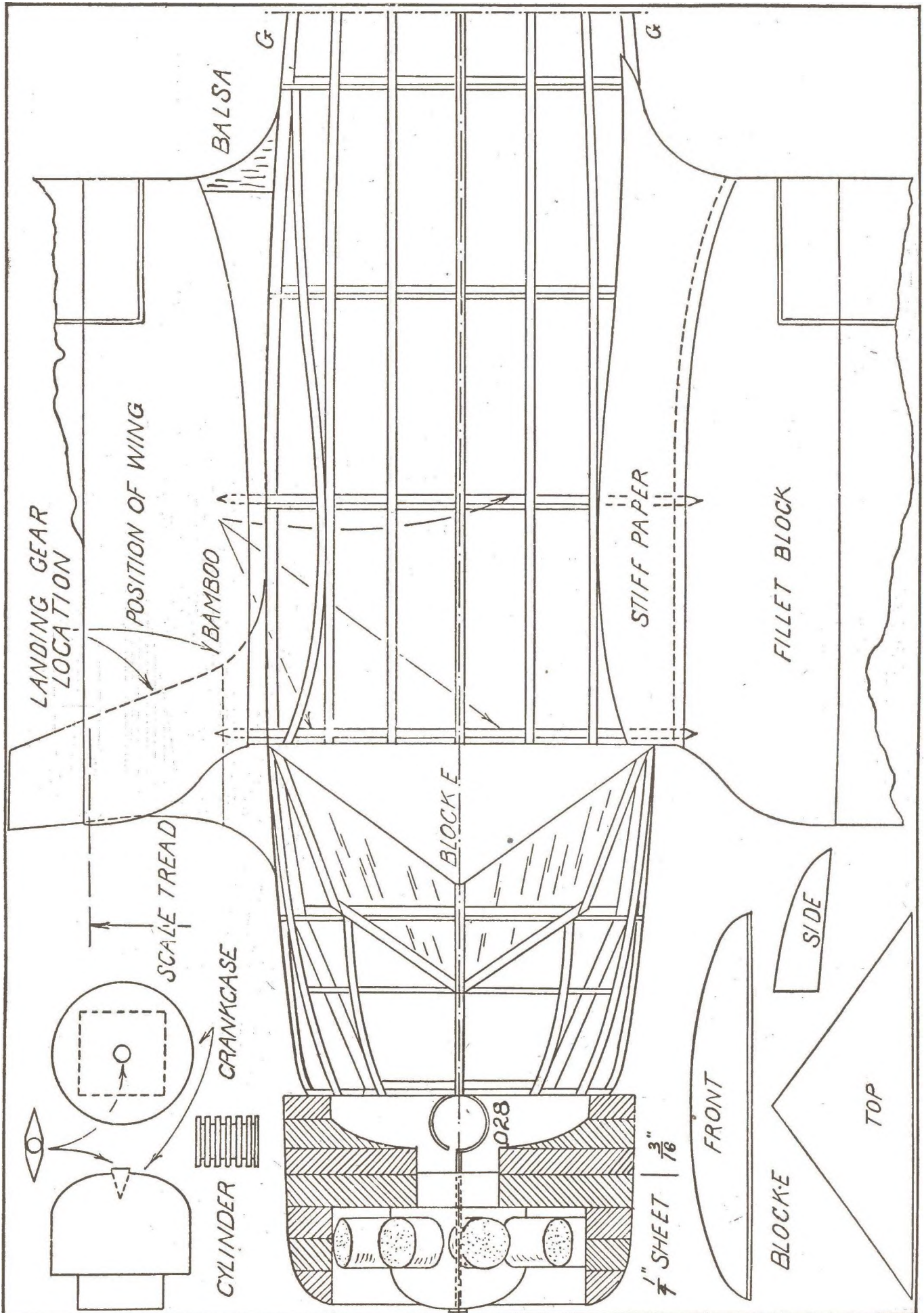


This is the prototype of our feature model—the 1935 Stinson Reliant. It's powered with the 260 h.p. Lycoming engine and is equipped with Smith controllable prop, multiple disc wheel brakes, dual ignition magneto, and other A-1 aero apparatus. All told, the four-place SR-6 rates tops!

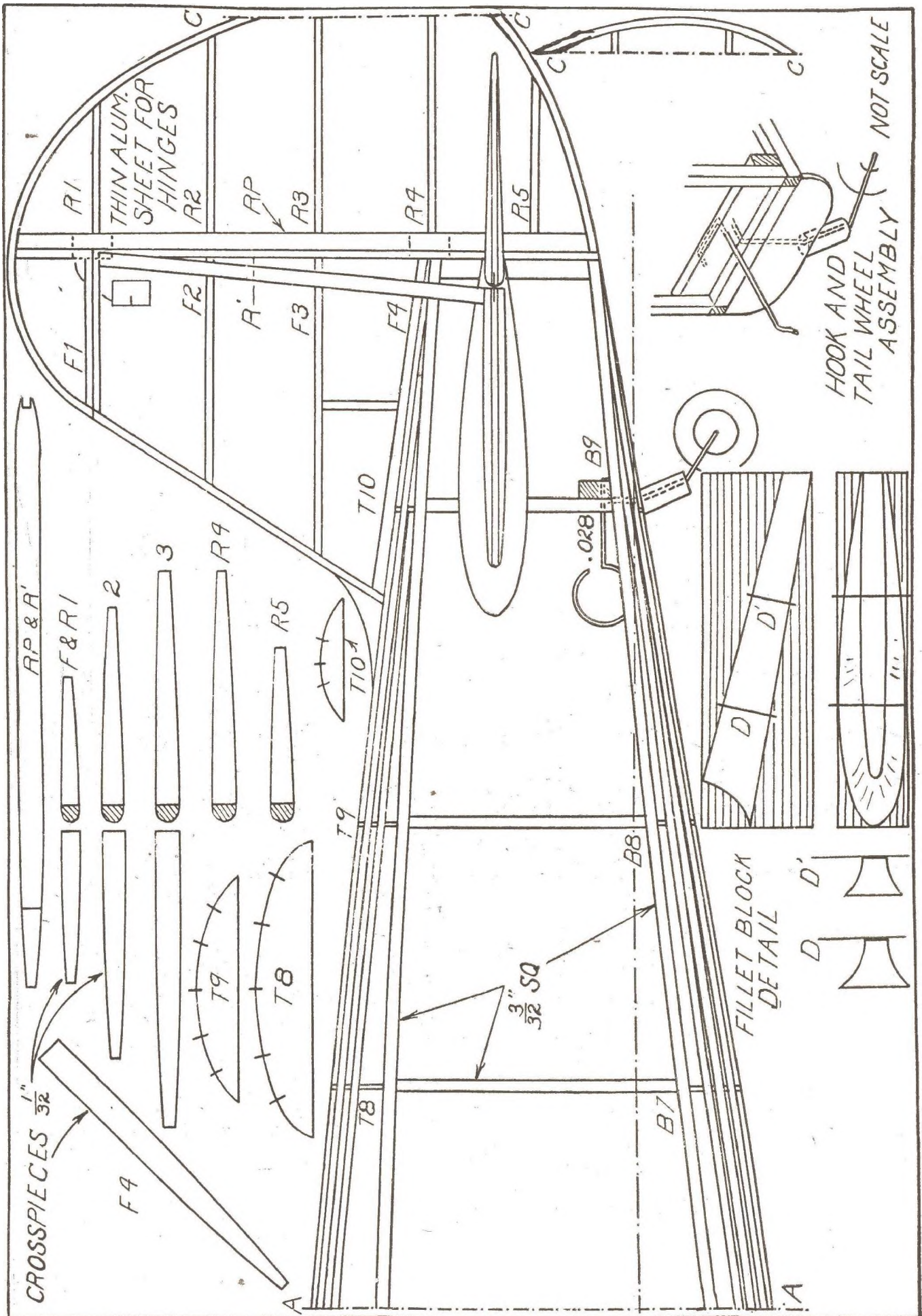
STINSON RELIANT—Plan 1



STINSON RELIANT—Plan 2

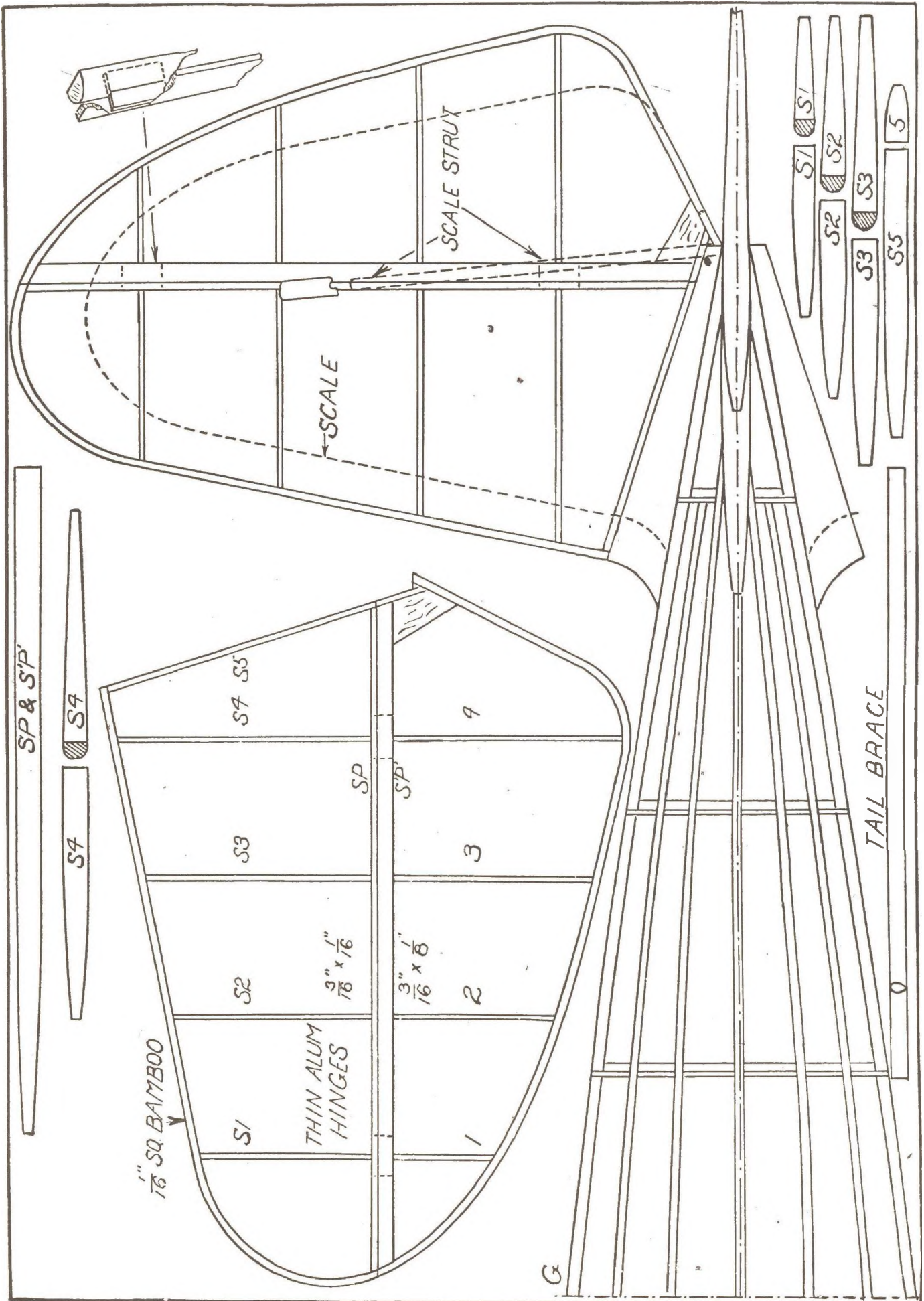


STINSON RELIANT—Plan 3

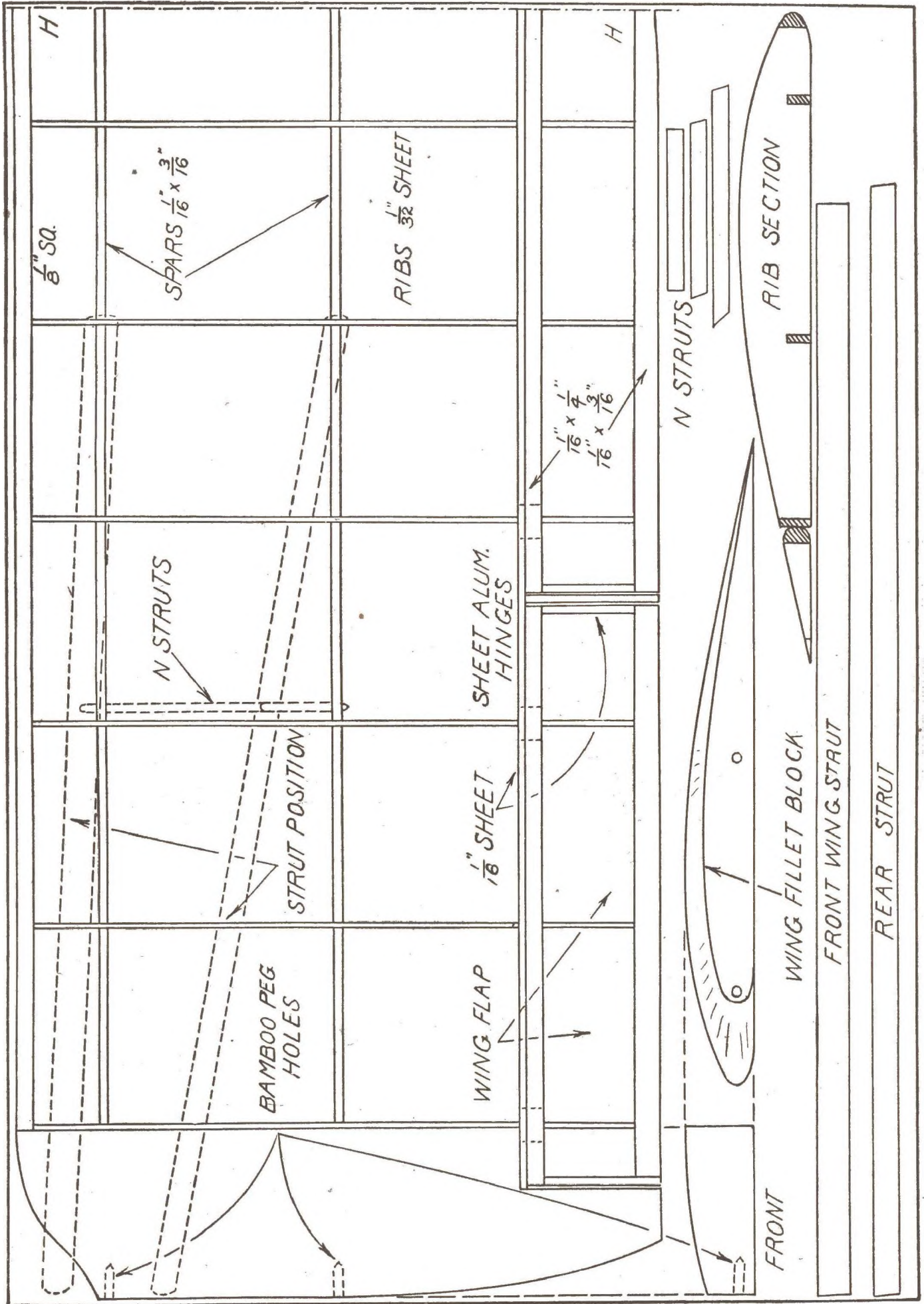




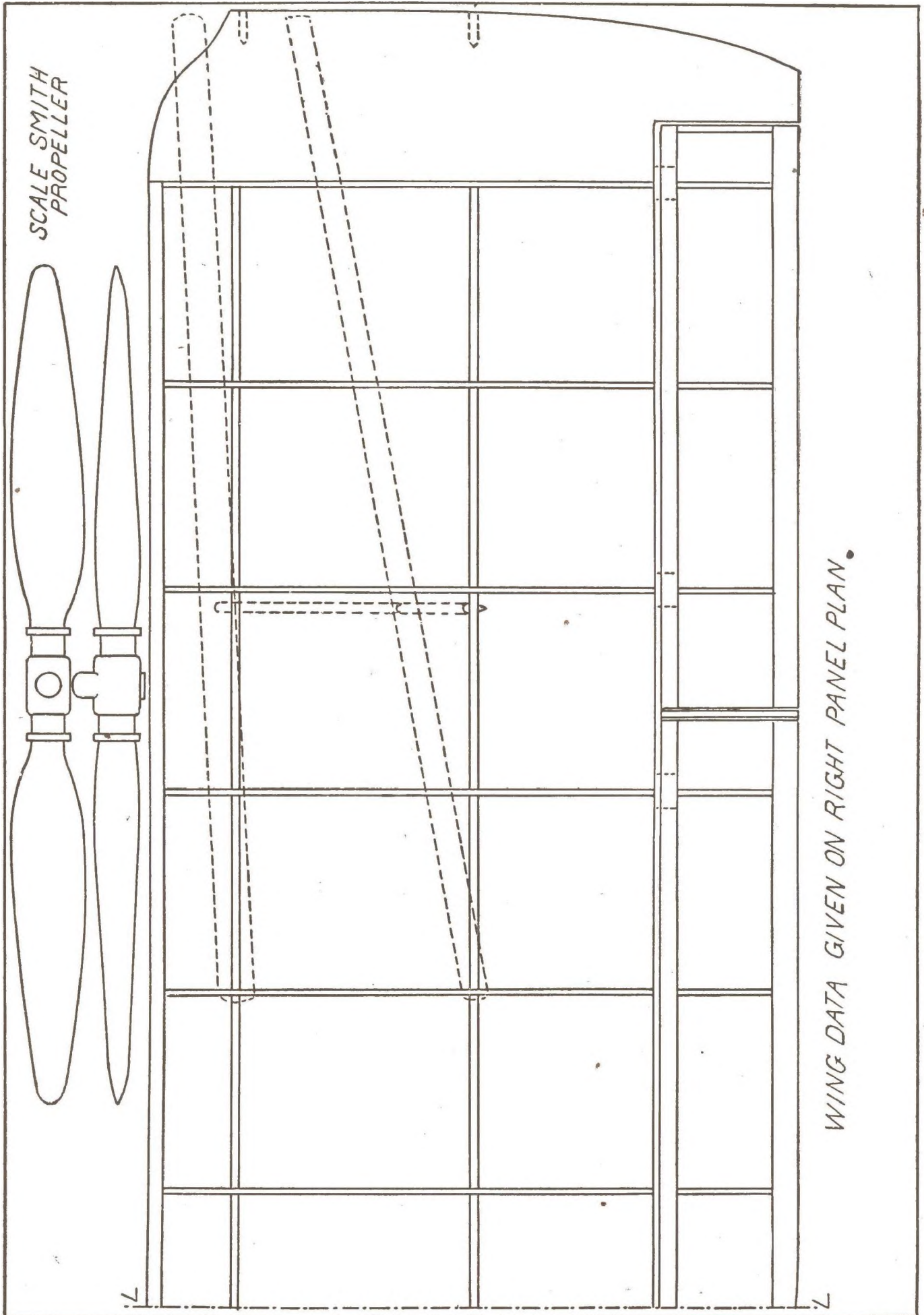
STINSON RELIANT—Plan 4



STINSON RELIANT—Plan 5

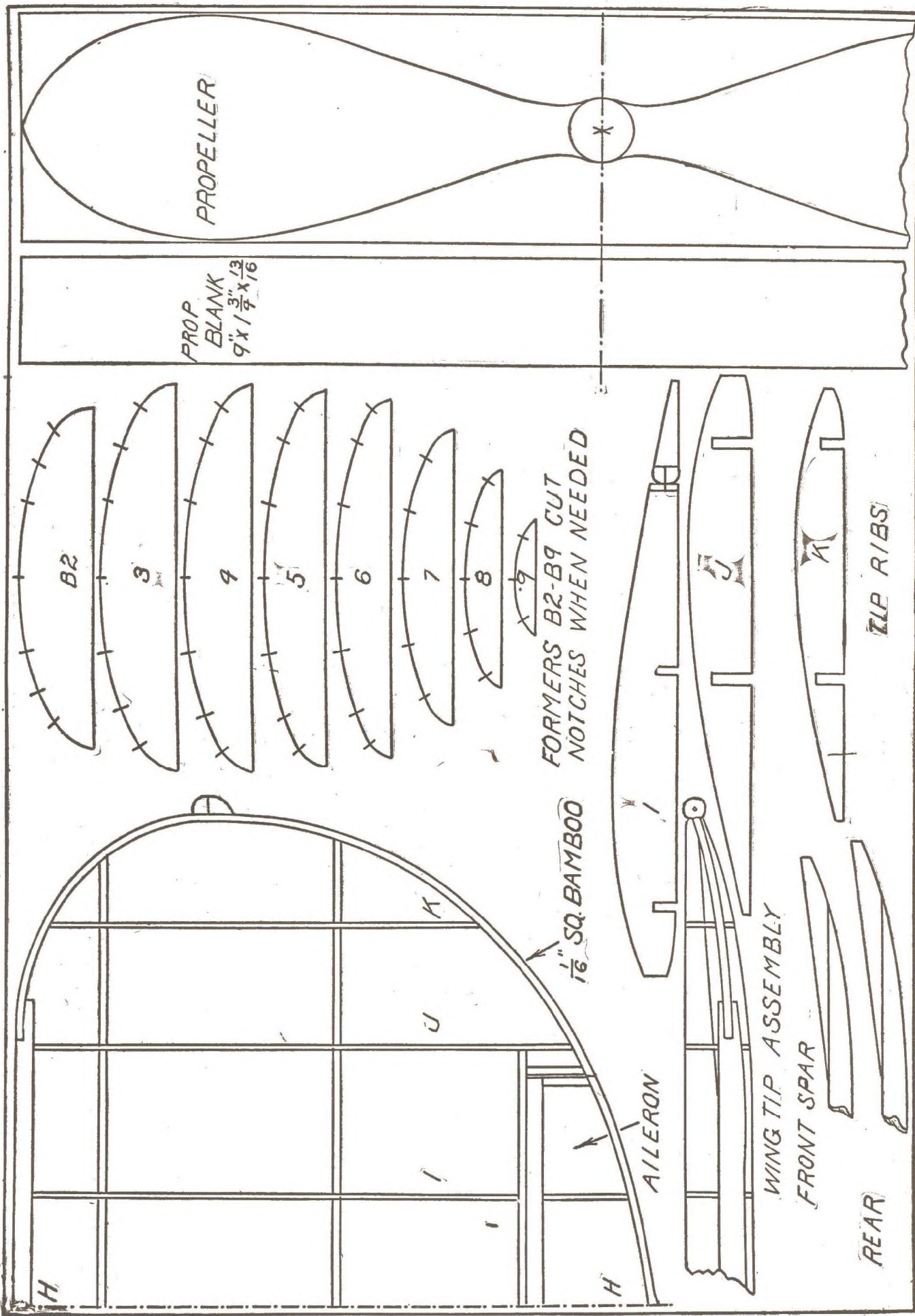


STINSON RELIANT—Plan 6

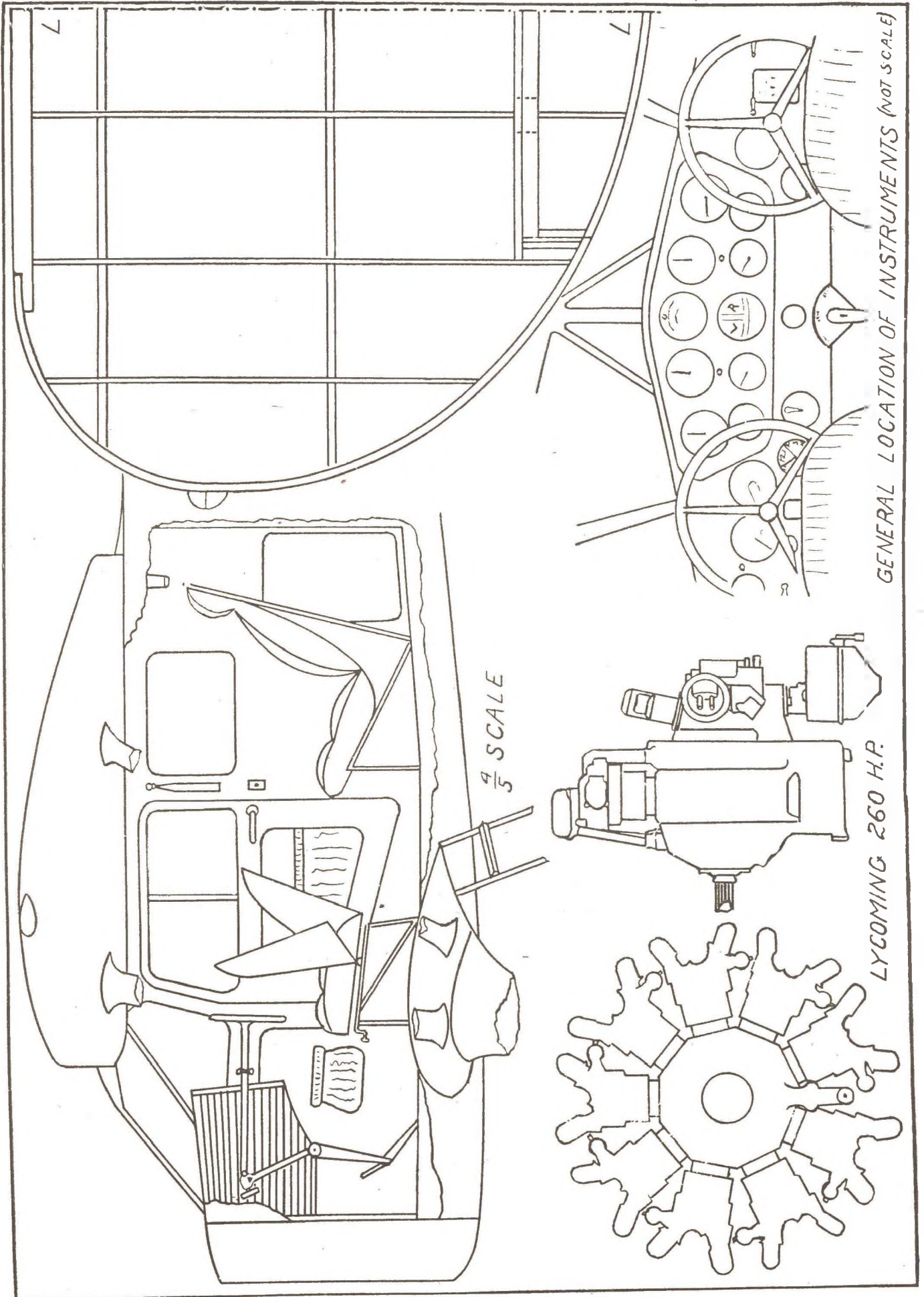


WING DATA GIVEN ON RIGHT PANEL PLAN.

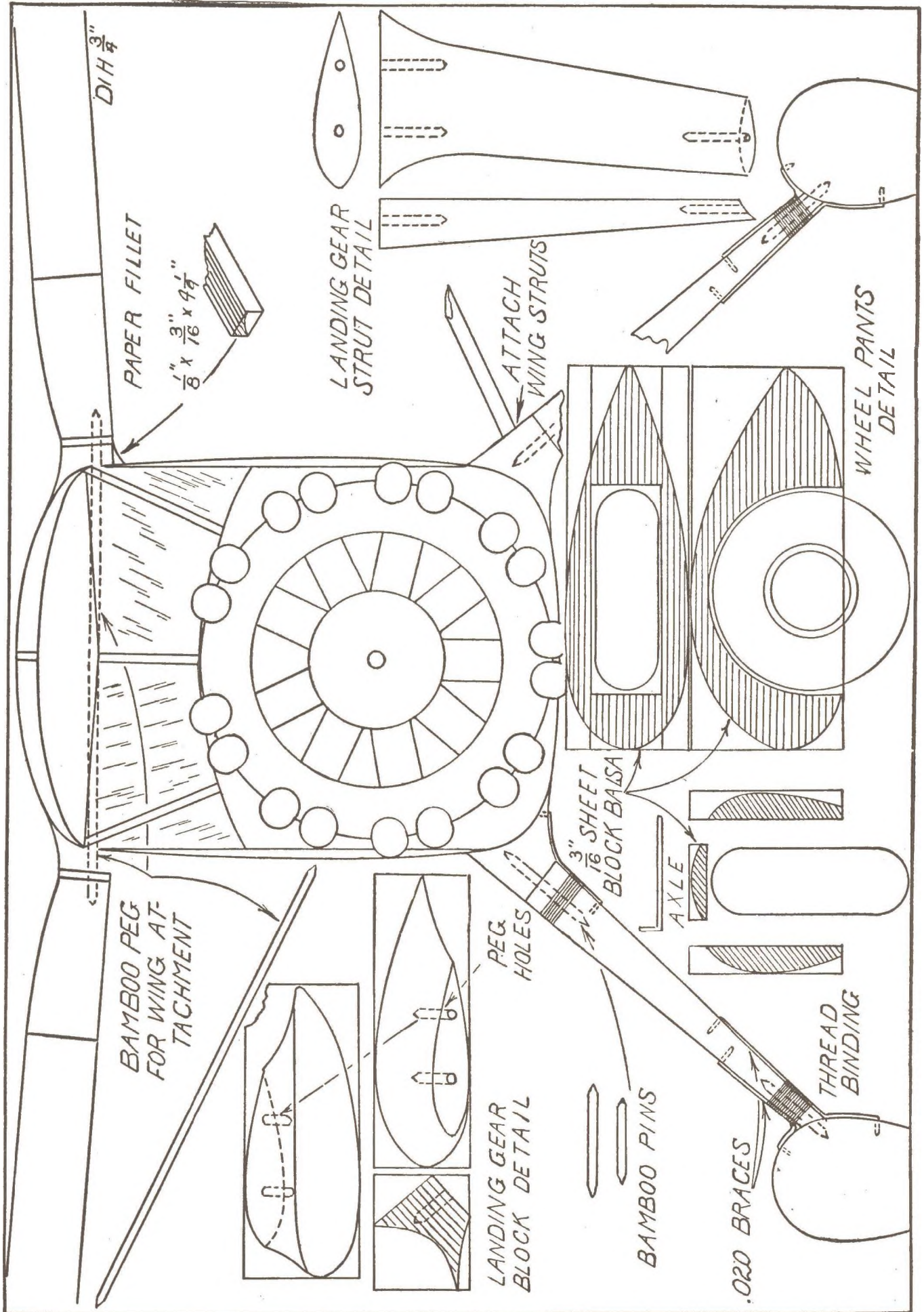
STINSON RELIANT—Plan 7



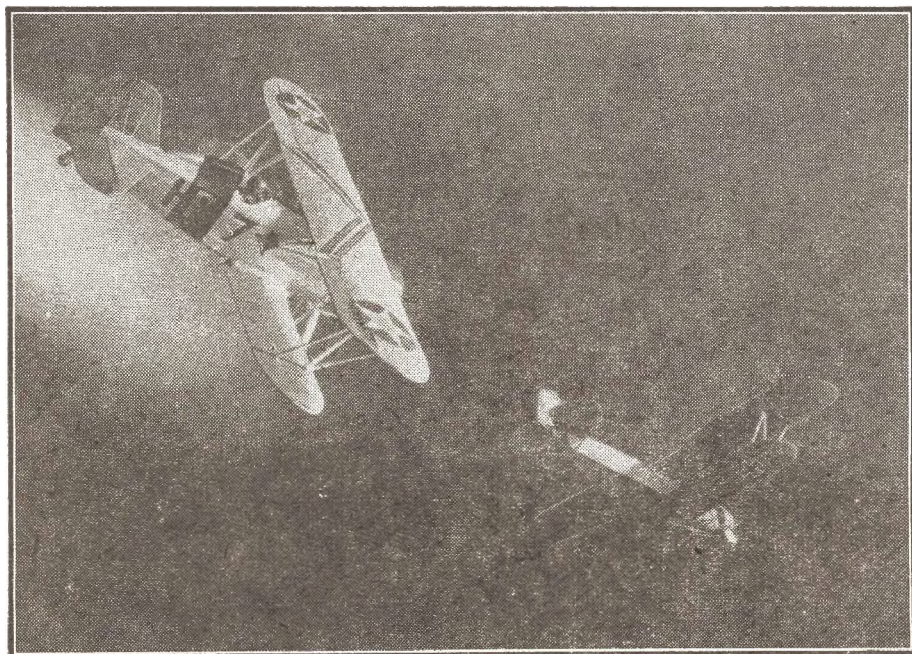
STINSON RELIANT—Plan 8



STINSON RELIANT—Plan 9



# Photo Your Models in an Air Fight!



Action and plenty of it! Fact is, that Kraut plane may zip into an Immelmann any second and come roarin' back throwing Spandau lead—not that we'd give the Stearman we've "rung in" to play Jerry much of a chance against our snappy Boeing F4B4. Yep, this is ace-high photography, and you can get swell "shots" like this, too.

**D**ID you "shoot" a picture of your favorite sea-plane model at rest on the movie-scene Arabian Coast inlet that we staged in last month's photography article? Okay! And now load another roll of film into your camera, for this time we're going up into the air to train our lenses on a dramatic model-plane air fight. Let's go!

From the looks of things, that German pilot (see photo above) has a real job of maneuvering on his hands to get away from that speeding member of the famed High Hat Squadron in his hurtling Boeing F4B4 fighter. Of course, you fellows can use any type of models you have on hand when you snap your scenes. And it isn't necessary to limit the number of ships to two, though you'll find three's a crowd unless you have a camera that takes large pictures. As for the pilots, you can make them out of modeling clay.

Here's how you go about it:

First of all, to portray the idea of flight, your planes must be suspended in the air by fine black wires or black thread against a fairly dark background. If you use thread, be sure it's sufficiently dark so it will show as little as possible in the finished picture, and be careful that your thread or wire doesn't cross in front of any part of the plane (see diagram), because if it does it may show against the ship.

The diagram will guide you in making your "set." Your planes may be suspended from any convenient place. If you've got them on hand, a long pole laid between two ladders will do very nicely, for this type of "hanging" permits greatest ease in arrangement.

The picture above was taken indoors at night with super-

be fairly dark, as stated before, in order that the hanging wires or thread will not show against it.

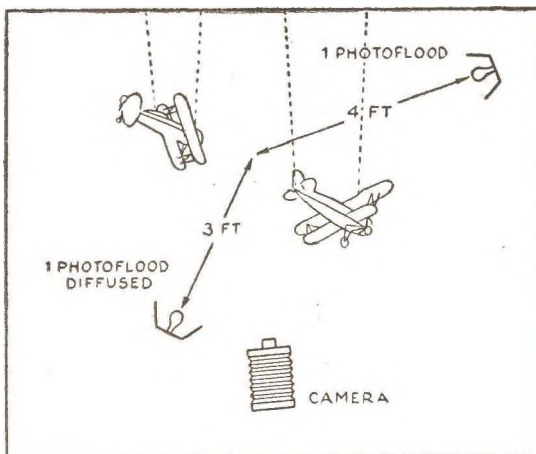
After you have suspended your planes in the desired positions, place an ordinary floor lamp slightly to the left of your "set"—as shown in the diagram—and tilt the shade so that the light is directed on the planes. This light should be diffused, or softened, by stretching a thin piece of cheesecloth over the front of the lamp shade.

To the right, set up another floor lamp, as indicated. If your lamps are placed at the distances designated, it will not be necessary to use more than one photoflood bulb in each.

Now you are ready to place your camera in position (see diagram). After locating your planes in the finder, set your distance scale at the proper footage. Set the diaphragm, or stop opening, at  $f. 6.3$  and the shutter speed at  $1/25$  of a second. With both Photoflood lamps turned on, you are ready to "shoot" your picture.

If you have a fixed focus camera, do not get closer than about eight feet from your subject—unless you use a portrait attachment, which will permit you to work within arm's length from your subject and thereby obtain a large image. (A portrait attachment is an inexpensive lens that slips over the regular lens of your camera and can be purchased from almost any store selling photographic supplies.)

If your camera has a slower lens than  $f. 6.3$ , place it on a table when "shooting" a short time exposure—about one second. Splendid pictures of models can be made with any camera, even the inexpensive box type outfit, by giving a  
(Continued on page 92)



And here, photo fans, is how it's done. Note carefully the positions of models, lights, and ships. The supporting wires or threads are indicated by the dotted lines extending upward from the models.

# The Vortex Theory of Lift

## AERODYNAMICS SIMPLIFIED—V

This month, Mr. Zier continues his discussion of the principles of air flow governing bodies in flight with an explanation of the Vortex theory of airfoil lift as developed by Prandtl, of Germany. By careful reading of these articles on aerodynamics you will learn to understand the varied forces affecting the performance of your flying models. Don't miss them!

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By Avrum Zier

Model Department Editor

**I**N our last article, discussion centered about the early theory of how lift was developed over an airfoil section, namely the "Partial Vacuum Theory." It was pointed out that this explanation had to be discarded because of its failure to account for the many discrepancies which arose during experiments simulating airflow over an airfoil section.

After the rejection of the "Partial Vacuum Theory" the Vortex theory of lift was developed. Though this working hypothesis has not as yet been fully justified as to its validity, it does, however, account for the many phenomena which the "Partial Vacuum Theory" failed to explain.

The Vortex theory of lift developed by Prandtl is based upon the assumption that the nature of air is to act according to Bernouilli's theorem, which states: "An increase in velocity over a surface will cause a decrease in pressure over the surface." This theorem, as we shall see, bids fair to be one of the most important ever developed, for while explaining the tendency of an airfoil to lift it also accounts for the behavior of many other objects in an airstream.

Let us consider calm air at sea level conditions. This air, as we know from our study of the atmosphere, is exerting a downward pressure of 14.7 pounds per square inch on the earth's surface. Since air is capable of doing work it must contain energy, which, when in a theoretical calm state, is all converted into pressure energy.

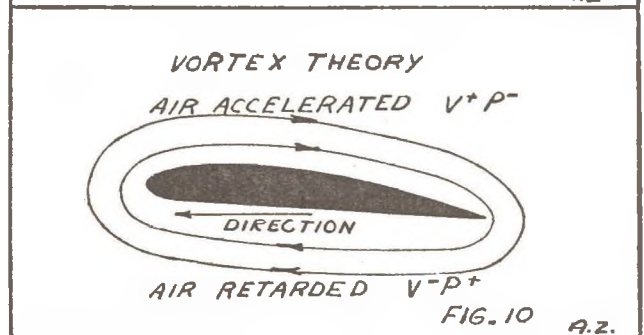
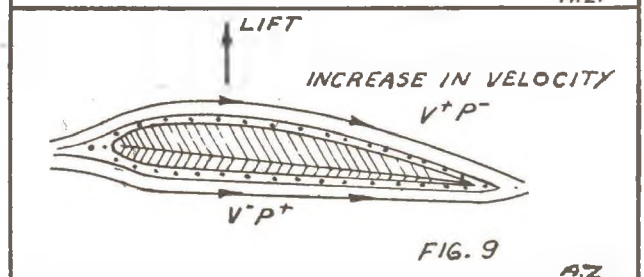
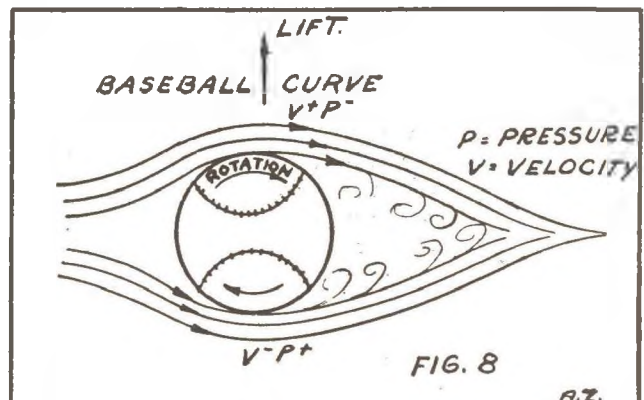
But air is never in a calm state, so let us now assume that it is in motion under a certain velocity. The air now must contain energy with which to move, hence we can say that the air contains velocity energy. Bernouilli's theorem is based on the assumption that air contains a certain amount of energy when over a surface which remains constant.

Following this assumption, when air is in motion a certain amount of pressure energy is being converted into velocity energy and the sum of the two energies is always equal to a constant. As the velocity increases, more pressure energy is being converted into velocity energy. It therefore follows that when we have an increase of velocity over a surface we will also have a decrease in pressure.

Perhaps we can best illustrate Bernouilli's theorem by reference to the action of a baseball. Those of us who have seen Dizzy Dean let loose one of his fancy curves—which almost threaten to encircle the batter's neck—no doubt often wonder how it is done. Though it may be unknown to Dizzy himself, the ball is thrust from his hand in such a manner as to give it rapidly increasing rotational velocity. The baseball, because of this rotational velocity, tends to retard the air on the one side and accelerate it on the side toward which it

is turning (See Fig. 8). Following Bernouilli's theorem, we have a greater decrease in pressure on the side having the greater velocity, and hence the ball will tend to lift in that direction. As the rotational velocity of the ball increases, a point is suddenly reached where the pressure on the side having the greater velocity becomes excessive. At this moment the difference in pressures causes a sharp lift which carries the ball off the line of flight and into an out-curve or an in-curve, depending on the rotation of the ball. Of course, the mere twisting of the ball before it leaves the hand will not always result in a curve. There is a certain knack in twisting the ball so that it attains the proper rotational velocity—a knack not easily acquired. The ability to

(Continued on page 92)





# Make the Lockheed Electra

By Joe Battaglia



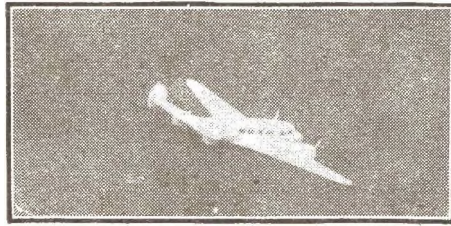
**I**N the past four years there have appeared in the transport field of aviation a number of highspeed, all-metal ships seating from ten to fifteen passengers, namely the Douglas DC-1, Boeing 247, Vultee V-1, and Lockheed Electra. All of them have won their share of popularity. They're the best you can get.

To the uninformed, most of them look somewhat alike. The exception, however, is the Lockheed Electra. This ship was originally designed for a single large rudder mounted in conventional position, but Lockheed engineers now produce the craft with a twin rudder empennage, each rudder being mounted near the outer tips of the horizontal tail surfaces. Another distinction of the Electra is its landing gear, composed of two single struts which fold backwards and are operated by an electrical mechanism.

The ship seats ten passengers and two pilots and is fully equipped for flying in all sorts of weather, including blind flying. It travels at better than 200 m.p.h. at top speed and cruises at 190 m.p.h.—all of which is velocity plus!

When the Electra first made its appearance it gave an amazing performance. Taking off and flying on one engine, it climbed to an altitude of 14,000 feet and flew from Albuquerque, New Mexico, over the "Great Divide." These ships have been used extensively in the West, and now the Eastern Airlines company has bought five to augment its "Great Silver Fleet."

The Lockheed company recently ordered a number of display scale models from the author of this article and extended permission to publish the performance specifications of the Electra. We give them in full at the close of this article in order that you may see how such data are listed by the designers.



*Photoed in simulated flight, your solid scale model of this speedy Lockheed transport should look like this—and it will if you carefully follow directions given in this article.*

## BUILDING THE MODEL

**I**N building a model of the Lockheed "Electra 10-A," you should first make templates of all important parts, namely: wing-fuselage, empennage surfaces, engine cowls and nacelles, and propellers. Each template for the wing and horizontal tail surface should be made in one continuous piece, including left and right halves.

Templates can be made of Bristol board, or any stiff paper. Transfer the outlines of the above parts to the stiff paper, first copying them on tracing paper. Then cut around the outlines. Use the usual carving tools if you do not have a machine with which to cut the wing, fuselage, etc., or a lathe on which to turn out cowls, engine nacelles, and wheels. Anyone who is handy with carving tools can turn out as good a job, the only difference being the time saved by the use of machines.

## THE WING

**W**HEN you have cut a block of wood to the proper dimensions of the wing, lay the template on it and trace the outlines on the block. Cut with a knife or saw along the lines. Then sand the edges straight.

Now plane down the wing to the shape of a "Clark Y 18" at the root, tapering down to a "Clark Y 9" at the tip. When through with this, sand the entire wing smooth. In order to obtain dihedral, draw a line through the center of the wing from leading to trailing edges. Draw two lines parallel to the center line 1/16" on either side of it.

With a fine bladed hand saw, cut along these lines at a downward angle to the center line so that both cuts meet at the center of the wing to within 1/16" from the lower side of it. This done, pour some cement into the crevice and bend the two halves of the wing upwards from the tips. Place a small block of wood underneath each tip to measure the exact angle of dihedral, then anchor the center of the wing to the surface on which it rests. While this is drying go on to the tail surfaces.

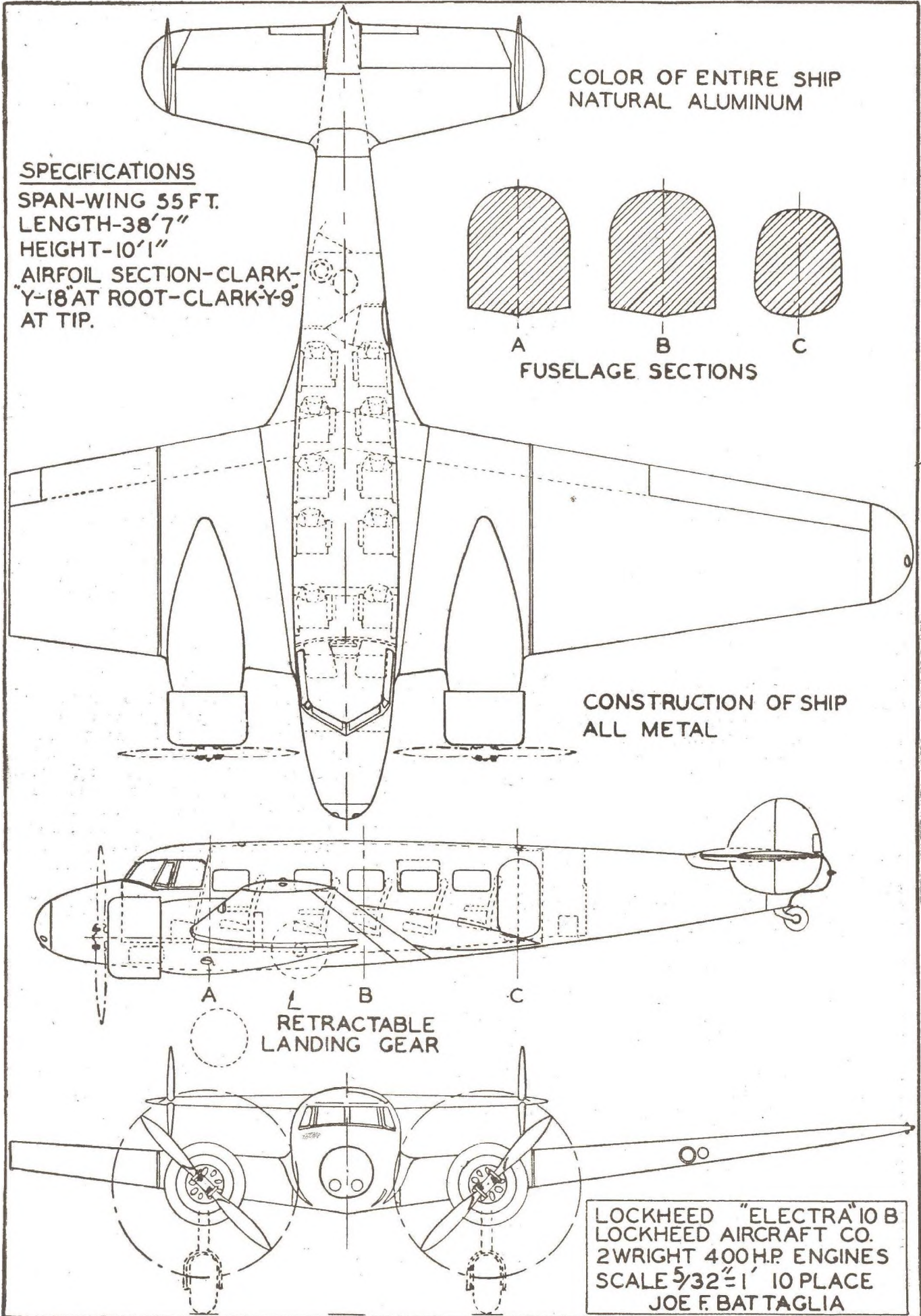
## TAIL SURFACES

**L**AY out the rudder on 1/16" sheet balsa and the horizontal tail on 5/64" sheet. Cut out these  
*(Continued on page 93)*



*Here's the real Lockheed Electra poised on the runway ready for a scheduled hop. The Electra, which is built principally of Alclad 24st., a high-strength duralumin, is a ten-passenger job capable of better than 200 m.p.h. As you construct your model, check it with this photo and you won't go wrong.*

# THE LOCKHEED ELECTRA



# The Gas Model Comes Into Its Own

By Leo Weiss

National Gas Model  
Champion

\*\*\*

FOR many years before they "caught hold" in America, gasoline-propelled models held an important place in the model building activities of other countries, notably England. The British models, however, were invariably heavy affairs, due mainly to the large size of the motors then employed. Long flights with these jobs were rare, and serious crack-ups came far too often to make the building of such craft a practical—or economical—pastime.

It remained for "Bill" Brown, of Philadelphia, to introduce, in collaboration with his father, the first really suitable gasoline engine for model airplanes. This admirable feat, accomplished about four years ago, proved to be the spark which started gas models on their way to the heights—much as Lindbergh's feat revitalized modern aviation.

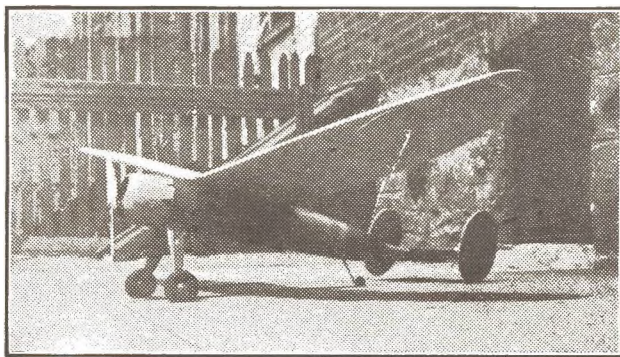
Three years ago, at the 1932 National Contests, at Atlantic City, Maxwell Bassett, also of Philadelphia, entered the Wakefield Event to fly the first gas model at a National contest. He placed fourth with a time of four minutes. On the same day, however, he made a practice flight of thirteen minutes—the longest recorded at the meet. Heartened by the success of his little engine, designer Brown developed a new and larger one.

At the 1933 National Contests the following year, held at New York City, Bassett proved the superiority of his new model by placing first in all four outdoor events. Naturally, there was a great deal of protest from the builders of rubber powered models, but the officials decided that since there were no rules excluding fuel-powered ships, it was perfectly permissible to allow them to compete.

Following this contest, interest in the performances of these models grew by leaps and bounds compared to the past. In July of that same summer, I flew a gasoline powered model in Van Cortlandt Park, New York, and managed to keep it in the air for about a minute on one-twentieth of an ounce of gas. Then, a few weeks later, Joe Kovel, of Brooklyn, made a flight of fourteen minutes with his eight-foot, all-balsa model. These two flights alone sounded the cry that was rapidly being taken up throughout the country.

At Akron, Ohio, in the 1934 contests, Maxwell Bassett again demonstrated that he was the leader in powered craft. He beat out fifteen other contestants, winning over his nearest competitor by four minutes. In this contest, there was only one event in which gas-powered models could be entered, this being known as the Texaco Event, named after the trophy which served as first prize. At this time, the writer was continuing to experiment with fully-streamlined models—and had the misfortune of seeing two of his ships go up in flames, not, however, through fault of the engine.

The East had now seen several gas contests. These events followed one upon the other, and sometimes only a few weeks separated the contests. But it was not until the 1935 Eastern States Contest that the gas model



*This beautifully-streamlined job is one of the author's powerful gasoline-propelled models. It's built to "go places"—and it's the nearest you can come, in miniature, to a real ship.*

With gasoline-motored models now achieving record flights of more than an hour's duration, a flood of enthusiasm has greeted this type of craft. So we've asked Leo Weiss, gas model champion of the 1935 National meet, to tell FLYING ACES readers something about the rapid rise of the fuel-powered job in the model world—and something about his own experiences.

Go ahead, Leo—

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record was broken. On that occasion, all the models that placed broke the record—and Joe Kovel topped them all when his giant model flew for 64 minutes and 40 seconds!

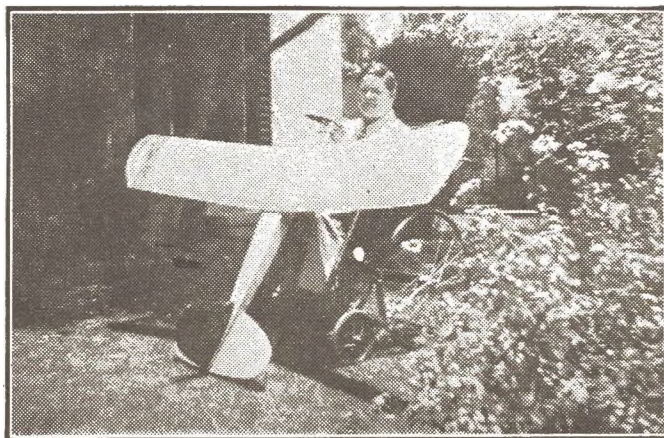
My next and final step in this brief history is to tell how I finally "arrived," as they say. The St. Louis Nationals were held, following the Eastern States meet, July 27-29. Up to this time, the best that my six-foot, midget gas model had done was two minutes and a half. Its showing at the Eastern States contest was dismal and little was expected of it in the course of the Nationals. However, it did come through—and I think it proved an entirely new principle in gas model construction.

My ship was an all-balsa, silk-covered model with an area of about five and a half square feet. Its weight was five and quarter pounds. This, in the opinion of most observers, did not give the plane the necessary "floating" power in the glide back to earth after the gas had been exhausted. But when the timers gripped their stop watches the ship took off and stayed in sight up to within twenty-eight seconds of the world's record!

I think it established one thing definitely: That added weight (and consequently more gas) may be more than compensated by a radically clean design. How the other gas model builders will take to this theory, I cannot prophesy, but I'm sure that a course of action similar to mine in the construction of gas models will result in record-breaking flights.

As an example of the true advancement of this science, consider the winning times in each of the impor-

*(Continued on page 94)*



*Here's S. Thorne Chancellor, of Santa Barbara, Calif., one of our FLYING ACES readers, with his high-flying gasoline model. This "shot" gives you some idea of the size of fuel-powered jobs. We have an idea that our gas model builders ought to add a little more balsa and actually fly in their ships themselves!*

# Build the Thomas Morse O-33E

Here's Willis L. Nye, who presented the Fleetster in our September number, three-pointing again with one of the Army's high-performance observation jobs. On your solid model, you can reproduce the corrugated surface of the fuselage by scoring with a sharp tool along a straight-edge. The scale for the plan below is 1/4 inch equals 1 foot. Good luck!

**SIDE**

**FRONT**

**SECTION 1**

**SECTION 2**

**SECTION 3**

**PLAN**

**THOMAS-MORSE**  
U.S. ARMY O-33E OBSERVATION PLANE  
CURTISS CONQUEROR 875 H.P. MOTOR

**DIMENSIONS**  
SPAN TOP WING 39'-9 1/2" - CHORD 6'-8"  
HEIGHT 10'-0" - LENGTH 30'-4"  
CHORD LOWER WING 4'-0" - TAIL CHORD -  
MAXIMUM 5'-11 1/2" - RUDDER HEIGHT 5'-5 1/2"

**ARMAMENT**  
THE FORWARD GUN IS SYNCHRO-  
NIZED 50 CALIBER. REAR GUN  
IS 30 CALIBER IN RECESSED  
GUN MOUNT. 250 LBS. OF  
BOMBS ARE ALSO CARRIED

**LANDING GEAR**  
LANDING GEAR OF OLEO TYPE  
WITH SEMI-BALLOON STRUT  
TIED TIRES AND NON-SWIVEL  
TAIL WHEEL.

**COLOR SCHEDULE**  
ALL PARTS NOT MENTIONED OTHERWISE  
ARE OLIVE DRAB. ENGINE AND ALL TIRES  
ARE BLACK. PROP. WIRES, STRUTS ARE SILVER  
WINGS, TAIL - ARMY YELLOW. RUDDER AND  
WING INSIGNIA - RED-WHITE-PALE. LETTER-  
ING IN BLACK. MACHINE GUNS IN BLACK

**PERFORMANCE**  
HIGH SPEED 182 MPH AT  
SEA LEVEL.  
CRUISING SPEED RATE OF  
154 MPH  
FROM SEA LEVEL  
ABSOLUTE CEILING 26,000  
FEET - SER-  
VICE CEILING  
23,500 FEET  
CLIMB 1560  
FEET PER MIN.  
LANDING  
SPEED 61 MPH

**STRUCTURAL DATA**  
FUSELAGE OF DURAL CORRUGATED SKIN AND STRINGERS  
WING-FABRIC COVERED - DURAL RIBS AND SPARS.  
TAIL ALL METAL - CORRUGATED DURAL OVER DURAL  
STRUCTURE. FIN-FABRIC COVERED WITH DURAL FRAME.  
AILERONS ARE ALL METAL CONSTRUCTION.

**FLYING WIRES IN PLANE**  
OF FRONT AND REAR SPAR  
SOME AT FEET TRAINING  
WITH ADDITIONAL PAIR OF  
FLYING WIRES FROM LEAD  
ING ORG. TO FRONT SPAR  
TOP WING JOINING WIRES  
EACH REMIE CENTER STRUT  
TO FRONT AND LOWER WING  
DOUBLE WIRES

**FRONT VIEW CALLOUTS:**  
30 CALIBER MACHINE GUN  
DURAL WALK  
SLIDING HATCH COVER

**SECTION 1 CALLOUTS:**  
FACE TIE  
CORRUGATED  
DURAL AILERON  
STREAMLINE  
TIRES

**SECTION 2 CALLOUTS:**  
CORRUGATED SKIN  
4TH OBSERVATION SQUADROOM

**SECTION 3 CALLOUTS:**  
RECESSED  
GUN MOUNT

**TAIL CALLOUTS:**  
YELLOW  
BLUE  
RED  
WHITE

**SCALE:** 0 1 2 3 4 5

# How to Make the Airspeed Envoy

With the ever-increasing interest in fast commercial planes, we know you'll want to build a solid scale model of England's swiftest transport—the new "Overseas Model" of the Airspeed Envoy.

Gather your tools and materials and let's go—

★ ★ ★

By Nick Limber

**K**NOwn as the "Overseas Model," an improved version of the Airspeed Envoy has recently been produced by Airspeed, Ltd., Portsmouth, England. The new machine has been fitted with two 7-cylinder Lynx IV C. engines and has a top speed of 174 m.p.h. Before we tell you how to build a solid model of this fast ship, we shall describe some of its features.

The performance of this cabin job considerably surpasses that of the previous Airspeed machines, even though certain structural alterations have increased the weight to 5,850 lbs. Despite the extra weight of the larger engines, a large payload is still permissible as well as a long range. The cabin, incidentally, can be arranged either as a six or eight seater.

The well-known Airspeed retractable undercarriage is retained, and behind the engines are fairings very similar to those placed behind the "Cheetah" engines in the "Viceroy" flown in the England-Australia Air Race. The leading edge of the outer portion of the wing has now been completely covered with plywood extending from the top of the front spar to the bottom of the same spar around the leading edge. This makes the structure not only rigid in torsion but also strong enough so that it will not easily damage.

Flaps have not been employed in the ship since the manufacturers feel that not only are the take-offs and landings adequately short without their use, but it must be remembered that when the undercarriage is

lowered it acts somewhat like flaps—that is, it considerably increases the drag and appreciably retards the glide of the ship.

The Envoy proves to be an ideal ship for long trips because the luxuriously furnished cabin is highly sound proof and the seats comfortable. Moreover, each passenger has a folding table and an ash tray at his, or her, disposal. For the entertainment of the passengers, a Plessey A.C.44 wireless set is fitted in the after bulkhead of the cabin. The remote control is mounted in a small box at the pilot's right hand. A spacious luggage compartment is also contained in the after bulkhead of the cabin.

The ship, when fully loaded, has climbed from 2,000 feet to 2,200 feet on only one engine. It will also interest you to know that the new Envoy can make safe landings on water without pontoons. This was proven by a customer of Airspeed, Ltd., who ran out of fuel while flying over Langston Harbor. The ship settled quietly in the water, and though the pilot came out through the cabin door grumbling that his shoes were wet, the ship was brought in without much trouble.

With standard tanks full, the maximum range at cruising speed is 638 miles, and the payload is 1,131 pounds. The fuel consumption is 24 gallons per hour at cruising speed.

Visibility from the pilot's seat is excellent. We do  
*(Continued on top of next page)*

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## From the Model Builder's Workbench

### EXPERT FINISHING

**M**UCH has been said about the finish and construction of solid scale models. Every model builder is often forced through necessity to invent methods of his own. However, here are a few tips.

An excellent filler for balsa wood is clear lacquer. It is much better than clear dope or banana oil, but takes slightly longer to dry. Apply several coats of lacquer, sanding with fine sandpaper after each application is thoroughly dry. Colored lacquer also makes a good paint for models. It is superior to dope and dries harder. When painting, however, lacquer often does not dry smooth, this being the main objection to its use. I have found a certain product, "Nu-Enamel," on the market now, to be the best for painting models. It dries without leaving brush marks.

Often when attaching wings, a builder finds that he must hold the wing until the glue sets. I have conquered this difficulty by inserting pins into the body with the heads clipped off, and pushing the other end into the wings.

On larger models, this may be done with struts and other parts, making them stronger and saving much time. Clear lacquer or dope carefully applied to a finished model gives a very high gloss.

Bending bamboo has always been a difficult problem. While building a well known model company's "Capt. Page Racer," I hit upon this idea. First trace

the outline of the tail surfaces, or part to be bent, upon a sheet of paper. Then cut out and trace on a piece of one-fourth or any similar size hardwood. Make this form slightly smaller than the real outline, but not much, however. Notch this evenly in the center of the sides. Then take the bamboo strips and using a candle, gently bend the bamboo around the form. This prevents bending one part so that it is too large, and makes uniform shapes.

Balsa may be bent slightly by making small indentations with the fingernail about one sixteenth of an inch apart and covering lightly with glue afterwards. Do not bend too much, though, or the piece will break. Clear dope is better than banana oil for covering. It leaves no gloss if applied too heavily.

MELTON KERNER.

### MISCELLANEOUS HINTS

**L**AYMEN tend to the idea that model makers' tools are all small and delicate. But more than one expert has been seen prowling around with gas pliers.

*(Continued on page 54)*

### Attention, Model Builders!

**FLYING ACES** wants plans and directions for building flying scale models of the latest modern planes. In order to be printed in this magazine, drawings must be done in India ink, and must fit a 7 x 10-inch page. Plans should not exceed six pages. Photographs of completed models must accompany plans. Send in your work, model builders, and get it printed!

not hesitate in saying that no better visibility has been attained by any other cabin job produced in Europe thus far.

**CONSTRUCTING A SOLID MODEL**

**F**IRST construct the fuselage and tail. After you have selected the type of wood you are going to use, draw the side view of the fuselage on the block of wood. If you are making the ship three times as large as the plans, the entire drawing may be enlarged

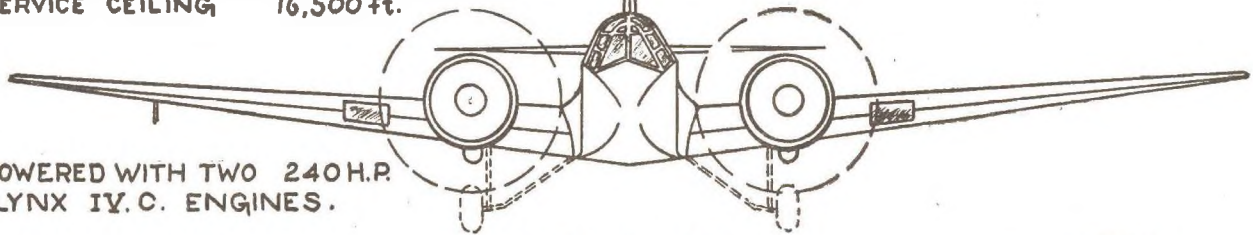
three times. When you have finished drawing the outline of the side of the body, you must cut around this outline with a knife. The surface must then be sanded smooth.

Next draw and cut away the top view of the body. With sandpaper, shape the fuselage as shown in the drawings. When this is completed, dope the fuselage and allow to dry. While the body is drying, construct

*(Continued on page 94)*

# The Airspeed Envoy

MAX. SPEED (SEA LEVEL)	174 m.p.h.
" " (5,000 FT.)	170 "
" " (10,000 FT.)	166 "
TAKE-OFF RUN (5 MPH WIND)	270 yd.
LANDING RUN (5 MPH WIND, WITH BRAKES)	240 yd.
CRUISING SPEED	153 m.p.h.
LANDING "	64 "
RATE OF CLIMB AT SEA LEVEL	1,070 ft./min
SERVICE CEILING	16,500 ft.



POWERED WITH TWO 240 H.P. LYNX IV.C. ENGINES.

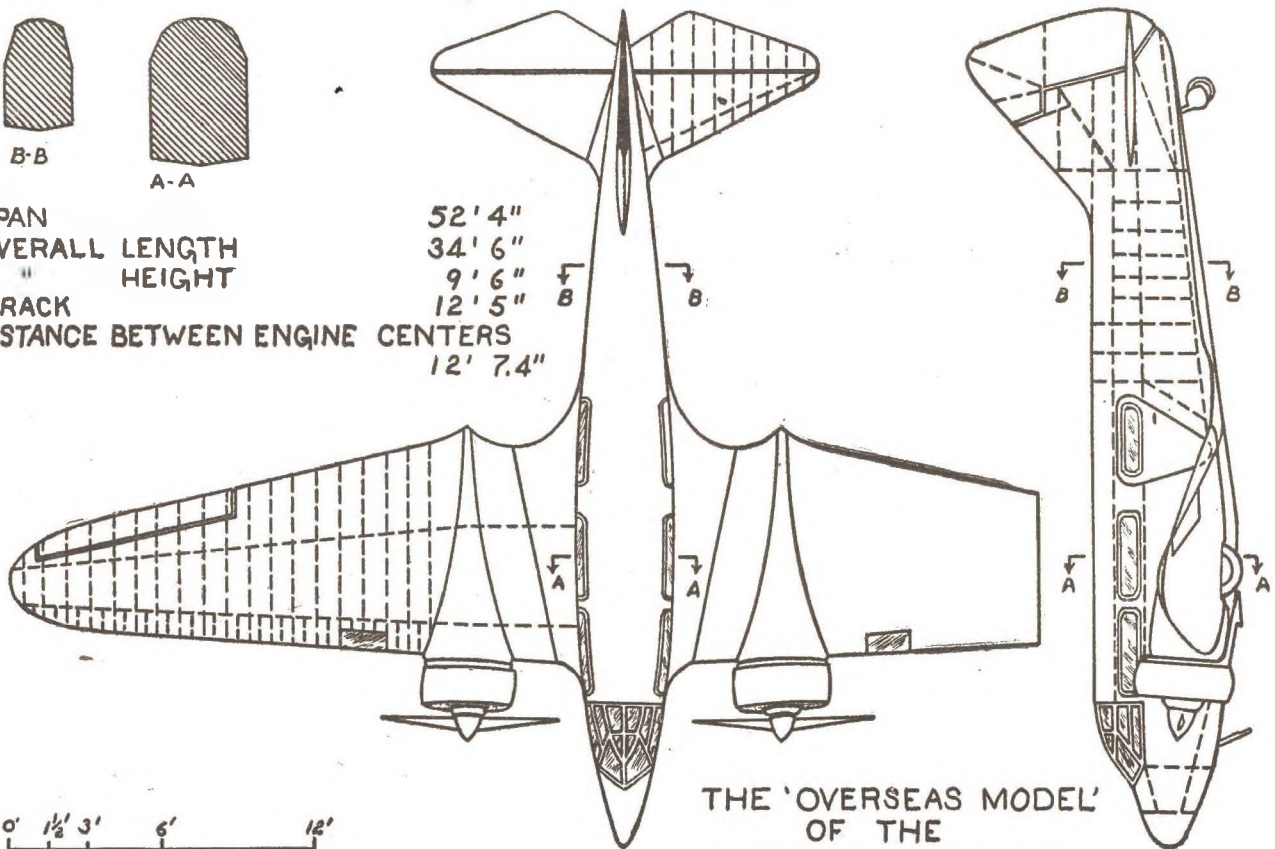


B-B



A-A

SPAN	52' 4"
OVERALL LENGTH	34' 6"
" HEIGHT	9' 6"
TRACK	12' 5"
DISTANCE BETWEEN ENGINE CENTERS	12' 7.4"



SCALE

THE 'OVERSEAS MODEL' OF THE AIRSPEED ENVOY

BY NICK LIMBER

# Make the Daniel R.O.G. Low-Wing

By  
R. T. Daniel

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**H**ERE'S a snappy-flying stick model that's been thoroughly tested—and come through with flying colors! Moreover, the coming of the Winter months always brings greater enthusiasm for these midget craft, for a "flying field" large enough for this plane is available to almost anyone. A space 30 feet square, preferably indoors, is sufficient in which to put the Daniel Low-Wing through its paces.

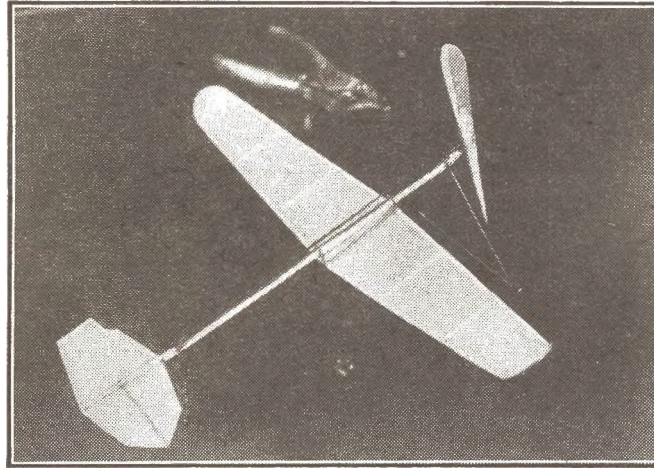
The writer has designed and built several of these models and they have proven to be excellent performers. However, materials must be selected with care, and workmanship must be accurate.

## WING

**T**HE wing spars are made from fairly light 1/16" by 3/64" balsa strips. Taper each spar from the center to the tip so that each measures 1/32" square at the tip. Slightly cut each spar on the outer edge at the center and crack with the fingers so that each piece may go in place on the drawing (see next page). The ribs are flat and are cut from 1/32" balsa. The tip outlines are made by bending to shape a piece of bamboo 1/32" thick by 1/8" wide while applying heat. This bamboo may first be soaked in water for several hours to facilitate bending. After the piece has thoroughly stiffened and cooled, trim it to 1/64" thick and split off two pieces 1/32" wide for the tips.

## TAIL UNIT

**T**HE tail members are attached to a tail boom "X." This is 1/16" square and is tapered (beginning where it joins the motor stick) to 1/16" by 1/32" at the rear end. The tail cross piece, "C," is made of 1/64" by 1/32" bamboo. The ribs, "B," are made of 1/16" by 3/64" balsa shaped as shown. The paper covering forms the outline of the stabilizer. The fin framework is com-



*Just wind 'er up—and she'll dart past that pair of pliers and take the air before you can say "prop"! The Low-Wing boasts clean lines and the best of flying features; and the photo above, which you may refer to as you build, proves that it's no idle boast.*

posed of 1/32" by 3/64" balsa strip. It is covered and then cemented to the side of the tail boom, "X." Attach the tail unit to the motor stick with cement. Give it a very slight positive angle of incidence, just enough to make sure that the rear edge is tucked down a little. A very slight amount of left rudder may be of advantage to help give the turn.

## PROPELLER AND LANDING GEAR

**T**HE propeller is cut from the regular "X" type of block. A point to be observed: Do not round off the blade tips according to the dotted lines until *after* the prop has been carved, since to do so would change the angle of attack in this part of the blade. The prop shaft is .016" music wire.

The wheels are cut from 1/32" light sheet balsa. First mark them out with a compass, then give a good coat of cement on each side. Later, put a drop of cement over the hole on each side where the axle is to go. When dry, cut out. If the cement is put on entirely after the wheel is cut out, the contraction caused by the drying cement will tend to curl up the wheel. The hubs are likewise made of 1/32" light sheet balsa.

## MISCELLANEOUS

**S**ELECT your material for the motor stick carefully. Use hard, straight balsa 1/16" by 1/8" by 6". The ends may be tapered on the *bottom* side, the amount of taper depending on the weight of the wood. Over-tapering will weaken the stick. The thrust bearing may be cut from 1/64" sheet brass or steel. The model is powered with a loop of 1/32" square brown rubber.

## Model Builder's Workbench

(Continued from page 52)

Such an instrument is desirable for cutting music wire, which is tough enough to destroy the edge of any ordinary tool. A fine nosed plier is of course indispensable. Pliers with two long-rounded points are excellent for the bending of well-shaped hooks and fittings.

If your last model is still in good shape, recheck the amount of dihedral. Probably, to your surprise, the dihedral is now much less than the plans originally called for. A short additional step while constructing the wing will guar-

antee the selected dihedral angle for the life of the model. A small strip is countersunk to fit flush with the upper surface of the wing and is extended one rib past the angle point. In this manner the likelihood of the wing losing any dihedral is lessened. The strip thus attached to the center section aids in supporting the weight of the outer-wing sections.

When it is necessary to construct a wing in two panels, each of which is to be attached to a fillet or the fuselage sides, thin strips should be inserted and glued between the first two ribs. This is done to prevent the covering distorting the otherwise unsupported first rib and to brace it enough to with-

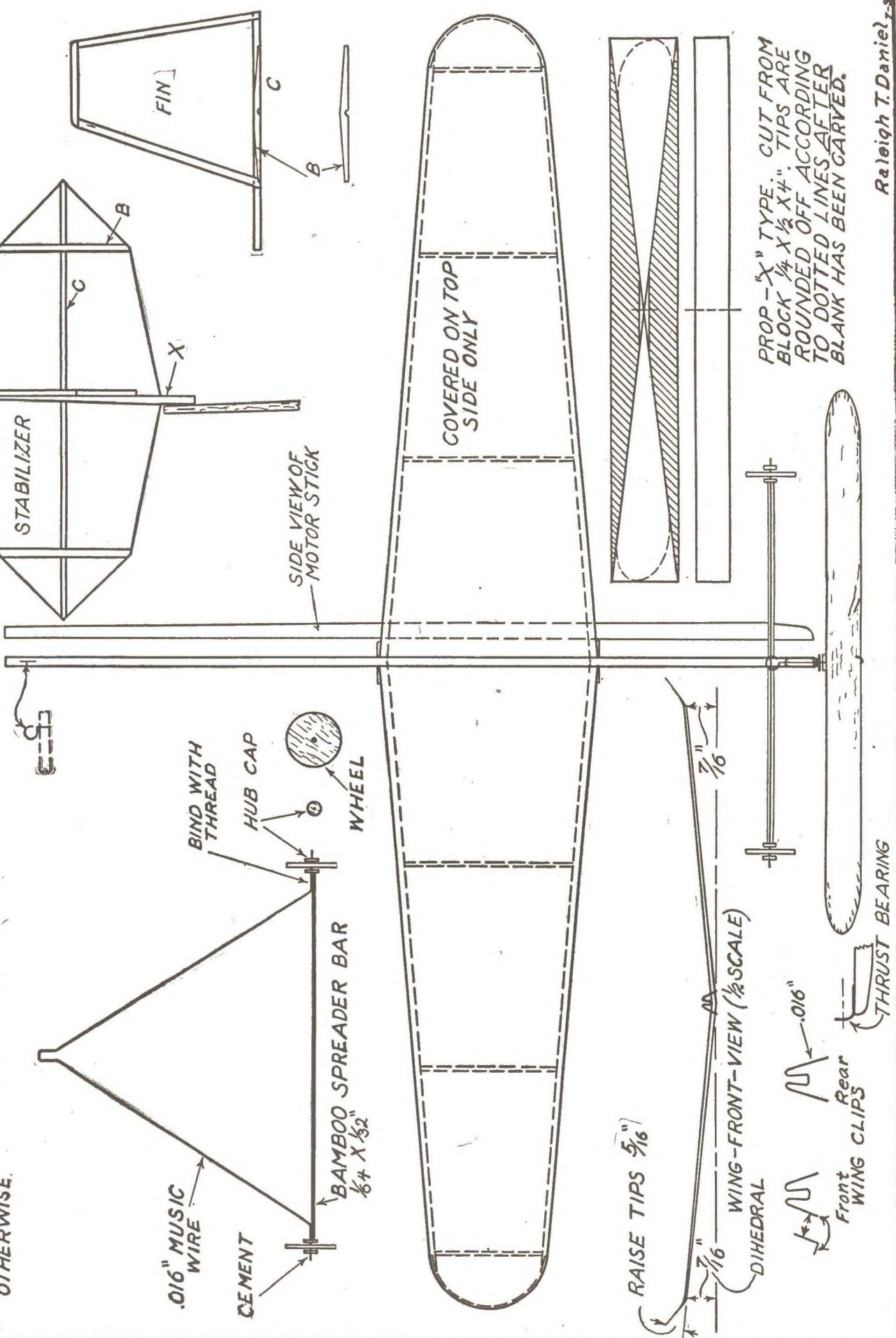
stand the weight of the wing.

The fuselage construction of a model is a dead giveaway of the builders' understanding of model mechanics. A fuselage should be braced suitably (1) to support any landing gear strut that does not attach to a longeron at a cross-piece, (2) any type of center section struts that do not attach to a longeron, or (3) to support wing panels that are mounted as mid-wing or low-wing arrangements. A mid-wing especially should be braced internally at a point directly between the butts of the trailing edges of each panel. A mid-wing model has a mean habit of folding its wings and crushing the fuselage under a comparatively slight shock.

# THE DANIEL R.O.G. LOW-WING

Raleigh T. Daniel, 1935

ALL VIEWS ARE DRAWN FULL SCALE EXCEPT WHERE INDICATED OTHERWISE.



PROP - "X" TYPE. CUT FROM BLOCK  $\frac{1}{4} \times \frac{1}{2} \times 4$ ". TIPS ARE ROUNDED OFF ACCORDING TO DOTTED LINES AFTER BLANK HAS BEEN CARVED.

.016" MUSIC WIRE

CEMENT

BAMBOO SPREADER BAR  $\frac{1}{8} \times \frac{1}{2}$ "

BIND WITH THREAD

HUB CAP

WHEEL

RAISE TIPS  $\frac{5}{16}$ "

WING-FRONT-VIEW ( $\frac{1}{2}$  SCALE)

DIHEDRAL

Rear WING CLIPS

Front WING CLIPS

THRUST BEARING



# Flying Aces Club News

The old world is humming with F.A.C. news, so let's join "Doug" Allen while he makes a talking "newsreel" of events during the past month. Before we begin cranking, we want to thank the many F.A.C.'s who wrote in expressing their appreciation of our new way of presenting the Club News. We like to get letters —so keep 'em coming!

**"I**F you're sure our cameras and all sound apparatus is safely aboard, guess we're ready for our trip."

Thus spoke Douglas Allen, addressing Herb Powell, Managing Editor of FLYING ACES. "Everything is aboard," replied Herb, so with Arch Whitehouse at the controls of our giant FLYING ACES transport, the "Three Musketeers of the Air" are off to make the first F.A.C. "newsreel!"

Heading our ship westward over the Hudson, Arch dips low over the giant *Normandie* lying at her pier, and it is not long before we drop on the tarmac of the Camden, N. J., Airport. In Camden, we want to see Anthony Buczko—for he's become interested in radio as a result of the formation of the FLYING ACES RADIO CORPS and is brushing up on the subject prior to getting his license. We find Tony working on a new set and before he really knows what it's all about, we've "shot" a number of feet of film, and have also secured on the sound record his protestations that he's really not doing anything to get excited about.

Leaving South Jersey, we head northwest and in a few hours set our plane down at the Wayne County Airport, Detroit. We're just in time to get in on the Michigan Air Circus! What a busy place! "Doug" leaps out of the plane with a camera over his shoulder and Herb follows with the sound apparatus. We're just in time to get some pictures of a great stunting exhibition! Milo Burcham, Hollywood stunt flyer, holder of the upside-down-flying endurance record of over four hours, has just *purposely* dropped a wheel! Our cameras grind as Burcham brings his plane down—closer and closer to earth. Our sound apparatus is all set for a terrific crash, but we're happily disappointed for the plane comes in on one wheel without as much as a scratch on the fuselage!

"There's Bill Balough," shouts "Doug" suddenly—right into the sound apparatus, and again the cameras grind away, for Bill is one of our most active members and is on the staff of the Air Circus. Before leaving, Bill insists upon taking us around and demonstrating some of his handiwork in putting in window displays, and let us tell you, folks, Bill is to be highly complimented—at every opportunity he boosts FLYING ACES and distributes F.A. stickers. As a result, there are going to be a lot of new readers of FLYING ACES in Detroit ter-



Friends, meet Charlie Crzybowski, a member of the Polish Cadet Corps, Hartford, Conn., and an active F.A.C. Charlie finds FLYING ACES indispensable in his work of teaching the Junior Cadet Corps the whys and wherefores of model building.

ritory! Nice work, say we. Keep it up!

We're back in the ship just about ready to give 'er the gun when Arch calls out: "For the love of Mike, look at that!" A car had just backed into a parking space, giving us a clear view of a colorful and unusual tire cover. It carries a picture of a vulture and bears the letters "F.A.C."

"Oh, I know what that is," says Doug, and he goes on to explain that it's the official insignia of Carl Ulanowicz's unit. Since our cameras are packed away, we take some "still" shots—and if they turn out okay, we will reproduce one in an early issue of the Club News.

Again in the air, we head due south for "Dixie," hoping to get some pictures of Dick Lemore, of Bladon Springs, Ala. Dick has recently sent us a letter from the refueling endurance record holding Key Brothers, operators of the Meridan (Miss.) Airport, accepting honorary membership in the F.A.C. Unfortunately Dick was out to a movie, so we move on. Hope to find you in next time, Dick!

While in the South we also drop in at Birmingham, Ala., to see Norman C. Thomas, and get some views of his fine models. His Douglas O-38 is a blue-ribbon winner.

We also drop in on Bill Hill, Winston-Salem, N. C., where we get some excellent pictures of his Flying Aces Hi-Climb R.O.G. (built from plans in FLYING ACES) and of his Curtiss-Robin and Page Racer. With Pensacola, Fla., only a short distance away, we surprise David Henneques, Jr., by dropping in on his tarmac and "shooting" his Boeing P-12, together with the clever hangar he made from an Erector set.

We're all but ready to head directly for the West Coast when we pick up a radio message from Major J. P. Tumulty, head of Ohio Squadron No. 1, Cleveland, informing us that they had seen our blue and gold plane pass overhead and felt disappointed because we did not drop in. After a consultation, during which "Doug" insisted that we should alter our course and drop in on this loyal Squadron, Arch heads the ship northward and we settle down on the tarmac at Cleveland. It's late when we arrive, so we lay over in Cleveland for the night. Taking our flashlight equipment along, we secure some top-flight pictures of Ohio Squadron No. 1 in action at one of their colorful meetings! What a business-like organization! First they have their roll-call; then they take up general business, talk of airplanes, designs, contests, FLYING ACES, and the F.A.C.; and finally they serve refreshments. Frank Plank, Adjutant, and Major J. P. Tumulty, Squadron Commander, are certainly two fine fellows to have in command, and they have a mighty fine bunch of fellows, too!

Bright and early the next morning, Arch gets us out of bed with the command—"Immediately following ham and eggs, the FLYING ACES transport leaves for the West Coast!"

Within an hour we board ship, bidding farewell to Ohio Squadron No. 1 assembled on the field to see us off. Westward we speed, and can Arch handle a ship! You should see him guide the ship through a storm area over Estes Park, in the Rockies!

By nightfall we land at Olympia, Washington, after a non-stop flight from Cleveland. As we land, a fellow comes running across the field to greet us. It's Jack Phipps, of Seattle.

"Come with me to the Executive Department in the morning and you can 'shoot' some pictures of the Governor signing a letter accepting honorary membership in the F.A.C.," says Jack; and sure enough next morning we get some nice sound pictures of Governor Clarence D. Martin signing his letter accepting membership. Informing us that he always wanted to do a 'chute jump, Jack drops off over Seattle after flying a short distance with us when we head for Tacoma.

We are met at the latter city's airport by our old friend, Paul Guerrero, Commander of Washington Squadron No. 1 and head of the F.A.C. Philippine Squadrons. Paul tells us that Squadron Commanders Fred S. Ponce, of the Mapa High School, and James B. Coulter, of the Arellano High School, Manila, plan a model contest, and that Captain Jose Valderrama, Lopez, Tayabas, is making great strides in his section of the Philippines. Paul insisted upon taking us to Vashon Island, Washington, where we get some first class pictures of Captain Thelma Haltom Castronuevo, who recently gave a beach party in honor of our popular Philippine Commander. Both Thelma and Paul informed us that most of those in attendance were wearing F.A.C. (Continued on page 91)



Well, Buzzards, though our present trip doesn't take in Australia, we want you to meet Major H. M. Cameron's boys—Australian Squadron No. 1. That surely is an A-1 flock of models, right? Of course, all the 69 members don't show in this picture nor the two planes owned by members of the Squadron. Incidentally, these high-flyers just celebrated the first birthday of the F.A.C. in that far-off land, and we wish we'd been at the party, for we know this bunch had a swell time.

# 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:

W. D. Davis                      William Kaempfer  
Bob Rosenbush                W. Joseph  
Walt Baylis                      Ralph Sassano

The following winners of the Distinguished Service Medal of the Flying Aces Club have been given the first award of the bronze props for additional services to the club:

Otto Gruytch                    Bernard Danowitz  
Leonard Tarver

The following winners of the first award of the bronze props have been given the second award of the bronze props for additional services to the club:

Robert Vahan                    William Boss  
John Gilchrist                    George Hartley  
Henry Bukowski                John Roy, Jr.  
Buddy Cornett                    David Henriques, Jr.  
Fred A. Dragone, Jr.            Harry F. Euker  
Edward Diller

The following winners of the second award of the bronze props have been given the third award of the bronze props for additional services to the club:

Francis Schweitzer              Ted Jacobs  
Raymond Dowsett               LeRoy Wilderman  
Hargis Blakley                    Alfred Costen

The following members of G-2 of the Flying Aces Club have been awarded the silver F.A.C. ring for exceptional service to the Club:

John Guest                        David L. Moffat  
Russell Moore                    Arthur Freeman  
William Griswold

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:

Lindsey Henderson              Winthrop Difford  
Sherman R. Higdon               Philip Varker

## 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.

Arnold McLean, Tamas City:—A primary glider costs about \$350. A full account of this sport and regulations may be obtained at the Department of Commerce for Aviation in Washington.

Gerry Nistal, New Rochelle:—The sweep-back of the wings is the most outstanding feature of the Douglas as compared to the Boeing transport. I do not know of any Portuguese aces. Think up another nation. Fokker's was the first synchronized gun used. That used by Garros was not synchronized, but fired through the prop, and the blades of the prop were protected by bands of steel—all of which I have mentioned 500 times before.

(Continued on next page)

# JOIN THE FLYING ACES CLUB

TO advance the cause of aviation, over 50,000 men and women, boys and girls, have banded together to form the Flying Aces Club. To become a member, fill in and mail the application coupon below, along with a stamped, self-addressed envelope for return of your official membership card.

It costs nothing. There are no dues. After becoming a member, you will be all set to win your Cadet Wings, Pilot Wings, Ace's Star, and perhaps the D.S.M. Take the first step NOW—fill in and mail the membership coupon!

It's easy to start an F.A.C. Flight or Squadron. Tell your friends about the F.A.C. and its official magazine—FLYING ACES. Ask them to buy a copy and join the club. Counting yourself, six members are necessary to form a Flight; a minimum of 18 for a Squadron. To become a member, each applicant must fill out and mail the application below. Be sure, when writing, to enclose a stamped, self-addressed envelope for your reply. This is important.

## Honorary Members

President and Mrs. Franklin D. Roosevelt  
Vice Pres. John Nance Garner

Casey Jones	Rear-Admiral Byrd
Wallace Beery	Capt. Edward Rickenbacker
Al Williams	Colonel W. A. Bishop
Col. Scaroni	Major G. A. Vaughn, Jr.
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
Colonel Roscoe Turner	Lowell Thomas
Charles W. A. Scott	Tom Campbell Black
Richard C. DuPont	Eric Kingsford-Smith
Amos 'n' Andy	Walt Disney
Jackie Cooper	Frankie Thomas
Gov. James V. Alfred	Lieut.-Col. Theodore Roosevelt

STEPHEN DRACE G-2

## AWARDS AND HONORS

### The D.S.M.

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.

Winners of the D.S.M. who merit further awards will be given beautiful bronze props. Worn on the ribbon of the D.S.M., they may be compared to the bronze palms awarded to winners of the Croix de Guerre. The highest award of the F.A.C. is the D.S.M. with three props.

### 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.

### 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.

### 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 activities. Those who are chosen will have unusual opportunities to win the Club's Distinguished Service Medal. Those who are accepted will be given a secret number and identification card as well as the secret code. Assignments will be made by letter and code.

## Attention, F.A.C.'s!



WE not only have a new supply of the handsome F.A.C. Club Ring, but now offer you the beautiful Identification Bracelet, as well. Both are finished in antique silver—the ring being self-adjustable to insure a perfect fit. Either ring or bracelet will be sent postpaid anywhere in the U.S.A. for only 50c each.

COUPON No. 37



## Save This Coupon for the NEW CADET WINGS of the Flying Aces Club

All members with Official Membership Cards are eligible for Cadet Wings. This coupon, with two others and 10c, entitles members to Cadet Wings. Do not send this coupon alone. Save it until you have three. Then send them in all together with a self-addressed envelope and 10c to cover cost of wrapping and mailing. 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.



COUPON No. 34

## Save This Coupon for the NEW PILOT'S WINGS of the Flying Aces Club

All enrolled members who have won their Cadet Wings are eligible for Pilot's Wings. This coupon, with four others and 10c, entitles Cadets to Pilot's Wings. Do not send this coupon alone. Save it until you have five. Then send them all together with a self-addressed envelope and 10c to cover cost of 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.

## December Membership Coupon

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

My name is .....  
Age .....  
Street .....  
City ..... State .....

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

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

**Joseph Keen, Baltimore:**—The Goshawk and the Hawk are two different ships. There are so many types of Hawks that it is impossible to answer all your questions on them, as you do not state which ship you mean.

**M. Perry Horton, Old Greenwich:**—Thanks for your letter. I am still not certain about interceptors here, but many men in the service continue to point out to me that we do not need them, and I was really expressing their views. It is still a problem. I don't know how to start a National Air Reserve. I believe it should be done by some one with real background, like Lindbergh, Doolittle, Al Williams or Frank Hawks.

Then it would have some real basis.

**Louis Cyr, Acushnet, Mass.:**—Fonck had the insignia of the Storks on his ship. That's all, as far as I know. He is still alive.

**Robert Harris, San Francisco:**—Floyd Bennet was not killed in a crash. He died of pneumonia. Head or tail winds affect flight so much that no instrument can correctly indicate your actual ground speed.

**Kenneth Austin, Belmont, Mass.:**—There was no single-seater Bristol Fighter. There was the Bristol Bullet and the Bristol monoplane. Garros was

not in the Storks. Pinsard was, I believe. Pinsard is credited with 27 victories. Garros is credited with five.

**Tony Jacobs, New York City:**—Thanks for the pictures. We have them all. The Belgian government uses Fairey Fox, Fireflies, Renard R-31 Breguet XIX bombers, Avro, Morane and Stampe-et-Vertongen trainers.

**Thomas Anders, St. Louis:**—The man you ask about is not known to us, but you do not state what army he served in. That would help. The Italian Macchi C-72 (440.6759 miles per hour) is the fastest ship in the world.

BY ARCH WHITEHOUSE.

## Devil of the Yellow Doom

(Continued from page 8)

Strange pulled up sharply. The Boche who had first attacked him was slashing back from his right. A Spandau burst raked his wing-tip as he turned. He rolled into a vertical bank, swiftly closed the gap. The other Boche zoomed to aid his comrade, and the tail of the Spad quivered under a sudden pounding. Strange hurled the ship into an Immelmann. As he twisted back he saw but one of the Fokkers. The other was screaming down at a spot beyond the balloon. The D.H. was taking off, and the German was plunging to finish it before it reached flying speed.

Something cold touched Strange's heart, and he knew without the faintest doubt that the Jays were in that ship. His clenched hand shot the stick forward. Like a flashing arrow, the Spad went down the sky. The other Boche dived after him with flaming guns. Bullets ripped through the Spad's left wing. Strange grimly steepened his plunge.

Three hundred feet below, the second German was pulling out for the kill. The D.H. was barely in the air, and the crafty Boche had made his dive behind a searchlight beam. As the Fokker slued into position, Strange aimed his shrieking plane. His tense fingers jammed the trips together. Red lightning stabbed from his cowl, straight for the German ship.

The Fokker jumped like a living thing in frenzy. Its nose came up, twisted to one side. For a moment, as Strange fought his ship from its dive, he thought he had failed to score. Then the black ship burst into flames and the furious speed of its plunge hurled it across the sky. One second, it seemed the Bessoneau hangars were doomed. Then with a blinding flash the ship struck the nose of the blimp.

The terrific heat of the flaming hydrogen forced Strange to a hasty turn. He put his hands before his eyes to shut out the dazzling light. As the Spad roared away from the flaming balloon, he dropped one hand to the stick. Suddenly, Spandau bullets vengefully pounded his wings. He crouched and flung around in a tight half-split.

Another burst crashed into the fuse-

lage close to his padded head-rest. As he ducked, the instrument board went to pieces under a smoking stream from the guns of his unseen foe. Strange set his jaw, rolled blindly into a turn. Though he still could not see, he knew where the Boche was flying. To his uncannily sensitive brain, the German's murderous hate was like a magnet out there in the night. It was not the first time he had sensed the direction of danger from the fury of an attacker.

### CHAPTER III

#### BLUE CIRCLE AND DOT

THE Spandau hail had ceased as he made that turn, but in a moment it came again, just as he whipped around. He snapped the trips together, hurriedly crossed the controls. Over the spitting guns he now caught a twisting shape, the blur of the last black Fokker. With cool precision, he brought the Vickers to bear on the darting ship.

Br-r-t-t-t-t-t! One short burst—and the thrashing belts ran out. Strange snatched at the charging handle of the nearest gun. There might have been a blank in the belt to give the pilot warning . . .

But the German had seen him hastily jerk at the gun. In a grinding turn he whirled to pounce on his prey. Strange tensed for a flashing *renversement*. The Spad snapped about in the first swift twist of that violent maneuver.

Something leaped out of the smoke-filled sky—the other Yankee Spad! And panic raced into the pilot's face as he saw Strange in his path. Strange hauled the stick to his belt, stood on opposite rudder. His ship screeched up and into a stall—and the other Spad shot underneath.

By that split-second change of direction, Strange had averted collision. But now the Boche had him at his mercy. The black ship's nose shot upward, and two livid streaks probed at the end of Strange's wing. Probed—and suddenly ended. Strange twisted around to see the Hun ship wobble and fall off. Tracers were still visible—but they were blazing into the Fokker's pit! Blaz-

ing from the nose of a thundering D.H. which had charged in.

The man in the Fokker never knew what struck him. Strange saw him fall, head lolling on his shoulders. Then another storm of lead raked over the side of the Fokker. Above the din of engines came a tearing sound as the ship's right wing collapsed. Turning onto its side, the German plane moaned down to a fiery finish.

The Spad had regained flying speed. Strange banked close to the D.H. and signaled his thanks to the Jays. Tom waved back, and Noisy, grinning from the front pit, shook hands with himself above his head in pugilistic fashion. Then the two-seater nosed down. Strange followed the D.H. to the ground. The field was as bright as day from the glare of the burning balloon and the two blazing Fokkers. Colonel Jordan and Andre dashed up breathlessly as Strange jumped from the Spad.

"Are you all right?" panted the G-2 chief.

"Yes, thanks to Tom and Noisy." Strange wheeled to Andre. "Did you catch the second spy?"

"The second one?" blurted the Frenchman.

"That spy at the searchlight was acting on signal from some other man—the one who fired the rockets," Strange said impatiently.

"*Sacre bleu!* I will turn this place upside down—"

"Wait! There's something more important. Have your men get the body that dropped from the blimp."

"It is too close to the fire." Andre pointed to where the balloon still blazed.

"Then it's safe for the moment," Strange muttered. He motioned toward the wreck of the Fokker which had not burned. "Have someone find out if there's a wireless receiver in that ship."

Andre hurried away to give the order. Jordan tugged at Strange's elbow.

"The spy who switched on that searchlight is dying. I want you to try hypnotism to make him talk—or see if you can read his mind."

Strange grimaced.

"That's pretty cold-blooded, colonel."  
"Can't help it," growled Jordan.

THEY pushed through the crowd at the truck. Strange saw a crumpled figure in mechanic's coveralls. The man's chest was bared, and blood was oozing from under a first-aid pack. The flight-surgeon stood up, whispered to Jordan. The G-2 chief turned hastily to Strange.

"Hurry! See what you can learn."

"All right," Strange said curtly. "But clear this mob away."

He knelt by the dying man. He had no heart for this task, but he wasn't supposed to be human. He was only a thinking-machine . . . .

The spy's blood-flecked lips moved slowly.

"Too late, Herr Brain-Devil," he whispered. "You will learn . . . nothing . . . from me—" his words trailed off, and he turned his head to look toward Germany. A faint smile touched his face as he died. Strange's eyes filmed as he caught that last thought.

"Did you get anything?" Jordan asked in a subdued tone.

Strange faced him stonily. "Yes, colonel—priceless military information. He was thinking of his home and of a little girl named Elsa."

Jordan flushed at the biting words. "We had to try it," he mumbled. "He might have given you the key to this thing."

"And he was only a spy," Strange added bitterly. Then his expression slowly altered. "You're right, of course, Colonel. I was only imagining myself in his place—a spy, dying in the midst of—"

He stopped as Andre came running from the direction of the squadron office.

"Come quickly!" the little Frenchman gasped. "Something has happened!"

They raced after him to the Adrian hut office. The door to the orderly room stood open, and lying by the telephone switchboard was the body of a *poilu*. One leg was twisted under him, and the nails of both hands had been dug into the flesh so tightly that it bled. The man's drawn features gave mute evidence to a death of agony, and their terrible expression was increased by the wild dilation of his eyes.

On his right cheek was a round bluish spot probably two inches in diameter. In the center was a faint black dot. As Jordan saw the blue spot he jerked around and stared at Andre. Strange caught the look.

"Why does the idea of poison upset you?" he demanded.

"Then you know that symbol?" whispered Andre.

"Symbol?" rapped Strange.

"The blue circle and the dot. It is the same mark which was found on the other victims."

"Your symbol is a paralyzed area," Strange said grimly. "It's caused by the poison. And I think I can explain the dot." He took a pencil and pulled open the dead man's mouth. A tiny steel

point, like the end of a needle, was visible inside the cheek where it had been driven through from the outside.

"A poison needle!" exclaimed Jordan.

"Practically a perfect means of murder," Strange said tersely. "That black dot is possibly curare—or more likely strophanthus mixed with snake venom, like the Kombe arrow poison. Whoever examined your other victims of whom you had planned to tell me should have discovered it."

"The reports haven't come through,"

Jordan said, staring at the dead *poilu*. "The men were killed in the last twenty-four hours."

"Where?" Strange clipped.

"Two at Bar-le-duc, both Intelligence agents. And an entire dawn patrol flight—found dead in their ships just as they were due to take off. That was at the 46th. Moreover, one of Andre's men was killed at Le Bourget."

"And now those devils strike right under our noses," Andre said furiously.

Strange eyed him queerly. "Who do you mean by 'those devils?'"

## ALL REVVED UP

for the

### Next Great 20% Larger Flying Aces

**Gripping Fiction**—"Philip Strange," Ace of G-2

"Phineas Pinkham," Deuce of the 9th

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**In the**

January **FLYING ACES**

On Sale November 24th

### IMPORTANT ANNOUNCEMENT!

FLYING ACES, in an early issue, will offer an unusual service to its model builders—a service marking a decided advance in the art of model building.

For the first time, experiments will be conducted in a modern wind tunnel *exclusively for model builders!* By arrangement with Casey Jones, outstanding American pilot, models will be tested in the huge, new tunnel of the Casey Jones School of Aeronautics, Newark, N. J. Under the direction of Prof. Walter Hartung, head of the school's engineering department, students will conduct the tests—and the results will be available to model builders **ONLY THROUGH FLYING ACES.** No model builder can afford to miss these articles. Watch for them!

#### STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACT OF CONGRESS OF AUGUST 24, 1912, AND MARCH 3, 1933. OF FLYING ACES, published monthly at Springfield, Mass., for October 1, 1935.

State of New York  
County of New York

Before me, a Notary in and for the State and county aforesaid, personally appeared A. A. Wyn, who, having been duly sworn according to law, deposes and says that he is the Publisher of the FLYING ACES and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, as amended by the Act of March 3, 1933, embodied in section 537, Postal Laws and Regulations, printed on the reverse of this form, to wit:

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5. That the average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the six months preceding the date shown above is (This information is required from daily publications only.)

A. A. Wyn, publisher. Sworn to and subscribed before me this 17th day of September, 1935. Anton Hyde, Notary Public, Nassau County, No. 553. New York Reg. No. 6-M-147. (My Commission expires March 30, 1936.)

"Who but this monster, Lacoste, the notorious poisoner, and the three traitors who escaped with him?"

"I was going to tell you, Strange," put in Jordan. "You've heard of Lacoste, of course—the French murderer who married women for their money and then poisoned them?"

"Yes. But the last I heard he was in the old prison at Fauborg St. Denis, awaiting the guillotine."

Jordan scowled. "I know. And in the same cell block with him were those three damned renegades you turned up at the 46th, the ones who'd been robbing Army paymasters and secretly peddling cocaine."

"I remember them," nodded Strange. "Cormak was the leader. Ross and Hickman were members of a Chicago gang who found things too warm and enlisted under false names."

"Tough eggs," grated Jordan. "Tougher than we thought. The night you left for London the three of them and Lacoste broke out of prison, leaving five guards and two officials poisoned. It's a mystery how they worked it, and also how they managed to vanish."

Strange was watching Jordan's angry face. "They sent threats of some kind?"

Jordan started, glared at him. "Yes, damn them! And since you're so smart, guess whose name was at the top of their murder list!"

"By your tone, I suppose it was mine."

"Right. Mine was next. Also the Jays were on it, and the two men who were killed in Bar-le-duc—"

"And the seven pilots of their old outfit," finished Strange. He flicked a keen glance at Andre. "And this Lacoste threatened *Surete* officials, I suppose?"

Andre's swarthy face hardened.

"*Oui*, may his black soul burn! And since then Colonel Raimond, chief of the *Surete*, has disappeared and is thought murdered. The judge who sentenced Lacoste died yesterday of poisoned wine at a sidewalk cafe. Then this agent of mine at Le Bourget, poor fellow."

An odd gleam came into Strange's green eyes. "Clever!" he said, half to himself. "Almost too clever."

"More vicious than clever," growled Andre.

Strange glanced at him sharply. "I didn't mean Lacoste. But now you mention him, do you know what poisons he was convicted of using?"

"Arsenic, cyanide, strychnine and a dozen other uncommon ones I could not even pronounce. Our men found he had an old copy of Schmidt's *Toxicology*, and was trying a new poison for every murder."

Strange gave an imperceptible start at mention of the German book. He turned quickly to the door. "Let's get at that post-mortem. This looks more serious than I thought."

AS they neared the hangars he saw the Renault. "Andre, I'll have to ask you to get that car back to its owner." He added a brief explanation

of what had occurred at the Winking Owl.

"*Nom d'un nom!*" exclaimed the little major. "If you told me sooner I would have flashed word to the *Surete*."

"*Herr Muller* and his pack probably fled at once," said Strange. He stopped short. "Muller! Why didn't I think of that!"

"What do you mean?" grunted Jordan.

"Muller used to be the right-hand man of Karl von Zenden, the impersonator."

"That mocking devil whom they called the 'Ace of a Thousand Faces?' queried Andre.

Strange gave a grim nod. "The most brilliant spy in the *Nachrichtendienst*. He was locked up at Vincennes. If he's escaped, too, and is mixed up in this—"

"No chance," snapped Jordan. "Your old enemy is dead. I myself saw the firing-squad finish him."

"You must have rushed the trial," Strange said in surprise.

"Good reason. We heard rumors the Boche were planning some scheme to free him. I had him secretly moved to the dungeon of that old castle where we hid Schriemer and von Lauss in April. We tried him the next day, and he was shot the following morning. We didn't even wait for dawn—got word there might be an air strafe at the last minute."

Strange started on toward the line. "It must have been a blow to Germany," he said thoughtfully. "No one could approach him in masquerade. He was on the stage before the war as a lightning-change artist, and his work was almost miraculous."

"You're no slouch yourself," rumbled Jordan.

"I'll never equal von Zenden." There was a curious admiration in Strange's voice. "He was the perfect spy. I've met men who could erect mental barriers against my attempts at telepathy, but von Zenden is the only one who ever deliberately forced himself to think along a false trail in order to trick me. He had nerves like iron."

"Well, they failed him at the last," the G-2 chief said sourly. "They had to carry him to the post; he was so terrified he couldn't even talk."

There was a grim satisfaction in his words. Strange gave him a peculiar look.

"Now, what the devil?" Jordan demanded.

Before Strange could reply, *Capitaine Lerue*, the squadron commander, strode up to Andre.

"We found a wireless in that Fokker, as you suspected. But there is also something startling—the plane was one of the captured Fokkers kept at the Neuilly repair depot."

Andre's black eyes almost popped from their sockets. "Name of a little pig!" he burst out. "Order a Nieuport started at once. I will soon know about this!"

"Tell them to start the D.H., too," boomed Jordan. "I'll go with you."

He was looking around for one of the G.H.Q. pilots when a klaxon sound-

ed. A long, black Hispano limousine with a French Staff pennant on its hood slid to a halt on the cinders. The non-com at the wheel hastily opened the door. A severe-faced French colonel, with pinched lips under a cropped mustache, emerged from the car. He wore a drab French field uniform and carried a heavy dispatch case in one hand.

"Colonel Raimond!" gasped Andre. "*Mon Dieu*, I thought you were dead!"

"I have been working secretly on this Lacoste case," snapped the other. He spied Jordan. "I rushed here to warn you of a diabolical scheme—" he broke off, stared around. "What is this?"

Strange followed his glance toward the waiting field ambulance. Stretcher-men were carrying one of the yellowed corpses to the machine. Andre, still dazed, made a hurried explanation. The French colonel swore.

"Where will those devils strike next!" Then he gestured toward the men with the body. "Go ahead. Andre, send the corpse to the *Surete* for autopsy at once!"

"*Oui, mon colonel*," Andre said reluctantly. "I will tell the driver—"

"A *Surete* man will be better," grated Raimond. He beckoned to the non-com who had driven the Hispano. "Take the ambulance to the medical examiner at Headquarters."

A red-faced *sous-officer* had started to take the wheel. As Strange glanced at Raimond, he thought he saw a swift furtive signal pass between them. That look galvanized some motor-center of his brain into furious activity. His green eyes raced over the French colonel, photographing every detail of uniform, face, and posture. His gaze flicked to the dispatch case. If he were right it would have a peculiar lock . . .

He stiffened. There was suddenly a feeling of dismay in the air—he could sense it as though some one had cried out.

## CHAPTER IV

### AERIAL AMBUSH

STRANGE turned. The red-faced *sous-officier* was staring at two *poilus* who were hauling a hose toward the embers of the blimp. The red-faced man jerked around, and Strange saw panic in his eyes. Then Colonel Raimond gave a hasty command.

"*Capitaine Lerue*, stop those men! That heavy stream might destroy some clue in the wreckage."

Lerue, surprised, ran through the smoke toward the wreck. Strange's eyes were riveted on Raimond's face. In the waning light it looked rigid and gray. He turned, stepped carelessly to the side of Colonel Jordan, who was standing near the Jays.

"Don't ask any questions, but stop that ambulance driver!" he said in an undertone. "Noisy, slip me my gun."

Jordan's mouth opened, closed with a snap. He started toward the ambulance as Strange wheeled back toward Raimond. Strange was within ten feet of the other man when there was a sud-

den yell from the ambulance driver. The French colonel sprang back, his free hand at his hip. Strange's gun flashed up from his side.

"Stand still!" he rapped. "Or this time you'll stay dead!"

Only a fraction of a second did consternation show in the other man's eyes. Then he was again the arrogant *Surete* chief. "What's the meaning of this?" he snarled. "Andre, arrest this fool!"

"It's no use, von Zenden," said Strange. "You gave yourself away."

"Strange, think what you're saying!" cried Andre. "You know von Zenden is dead."

"He's tricked you," Strange snapped. "I knew it when Jordan said—"

"Look out!" Tom Jay shouted.

Strange leaped to one side as he saw von Zenden's body tense. The red-faced sergeant had whipped out a gun and fired. As Strange sprang, von Zenden quickly turned and slammed the dispatch case fiercely against his elbow. The pistol blasted into the air, then fell from Strange's numbed fingers. Two shots crashed above the drone of the idling engines. Strange dived for his gun. Some one fell against him as his left hand closed on the weapon. He spun around on one knee, thinking it was von Zenden. Instead, a *poilu* was slumping beside him, a bullet-hole in his head.

The ambulance lurched forward as he jumped to his feet. He saw Jordan sprawled on the ground. The G-2 chief was up again in a second, hurling curses after the speeding machine. Mechanics scattered wildly as the car plunged toward them. Strange looked around hastily for von Zenden. In the dim light there was no sign of the Prussian or the false *sous-officier*. A motorcycle, sputtered into life near one of the shops. He dashed to the spot, recognized Lerue and one of his pilots. The machine rocketed in pursuit of the ambulance which now had almost reached the gate. A moment later Andre and Noisy Jay ran up breathlessly.

"*Sacre bleu!*" yelled the Frenchman. "Then those others escaped, too!"

"No, those were your men," Strange told him. "Von Zenden and that red-faced agent are still here some place."

Andre sent *poilus* scurrying for rifles. There was a brief rattle of gunfire from the sentries at the gate, as the ambulance roared through. Noisy Jay suddenly caught at Strange's arm.

"That limousine's door is open! It was closed before."

Strange ran to the opened door while Andre tore around to the other side. A huddled figure was visible in the rear of the machine. Strange covered the man quickly.

"Don't move! Noisy, switch on that dome-light."

A white glow shone through the frosted glass.

"Good Lord!" yelled Noisy. "Somebody's drilled him."

Strange slowly lowered his gun. He had not expected such an ending for the Prussian. There was a grim dark hole above the dead man's nose. He had

been shot squarely between the eyes, as though some one had taken deliberate aim. There was no blood, only a sinister blackness. Even in its waxen grayness the resemblance to Raimond was perfect.

Strange reached out and gripped the dead man's wrist. At the stunned look on his face, Andre thrust one hand inside and touched the corpse. He recoiled as though from an electric shock.

"*Nom de Dieu!* He is cold as ice!"

"You're right," Strange muttered. "He's been dead for hours."

Andre almost dropped his pistol.

"B-but he was alive a few minutes ago—"

"Von Zenden—not this man. This is the real Colonel Raimond."

"I don't understand," Andre said dazedly.

"There's no time to explain now. Von Zenden's still loose. We'll have to be on our guard or he'll escape."

"No one will leave this field," Andre said fiercely. "Knowing that devil's skill, I would not let even myself pass without examination."

HE turned with an oath as the low rumble of idling motors changed suddenly. A muffled report came as Strange ran toward the line. Near Andre's Nieuport, at the end hangar, he could dimly see a struggle going on. In a second, he saw a *poilu* mechanic stagger back and collapse. Two figures, mere shadows, leaped toward the Nieuport. Strange fired at long range. One of the figures stumbled, lurched back to face him. A small shiny object flashed up in the wounded man's hand. With a low but vicious snarl something whizzed past Strange's ear. His finger closed on the trigger of his gun. By the spurting flame he saw the red-faced spy.

The Boche took a step forward, doubled over and fell. The Nieuport's engine roared, and a cloud of fine cinders blew back into Strange's face. He blindly emptied his gun at the fleeing ship. Then, cursing himself for letting the Prussian trick him, he ran back to the idling D.H.

The alarm had already spread. Some one was clambering into the rear pit of the two-seater. Strange recognized one of the Jay twins as he reached up and pulled down his goggles.

"Hold it!" he shouted. He vaulted up and into the front cockpit. "All set! Take her off!"

The Liberty thundered, and the big ship charged out onto the field. Strange snapped his safety-belt, looked hastily around the pit in the hope that the pilot had left his goggles. He saw none, but an ear-phone helmet with a voice-tube connection to the rear cockpit—standard equipment in G.H.Q. ships—hung at one side. He put it on, adjusted the mouthpiece, fastened the helmet buckle. As the D.H. lifted, he bent to speak through the tube.

"Tom? Noisy?" he snapped.

"It's Noisy," came the quick answer.

"Give me the stick," ordered Strange. "Get onto those Lewises—and remember we're fighting von Zenden!"

A searchlight flickered up from the drome as he took the controls. He banked, slitting his eyes against the wind, then caught a blur of wings below and to the right. The Nieuport was twisting around, hardly a hundred feet from the ground. As he pushed the stick forward, the Nieuport skidded and plunged down over the trees. Strange snatched at the charging handles of the Vickers, expecting a fast chandelle. Then he paused, trips half-closed.

The Nieuport seemed on the point of crashing. He saw it rake through the top branch of a tree, then swoop off into the clear space above the field. Eyes narrowed, he hurled the D.H. after the single-seater. Von Zenden might be wounded. One of those blind shots might have hit him. Or he might only be trying to give that impression, intending a swift attack.

With a crazy half-roll, the Nieuport pitched back in the D.H.'s path. Strange raked it briefly as he kicked aside. The Nieuport tightened in a left bank. Strange whirled in a vertical turn, drove two bursts up the fuselage. Cherry-red, his tracers lanced into the pit. The fighter dropped in a slip, straightened and thundered on.

Strange gazed at it in astonishment. His bullets had gone straight to the mark. Unless the spy was wearing a bullet-proof jacket . . .

Another searchlight blazed up from the drome. The beam caught the Nieuport's left wing-tip, shifted to spot the plane. Strange jumped. The cockpit was empty!

Hardly believing his eyes, he ruderred in toward the ship. The Nieuport rocked in bumpy air, crabbed down into the beam. For a second Strange could see squarely into the pit. The stick was tugging against the safety-belt, which had been snapped around it.

"Good Lord!" came a shout in his ears. "Von Zenden's fallen out!"

"He never was in the ship!" Strange answered savagely. "We've been fooled by a clever trick. He hooked the belt over the stick and slammed the throttle open. Probably expected the ship to crash and draw the crowd. By a fluke it took off instead."

"Phew! That Heinie is smart, all right. But are you sure it's von Zenden? Colonel Jordan said he saw him shot."

"Jordan's a poor judge of character. Von Zenden is too proud to show the white feather in front of a firing squad. It must have been some poor wretch who was drugged and made up to look like him. That rumor of an air strafe was spread purposely so the execution would be ordered before daylight."

"If you're right where are you heading?"

Strange had swung around to parallel the highway.

"Von Zenden probably made a break while this was going on," he rapped through the voice-tube. "We'll fly toward Paris and watch for a speeding car."

"Okay," came the answer. "But I'm still in the dark about this business. Where does von Zenden hook up with those dead men in the blimp?"

STRANGE eased the throttle, gazed down at the road. "I'm not sure," he said grimly. "But I think Germany is back of the escape of Lacoste and those others. Something big is in the wind, and von Zenden must have charge of it."

"But how could they kill that blimp crew—"

"I don't know," grated Strange. "But something must have gone wrong with their plans. That non-com with the red face must have killed the switchboard operator so he could call von Zenden at some secret base and tell him the blimp had been brought down. There must be a wireless at the place, for those Fokker pilots were on the scene in a twinkling—"

"I begin to get it. Von Zenden followed up so he could make sure the bodies were destroyed. That's why he was so anxious to get that ambulance away. But what about the real Raimond's body?"

Strange leveled out at five hundred feet, stared ahead for a moment before answering.

"They must have held Raimond prisoner for a while before killing him. When the alarm came about the blimp, von Zenden would naturally think of posing as Raimond to get quick action. He undoubtedly had the body put in that car so he could use it for a model and save precious time in making up. He's cold-blooded enough to think nothing of it."

There was a pause, then a soft laugh came through the voice-tube.

"Thank you, *mein Freund*, you have told me several things I wanted to know."

As he heard that suddenly mocking voice, Strange spun around in amazement. A Luger was trained at his head. The man behind the gun laughed again.

"I am sorry to startle you," the voice came ironically through the tube. "Perhaps I should have been more gentle in dispelling the illusion."

With a swift movement, he shoved the Luger close to Strange's face.

"Put your hands outside the cockpit!"

After that first moment of shock, Strange had started to reach for his pistol. But at the spy's fierce command, he lifted his hands from the pit. He knew when a voice held murder.

The D. H. nosed down slightly, leveled out again as von Zenden took the stick. Strange was still looking backward, tautly waiting his chance. But the Luger never wavered.

"Take your feet from the rudder," the Prussian ordered. "Now turn around, and keep your hands in sight."

His tone was still smoothly mocking, but Strange knew what lay beneath. He sat motionless, hands on the cowling, as though resigned to his fate. The D. H. banked into a climbing turn, spiraled upward. Strange fixed his eyes on the tachometer, waiting the first sign that von Zenden's gun hand had shifted to the throttle. In a few seconds the Prussian's cool voice sounded through the tube.

"Hold up your left hand, my dear

Captain. Higher . . . Good! Now take your right hand and reach across to the throttle when I tell you. I will allow you two seconds to bring the tachometer to 1500 revolutions, and to get your hand in sight again . . . Now!"

Strange gritted his teeth as he followed the order. Von Zenden was beating him at his own game of mind-reading, it seemed. He heard the spy laugh.

"I hope you are not annoyed because of our shift in positions?"

With an effort, Strange conquered his anger. His only chance would be to play the Prussian's game.

He tilted his head to speak into the mouthpiece strapped on his chest.

"Since I put myself in this trap," he said calmly, "I shouldn't complain."

"It was quite a welcome surprise," von Zenden assured him. "I knew I would capture you some time, but I expected more difficulty. At that, I had a bad moment. There was no time for careful make-up, and I thought you had discovered me."

Strange glanced quickly at the compass as the D.H. swung into straight flight.

"A clever idea, impersonating one of the Jays," he stated carelessly. "Unless, of course, the three of you happened to be seen at once."

"I decided not to risk that. After borrowing your young friend's blouse and Sam Browne belt—at gun-point, I regret to add—I thought it best to render him *hors de combat*. Unless his skull is harder than I think, he will sleep another hour or so in the propeller shed."

## CHAPTER V

### BLOODY BARJOIS

STRANGE breathed a little easier, for he had begun to fear that Tom Jay was dead. His question had been intended to draw this information. He knew the Prussian's weak point—vanity. Von Zenden, the spy, missed the audiences who had applauded him as "The Man of a Thousand Faces." When nothing was at stake, he could not refrain from boasting of some daring trick or a brilliant escape he had made.

"If you had used your marvelous brain," von Zenden said silkily, "you would have guessed that move. Switching insignia and becoming a French subaltern would be too common, and a mechanic's coveralls would hide the uniform but give me no authority. What else but a change from French to Yankee—an olive-drab blouse to match the French field breeches, and a switch from an old man to a young one? I am afraid the Mental Marvel has slipped from the days when I knew him on Broadway."

Strange had listened; but his mind was divided, half of it busy with a plan to overcome the spy. If he could keep von Zenden talking . . .

"You took a desperate chance to get rid of that body," he said.

"I play for high stakes," von Zenden answered suavely. Then his tone abruptly hardened. "Enough of this. I

have not forgotten the last time you threw me off guard in this way."

For several minutes there was only the roar of the Liberty. Strange watched the compass. They were apparently heading for Germany. His eyes roamed over the luminous dials before him, to the stick which now and then moved between his knees. A grim look had come into his face. Months ago, he had decided to die fighting rather than be taken prisoner in Germany. No ordinary death waited him there, he knew. A bullet from von Zenden's gun would be better than the ignominy of a public hanging in Berlin—or worse.

He made a quick estimate. The D.H. was about twelve miles northeast of Paris. It was flying at two thousand feet, just under the patchy clouds. The spy would not dare to cross the Front that low. When he started to climb through those clouds would be the time—

"We are going to land," von Zenden's voice came sharply through the tube. "Raise your hands above your head. The gun is in my throttle hand, and I shall fire if you make a move."

For a second, Strange tensed to make a desperate lunge at the controls. Then he slowly lifted his hands. The other would have been suicide. He sat there, the prop-stream buffeting his arms as the Prussian banked to the south. The Liberty fell to idling, then revved up two or three times. To a casual listener, it would have seemed that the pilot was merely clearing the plugs and keeping the engine warm. But Strange knew it was a signal.

Almost at once, a speck of green light flickered out of the blackness. Von Zenden glided toward it, banked carefully as another speck appeared. Midway between the tiny green lights a faint white glow shone out, spread in the shape of a fan. At a thousand feet, the Prussian cut the switch. Liberty silent, the D.H. moaned down through the night.

Under the tilted right wing Strange glimpsed a grayish blur. It looked like a building perched on a knoll with a dark mass of trees around it. The two green lights and that vague white fan were at a lower level.

By now his arms were aching, but he hardly felt the pain. His eyes were glued on the altimeter. They were down to three hundred feet and von Zenden was slipping to bring them close to the white glow. Strange waited, muscles taut.

Dead-stick landing! If he seized the controls now it would mean a crash. That was why von Zenden had switched off the engine—so that his prisoner would not take a chance while he was watching the ground.

Trees flashed beneath the landing-gear. Strange saw men appear in the fan-shaped glow, then cleared ground showed ahead. The D.H.'s wheels touched earth close to the lighted spot. The ship bounced, started to settle again. Strange stared at the air-speed meter. The hand was at 60 . . . 55 . . . now 50 . . .

Suddenly Strange sank his long fin-

gers into the crash padding. Then with savage force he drove his left foot against the rudder.

The D.H. swerved violently. In spite of his hold, he was thrown against the side of the cockpit. A groan—then the clatter of the Luger to the floor-boards came from behind. Strange snatched the stick. The D.H. struck on one wheel, yawed wildly. He kicked hard to straighten it, grasped the switch. The prop was still turning over. If he could only start the Liberty—

Crack! The two-seater lurched drunkenly as a landing-gear strut collapsed. Before Strange could throw the switch on, the D.H. had plunged around toward the trees. With a crash and a jolt the nose dug into the ground. The tail flipped up and the ship went onto its back.

An outflung limb caught the tail and lessened the force of impact. Strange waited till the ship had ceased to move, then jerked open his safety-belt. His gun was in his hand almost as soon as he struck the ground. He pivoted on one knee. The half-covered floodlight far down on the edge of the field shone dimly through the trees. A quick glance and he saw he had nothing to fear from von Zenden. That vicious kick at the rudder had done what he had planned. An ugly bruise near the temple showed where the Prussian's head had struck.

The unconscious spy was sagging down against his belt. Below one dangling hand a rubberized packet had fallen and burst open. A mirror, tubes of make-up, and plasto wax had slid out of it. Strange's eyes rested briefly on them as he jumped to his feet. Von Zenden had obviously kept this miniature kit in the larger case so that he would not be without means to change his appearance if he had to abandon the other.

VOICES sounded indistinctly from the right. Strange wheeled and started into the woods. He had not gone ten feet when the floodlight shifted and its beam narrowed to point to the wreck. He halted as the brighter light showed a tangled growth before him. Von Zenden's men would be on him before he could break through there. If he ran into the clearing he would likewise be caught.

He stood motionless for a second, then sprang back to the overturned ship. He snapped open the spy's belt, dragged von Zenden to a spot beneath the front cockpit. Swiftly, he searched the Prussian, transferred a leather wallet to his own pocket. By the increased light, von Zenden's hurried make-up looked slightly artificial. Strange took the spy's goggles, then rolled the man on his face in the dusty grass.

Every move carried the precision of clock-work. As he finished with von Zenden he picked up the spy's miniature kit and shot a glance toward the clearing. The voices were louder, but trees still hid the running men. He set the kit on the D.H.'s wing, seized a tube and pencil. No time for more than a few hints . . . a hard line there at

the mouth . . . a few swift strokes near the eyes . . .

He dropped the lining pencil, snatched up a flesh-colored stick. A smear on his other cheek, a hasty dab with a cold-cream pad . . . with a silent prayer he turned to meet the first arrival . . . Strike first, that was the key!

"*Dunkopf!*" he snapped. "Tell them to switch off that *verdammt* light! I may have been followed!"

The other man, a burly fellow in the soiled uniform of a French corporal, halted with open mouth. Strange cursed him in fluent German.

"Hurry, you fool, or we'll be caught! Do you want to face a firing squad?"

The man turned pale and dashed back toward the light. Strange heard him shouting as he ran. He spun around, went on hastily with his make-up. Footsteps sounded, and as he stepped away from the kit two men came up breathlessly. One was tall, with a crooked nose and a brutal twist to his lips. The other was smaller, and his pinched face showed fright. Strange turned so they would see the harsh lines and shadows which suggested the real face of von Zenden.

"Get that Yankee pig out of here!" he ordered, pointing to the spy. "I'll follow as soon as I get rid of this make-up."

As he spoke, he turned the other side of his face, rubbing the cold-cream pad over the smear of grease-paint. The man with the crooked nose stared from him to von Zenden.

"Is he dead, *Excellenz?* If so, we can bury him with the others."

"No," Strange replied curtly. "Take him to the base."

The first man returned as he finished speaking. The three of them lifted the Prussian and carried him into the clearing. The floodlight beam was fading; in a moment it went out. Strange had already noted a miniature electric light attached to the make-up kit. He waited till the men were a hundred feet away, then crouched behind the D.H. and switched on the bulb. If it came to a real test, he would need more than those crude lines. His imitation of von Zenden's voice had helped convince those three. Seeing his half made-up face, they had thought him the Prussian in process of transformation. But he might run into some one with keener eyes before he made his escape.

He worked furiously, but with precise, steady fingers. Some one else was coming. He could hear muffled voices. He took a last glimpse into the magnifying mirror. The cheek bones were not quite right. He stuffed two pads of cotton wool inside his mouth, between his jaws and cheeks. A poor substitute for wax or overlays, but they would have to do. He had one advantage . . . few people knew von Zenden's real face well.

"What caused the crash?" he heard a harsh voice demand, a voice abruptly familiar.

"I don't know," some one said gutturally. "The *Oberst* did not explain."

"Where is he? What is he waiting for?" said the first speaker. Strange

stiffened as he recognized the voice. The man was Muller, the spy at the Winking Owl!

STRANGE drew out the wallet he had taken from von Zenden. Tossing it on the ground, he stepped around the D.H. As the two men came up, he was bending over, playing the light from the make-up kit along the ground.

"What happened?" came the voice of the pseudo *capitaine*.

Strange looked up. "Matter enough! One of those accursed twins you failed to capture almost broke my neck."

Muller started. "Then you already know—"

"They were both at the French drome," Strange interrupted. "I tricked one of them to help me escape. After we were in the air I hit him with my gun. He recovered his senses just as I was landing, and he seized the controls."

"It is too bad you did not capture that damned Brain-Devil instead!" grated Muller. "I would like to get my hands on that swine."

Strange bent and picked up the wallet as the light spotted it. He snapped off the switch, turned to the man with Muller.

"Stay here with the wreck. If an Allied plane flies near here, set the ship afire."

"*Mein Gott!*" exclaimed Muller. "Are you crazy, Karl?"

"I know what I'm doing," Strange said calmly. "Come on, I've no time to waste."

"But I don't understand—"

"It's quite simple. They'll be hunting this ship. If it burns there'll be no need to explain where the pilots are."

"Yes, but they'll look for the bodies."

"We'll provide them if necessary," Strange answered, with an imitation of von Zenden's mocking laugh.

He purposely stumbled as they reached the clearing, so that he could see which direction Muller would take.

"What happened at the Winking Owl?" he demanded as they went on.

"I was outwitted," Muller said bitterly, "just as my plans were perfected. This man Strange is a fiend." And he described glumly what had occurred.

"I have discovered something," Strange told him. "We are going to Paris at once. I can promise that you will see your Brain-Devil before the night is over."

"*Gut!*" muttered the German. "But you had better see Schmidt first. The report about the blimp has set him to raving."

Strange's eyes narrowed in the darkness. Here was a chance to learn the key to the riddle of the yellow death. If he refused, Muller's suspicions might be aroused.

"Very well, but only for a minute," he agreed.

They were skirting the edge of the clearing. Two hundred feet beyond the now darkened floodlight he saw several white sticks planted in a row.

"How does it feel to be passing your own grave?" Muller jokingly asked.

The query was so unexpected that



## CHAPTER VI

## THE CORPSE IN THE CABINET

Strange gave a start. He blessed the darkness which hid it. "Too many know of that," he growled.

Muller fell silent. Strange gazed off to the left, where a small, wooded slope and the bulk of a gloomy building showed faintly against the sky. He knew now where he was. Those white sticks marked the graves of spies who had been kept prisoners at old Barjois Castle. That building, then, must be the castle, and this clearing was one of the French "contact fields," used as a checking point for student pilots on cross-country training.

He remembered landing here in April when G-2 had taken over the castle as a spy-prison. Schriemer and von Lauss had been put to death on this very field. The execution spot was not far from those graves. He peered ahead. He recalled a small stone house, apparently as old as the castle, down at the bottom of the slope. The French had kept two or three *poilus* stationed there to make reports on student planes which circled the "contact field," or occasionally landed for fuel if they had become lost and were short of petrol. The reports were telephoned to the various dromes, and the *poilus* were isolated for days at a time.

It was obvious that these men either had been bribed by the Germans, or more likely had been killed and their places taken by spies. The German-speaking pair he had seen in French uniform bore that out. The stone house, then, must be von Zenden's base—or one of them.

HE saw the building in a few moments, a gloomy pile of rock set back under wide-limbed trees. Several men were whispering near the door and he saw two more by a car parked under the trees. One of those by the door turned quickly.

"Herr Oberst, do you want the prisoner taken on into the basement or—"

"Put him in that car," Strange cut in. "I'll be back to attend to him at once."

To his surprise, the man opened the door and went inside, followed by two others. He had supposed that von Zenden was lying out there in the dark. The room immediately inside was not lighted, but a yellow gleam came from under the door to the next room. In a moment the man with the crooked nose came out with two others, grunting under von Zenden's weight. The spy's disguised face was briefly visible in the light before the second door closed. Muller glared after the supposed Jay twin.

"Do me a favor, Karl. Give me that swine in a locked room when he wakes up."

"Perhaps I can arrange that," Strange said with a grim significance which was lost on Muller. "But we must hurry. Where is Schmidt?"

"In that foul den of his, I suppose," growled Muller.

He led the way into the next room, which was sparsely furnished as *poilus'* quarters. Strange's quick glance noted another exit and the position of

the lights. There was no one in the room, but at the bottom of the cellar steps a man in dungarees stood with a Mannlicher pistol strapped at his hip. Muller nodded as they went down the stairs and the man turned, picking up a flashlight. Strange unfastened the second button of his tunic, so that he could swiftly draw the gun in his armpit holster.

The flashlight passed over a pile of rubbish, some empty boxes, and made a white path into a small wine cellar. The man with the light rolled a keg away from the wall, shoved against a stone which was slightly larger than the rest. With a scraping sound, a cleverly matched piece of flooring swung up and revealed itself as a hinged trap-door.

"Wer ist es?" barked a voice from the blackness below.

"Der Oberst und Herr Major," replied the man who had opened the trap.

A switch clicked, and a green-shaded light disclosed steps leading down into a passage. The muzzle of an automatic rifle shifted as the man back of the light ceased to cover the opening. Muller stepped back.

"You first, Karl."

Until that moment, Strange had supposed their destination to be some room in the basement, perhaps a hidden one. But this was evidently a passage leading to the castle. He hesitated an instant. Did he dare risk some excuse and turn back? Muller and the Boche with the Mannlicher were both eyeing him curiously. The slightest suspicion, and he would be covered from three sides.

"What is the matter?" queried Muller.

"I forgot to have that Yankee *Schweinhund* bound and gagged; he is going in the car with us."

"Franz will tell them," said Muller. He jerked his thumb, and the cellar guard went upstairs.

Strange descended the steps, berating himself for having entered the building. He should have guessed there would be a connection with the castle. It explained von Zenden's escape and the substitution of the ill-fated wretch who had died in his stead. The Prussian and his men must have returned and overcome the caretakers after the G-2 guards had left.

The man with the rifle stood aside to let Strange pass. Strange moved quickly by the bright light. Ahead, electric bulbs of low candle-power marked the steep upward slant of the tunnel. The wires and fixtures were new. He began to climb rapidly, hoping the exertion would keep Muller from asking questions.

A dank, musty atmosphere pervaded the tunnel. Most of the original bracing had decayed long ago, and new, rough-hewn timber supported the roof at intervals. The light wires and a telephone line were fastened to the uprights. There was no electricity, Strange knew, in the old castle. Evidently the Germans had connected with the transformer back on the field, which the French had installed for use with the emergency floodlight.

THEY were at a point which he estimated as midway in the passage when Muller spoke in a laboring voice from behind him.

"Go slower, Karl, will you? What's the hurry, anyway?"

"I dislike this tunnel," Strange retorted. "I'm always uneasy in here."

"You ought to bless its existence," Muller said. "Lucky for you that we learned about it and maneuvered to get you brought here from Vincennes."

"I still don't like it," Strange told him irritably. "I've changed my mind about going back this way. We'll have the car brought up to the castle."

"Himmel!" gasped Muller. "Are you losing your mind? First you order the plane set on fire—"

Strange whirled as he heard the German's sharply indrawn breath. Muller was staring at him in sudden alarm. For a split-second more, the German's eyes probed at his made-up face.

"Grosser Gott!" he whispered.

His right hand flashed down, but before he could draw his gun Strange's automatic was firmly against his ribs. Muller's swarthy face became a sickly white. His hands quivered as he raised them into the air. Strange jerked a Luger from under the flare of the spy's French tunic. His green eyes regarded the German with brief amusement.

"Our informal meetings seem about to become a habit, Herr Muller."

"Teufel!" Muller said hoarsely. "What have you done with von Zenden?" Then his dark eyes blazed. "The prisoner! So that is why you had him tied and gagged!"

"A remarkable deduction," said Strange. His ironic smile vanished. "We're going up to the castle. If you care to go on living, do what I tell you." Fear and something else struggled in the German's face as he turned to walk ahead.

"Stop," Strange ordered abruptly. He quickly searched Muller for other weapons, but found nothing. "Put down your hands and stand there."

He took the magazine from the Luger, rapidly counted the cartridges. It held six, with one in the chamber. He put the partly emptied Colt .32 back in his holster, poked the spy with the other gun.

"Go ahead, and talk fast when you answer these questions. How many men in the castle?"

"Five or six," muttered the German.

"Beside Lacoste and those three renegades you're keeping prisoner?" Strange snapped.

Muller gulped. "Ja," he answered. "This Schmidt—he is the Hugo Schmidt who wrote the *Standard Toxicology*? The one they call the 'Poison Master'?"

"Yes," Muller said sullenly.

Strange glanced at the electric-light wires which, with the braided telephone line, ran along at shoulder-height.

"You are operating a wireless set

up there?" he demanded.

Muller twisted for a startled look backward. "*Ach du Lieber!* How do you know all this?"

"Keep moving," ordered Strange. He gazed up into the slanting tunnel, eyes narrowed in feverish thought. With his make-up, escape seemed fairly simple, providing he could keep Muller cowed. Yet he sensed something in the German's confused brain . . .

"Halt!" he said curtly. He reached out and pulled the tape from a splice in the telephone wire. In a second the connection was broken. He prodded Muller ahead. Fifty feet beyond, the slant decreased and he saw a door at the end of the tunnel. He quickly took out his handkerchief, wound it around his right wrist.

"I'm holding this gun out of sight, inside my blouse," he told the spy in a low tone. "I've made my handkerchief look like a bandage, but that 'crippled hand' is ready to move fast. Understand?"

Muller jerked a fearful glance over his shoulder.

"You were a good actor tonight in Paris," Strange said in a grim voice. "Play up to me now—or it's your finish."

A grill opened in the iron door which blocked the way, and a pair of eyes surveyed them. The door ponderously opened. As a stolid German in *poilu* uniform barred it behind them, Strange saw a narrow hall, dimly lighted. It stretched ahead for sixty feet, with massive wooden doors on both sides. A feeling of uneasiness came over him the moment he entered. There was nothing familiar about this scene . . .

"VON ZENDEN!" an excited voice howled from one side. The second door on the left had opened, letting a bright light stream into the corridor. The glow shone on an oily, bald head, on a man who in face and figure was grossness personified. Small blue eyes, diminished to half their size by thick glasses, seemed to bore out from slits in his fat and greasy cheeks.

"Well?" he snarled at Strange. "Did they learn the secret? *Lieber Gott*, speak up!"

Strange glared back at him. "The secret is safe, for which you can thank me!"

"*Himmel sie Dank!*" the other man exploded in relief. His voice changed to a whine. "Forgive my manner—I have been half crazy, waiting to learn. But come in—I must know what happened—" he stared at Strange's arm, which rested in the opening of his blouse, as in a sling. "*Ach*, you are injured!"

"Nothing serious," grunted Strange. "It was hurt in the crash."

The bald man nodded, turned back into the room, from which came an acrid smell of chemicals. Strange had already guessed that this greasy German was Hugo Schmidt, formerly Berlin police expert on poisons. There had been ugly stories about the man—an accusation of murder. And he had been forced out of the official service. The

name of "Poison-Master," used at that time by the press, had clung to him. Since 1914, there had been rumors that he was secretly working with the German Army.

Strange nudged Muller ahead of him, tightened his grip on the hidden Luger. As he closed the door behind him, he sent a quick look about the room. One side was littered with carboys of chemicals. A condensing apparatus and a scarred old table filled with test-tubes and bottles stood under a shaded drop-light. The shade was so thick that it created a gloom in the rest of the room. Strange could also see an asbestos-covered cabinet with a glass panel in the door.

Secured by heavy straps inside the cabinet was a motionless figure. Strange felt a shiver run through him. For the sixth time that night he was looking on a ghastly yellow face, swollen and horrible. The Poison-Master made an impatient gesture.

"Don't begin to get squeamish. I had to make an experiment with this new run-off, and you yourself ordered that nosing Frenchman killed."

"Yes, I know," muttered Strange. "But there's something sickening about that poison."

"So you're still thinking about the poor women and children of Paris," sneered Schmidt. He looked sourly at Muller. "And back in the Fatherland you told me von Zenden was a man of iron."

A chill went up Strange's spine. The women and children of Paris! That sneering devil had planned something so terrible that even von Zenden had demurred at taking part . . .

"I've no time to waste here!" he rasped at Schmidt. "There's work to be done outside—what do you want to know?"

"Everything!" the Poison-Master flung back waspishly.

"The crew of the blimp was killed as reported," Strange told him curtly. "One of the Fokkers set it afire, destroying four of the bodies. I managed to have the other one spirited away."

"The careless fools!" fumed Schmidt. "They must have spilled some water on one of the bags."

His bullet-like eyes shifted to several small canvas sacks placed along the wall. Strange's pulses leaped. The sacks were identical with the ballast bags, in the blimp, even to the French stamp on the sides. Then the crew had been involved in the plot—had not been innocent victims.

"One of the engines must have had a leaky hose connection," Schmidt grumbled. Then a startled look came into his greasy face. He swung hastily toward a map of Paris which hung on the wall. "Which way was the wind? They may have dropped some of the bags before losing consciousness and drifting over that drome."

Keeping close to Muller, Strange looked at the map. There were several check-marks on it. With sudden horror he realized they were the reservoirs of Paris! This fiend meant to poison the entire city.

THE shock of discovery took his mind for an instant from Muller. Seeing his chance, the spy frantically leaped upon Strange and almost knocked him from his feet. Strange smashed an uppercut to Muller's jaw, stopped his head-long rush. Before the spy could seize his arm he snatched out the Luger.

"*Handen hoch!* Both of you!"

Schmidt backed away, his thick lips working in terror.

"Stand still!" Strange ordered savagely. "Get up against the wall. You, too, Muller!"

"*Gott im Himmel!*" moaned the Poison-Master. "Are you out of your senses?"

"You blind fool!" raged Muller. "That's not von Zenden."

"Keep quiet," Strange grimly warned them. He drove them farther back from the dazzling light. As his eyes pierced the shadows beyond the gruesome death-cabinet, he saw a ladder formed by iron rungs sunk into the wall. At the top was a trap secured by a heavy bar with two large padlocks through the hasps.

The truth hit Strange with a jolt. He was down in a sub-basement below the dungeon G-2 had used. It was probably some medieval hiding-place unsuspected even by the caretakers. He glared at Muller.

My ordering the car to the castle—that's how you knew I wasn't von Zenden!"

Muller was white-lipped, but he managed a snarling grin.

"You're right, *Herr Brain-Devil!* There's no way out but the tunnel."

Strange swiftly measured the two men. He drove the Luger muzzle into Schmidt's bulging stomach. "Where are the keys to those padlocks?" Sweat stood out all over the man's greasy face. "In—in von Zenden's room," he said hoarsely.

"Where is that?" demanded Strange.

"Across the hall," groaned Schmidt.

"Move!" Strange rapped out. He forced the two men toward the door. Muller was reaching out toward the wrought-iron handle when voices rose excitedly in the hall. Strange sprang to throw the bar into place. Before he could slide it, the door was hurled open. He leaped back, avoiding Muller's plunge.

A dozen Germans had swarmed into the hall. Behind them, with Jay twin make-up still on his face, was von Zenden!

Strange fired point-blank into the charging men. An agent in dungarees fell and was trampled down. A pistol spurted red. A bullet tore at the loose flap of Strange's helmet. He pumped two more shots into the group. The man with the crooked nose screamed and dropped his gun. Those behind him gave back for a second. Strange jumped toward the heavy door. A hail of lead thudded into the massive planking. A slug tore through, splintered the wood almost in his face.

Now a hand with a gun appeared around the edge of the door. Strange fired. Blood spouted from the German's

## CHAPTER VII

## THE RED TRIANGLE

shattered wrist. As the man groaned and lurched back, Strange threw his weight against the door. Some one howled out a curse as the door closed on his arm. The arm jerked back. Strange dropped his now empty Luger, grasped the bar.

Snarling Germans hurtled against the heavy panels. Strange braced himself, trying to slide the bar. Suddenly a wet cloth was whipped around his head. Before he could claw it away, his lungs had sucked in a stifling breath. Gasping, dizzy, he staggered back.

He heard the door burst open. Something crashed on top of his head. As he went down, he made a desperate effort and pulled the cloth away. Through a darkening haze he saw the enraged Germans . . . . Some one kicked him . . . . oddly, he felt no pain . . . . He saw the face of von Zenden . . . . von Zenden's eyes and mouth grinning through his Jay twin make-up.

The whole room whirled. The growl of voices faded off into a murmur . . . . a black silence . . . . and then oblivion.

WHEN Strange opened his eyes again, a figure was bending over him. He stared up dazedly. Noisy Jay! Then memory returned to his aching brain. He waited, eyes narrowed, setting his jaw as pain beat his brain.

"Phil!" whispered the other man. "Good Lord, I thought you'd never come around!"

Strange pulled himself up on one elbow, gazed at the other in astonishment. It should have been von Zenden—it couldn't be anyone else. But his trained eyes saw no sign of make-up.

"Noisy!" he whispered. "Is it really you?"

"You said it," came Noisy's familiar voice. "And if you ask me, we're in one hell of a fix!"

Strange shook his head blankly.

"I must be crazy," he muttered. "How could you be in here?"

"By being a damn fool," growled Noisy.

Strange tried to sit up, dropped back as his head swam dizzily. He looked around, saw they were in a small stone cell with only a hole in the door for ventilation. Coils of wire, a few boxes of canned food lay in one corner. An extension cord ran under the door to a light socket nailed on a box.

"All we need is a can-opener," Noisy observed sourly, as Strange looked at the tinned food. "And if we get tired of that stuff, we can hang ourselves with the wire."

"I still don't understand," said Strange. "How did you get here?"

"We knew von Zenden had captured you when Tom came to and told us what had happened. Andre called the sound-rangers to try to spot the D.H. They couldn't pick up the ship, but they swore it couldn't reach the Front in that short time. Half a dozen of us have been hunting for you. I was hedge-hopping this section, and I just happened to see the wreck, where they'd pulled it back under the trees."

"You saw it?" Strange interrupted. "You mean it's daytime now?"

"Daytime nothing," retorted Noisy. "It's about ten o'clock at night."

"Then I've been unconscious all that time," Strange said grimly. He gave Noisy a brief outline of what had occurred. "I suppose you landed when you saw the D.H., and then they jumped you?"

"They blamed near killed me," growled the Jay twin. "A big Kraut in French uniform knocked me cold. When I snapped out of it I was in that house down below. I pretended I was still out. Von Zenden was talking to this bird Muller, and I managed to dope out the truth about that blimp from what they said. They'd worked a couple of their men into the blimp crew and they knocked out the rest after the ship took off last night. Then they brought the balloon here and loaded it with some kind of poison—"

"I know," Strange cut in. "They were going to drop the stuff in the reservoirs."

"They still are," Noisy said harshly. "I heard von Zenden say they'd get the other patrol blimp tonight. He plans to impersonate a French officer and then substitute two of his own men for the blimp mechanics."

"It's a diabolical scheme." Strange got to his feet with an effort, began to pace back and forth. "Planes would be suspected, flying that low. Besides, they might crash the sausage-balloon nets. Everyone's used to the blimp's flying low. They can poison every reservoir in Paris and nobody will be the wiser—until they start to die!"

"The damned fiends!" raged Noisy. "They'll kill a million women and kids!"

Strange's face was like granite.

"Germany's desperate, but if she wipes out Paris the French army will collapse. At that, she wouldn't risk it if she weren't perfectly covered. Somewhere in this building they're keeping Lacoste and those three other crooks ready to use as 'goats.'"

Noisy started.

"I heard Muller say something about Lacoste and some Apaches. He told von Zenden there'd be looting, anyway—"

"That's it!" exclaimed Strange.

"They'll make it look as though those four thugs had connected up with the Paris underworld. A scheme to ransack the city while most of the people are dying. Fantastic, but plenty will believe it."

"An interesting analysis, my dear Strange," a suave voice spoke from the direction of the door. Strange wheeled. Von Zenden's undisguised face appeared at the hole. The Prussian moved aside, a scraping of metal was audible, then the door slowly opened. Three German agents entered the cell, Lugers poised. Von Zenden watched indolently while the guards tied both prisoners' hands behind them. He was wearing a French uniform, but the short leather jacket he wore over his tunic concealed his insignia. The flap of his helmet and the goggles low on his forehead hid the bruise at his temple.

"Take them to the laboratory," von Zenden ordered.

SCHMIDT was waiting nervously at the iron door to the tunnel. He, too, was in flying garb, but his strained, frightened look was in sharp contrast to von Zenden's poise. He gave Strange a murderous glare, turned to the Prussian with a snarl.

"If you had let me have him, he would not stand there so coolly!"

"You attend to your butcher's work," retorted von Zenden. "I'll take care of the rest."

Schmidt kept an ugly silence as they started down the tunnel. Strange and Noisy had been shoved ahead by the guards. Each time they passed a shadowy spot between two of the dim lights, Strange furtively pulled at his bonds. The ropes had been drawn fairly tight, but he knew he could slip them with a little time to work. Even then, he would have the five Germans against him.

He could feel Schmidt's baffled hatred as though it were a tangible thing. The Poison-Master was close behind him, on the heels of the third guard. A lambent flame touched Strange's green eyes . . . . As though Schmidt had snarled the words he caught a savage thought:

*. . . . Von Zenden, you're a fool . . . . the reward is the same for these two, dead or alive . . . . if I had my way they'd go to Germany dead, not drugged . . . . no easy death, either . . . . carbolic acid . . . . or sulphuric . . . .*

A feeling of desperation surged over Strange. Once they were drugged, they would be lost. They would wake up in Germany, ringed by guards.

The procession reached the basement of the stone house. There was no one on guard below. Muller's tense voice could be heard as they climbed the stairs. The German whirled around from the telephone as they appeared.

"I was calling," he told von Zenden hastily. "The blimp came before we expected it."

"Is it loaded?" asked the Prussian.

"Yes, and they'll have to take off quickly. The wind is rising, and they can't hold it much longer."

"Send in those two pilots who brought over the captured Breguets," ordered von Zenden.

"They're helping hold the balloon—"

"Take these three." Von Zenden motioned to the guards. "I'll watch the prisoners."

In a few moments two men hurried into the room. Like the Prussian, they were dressed in French uniform with flyingcoats and helmets. Both were obviously nervous. Von Zenden pointed at Strange and Noisy with the pistol he had drawn.

"Herr Schmidt is going to drug these two men. You will take them to the Fifth Army headquarters field and have them put in chains and kept under double guard. Tell Headquarters this green-eyed man is Captain Strange. The other is one of his aides."

The two pilots scowled at Strange and

Noisy. One of them tapped the butt of his holstered pistol.

"If the drug should wear off, *Herr Oberst*, this will be handy."

"Simpleton!" said the Poison-Master. "This drug will keep them asleep for at least six hours."

He had taken a bottle and a sponge from his pocket. Strange drew a deep breath, forced it quickly but silently through his lips. He repeated the operation. If he could fill his blood with excess oxygen as the old Yogi had taught him in India . . . .

Abruptly, the two pilots seized him and threw him to the floor. Schmidt pounced like a hawk, forced the wet sponge against Strange's face. Strange kicked out wildly. Not to struggle would make them suspicious. Suddenly Schmidt drove his knee into Strange's middle. The breath whistled out of his lungs. For a second, a cold and choking vapor swept into his nostrils. He checked it with a violent effort. The oxygen in his blood would give him perhaps a minute . . . . There had been no time for complete suspense of breathing. That took many minutes.

His lungs began to ache. An iron hand seemed to be clutching at his throat. His breast heaved with a frantic attempt to force him to draw breath. And still that hand drove the sponge against his face.

"Be careful you don't kill him," von Zenden spoke angrily. "I have a use for him—alive."

The sponge was lifted away. Strange drew a gasping breath, lay rigid, heavily exhaling.

"You dirty rats!" he heard Noisy Jay burst out. There was a sound of scuffling. Then he heard the door open, and recognized Muller's anxious voice.

"Karl! The men can't hold the balloon any longer!"

"Here!" rasped von Zenden. "One of you take this sponge—you saw how it was done. Come on, *Herr Schmidt*."

"Wait a moment," Schmidt said hoarsely. "Are you sure my weight will not be too much? I can still show them how to—"

"No!" snarled the Prussian. "Get you fat carcass out there! This damned massacre was your idea."

Strange cautiously opened one eye as he heard the three men leave. The pilots had Noisy on the floor. One was squatting on him, gripping Noisy's throat, while the other knelt with the bottle and sponge.

"Hurry up!" growled the first man. "That stuff is making me dizzy."

STRANGE arched his back, tugged at the ropes which bound his wrists. Just as the second German thrust the sponge toward Noisy's face, his left hand slipped through the noose. He rolled over, sprang to his feet. Noisy's furious struggles were holding the German's attention. Strange's green eyes flashed to the holster at the hip of the man with the sponge. He leaped, whipped out the gun, and struck—all in one swift motion.

The German sagged down, a frightful gash in his skull. The other man twisted

around, a horrified look on his face. The descending Luger crashed into his head before he could even cry out. With a stifled groan, he fell back across Noisy Jay.

Strange dragged the man's body to one side. Noisy had forced the sponge from his face, was trying to get up. He reeled as Strange helped him to stand. Outside, the grumbling drone of engines changed. The blimp evidently had been shoved up, was taking off. As Strange unfastened the knots at Noisy's wrists, Noisy shook his head groggily.

"Go ahead without me, Phil! I'm out on my feet!"

Strange wheeled, ripped the helmet and goggles off one of the Germans. In a second more he was pulling on one of the leather jackets. He drew the goggles over his eyes, pushed his gun under his belt.

"Flopp over my shoulder," he rapped at Noisy. "I'm going to carry you out there—they'll think I'm one of their pilots." Strange jerked Noisy off his feet, slung him to his shoulder as though he had been a child. Then he made for the door.

It was several moments before he could see in the darkness outside. He turned in the direction of an idling plane, guided by the exhaust. Some one passed near him, going toward the clearing. The exhaust flare of a taxiing ship showed red and blue in the gloom. The plane stopped, and he saw it was a Nieuport. There was another Nieuport between two Breguets. The engines of all three ships were idling. Strange started toward one of the two-seaters. He was within sixty feet of it when a man appeared from the shadows.

"Is that you, Muller?"

Strange's heart skipped a beat. It was von Zenden.

"*Nein, Herr Oberst*," he said in a gruff voice. "I think he is back there."

Von Zenden peered through the darkness. Strange felt Noisy stiffen. He shifted his burden with a grunt.

"This swine is heavy, *Herr Oberst*." He started on. He reached the Breguet, pretended to dump Noisy carelessly into the rear cockpit. He was pivoting toward the front pit when there came a yell from the direction of the house. A spy-mechanic took it up in a twinkling.

"*Hilfe!* The prisoners have escaped!"

Strange reached the cockpit in a mad scramble. Above the Liberty's drone he heard von Zenden give a furious shout. Scarlet flame stabbed out of the night, and a bullet zipped through the cowl of the Breguet. Strange shoved the throttle open, kicked the two-seater around toward the spy. Von Zenden flung himself to the ground as the heavy ship roared at him. Another kick at the rudder, and the ship was thundering into the clearing.

Guns were blazing from three or four directions. Strange crouched over the stick. That first Nieuport was sure to be after them in a flash, probably all three ships. And that death-laden blimp was already on its way!

The rear-pit guns burst into staccato song. Strange shot a glance back as the

two-seater lifted. One of the Nieuports was charging up wildly, a blur of silver in the dark. Two red lines of tracer shot over the Breguet's tail. Noisy had pulled himself up to the rear-pit guns. A vicious blast caught the zooming ship. The Nieuport slipped, crashed on one wing.

Strange banked, hurled the two-seater into the night. He flew northwest, straight for the nearest Paris reservoir. It was the logical starting-point—and Germans were systematic . . . .

SOLID blackness lay ahead. Strange held the throttle open, drilled up to a thousand feet. The stick moved forward. Engine wide-open, the Breguet roared through the miles. Two minutes . . . . three . . . . five . . . .

Off to the right, down in that solid blackness, a pin-point of red light glowed. In another moment, two more appeared. Strange slammed the Breguet onto its nose, dived like a madman. One hand flew to set the C.C. gear for his guns.

A red triangle . . . . signal-lights on the ground, guiding the blimp . . . . shielded blinkers flashed on by German agents! And within that triangle, the first of the reservoirs!

Strange jumped as Noisy pounded his back.

"I've got two flares back here!" Noisy yelled in his ear.

"Let one go!" Strange shouted.

Dazzling white light blossomed back of the wings. He whirled and dived underneath it. Three hundred feet below, the blimp was hastily swerving toward the reservoir. The Breguet screamed down like a Fury. Into the zone of light suddenly pitched a Nieuport, and a torrent of Vickers slugs ripped through the two-seater's wings. As the Nieuport hurtled past, Strange saw the face of von Zenden.

Noisy swung his guns, but the Prussian was clear of the light. Strange twisted out of his dive, crouched behind his black cowl-guns. Through the ring-sights he now saw the car of the blimp. He squeezed his trips. Fabric and wood tore loose from the bow of the car. One of the crew of spies hastily swung a twin-mount. Strange rocked the rudder bar. The gunner staggered back, dropped out of sight. In a cloud of splintered fragments, the blimp's starboard prop went to pieces.

Yellowish streaks lanced before Strange's face. He snapped the Breguet into a lightning turn. The other two-seater had plummeted down out of the night. Muller, bare-headed, rode the pilot's pit, while behind him a spy-mechanic hung on the swiveled guns.

As Muller kicked around to give his gunner full aim, von Zenden's Nieuport came charging from behind the blimp. Both ships slued wildly to avert a crash. Strange plunged between them, his grim eyes fixed on the blimp.

Von Zenden dived headlong. Muller had pulled up as though to chandelle. A fiery torrent from Noisy's guns poured into the two-seater's tail. Strange had a swift glimpse of Muller staring back

in horror as his crippled ship plunged. Then the blimp loomed up before him.

The crashing propeller had torn a hole in the side of the gas-bag. Three of the crew had gone down under the same fusillade which had wrecked the prop. The fourth was dragging himself inch by inch toward the swiveled guns. For an instant Strange thought that Schmidt had died with the others. Then a cringing figure moved behind the starboard engine. As the Breguet thundered in, the glow of the parachute flare showed the terrified Poison-Master. The German fell to his knees, his shaking hands raised in supplication.

Over his guns, Strange saw that frenzied prayer for mercy. His half-tensed fingers held for a second on the trips. Then his eyes turned hard as flint. With a snarl, the Vickers erupted, and into that dead-white face went a stream of smoking lead. One burst! Strange grimaced and ruddered the ship away.

Oily smoke puffed out from the crippled

engine as Noisy's tracers probed its vitals. Then a tongue of crimson forked through that shrouding blackness which hid the Poison-Master. Strange backsticked, hurriedly rolled clear. Behind him, the leaping flame rose to that rent in the bag. In a blazing mass, the stricken craft sank toward a patch of woods beyond the Canal de l'Ourcq.

Searchlights were belatedly springing up on all sides. French planes were streaking across two of the defense fields, and down through the weaving light beams three of the bat patrol came screeching.

Strange whipped the Breguet around and dived for the Third Defense drome. Those bat pilots might not stop to decide who was friend or foe. He dropped the last five hundred feet in a forward slip, landed close to the line. Half a minute later, he was explaining to Lerue and a dozen excited Frenchmen.

"And what happened to this thou-

sand-faced devil?" exclaimed Lerue as Strange finished.

"He cracked up in that dive," Noisy Jay interposed. "I saw him hit—" he stopped, as a faint moaning sound grew into the howl of wings above them.

A silver Nieuport swooped down, engine idling. Something fell to the ground. With a salute the pilot sat back in his pit, hurled the ship at full-gun up into the night.

"So you saw him crash," Strange said drily.

A mechanic came running to him with a message which had been stuffed into the barrel of a rocket-pistol. He read the words:

*Captain Strange:*

*Perhaps I shall sleep better after seeing that fat pig burn. I had no love for my orders.*

*But—you and I shall meet again!*

Grimly, Philip Strange smiled. He would not forget.

## Legion of the Flame

(Continued from page 21)

As Keen started to run for the amphibian, he saw that the Army man had lost his hold and was falling. He ran to the wall and peered over. A screaming figure was falling toward the green splash of lawn that marked the north side of the Battery. Even from that height, Keen heard the sickening thud. He turned away and darted for the black machine.

Once he was aboard, the Mick gave the motor the gun, pressing both brake pedals down until the plane threatened to nose over. Then he released her and she shot ahead. Luckily, she lifted clear in time to hurdle the four-foot wall. Then the ship shot out over the North River. Keen leaned over and rammed in the Skodas as they circled out over the Statue of Liberty.

"WELL, you almost managed to smother that one," ragged Barney through the head-set. "Where to now?"

"Something tells me I ought to get up to 55th Street right away," muttered Keen, thinking of the Griffon card that the Army man had stuck into his pocket a few seconds before he went to his death. "Old Lang will be on me like a ton of brick."

"Gonner jump off again?"

"We'll see . . . Hello, what the hell is all this?"

Keen had suddenly noticed a strange, stepped design in the sky. He grabbed a pair of night glasses and spun the focussing knob a trifle.

"Quick! Over to your right, Barney. There they are, heading for Newark airport. The swine! You take her, I'll play the organ in the back here. Now then, get above them—they're all fighters."

Barney rolled the black amphibian over hard and shot the ship toward the queer formation silhouetted against the searchlight-swept sky. He adjusted his

variable-pitch prop, set the flaps again, and gave the plane all it would take. Behind him, Keen was breaking out a double-set of Brownings and pulling loading handles like mad.

As the black craft hurtled at the stepped fighters, Barney turned and grinned.

"I get it. Fiat two-seaters with French, British and Italian markings," he clicked through his clenched teeth. "There's about twelve of them, together with the 'Giro.'"

The formation of skulking fighters, all capable of about 160 fully loaded with a dozen 12-kg. bombs apiece, had turned directly over the noted Pulaski Skyway, the huge elevated auto highway which spanned the Jersey meadows and offered a certain guide to the darkened Newark airport.

Barney kept the amphibian climbing until he got a tap on the back from Keen. Then down like a plummet they dropped, with engine out full. Keen set the Krupp rotator guns belching clouds of high caliber ammo. His Darn guns, set in the troughs on each side of the opposed engine, rattled madly, and the Chatelleraults in the wings joined the chorus.

The terrible hurricane of lead and steel battered the leading Fiat into a mad tangle of dural and fabric. The sub-leader, or the outer tip of the Vee, tried to rush in and take up the leadership, but Keen picked him off so suddenly that he swerved and fouled a third ship. The two scrawned madly, nosed in, and cracked up in mid-air with a terrific explosion.

Three accounted for in one dive!

Barney was in his glory now. So far they had not had a shot fired at them, so sudden and unexpected was their charge. Then the gunners aboard the Fiat monoplanes opened up—but their fire was inaccurate and hurried. Bar-

ney swept the multi-gunned black amphibian back and forth across a wide arc and scattered the formation. Then they bashed in again and engaged them one at a time, curbing the raiders in their wild attempts to get through to the airport—where, unbeknownst to the raiders, new defense squadrons had hurried in from the Third Corps Area.

"Don't let them through, Barney!" screamed Keen. "There goes one—spilling his H.E. on the elevated highway. My Lord!"

A blossom of fire and smoke billowed up from one of the main supports of the great steel and concrete highway. There was a dull roar, and a long section of the great skyway dropped with a gigantic groan and lay across the meadows.

Barney then tagged another two-seater. Its high wing fluttered away like a great slab of cardboard, and its fuselage, carrying two battered bodies, nosed down in a crazy tight spin and finally buried itself all the way up to the fin in the dank mud of the meadows. The dry marsh grass caught fire and the wind swept the blaze across the open space toward the Hackensack River like a scourge.

Keen was now fighting off a pair of Fiats that were ramming down at him from two angles. He held his fire on one for a short crisp burst, then swung fast on the balls of his feet and caught the other. Both tried to zoom out of the way—only to come together with an ear-splitting crash, decorated with splintered designs of fire and sparks. Barney took the signal from behind, whipped the amphibian over, and cleared the tumbling wreckage just in time.

"Get away! Get away!" screamed Keen. "Here comes the Navy!"

Two wild-climbing Corsairs from the darkened Newark field swept up out

of nowhere and pounced on the six remaining ships that were trying to get away and skurry out to sea again.

"Where to?" asked Barney, watching the Corsairs hurtle down the sky.

"The penthouse. We've wasted too much time now. Make it the park. I'll taxi down."

"Jumping?"

"Certainly. Get going."

Then, while Barney guided the black amphibian back over the partially darkened city, Keen ripped off his coverall and took a neat dinner suit from a compact locker behind him. He completed the transformation and again drew on his parachute harness. Barney eased over the confines of Central Park on a well-muffled engine, then turned and nodded. Keen caught the glance, grabbed a light suitcase from the same locker, and prepared to evacuate.

"Get back to Graylands and sit tight until I call you. Lay off the Duggan's Dew, too."

"Just one," grinned Barney.

"One drink?"

"Naw, one bottle."

"I said a *pint*," growled Keen. "Just a mouthful!"

"You'll wind up in the lake if you don't get off—or in Columbus Circle. Wouldn't you look funny there with that black umbrella?" cooed Barney, giving the ship a jerk.

Keen toppled off. He counted five, then pulled the rip-cord.

Landing behind trees in the park, he quickly slipped out of the harness. In five minutes he had coolly folded the 'chute and stuffed it into the handbag. Then he dusted off his hands, lit a cigarette, and strode toward the roaring traffic. He checked the suitcase over a Columbus Circle counter, then climbed into a taxi with a bored air and gave the driver his 55th Street address.

AS Keen had expected, Drury Lang was waiting for him in the doorway, but strange to relate, he did not ask where he had been.

"I don't know what has happened, but I didn't do it," Keen grinned. "I've just been for a stroll through the Park. What's the Griffon been up to this time?"

"You can always manage to be somewhere when anything big happens," growled the detective. "I suppose you were out buying rest homes for underpaid store workers, this time."

"No, but it's a good idea. Have you ever noticed the—"

"Don't try to string me, Keen. Come on upstairs. All hell has broken loose again."

"Thought I heard some guns going off . . . somewhere. What's up?"

"Guns going off? Cripes, they blew the Pulaski Skyway off the map tonight! But two Navy guys accounted for 'em. Seems they're Italian-made ships with British and French markings. And say, did you hear about this guy Brigadier-General Fullard? The bloke who has been blamed for the loss of all those planes that went out to sea the other day?"

"Up for a court martial?" asked Kerry.

"Naw. Found dead in his room at the Army and Navy Club—looks like murder."

"What did you say? . . . Say that again," rapped Keen, plainly startled.

"I said Brigadier-General Fullard was just found dead in his room at the Army and Navy Club. Why, what's wrong?"

"But the Army and Navy Club is only a couple of blocks from here," Keen argued sanelessly.

"What of it? The guy's dead, just the same."

Keen had recovered his astonishment by now. But he was strangely silent. Lang wondered what he was thinking. "It was murder, all right," he continued, "but it's a pip! He was shot through the mouth and the bullet only made a hole in his cheek. Not even a tooth knocked out—but he was as dead as a doornail!"

"Must have been his heart," Keen suggested.

"No. . . . He had only just undergone a military physical exam. He was in perfect shape. The guys call him 'Steelback,' which is a tip-off on him."

"I'd like to see him. Was anything left around?"

"A 48 caliber bullet in a wall panel. You can look at that. Might find something from it."

"I can't believe it," said Keen strangely.

"Look here. You don't know anything about it, do you?" Lang taunted. "You sure act goofy. Better stay out of that park, you're getting sappy. Be writing poetry next."

"There wasn't a 'Griffon' card around, was there?" husked Keen, pouring himself a drink.

"No. . . . Say, what the devil is the matter with you, anyway?"

"Nothing. Just a bit of a shock. First you don't ask me for a detailed explanation of where I have been all night. Then you tell me that another raid has been staged, and on top of it all, a guy is killed with a 48 caliber gun that only punctures his cheek. I can only stand so much of a good thing, you know," Keen smiled.

"You're hiding something, Keen, but I'll get it. Come on around to the Army and Navy club."

KEEN and Lang wound their way through the mob that congregated in the club corridor. Voices were raised. Pages crackled out names. Officers were listening around a large radio. Outside the street was choked with official cars. They went up to Fullard's room and found John Scott, the Secret Service man for the district, a number of plain-clothes men, and Army officers. The body was covered with a sheet.

"Hello, Keen," greeted Scott drawing him to one side. "This is a mess."

He handed Kerry the bullet that had been found in the wall, and while the ballistics expert examined it, he went on to give more particulars.

"Here's the Brigadier as dead as Caesar, but the elevator boy says the

Brigadier left about an hour ago. Someone's crazy! The kitchen staff says the Brigadier entered the building about three hours ago through the back entrance all muffled up in a greatcoat. But there are a dozen more who swear he entered the front door in uniform carrying one of those trench coats on his arm. The elevator boy swears the Brigadier left with the trenchcoat over his arm. But here the guy is, dead."

"Is his trench coat here?"

"No, neither is his cap or stick."

"Are you certain this is the Brigadier?"

"Of course it is . . . . They've all identified him," Lang broke in.

Keen went over to the body and kneeled down. He drew the sheet back and gave a perceptible jerk. Then he leaned closer and examined the comparatively small wound in the dead man's cheek. He wagged his head and pulled the sheet back. Then he got up and stared about the room.

"Here's where the bullet stopped," explained Scott. "Look, in here."

He pointed to the hole in the panel. Keen took one look at it and turned to Lang.

"Smart guy, but not smart enough. That bullet was never fired in this room. The Brigadier was killed with something else. A 48 would make a hell of a hole in his face and it certainly would go into the panel further than that. That panel is soft pine."

"Damn!" gasped Lang, staring up at the hole.

The telephone bell rang. Someone answered it and called Scott. The Secret Service man took up the receiver, spoke, then listened for what seemed several minutes. At last with a gasp he answered: "Hold everything. I'll be right down!"

"What's up!" asked Lang, staring at Scott's white cheeks.

"The Griffon again. I thought you said he was dead."

"Why? . . . . They found him in a crashed plane out at sea . . . . At least we thought it was the Griffon," Lang stuttered. Keen was picking up a small whitened slug that had made a mark on the paneled wall and had fallen down alongside a small book case.

"Yeh?" barked Scott. "Well, listen to this. A man wearing an Army Air Service uniform and with an aviation wristlet on his arm was thrown—or fell—out of one of the planes that just made that attack on the Skyway. He fell in Battery Park, and his wristlet bore the name of Brigadier-General Alton Fullard. How do you like that?"

"How can that be . . . . Fullard's here . . . . dead?"

"Well, this new guy has been identified as Fullard by those who knew him . . . . at least what's left of him has. Come on, we're going down there. He had a card marked 'The Griffon' in his pocket, too."

Keen did not appear to be listening. He was studying the small whitish slug he had picked up.

"Keen!" raged Lang. "Where the hell were you tonight?"

"In the park. Look up that taxi-man."

He'll tell you. I kept his number. Why, what's up now?"

"Never mind. Come on with us. We got another Brigadier-General Fullard down town."

**T**HE police car they leaped into wormed its way through the insane tangle of traffic. Newsboys were bawling the latest extras. Overhead, groups of fighting ships skurried. Ambulances screeched for the ferry slips and the Hudson Tunnel. Around the Times building, in the heart of the city, the automatic sign blazed out with the latest puzzling news—

NAVY AIRMEN DESTROY ENEMY BOMBERS.  
PULASKI SKYWAY DESTROYED IN NEW RAID.  
RAIDING SHIPS BEAR FALSE MARKINGS.  
BRIGADIER FULLARD FOUND MURDERED.  
AMERICAN OFFICER TOSSED FROM WAR PLANE.  
WAR DEPARTMENT ORDERED TO MOBILIZE FORCES.  
WORLD POWERS DENY KNOWLEDGE OF RAIDING CRAFT.

No wonder the man on the street was puzzled—and terror-stricken. He had been told of the complete destruction of the air defense of New York. He had seen airports and great buildings bombed. He had seen enemy craft raiding the important points of New York with practically no opposition. Who was responsible for this dastardly attack?

"68 W. 36 N," Keen kept repeating to himself as they rumbled toward the Battery. But he also had another worry. The small white-flecked slug in his pocket—apparently from some sort of air-pistol. Probably one of those Spanish guns said to be far superior to any other such gun made.

"Queer though, that plaster stuff on the knurled base of the slug," he reflected. "There was no plaster wall in that room. There were no cheap plaster statues about. Yet this slug killed him—but how? There was only a small puncture in his cheek."

They eased down lower Broadway and the police chauffeur skilfully guided the car through the maze of traffic and mobs of panic-stricken people, many of whom carried great loads of suitcases and hurriedly tied packages. They were heading for the ferries or bridges that would take them away from the death canyons of stone and steel.

"Here we are," grunted Scott. "Come on and have a look, Keen."

The clock on Trinity Church bonged out the hour of eleven. A squad of blue-coats guarded the shapeless pile that lay on the Battery lawn covered with a canvas. Scott took a torch from a plainclothes man, pulled the canvas back, and directed the light on the gruesome body.

Scott gasped. Lang peered down, amazed. Keen examined the wristlet and wagged his head as he saw "Alton Fullard" plainly engraved on the plate.

"Anything in the pockets?" asked Keen.

"Only a few papers, a city map, quite some money in large denominations—and the 'Griffon' card."

"Let me see that map!" Keen said.

The man took something from a stack of papers he held under his arm. It was an ordinary, large-scale map such as auto-owners carry. It showed the main highways, bridges, tunnels, and ferries of the Metropolitan area. For more than a minute Keen studied it, making careful note of the scarlet circles placed at several spots.

"What do they mean?" asked Scott, pointing at the circles.

"You guess," said Keen. "I don't know."

But Keen really had an idea.

Lang stared down at the body again and tried to fathom it all out. "What the hell are we up against?" he asked. "Two guys so much alike it ain't funny. Which one is Fullard, anyways?"

"We'll never know until we can get Fullard's fingerprints from the War Department. But if this is Fullard, what the deuce was he doing up there in one of those machines. They weren't ours!"

"You know, Keen," went on Lang, still staring down at the body. "I'll always believe you know something about this. You acted pretty queer when I told you that Fullard had been found murdered up at the Army and Navy Club. I'd give a lot to know just where you were tonight."

He got up off his knees and turned to see Keen's reaction—but Keen was no longer there!

"I knew it! I knew it!" Lang moaned. "That devil knew about this guy all the time. Where is he?"

"Why, he just slipped out—over toward that building," the plainclothes man stammered.

"You stay here," said Lang officiously to his Chief. "I'm going to get him. That bird knows something."

"He took that map, too," the plainclothes man bellowed.

**I**T was true. Keen had raced toward the Navigation Building. He hurried into the corridor, got into an elevator, and alighted at the seventeenth floor. He calmly walked along the corridor, then darted suddenly through the door that led to the emergency stairs. Up three flights he raced and peered out along the corridor again. There was no one there. In a flash he was back in the office that had seen him hardly ninety minutes before. He snatched at the telephone and called Barney.

"Fill her up, load everything, Barney, and come back and get me here . . . somehow. Got to work fast, I'm afraid."

"Where are you?"

"Same place—Navigation Building. Make it snappy."

"I'm not trying to get on that postage stamp, Boss," argued the Mick. "I'm not that good."

"All right, drop the cable and the weight and pick me up that way. I can make it. Same light signals."

"I'll do my best, but it's damn risky.

All commercial ships are grounded. Just came over the radio."

"Never mind. Who said you were commercial? You don't even carry license numbers, you bum!" roared Keen. "Get down here, fast!"

Barney grumbled a reply and hung up. Keen again turned to the desk and sat studying the map he had filched from the plainclothes man. It did not seem to make sense until he finally caught two circles set on opposite sides of the Hudson River.

"What the deuce does that mean? Those circles are around the breather towers for the Holland Tunnel."

Then he began to get a more sane viewpoint. He studied the positions of the other circles—and like a flash it came to him that the circles marked every ventilation point in the city. Tall square towers that fed pure air to the subways and main subway stations. Others that provided clean air for important below-street-level railroad terminals.

"Good Lord," he cried aloud. "That's their game, next. Bomb these breather towers with gas-bombs and the suction of the breathers will draw in the gas and kill everyone below the surface. What a hell of an idea?"

In his mind's eye he could see thousands seeking shelter in the underground stations—only to be trapped in the path of death-dealing gas. He remembered the plot that had been discovered in Paris where an enemy country had made a complete survey of the movement of air currents through the most important streets of the French capital and in that way had discovered a way in which to flood the underground subways with invisible gas that required but one sniff to stiffen a body in death. But here in New York, the plan was even more efficient where monster towers standing out plainly amid the city structures provided splendid targets for the raiding airmen.

But while he had ferretted out the secret of the marked map, Keen was still full of curiosity. He had fully half an hour to kill before Barney would arrive. There was the matter of that strange slug, and the identity of the man who lay out there on the Battery turf.

He went through the desk compartments, studied everything. Then he opened the small doors in the desk's upper corners and found several small boxes, vials, and bottles. He went over the chemical formula markings they all carried—then suddenly noticed a small bottle partly filled with a queer white powder. He studied it without removing the cork. Then he checked the formula markings on the label and whistled.

"Ardena!" he gasped, holding the cork down as though he expected it to leap out.

He recalled that this poison, the deadliest known, was first accidentally discovered by laborers working along the Pienaars River in the Transvaal. It is found in certain bulbs that grow along that waterway and the unfortunate devils who had accidentally cut two of

these open with their spades died instantly. Others, who only inhaled the air, almost died. They were only saved by the greatest medical skill. Chemists today agree that three grains of Ardena diffused in a roomful of people, would quickly kill all present.

Keen studied the bottle of death reflectively. Then it all came to him. This man had managed to make a paste of the powder in some manner, taking proper precautions of course with a mask. And he had covered the knurled base of a bullet with the deadly poison. Even the slightest wound and the poison would do the rest. That explained the death of the man at the Army and Navy Club. Keen thanked his lucky stars that he had had no cuts on his fingers while he had handled the death slug.

Keen glanced at the time and made a quick calculation. Then he snatched at a pile of note-paper on one end of the desk. Carefully he drew on a pair of thin rubber gloves and inserted a sheet of the paper in the typewriter that stood on a folding shelf at one end. Then he carefully wrote:

*To Drury Lang,  
New York City.*

*Brigadier General Alton Fullard was murdered by one Norton Brainard, former Army officer who was cashiered out of his regiment for espionage. Brainard hid in Fullard's rooms and killed him with an air-pistol slug that had been dipped in Ardena, a little-known, but deadly, South African poison.*

*The man found dead in Battery Park was this same Norton Brainard, a clever impersonator and an American member of the Legion of the Flame—a multi-national war-mad society which somehow has unscrupulously obtained a group of Fiat planes. It was Brainard who represented himself as Fullard and gave out the orders for the Second Corps area rendezvous at 68 W. 36 N. and thus brought destruction to the machines and men involved.*

Keen again consulted the complete set of reports he had found in the desk. Then he continued:

*The prime reason for this amazing organized attack on our country is to break diplomatic relations between the United States, Great Britain, France and Italy. It will be evident, considering the present turn of international events, that such a breach would be destructive to world peace.*

*How the raids on the American mainland are being carried out or from what base is not known at present, but it is evident that some sort of an attack involving the use of invisible and highly destructive gas is planned, and it will probably be directed at the City of New York.*

Here Keen stopped hurriedly and scrawled *The Griffon* at the bottom of the sheet. He addressed an envelope with Lang's name and address across the front, snatched at a stamp, and jammed it on the corner.

# Advertiser's CONTACT

A LITTLE NEWSPAPER DEVOTED TO A BIG CAUSE ★ OF, BY AND FOR FLYING ACES CLUB!

VOLUME 17

DECEMBER, 1935

WHOLE NUMBER 30

## Proving Conclusively that Flying Aces Readers Do Go In for Sports Wear and Equipment!

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"... my skates are good for another four years, but I must have new shoes before the training season opens. How about it? I'm going to ride on the tail of a certain manufacturer and try to bring him in alive!"

grass last summer, for F.A.C. members from the entire North American continent have written in backing him up.

Bert Macpherson—one of the club's old "standbys" and a fellow who has done more perhaps for the club in the way of securing advertisers for the old mag than anyone else—was among the first to write, and this, in part, is what our Canadian friend said:

"What I'm hollering about this time is Bob Hartwell's article on the Contact page of the October issue. Hartwell hit the nail right square on the bean. In fact he reminded me that I am going to require some new equipment for the coming winter, and I'm not going to buck head-winds to get it. If it is advertised in FLYING ACES, I'll accept the 'tail winds' of the F.A.C. and buy from our advertisers."

This snow and ice-covered page may seem a bit previous, but the days of winter sports are on the immediate horizon—in fact this is our December number, Buz-



Bob Salzman and Dave Hausehild, Big Fork, Mont.

... before long this country will be a "Winter Wonderland," as it was when this picture was taken last winter. Be assured that all members of our unit consult good old FLYING ACES advertising columns before making any purchases whatsoever."



Then he twirled the dial of the radio set to the wave length of the Brooklyn Navy yard and began calling. When he got an answer he said in a firm steady voice:

"Advise all available military aircraft to be prepared for a raid on the City of New York sometime between 1 a.m. and dawn. At all events, no raider must reach the limits of the City because a deadly gas attack is intended. This order must not be ignored as the raid is certain to take place. Advise all Corps Commanders, Naval area Staff, and the Secretary of War. This is The Griffon, speaking."

And a weary-eyed Sparks jotted down the message, made a quick check on the directional antenna, bellowed for a young staff lieutenant, and began pounding brass for all he was worth.

With another quick glance at the sheets of paper he had found in the desk and a quick squint at the clock, Keen picked up the letter he had typed to Lang. But then he halted a minute, grabbed a pair of pliers, and wrenched out all the type-bars of the typewriter. He quickly defaced them all and stuck them in his pocket with the intention of throwing them away once he was in the clear.

Finally, he flipped off the light, slipped out into the corridor, made his way to the elevator, and dropped the letter in the mail-chute. Then he hurried to the stairs. But as he slipped through the door a voice behind him bellowed.

"Keen! Hey you, Keen!"

It was Drury Lang!

KEEN went white, sucked in his breath, and raced up the dark stairway. Two flights he covered before he heard the door below open and Lang's voice raging. He slipped onto the roof, then darted toward a ventilator block. Jamming his hat down tight on his head, he took a small flashlight from his pocket. Then he listened intently. Above, he caught the low wailing drone of an idling prop and the moaning dirge of taut wires. He flashed his light twice and waited.

He heard the door of the roof entrance open and saw Lang step out and peer about. Keen watched the detective hurry to the buttress wall and peer over.

Keen grinned. Somewhere above, a silenced amphibian lowered a cable from a drum inside the compact body. At the cable's end hung a streamlined weight and a few feet above it a padded-grip loop.

The amphibian, throttled back and using the air-brake flaps, was making a tight circle directly over the roof of the Navigation Building. The cable dangling well over 1,000 feet below was describing a narrow circle with its streamlined weight as it descended toward the flat roof.

It was the same device Keen had used in the adventure of *Ko-Dachi* to escape from the roof of Rockwell Manor—a device that had been used on many occasions and perfected by a certain European air force to pick-up

agents inside the enemy lines. Keen and Barney had worked the thing until they were now startlingly proficient with it. But they usually had worked it with a parachute—just in case.

Keen peered around the ventilator block and watched Lang who was acting like a man who knew he was being watched. Keen listened and caught the tell-tale whirr-whirr-whirr of the descending cable. Lang heard it, too, and stared up. Keen saw it now, his eyes were trained to pick it out of the darkness. He leaned down, picked up an empty paint can, and with one hand he threw it far down the roof, to distract the detective's attention. Then, the instant the can clanked into a far corner, he darted out of his shelter and flashed the light once. The leaden weight was squirming about on the roof of the building like an enraged lizard. Lang heard the footsteps and turned. He yelled and reached for a gun. Keen took his flashlight and directed a high-powered beam straight into the little detective's eyes. The blinding flash stopped Lang for an instant. He threw one hand up to shield his eyes, then he fired from the hip.

He had fired at empty space! The figure in black was no longer there, but a streaked something had shot up off the roof with the speed of an elevator, an eerie twanging and snaky hissing marking the direction.

"Whew!" gasped Drury Lang. "I'm certainly seeing 'em tonight! I must need a rest. I could swear someone who looked like Keen was standing there. But where the devil did he go?"

Lang spent a full half hour searching the roof, but not a trace of his man could he find. A puzzled, frustrated man, he returned to the street, where the bedlam was now increased by a dozen mobile anti-aircraft guns that rattled out of Broadway and took up their posts on the green turf, rattling and clanking. Jacks were lowered and screwed tight to steady the platforms. The great muzzles slowly raised and the gunners took their positions at the breeches.

An officer barked, and the gunners spun the wheels and set fuses. Shells slipped into the steel maw and the breech block closed with a bang. A lanyard twanged and the gun rang out, throwing her barrel back against the concussion chambers.

The range had been taken on a black, unmarked amphibian that swept through a broad sword-blade of light.

THE point 68 W. 36 N. lies approximately 450 miles out to sea from the tip of Manhattan. If you are acquainted with shipping, you would know that the point in question lies midway between the heavy-traffic Southern Route to Europe and the lanes followed by vessels heading for Bermuda and certain South American ports. A glance at the regular weekly map showing positions of ships at sea will disclose that there is a wide area, fully 200 miles in breadth, that sees practically no shipping of any kind. A ship captain would be able to keep his vessel

well out of sight for weeks by judicial consideration of his radio reports and reference to his nautical almanac.

Such was the game that Captain Ludo Dorlant, present skipper of the former *Milavian*, played to keep his mysterious vessel out of the binocular lenses of the few vessels that plowed the seas headed for West African ports.

You will remember the *Milavian*, the noted luxury liner that was so suddenly withdrawn from the heavy trans-Atlantic run for improvements to her turbines in order that she might attempt new speed marks. You will perhaps recall that she was reported in dry dock undergoing repairs. You may also remember that a few weeks later the *Milavian* was suddenly sold to a firm of ship-breakers for the junk she might provide.

There was the usual talk in the shipping world about the possibility of hull failure under higher speed, together with the unmistakable trends toward smaller and less expensive ships with more cabin-space for the so-called tourist passenger. All this seemed to settle the mystery of the *Milavian*. She had failed to make the grade and had been scrapped for smaller and less expensive craft. Look at the *Leviathan*, the *Olympic*, and the old *Mauretania*—all withdrawn from service.

It was reasonable, but men who knew their ships would have been astonished to see the *Milavian* out there in the dead area of the Atlantic.

Her four funnels were gone—replaced by sweeping tubes that carried the smoke back under the lip of her stern deck. Her superstructure, was now fitted with a quick-release gear that allowed it to fold away into a compact island fitted with the full-sized control tower of a modern aircraft carrier.

But there were no aircraft aboard the *Milavian*! Those that had been aboard had been destroyed by Kerry Keen, Barney O'Dare, and a few members of the United States Navy. The situation was now reversed. The skipper of the *Milavian* now hoped to provide a haven for a new formation of aerial killers.

ONCE Keen had been safely drawn up inside the black amphibian, he hurriedly clambered into a more suitable flying kit. He pulled on helmet, goggles, parachute, and gloves, then slipped past Barney and took over the forward seat.

"Every tank full?" bawled Kerry.

"Sure . . . Why?"

"We're going a long way, son—the way out to 68-36 to find those lads who have been kicking up this mess. You should have been with me, Barney. More fun! Two Brigadiers—both alike—popped off in two separate parts of the city. And I was honored with credit for both."

"Phat the hell are ye talking about?" demanded Barney.

"Skip it. I'll tell you later. It's too goofy for words. They're staging a raid again on the city with gas. A beaut too." And Keen climbed the

(Continued on page 74)

# Flying Aces Stamp Tales

A MONTHLY AIR JOURNEY VIA STAMPS  
PILOTED BY CHARLES CORWIN, A.P.S.

WHAT is the most beautiful air mail stamp? Ask twenty aerophilatelists, and you may get twenty different answers. Design, color, and size all influence such a choice. Of course, we all have our favorites. However, if each of those twenty air mail stamp collectors listed a half-dozen picked copies, you will find the "Flying Horse," featured on the *correo aereo* stamps of the Republic of Uruguay, at least among the runners-up in each list.

This winged steed has been featured by Uruguay on 34 stamps ranging in color from red-orange to bright violet—in short, the whole range of the spectrum. Surely, the lover of horse flesh can pick his favorite color to win. The values of these stamps range from one *centesimo* to four and one half *pesos* face value.

The Uruguayans chose the flying horse by popular demand. The series was first issued in 1929, re-issued in 1930-31, repeated in 1931, and continued throughout 1932. The design pictures Pegasus soaring between two cumulus clouds against a background of the northern constellation of the same name. It would seem particularly appropriate to use this spirited equine as a symbol of the air mail—what with horse-power and wings.

Turning from the most beautiful to the almost horrible, we have a greater choice. At least two stamps should be considered in the latter category. One portrays the "Garuda bird"—the Siam air mail of 1925. The other is Spain's *correo aereo* of 1930—this being a combination air post-special delivery stamp, as indicated by the black surcharge "Urgente." In the first item, the "Garuda" is an East Indian idea of what the king of birds should look like. On this monstrosity, the god Vishnu is supposed to fly about its sacred business. This heavier-than-air creature

has a head of an eagle with vicious beak, the supple arms of a dancer adorned with bracelets, the torso of a wrestler, and feathered legs equipped with prodigious talons. The whole effect is that of a bad dream in full flight.

The second stamp, sometimes poetically entitled the "phantasy of flight," was taken from the artist Goya's note book. The central portion of the stamp shows five figures and one pair of wings. The expressions are demoniacal and the whole effect is that of a quintet of aviators who have bailed out minus their "chutes." This massed descent of potential members of the Caterpillar Club would be more representative of some of Russia's aeronautical experiments than of aviation in romantic



Left: Uruguay. Right: Italy.

Spain, land of the *senoritas*.

Since the days of Adam and Eve, human beings have been envious of the bird's ability to fly. It is no wonder that mankind conceived of winged angels, magic flying carpets, the winged sandals of the Greek Hermes, and his Roman counterpart, Mercury.

Canada's air mail stamps have depicted angels, as mentioned in previous issues of FLYING ACES, and Lithuania, in 1921, issued a series of stamps that presented an allegory of flight—a high-wing monoplane supported by a buxom angel with trailing wings. The value "2 Auks" which appears on the Lithuanian stamp seems to be a birdlike coincidence. Actually, the word *Auks* is an abbreviation for "Auksinas" which is equal to one hundred "Skatikai" in Lithuanian cash.

The orphaned second part of the hyphenated pair, Austro-Hungary, printed in 1920 a graceful winged man losing altitude in what threatens to become a nose dive. This figure (see illustration of Hungarian stamp) brings back the legend of Father Daedalus and his flighty son

(Continued on page 96)



Upper left: Hungary. Lower left: Siam. Right: Spain.

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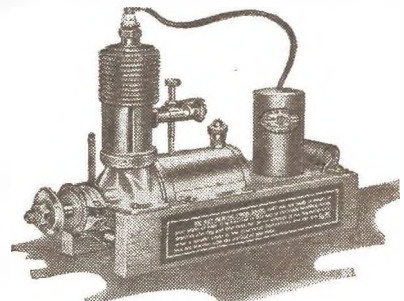
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## Legion of the Flame

(Continued from page 72)

plane like mad to clear the Ack-Ack batteries.

"That comes to about 945 miles round-trip for their Fiats not allowing for wind or the time involved in the actual raid," said Barney. "That's cutting it too fine."

"Maybe, but these guys are crazy, anyway," went on Keen.

"Sure, but not that crazy. They'll take a wild chance in a fight, but no such dizzy chance as that. They may be goofy, but they're asking for a fifty-fifty break, anyway."

"All right. Where are they coming from then?"

"I don't know, but I'll bet they're somewhere within one hundred miles of New York City," Barney replied.

Something told Keen that the Mick had the right idea, but there was no way of finding out. He circled high over the city and tried to figure it all out. Below him lay the gigantic finger of Manhattan, poking its great nail into New York Harbor. He tried to visualize the horror that would run rampant there if the threatened raid took place. He knew the effect of high explosives amid civilians under ordinary circumstances, but an air raid on the City of New York with gigantic shells bursting between the walls of skyscraped streets, the ensuing tumble of masonry, and the confined force of the splintering explosions along granite-faced caverns—could be ten times more appalling than any staged in Europe during the Great War.

He decided to take one more chance. It all depended on how well the stories of the deaths of the two men he had examined a short time before had been garbled by the press and radio announcers. He turned in his seat and spun his radio dial to 23.61 meters.

It was a wild chance, but considering everything it was worth it. The 'Giro that was to carry the fake Brigadier away from the roof of the Navigation Building had been shot down. The rest of the ships engaged in the raid on Newark Airport had been stopped stone dead over the Pulaski Skyway and pounded into the meadows. Keen tried to place himself in the shoes of the man who was waiting for orders from the fake Brigadier.

His guess was fruitful.

As Keen snapped over the switch, his ears caught the low wailing cry of an operator who seemed to have given up all hope.

"Calling Brainard . . . . Calling Brainard . . . ."

The voice was tuneless and pathetic, the cry of a deserted animal.

Keen snapped the lever over to "send" and replied in a cool military voice: "Brainard calling . . . . from plane No . . . ." He thought quickly and remembered that the 'Giro had been marked G-P7. . . . "No. G-P7 . . . . heading out for 68-36. How soon can you get off?"

The operator awoke from his lethargy and barked back.

"What happened, Brainard? Our ships were apparently intercepted. None have reported to 68-36. Where are you now?"

"In the raid area yet, waiting your appearance," replied Keen.

"Aren't you taking part in the raid with us?"

"No, I can't get to you in time. I'm going on through to Canada and make contact with our main force via the Azores."

"But you can get here in time. We are only eighty miles from you now. You can join the main force here or meet us over Bristol. What happened anyway?"

"Everything. You'll have to be careful. Do not leave for at least one hour. That will be 2 o'clock. That will get you over the city at 2:30 allowing for everything."

"But why waste time that way?" demanded the voice of a new man who had taken the operator's seat, to talk directly to Keen.

"For the simple reason," lied Keen, "that the Navy ships are in the air now doing a night patrol. They will have to go down and refuel by that time and you will be unmolested long enough to register on your targets."

"I understand," agreed the man at the other end. "Then we won't see you until we can contact you at the Azores. How will you get there?"

"I've arranged to get away aboard a Portuguese fishing boat working out of the banks of Newfoundland. I've done my job and it's too hot here in New York—especially if you are going to douse them with talcum," said Keen, referring to the new gas-impregnated clay.

"It will be a very interesting experiment," the man at the other end agreed. "But we are wasting time. We cannot hope to hide up here much longer. We had better cut off, too, before we are picked up."

"Yes, you had better take no more chances. You leave, remember, at 2 o'clock on the dot," ordered Keen, still wondering to whom he was talking. Then he hung up and stared around at Barney who was watching the sky.

"What town of Bristol is within eighty miles of New York," he snapped.

"Bristol, Connecticut, is well over one hundred miles away," the Mick replied still puzzled.

"No . . . . that's not it. Let's see what's the place where they make fishing rods and steel shafts for golf clubs?"

"Bristol, Pennsylvania!" gaged Barney. "That's no more than eighty miles from New York."

"That's it—as sure as shooting!"

He glanced at the clock. It showed 1:35. He spun the wave-length lever again and began calling the Newark Airport.

In five minutes he had warned all departments that a raid on New York was certain by 2:30 and that the raiders were coming out of a field outside Bristol, Pa. He whipped the amphibian over, scuttled across the North River, and headed for Trenton.

IT was almost 1:45 before he had completed his detailed explanation to the officer in charge of the Navy defense ships quartered at Newark, and he knew he would have to step on it to get to Bristol in time to block the Legion's take-off. Those that escaped would have to be nailed by the Navy pilots.

"But what a game!" Keen gurgled with admiration. "They gave that location and trapped the Second Corps Area mob with a hope that we would later believe that their planes were based out there. They nearly fooled me. They probably have got a ship out there to pick them up, but you were right Barney, they were taking no chances on a 900 mile flight to do it."

"I'm getting it now, too," said Barney, leaning over Keen's shoulder. "They evidently lay out there and trapped the Second Corps outfit, then moved in close during the furor the next night. They bombed those fields and lower New York, then continued on and dug in at Bristol. Half of them attempted to get the Navy ships at Newark earlier tonight so that the second section would have no trouble in raiding New York City early this morning with gas. Finally, they'd scoot out to sea and be picked up and carried a way. Nice thinkin' on somebody's part."

"All I hope is that those Navy guys who got all the credit for stopping them outside of Newark will get here in time to help us out with the rest."

But Barney was getting ready to go to work now. He checked his guns and took no chances on anything. They roared across New Jersey and eventually found Trenton: Over Jersey's capitol dome, they turned and caught the glint of the railroad that followed the river southward. Then by careful flying, with mufflers cut in, they sought their prey. Keen knew they would have to strike fast and hard.

"They had fully a dozen planes on that Newark attempt. They probably have as many left for the second half of their program. A lovely little packet to pick on. Come on, Navy!" he bawled.

They circled over the outskirts of Bristol for three or four minutes seeking their goal. At last they spotted a suspicious field halfway between Bristol and Newportville—a field well shielded on three sides by dense wooded area. On the north side it was open and Keen smiled, for he knew they would no doubt attempt to get off with their loads up that long end.

Suddenly Keen remembered some-

(Continued on page 76)

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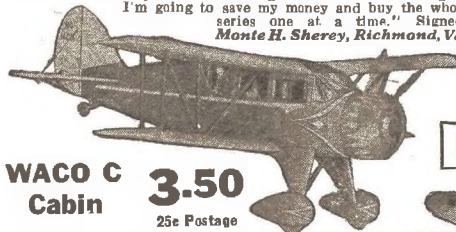
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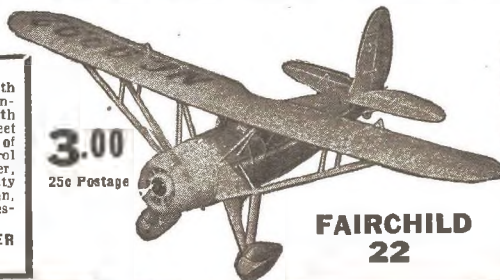


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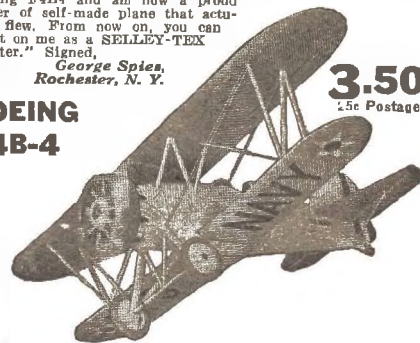


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thing. He stuck his hand through the slits of his coverall and pulled out the wad of type-bars he had removed from the typewriter. He grinned at Barney and shoved them through a sliding section of the cowl and let them go down into the wide Delaware River.

"Soaking the evidence," he grinned.

But Barney was too busy peering ahead for the field. He slapped Keen's shoulder and pointed.

Keen caught the sudden glow as two camouflaged canvas hangars were opened. The glare of light fanned out across the turf and showed several high-wing Fiats. Keen reached up, checked his Darn guns, and pulled the two levers that loaded the Chatelleraults in the wings. He knew Barney had taken care of the heavy caliber rotators in the pontoons.

"All right, Barney. I'll give 'em the works on the dive. You take care of those that get off the ground, but keep track of every one. Here goes!"

The black amphibian, her lungs cleared for action when Keen cut out the Skodas, nosed down like a black vampire and set her sights on the skulking bomber-fighters. His Krupp rotators battered in their wings and fuselages. One fuel tank went up with a roar and illuminated the whole mad scene. Men were running in all directions. Two more ships were being pulled out at that instant, and as Keen zoomed the black amphibian clear of the first hangar, Barney turned his guns over the tail and swept through the roof with a torrent of lead.

Keen swung the ship over on her ear and came back. His wing guns chanted and the Darns picked off men who were trying to get into the Fiats. Barney showered the open mouths of the hangars, then over came the amphibian again.

A Fiat waddled out of the tangle of fire and broken wings. Barney slammed down on her from above and Keen watched the renegade ship go up on her nose and catch fire.

He roared back at the hangars again and opened every forward-firing gun aboard. He kicked his rudder pedals back and forth and sprayed away unmercifully. He realized that he was attacking members of nations that were not at war with his country, but he also realized that these men, members of an insane, war-mad organization entirely outside the official limitations of their own various governments, were actually trying to sweep the United States into a war which might involve three friendly nations. A war that could mean only the complete destruction of modern civilization.

The black amphibian raced through a bitter torrent of lead that came up from the rear guns of two Fiats that had somehow been wheeled out of a third hangar they had not noticed in the excitement. The amphibian reeled under the sudden blow and almost slipped wing-first to the ground. Keen drew her out carefully, while Barney basked the gunners to pulp. Then they swept around and charged the third hangar. The fire from Keen's guns

literally ripped it to shreds. Then a blaze swept up from another Fiat tank and belched across the field in a sheet of death that blocked the entrance to the second hangar. The pilots and mechanics were trapped!

Keen blasted down again at the third hangar and started another fire with his rotator incendiaries, while Barney took a futile crack at one Fiat that was belting away for a take-off.

"There goes one!" he screamed into Keen's ear. "Get after him."

Keen swept the ship around and went after the plunging plane. They caught it as it swept up into the air and tried to clear the trees in a mad zoom. Keen nailed it cold and it fell, wingless, into the tops of the trees and caught fire. Then, as he continued on and swept over the billowing smoke and flame, his heart came up into his mouth. He almost rammed a silver Boeing F4B with Navy markings that was shooting across the field at the burning sheds. With a quick twist, Keen cleared and turned back to see whether there was any more of them.

"There's your Navy mob," laughed Barney. "Must have come up from the Philadelphia Navy Yard field. Now we're for it."

"You said it. And I'm beating it!" Keen snapped.

The black amphibian shot under the Boeing and took one last punch at the outlaw outfit. He picked off another Fiat on the wing and piled it up in the middle of the field. Then the Boeing shot down near them and began waving and ordering them down.

"Nothing doing," smirked Keen. "There's your mob, John Paul Jones. Now go to it. We're going."

And the black amphibian shot up through the smoke-streaked sky like a rocket and left the amazed Navy pilot practically standing still. When his formation pals arrived on the scene, they were equally amazed to see the damage he had done.

In ten more minutes, the Navy men had landed and taken complete charge. But one young commander was walking about still wondering what it was he had seen battering those Fiats down.

**T**HE next morning, Kerry Keen was aroused from a sound, wholesome sleep in his New York apartment by the thunderous rappings of Drury Lang. He stared at the sleepy-eyed Keen, who came to the door in pyjamas and slippers.

"Stick your head in some cold water, you," Lang barked, "and listen to me."

"What's up now?" demanded Keen, rubbing his eyes. "Can't I ever get any sleep?"

"Sure, plenty. But I just came up this time to tell you I've found out all about that Fullard business. I don't need your assistance this time."

"Okay. Buzz off, then, and let me get back to bed."

"Wait a minute. Listen to this: That guy we saw down there on Bowling Green wasn't Fullard at all. It was a guy named Norton Brainard, a bird who had been impersonating him. He

killed Fullard with a poison bullet. How do you like that?"

"Lovely!" groaned Keen, lying back on a sofa. "Who told you all that?"

"Never mind. Listen to the rest of it. Those raids were being staged by a crazy mob known as the Legion of the Flame that was trying to get this country to tangle with England, France, and Italy so that the whole world would go to hell."

"How interesting," yawned Keen.

"But that's not all. Early this morning the Navy airmen nailed the lot hidden away down on an old field that has been evacuated for years. Shot the whole bunch down before they could stage a raid on New York with gas. How's that?"

"Very nice of the Navy," agreed Keen. "I always said they could—"

"Shut up! Listen to the rest, I worked all this out myself. And is old Scott sore! I have figured it out that they were out at the field outside Bristol for several days. Probably sent off a carrier of some kind, and after the fun, they sneaked inland and lay low there."

"That's interesting," agreed Keen. "But I've been wondering who got the other guy, this Brainard, or whatever his name was?"

"That's simple," explained Lang. He evidently was making a getaway in one of those ships and was shot down and fell out somehow."

"Marvelous!" agreed Keen. "You certainly straightened this mess out, Lang. But how did the Navy find out these birds were holed-up down there at—where did you say, Bristol?"

"Um, there's the queer side, Keen," replied Lang cautiously. "They claim they got a radio call from some unknown station—a call signed by 'The Griffon.' That's all hooey, of course, but they swear to it. But what gets me is that a young commander named Lowery, who was in on the mess down there at Bristol, swears he saw a black amphib—you know, one of them land and sea things—darting in and out, shooting those ships down like flies. No one else saw it, but he swears to it. They're gonner give him a long leave. He must be nuts."

"Positive!" smiled Keen. "The man's crazy. He needs a long rest."

But Drury Lang was examining Keen closely now.

"Say," he snapped, "where did you go to last night when you hopped into that Navigation Building? They want that map back."

"Me? . . . Map? . . . Oh, I went to call up Barney and have him come down and get me, but the sleepy devil is still snoring out there on Long Island, I suppose."

Lang was puzzled but tried again.

"You didn't go up on that roof, did you?" he asked.

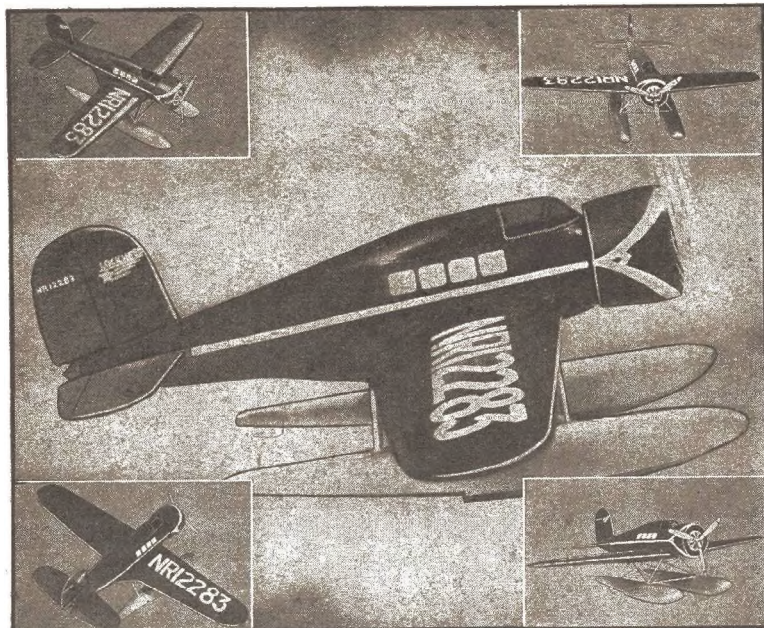
"No. Why?"

"Well, I chased you all over that building and finally got up on the roof and I could swear you were up there. I saw someone like you—and then when I tried to go after him, he just—well, he just went up in the air like nothing

(Continued on page 78)



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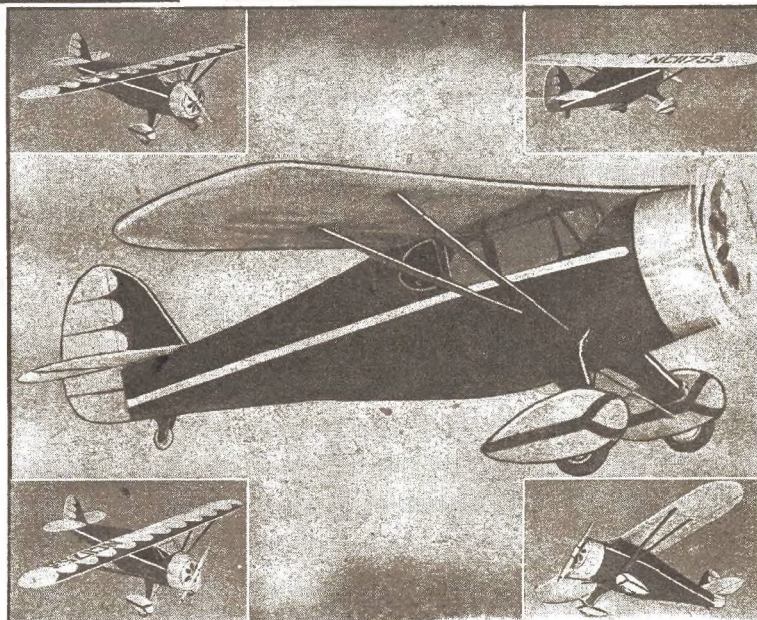
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and disappeared."

"Look here, Lang, old man," said Keen, sitting up suddenly, "you'd better find that Navy Commander and go off on a long leave yourself. Went straight up in the air and disappeared. Say! But you know, Lang, that might have been the Griffon!"

"Well, I saw something go up," he growled, "and if I thought you had anything to do with it, I'd run you in."

"Oh, forget it, Lang. You're tired. Too much work on your shoulders," Keen sympathized. "By the way, what are they doing about the dependents of those poor devils who were killed out

there on Governor's Island?"

Keen was thinking of the wad of bills that were still in his coverall pocket.

"How should I know?" growled Lang, wondering whether there was any more mail for him back at his office. "I'm beating it. I need some sleep, too."

## Fallen Archies

(Continued from page 15)

of twine and shoved said spike through a slab of very polluted haddock. He repeated the process until he had something that looked like an oversized kite string. After he had completed one, Phineas went to work on another. He was dragging both toward the spot where he had left his Spad when four other Spads roared by overhead. "A" Flight was beating him to the lines. He saw Captain Howell swoop low over the spot where the Pinkham Spad squatted and Phineas scotched down in the bushes. He came out when the quartet of Von-poisoners had continued on their way.

Resumption of operations included tying the strings of haddock to his Spad, climbing into the pit, and giving the Hisso the gun. When Phineas was up in the ozone five thousand feet and heading for the Bristol outfit near Blercourt, he spotted a Heinie battle wagon which had somehow escaped Howell's

optics. It was a Rumpler flying a thousand feet under his trucks.

"Business before pleasure," the Boone-town flyer yipped and pushed the stick away from him. The Kraut observation ship slipped through a cloudbank, turning as it high-tailed. Phineas stabbed into the soup after the Rumpler, but did not catch up with it until it was well above the lines. Spandau lead spat at him as he hopped to its tail. The Spad guns roared and Phineas let out a joyful whoop as he saw the Vicker spume tear hell out of the Rumpler's tail.

"Boy, I wouldn't change places with them bums," he exulted, piquing in from the port side and lamming the Rumpler in the floating ribs. "I wonder what keeps it up as it is as punch drunk as a Limey heavyweight!"

Phineas chased the ship into Jerry territory before he got in the *coup de grace*. The Rumpler seemed to shake itself like a cat that has just been

dragged out of a brook, before it headed for the linoleum. Phineas let the Vons land the best way they could without a tail assembly and an aileron. Then he zoomed for height, looked over-side as he climbed, and spotted a familiar landmark. A shellacked Frog hamlet on a hillside.

"Oh mama!" Phineas gulped. "I am too far from home. I've got to git—"

The sun breaking through fleecy clouds at ten thousand suddenly planted its dazzling trademark on something on the panorama below. Phineas looked down as he banked wide. He saw the flash again. It came from a wooded area. Old Sol seemed intent upon pointing something out to Lieutenant Phineas Pinkham, Yankee pilot extraordinary. The thorn in Rufus Garrity's side had no doubt about it. Only metal could glint in such a fashion when bathed with sunshine. Steel! Powerful

(Continued on page 80)

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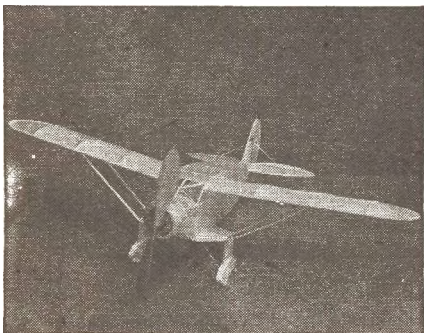
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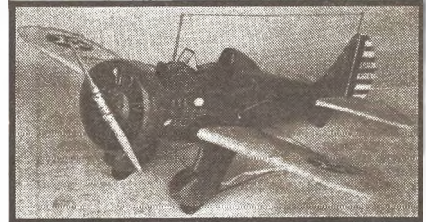
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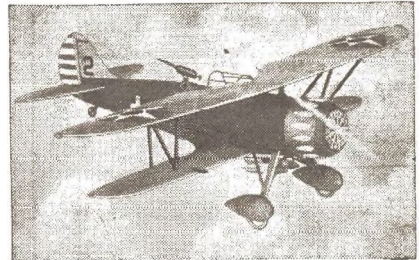
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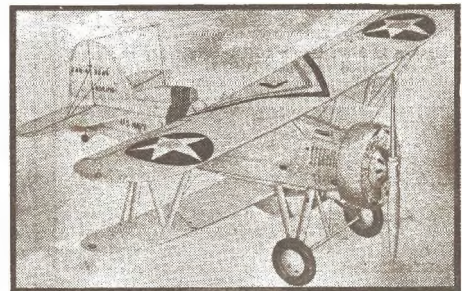
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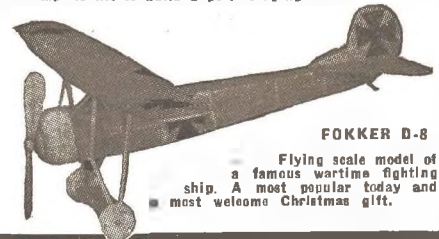
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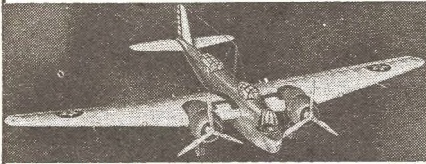


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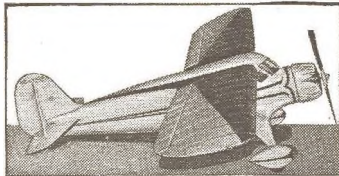
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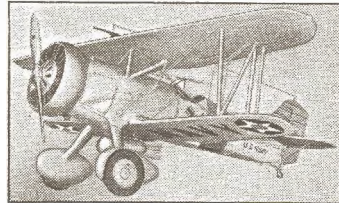
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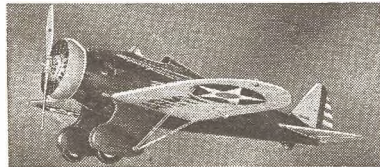
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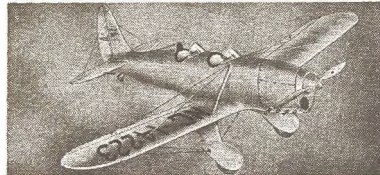
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Katinka? Who could tell?

"Why—I—I'm a—well, what it—huh, why maybe—" Phineas was stuttering as he dropped down. His eagle eyes spotted three or four other wooded patches in the immediate vicinity. If he got them mixed up—

"EUREKA!" he suddenly yipped. He had spotted that flash again. He would have to mark that spot well. As yet he did not know how but— A very obnoxious odor seeped into his oversized bugle.

"Fancy that!" Phineas grinned. "It's right under my nose—the way to do it. Haw-w-w-w-w-w! I would hunt all day for a spaghetti restaurant in Italy. I must be slippin' a little." As he spoke, the incurable jokester gunned down and swept over the copse. He yanked at a piece of twine, tore it loose, and looked back as he back-sticked. The string of haddock floated down to the tree branches and stuck there. Again he swept over the wooded area, dropped the other string of long-defunct fish, and then headed for a high sky shelf. To his dismay three Kraut Halberstadts were sitting on it.

"I can smell angle worms already," the pride of the Pinkhams groaned. He tried to pull his startled wits together. The Vons dropped down like dice tossed from a box. "It looks like my bright career is nipped in the bud!" the Boonetown pilot quavered, ducking a swath of Spandau lead by the thickness of a rice wafer. "Oh well, you can't keep jumpin' in blast furnaces an' comin' out with frost bites . . . Ugh!"

The Spad pitched and tossed as steel wasps stung it on the rear. Phineas remembered the time when he was in a ferris wheel wreck. The sensation was identical. When he raked in his marbles, he took a hazy look around and saw two Halberstadts so close to his neck that he could feel the heat from the Mercedes power plants. Phineas tripped his guns by force of habit and knocked off a Kraut who had taken a sudden notion to cut across in front of his nose.

"Huh?" gulped Phineas. "Why, it was there an' then—ow-w-w!"

Another blast of lead discouraged the Spad. It gave up trying and headed for Heinie real estate developments. Phineas had been in more than one Spad that had folded up on him. He unloosed his belt quickly. He was free of moorings when the fifteen thousand dollar Allied investment cracked up and tossed him out into the open. The Spad pilot hit a high bank—and Phineas unceremoniously kerplunked into a great big hole. Before he was gathered to the cool bosom of deep, dark, dirty water, the flyer from Boonetown, Iowa, knew he had fallen into an old quarry.

"Gosh, I wonder if it has a bottom?" thought Phineas as he kept on going down. "Boy, I will never drown no more kittens as it is a horrible death."

Abruptly the descending Yank hit bottom, and then he started up. He did not see much sense to that. The quarry

banks would be lined with Heinie sharpshooters, he could gamble on that. Then something very queer happened. The top of the Pinkham pate collided with something. It was still dark but the Boonetown wonder knew he was breathing sweet, fresh air. All around him was the sound of excited Teuton jabbering.

"Why," Phineas suddenly mused aloud, "I've jammed my dome up through the rotted part of an old log that's just out of water. They can't see me—them Heinies. Haww-w-ww!"

"Efen das Pingham he ist not der vish, nein," Phineas heard a guttural voice say. "Der oopstardt he ist drowned, ja! Gott sie dank!"

"You said it," chuckled the cause of the Heinie thanksgivings. "Now if I can hold out until dark—that'll only be nine hours from now—haw-w-w-w-w!" He got his hands up and hooked them onto an out-cropping snag under water. "Well, Pinkhams have always been up to big ordeals. I'll stick to the end."

"How ist idt you know idts das Pingham?" one of the Krauts wanted information from another. "His body idt don'td came oop, hein?"

"On der Spad ist idt der rabbit mit der high hadt vhat he yoomps oudt uff, nein? Der magician ist das Pingham, ja?"

"Das ist gut," came the reply. "Ve go und spreadt idt der gut news by der High Kommand. Leave it vunce der soldiers by here zwei odder drei hours, ja."

"Sehr gut, Herr Oberst," assented another voice.

For hours Phineas Pinkham clung to the log in sodden determination. At times he trod water to get exercise.

"Boy, it would be a day that has got fifty-four hours in it," he grumbled. "I'll have fins an' scales when I git out of here, if ever. But a Pinkham knows no odds an'—oh well, I'll do it for the Allies."

When two weeks seemed to have gone by, the submerged Yank extricated himself from the rotted log and spinned his big ears doing so. He swam close to the side of the quarry and looked up. Everything was as still as a Scotch grog shop when somebody asks who is buying the drinks. Cautiously Phineas climbed up the rocky wall and soon had his chin resting on the edge. He saw the figure of a Kraut dough not twenty feet away. The guard was sitting against a tree evidently thinking of home und Mutter.

Phineas grinned and drew himself to firm ground. He crept behind a tree, picked up a rock and tossed it into some bushes. The Heinie guard bolted to his feet and jumped toward the spot from which the alien sound had come. Phineas also jumped. He whanged the Heinie dough over the coal scuttle hat with a rock as big as an emu's torso. To make sure, he hooked a right to the Kraut's jaw as the fellow sank to his wobbly knees.

"If I have not lost strength from my ordeal," the Yank grinned, "I would guess he will be out of circulation for an hour at the very least. Now for some

quick work."

Phineas removed the Kraut's long overcoat and big tin hat and put them onto his own frame. From the pocket of his tunic he pulled out an assortment of thin rubber masks. Selecting one, he pulled it down over his face. Before he reconnoitred toward an olio of night sounds, the magician of Uncle Sam dragged the assaulted Jerry into a clump of bushes. Gun ready, Phineas then walked through a thin strip of forest and came to a barbed-wire fence. On the far side was a Jerry air drome. About twenty yards along the fence was a gate and a Jerry stood guard there. Phineas set his jaws and approached him.

"Handen hoch!"

"Mach schnell," Phineas grunted from far below his tonsils. "Das Pingham. Oop he cooms, ja! Der Leutnant—ach!"

The Kraut swung the gate open and Phineas Pinkham went through. Just fifty yards away three Kraut ackemmas were warming up a Fokker that evidently had been under first aid treatment. Phineas gauged the distance, revved up the power plant in his own cranium. Summoning all the German he knew, Phineas told the sentry he would report the great find to the Herr Oberst.

"Ja," the sentry grinned and let it go at that.

His eyes roving like a ferret's, the amazing Spad pusher from the Yankee side walked close to the idling Jerry ship. He turned suddenly and leaped, gun butt flailing. Two ackemmas bit the dust. The other got Phineas' toe in the bread basket just as the Yank leaped to the Fokker pit. Loud yelps split the air. The sentry took aim and fired. A bullet pinged off Phineas' borrowed tin hat as he goosed the Mercedes engine. Jamming in the throttle, he felt the D-7 leap away and tear across the field.

"Pingham—Himmel!"

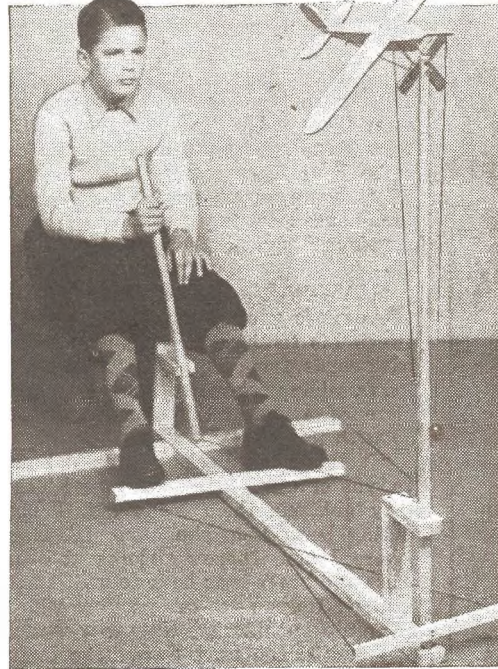
"Donnervetter!"

A siren shrieked. Von pilots came tumbling out of a Jerry mess shack. Machine guns almost cut the Fokker undercarriage away before Phineas could get buoyancy under the wings. He had never experienced a more satisfied feeling in his life than when the Fokker lifted clear of Heinie dirt.

"Adoo bums," he yelped as ackemmas worked feverishly to get other battle wagons out of a hangar. "I'll send you a postcard from where I make my first stop. It is maybe six lives I have got left yet, haw-w-w-w-w!"

JUST as Garrity's pilots were trekking into mess that night on the drome of the Ninth the word came through. A Jerry had dropped a big rock just behind the Allied lines and almost had wrecked a Yankee fourgon. The driver had gotten out of the bus to pick up the missile. Wrapped around it was a big square of fabric and on it the rabbit-out-of-the-hat insignia of Lieutenant Phineas Pinkham. A note had been enclosed. A brass hat of an infantry outfit called the Old Man. Garrity read the letter to his pilots—

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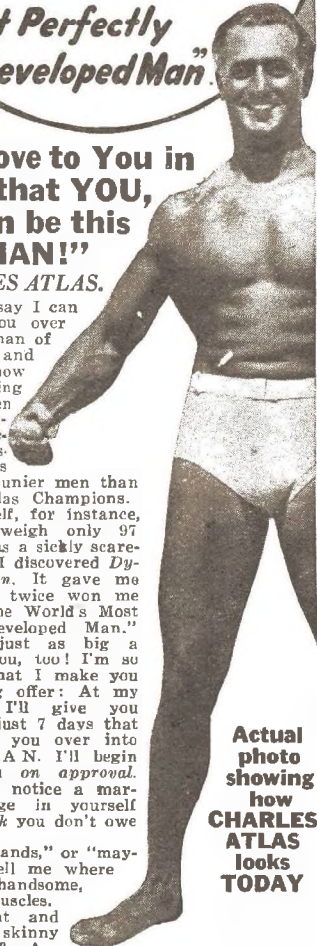


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Actual photo showing how CHARLES ATLAS looks TODAY

"Herr Leutnant Phineas Pinkham shot down behind lines near Pagney. Thrown out of Spad into water-filled quarry and drowned. Our deepest sympathy. Herr Oberst Von Scrahm."

"Well," stuttered Bump Gillis, "it looks like a sure thing this time. That rabbit an' hat—well—huh, Major, that old pipe of yours is hell on a guy's eyes. Ugh, I ain't hungry. Well—"

Captain Howell took a prolonged puff at his cigarette. It seemed to have a sour taste. He tossed it away.

Garrity choked as he said, "Well, let's drink to him, guys. After all Pinkham was a pretty good mutt. Here's to him, yeah. Don't look at me like that, you clucks! You've called him worse things than I have. Uh—huh—let's not fight. Now that Lieutenant Pinkham's—"

An hour later the Old Man and his pilots were grouped in front of the farmhouse looking up at the sky.

"Nope," sighed Bump, "it's no use. He—"

"HAW-W-W-W-W-W-W!"

Garrity's pipe popped out from between his teeth. Bump Gillis fell over backwards from an old nail keg. The too familiar guffaw had come from some distance away and it had nothing to do with imagination. Then—

"Well, I come back. I said I'd haunt ya, you ol' turtle. Haw-w-w-w-w! Yeah, they got me, them Vons did. I been taking lessons on the harp. It's swell where I am. There's sirloins at every mess and brass hats have to wait on the Looeys. I am next to one now who is cleanin' cuspidors. Haw-w-w-w-w! Well, until the next time, adoo bums! I will be back for more hauntin'."

An eerie silence grabbed the world by the throat.

Major Rufus Garrity swore, mopped a pasty face and sent a small army of men toward the spot from which the sound had come. But the stunned men returned shaking their heads.

"It is not possible," the Major insisted. "Even Pinkham could not—Goomer! Get me a bottle—two bottles!"

"What do you think, Bump?" Howell asked Gillis.

"I—dunno—that ape wasn't human. He's drowned, ain't he? He'd get out of any place nobody else could. Oh, I believe it. He left St. Peter's drome A.W.O.L. He could do it. Have you got anythin' for me to drink? Look at me shake."

At ten o'clock that night Phineas Pinkham got out of a Fokker a mile from a Handley Page outfit some sixty miles from Bar-Le-Duc. He had long since discarded all his disguise with the exception of his mask. As he set the Kraut ship down in the midst of a crowd of wondering Britishers, he said, "Boys, it was nice of the Jerries to load me up with so much gas."

"I say," a British C. O. exclaimed as he got out of the pit. "Blasted queer, no end, I say. Who are you, my fellow?"

"I ain't yours," Phineas grinned. "I am Lieutenant John Smith of the Intelligence Corps. I have found the Kraut Archie, Powerful Katinka. I want some bombers warmed up. Hurry an' don't gape at me. There is no time

to lose as the wind is just right to-night and in this mist that's comin' up, the smell—well you get them bombs loaded, Major? Git me to a phone as I want to talk to the Haigs."

"You—er—sure—er—this is beastly irregular, y'know?" the brass hat blustered. "Why—er—"

"I could have got Yanks to do it," Phineas snapped, "but it is bloaters an' herrin' an' haddock the Limeys can smell a mile as that is all they live on, ain't it? I must call up the red tabs, if you don't—"

"The fellow might be balmy, but if he has found that gun—why—we have to go over anyway at midnight, y'know," the Major shot at a subordinate.

"Righto!" came the answer and the man spun on his heel.

"I will ride in the bomber," announced Phineas. "In the front pit as my nose is a pretty good one, too. Haw-w-w-w-w! Ha ha! I am glad you Limeys decided to bring three of them big crates down this far as they will blow up things as good here as close to the Channel. Well—when you are ready, let me know."

A man whispered into the Limey officer's ear.

"Right you are," the C.O. agreed. "How do we know he is not a German spy? Landed in a Fokker—lock him up!"

"Aw what's the use?" Phineas yipped and ripped off his mask. "Haw-w-w-w-w-w!" he guffawed loudly then. "I am Lieutenant Phineas Pinkham just escaped from—"

"Strike me pink! Pinkham! We heard—why—on the jump, you fellows! Load up the blasted bombs. This spotted blighter is liable to have spotted that gun—damme yes!"

"Don't you dare call up my outfit," Phineas threatened him. "Not until the morning as it is a whim I have got."

"Righto! Fancy that!"

AT midnight three Handley Pages began to circle over Pagney. Phineas Pinkham sniffed at the ozone, then crawled down into the bowels of the bomber and hurried to the control pit.

"I got it tagged," he snapped. "The smell is stronger over that clump of woods that is shaped like a kidney. The Limey gunner says it is so, too, as he worked in Yarmouth a long time and knows smoked haddock and herrin' when he smells 'em. Haw-w-w-w-w! Unload the eggs when you git over that stretch. Boys! What fishin'!"

The churn of bomber props brought the short hairs up on Heinie necks down in the woods. The first egg splatted not fifty yards away and made Powerful Katinka tremble.

"I told you alzo yedt," a Heinie brass hat trumpeted to another. "Der shmell—somet'ing idt ist rotten. Das Pingham, he flies ofer today und I bedt you mein life—"

Blam! Cra-a-a-a-ash! B-o-o-o-o-ong! Powerful Katinka keeled over. Cement flew in chunks. Krauts burrowed into the dirt like ground moles.

"Ach—Himmel—Gott!" yelped the boss of the big gun as he tried to wrig-

gle into a fox hole. "Idt ist kaput—ja! Himmel!"

The Handley Pages did a great job of it. Two hours later the word of the downfall of the Archie swept along the front. Garrity of the Ninth Pursuit Squadron was dragged from his bed to hear the astounding news.

"Huh? The Limeys got it?" he gulped. "That bombing outfit. How could they spot it? They only established themselves here a week ago. Something is fishy, by cr-r-r-r—" The Old Man did not realize how very right he was. He did feel a tingling of the spinal column and paused to wonder why. In the next second that spooky voice seeped out of the mists and in through the window.

"HAW-W-W-W-W! Here I am once more. Can you hear me, bums? It is yours truly, Phineas Pingham, again haunting you! I will show you a Pingham never forgets, dead or alive. Haw-w-w-w-w! I met old Nap today—y'know Napoleon. He is still tryin' to git up an army and is melting down harps to make bullets. But Mark Anthony is the guy I like best here. He has got such swell dames. I wish I could tell you about all the other bums I met but—"

The voice broke off just as a big automobile rumbled onto the drome. Three British red tabs got out and walked into the farmhouse.

"Why, Major, are you sick? Huh, why—?"

"Just leave me alone—please," groaned the Old Man. "You can send for a wagon, though. Be sure it's padded as—"

"Uh—er—you hear anything, sir, when you come in?" Bump Gillis interrupted to ask the Britishers. "A voice like a laughin' jackass's or—er—"

The red tab shook his head and passed a hand over his face.

"Let me get up and pack my things," yipped Rufus Garrity.

The door had opened. "Haw-w-w-w-w! It's me. Boys, did I fool ya?"

The red tabs had to concentrate on the Old Man. They grabbed at every one of his extremities and yelled for spirits of ammonia.

"Aw, it was only two phonograph records I had made," explained Phineas with a broad grin as he sat down and reached for a bottle. "Boys, they was worth the *argent* I paid. I put the box in a tree and made an amplifier out of bark to put behind it. Sounds carry so at night! I didn't think I'd ever get to use it, though, after I fell into the quarry. Boys, did you ever smell smoked haddock that has been weather-beaten for a month? Haw-w-w-w-w!"

"Lemme go," erupted Garrity. "I demand to be released!"

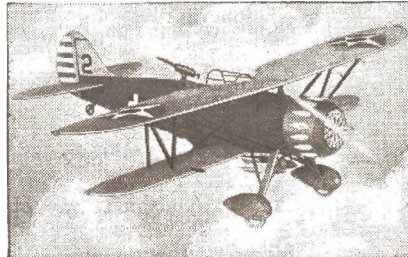
"It was them fish I strung together and was takin' 'em out to drop on the Bristols when I got my attention distracted. I chased a Rumpler an' spotted Powerful Katinka. I got away from the Krauts and headed for the Handley Pages an' went over with them. Let's see, did I leave out anythin'? Oh yes, I stopped twice to play the phonograph.

"Why," yelled the Major, "then y-you—? It wasn't the Limeys who did

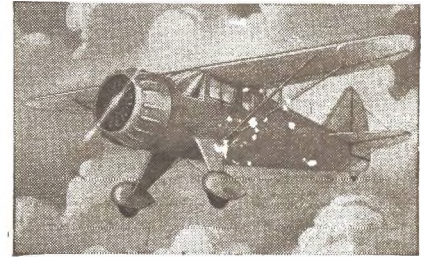
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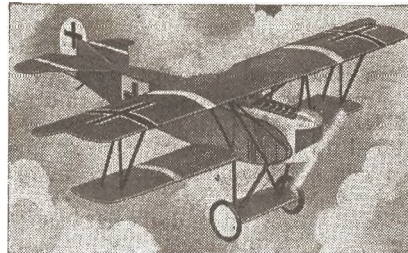
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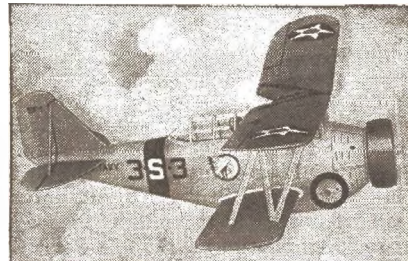
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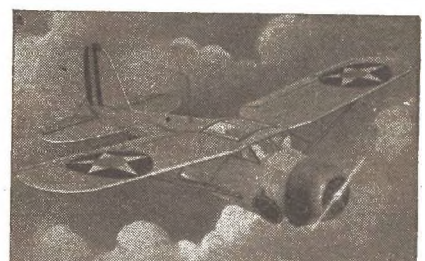
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it? The Ninth Pursuit Squadron got Powerful Katinka? Why—er—why didn't you say so, Pinkham? Let me up, fellows, I want to shake his hand. We will be decorated for this. Let me go."

Major Garrity was freed. He shoved out his hand. Phineas gripped it.

"You are always right, sir," Phineas said. "You will get decorated." He squeezed hard. Ink spurted out and splattered the Old Man's tunic.

"Why—you—!"  
 "It was a little rubber sack with a hole in it," Phineas said as he ran out of the place. "Haw-w-w-w-w!"

A red tab jumped out of Major Rufus Garrity's torrid path to the door. He bumped against Captain Howell.

"Queer fellow, eh what?" he spluttered.

"Haw-w-w-w-w!" Howell ripped out and reached for a bottle.

**Who Slew Richthofen?**

(Continued from page 11)

believed to have been jammed. He saw May twisting and turning to get away from the fire of the Baron. Then from somewhere down below them, says Travers, four short machine-gun bursts lanced out and von Richthofen's plane seemed to turn on its side, recover itself, then swerve sharply to the right and swoop gradually to the ground, landing about half a mile away. Then, in direct contrast to Fraser who was only 200 yards away, Travers says:

"The first three men to reach the plane were Captain Cruickshank, Staff Captain of the 11th Brigade; my runner, Private Webber; and myself. Cruickshank took charge of things and carried a few papers and a gold watch

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back to headquarters where von Richthofen was identified by an inscription in the watch. I took one of the big black crosses and kept it. A few days later, I was wounded at Villers Bretonneaux, and eventually I arrived at Wandsworth Hospital in England. A sergeant from the Records office came to see me and asked me if I would give the black cross to the Australian War Museum. I eventually let them have it."

Another member of the 52nd, a Mr. Edward Barrow, vouches for all of Travers' statements and goes on further to explain that there was such a rush for souvenirs that the machine was soon stripped. Moreover, someone actually removed von Richthofen's boots. Then Barrow adds to the mystery by stating:

"There is not the slightest doubt in my mind that von Richthofen was killed by a machine gun bullet from a Vickers gun. I saw where the bullet had entered the face near the lower jaw on the left side and come out behind his right eye."

There you are! First it was a Lewis gun that put a bullet through the Baron's chest from his right to his left side. Now it's a Vickers bullet that entered from the opposite side and struck him in the head. No wonder we're all puzzled.

Travers later declared that Sergeant Popkin Cedric Basset, of the 24th Australian M.G. Company, should have been given credit for the shooting down of von Richthofen. This is probably the "Sergeant Popkin" mentioned by Fraser.

To get back to another and more familiar account—that given by Floyd Gibbons in his book on the Red Knight—we get a further shock when we are told that Lieutenant Mellersh, who was in the air with Brown's flight, actually landed nearby just in time to see the wreckage pile into a shell hole not fifty yards away from him. An Australian, he says, crawled out of a trench, attached a line to the wrecked Fokker, and under heavy machine gun fire from the German trenches helped pull the wreckage behind a protecting rise in the ground. Then, according to Gibbons, it was Mellersh who assisted in removing the dead body and who first identified him by a gold watch and some papers. Several Australians, he continues, crawled out of their trenches and came over to get a glimpse of the terror of the skies.

But as far as the Australian observers go, they one and all agree on one point. That is, that there were only two planes in the air at the time—a German Fokker chasing a British Camel. Where, then, was Brown?

A Mr. Donald Shoobridge, of Long Branch, Ontario, has sent me what he claims to be the actual combat report of Lieutenant W. R. May. This gives another angle on the affair. It explains in part as follows:

"Attacked large formation of about 10-20 machines. Engaged one E. A. (enemy airman), firing bursts head-on into his engine. He went over and

dived down. I was unable to observe result, as a second machine attacked me from behind, though without result. I then went down and was attacked by a red triplane which chased me over the lines, low to the ground. While the triplane was on my tail, Captain A. R. Brown attacked and shot it down. I observed it crash into the ground near Vaux-sur-Somme."

May has also given further details in magazine articles, admitting being in a tight spot about a mile inside his own lines. The Fokker was on his tail, and when the machine gun fire seemed to increase to unusual intensity, he turned back and saw a Camel on the Fokker's tail. Then he saw the Fokker stagger, try to get away, only to fail to clear and go down, smashing into the open ground. May, in turning back to wriggle his wings gratefully at his saviour, then saw that the Camel carried Brown's markings.

This sort of discussion might go on forever, since I have many other reports from both sides of the question, but it would only befog the issue further.

The amazing thing about it all is the sincerity of May and Brown in stating their positions and actions 400 feet above the ground over the Australian 11th Brigade headquarters, while at the same time trained observers and machine gunners who had a clear vision of fully 6,000 yards in all directions saw only one Camel and one Fokker. According to May, Brown was firing on the Fokker at close quarters, and yet only one—or maybe two—bullets hit him.

Perhaps there were two von Richthofens. Brown's report is timed at 10:35. But Travers states that the Baron was shot down at 11:45. And while some reports state that von Richthofen was buried soon after he was shot down, others declare that it was not until late the following afternoon. Travers was actually on the spot with field glasses doing an observation job, and he only saw the red Fokker "not twenty paces behind the British ship"—no others.

Now, here's the last and most amazing bit of evidence. It's supplied by Sergeant A. J. Porter, the man who "souvenired" the Red Knight's military boots, mentioned above by Edward Barrow.

About a year ago, this same Sergeant Porter arrived in England on his way to Schweidnitz where he planned to return those boots to von Richthofen's aged mother. In London, when interviewed by a *News-Chronicle* reporter, he said:

"Baron von Richthofen in his red Fokker plane was chasing Lieutenant May, who, by the way, came from Melbourne. Captain Roy Brown, a Canadian, came to May's rescue and swooping on von Richthofen from behind, killed him with a single shot."

There is no question that Porter was there. He took the Baron's boots. But we would still be interested in knowing who killed the Baron von Richthofen.

## Design for Killing

(Continued from page 27)

that!" he cried. "The kid's no match for you, Freeman!"

The flush died out of Freeman's face. His thick lips sucked in air. "The kid asked for it," he said dully.

LaMarch, the Frenchman who was naturalized an American and who had come over to fight with the Yanks, shook his dark, thin head slowly. He was built like a rapier, was LaMarch. His sharp eyes held a puzzled light.

"*Mon Dieu*, eet ees the hard theeng to understand. My American brothers, for the love of the fighting, they fight. You have the small offense for wheech to fight. Me? I have thee double duty. France is *mere patrie*. Can one evare become the stranger to hees mothare? *Non! Non!* I fight for France, and also for the land of my adoption."

The kid scrambled up, brushing his clothes fiercely. At that instant, an orderly rushed in the bar room.

"Captain Wately! The colonel wants you all on the line at once!"

The flight crowded through the door. When they reached the line, the Spads were already ticking over. The huge Hissos were grumbling in their ten thousand dollar stomachs.

The colonel stopped Wately. "Got a wire from Neuville. There's a circus there playing hobs with the observations busses in that sector. It's got to be knocked down. I'll give you half an

hour to drive them off, and then I'm sending out two more observation busses to replace the two that were lost."

"Okay, sir," Wately snapped. He turned toward the men. "We're going to tackle this job in a different way. We've got to have a design to fight by. Richthofen is using formation flying up north. They'll be using it all along the front before long. It's time we got started."

"All right, what's your design for killing?" Freeman inquired coolly.

"We'll fly ten men in the first V," said Wately, "and four in the second. The four will stay behind ten minutes. The first bunch will strike down on the enemy in a spiral and fly in a circle with each plane just a little higher than the one in front. That way, the Germans can't get on our tails, but we can shoot out of the circle on a tangent and get them if they try to break us up."

"And if they do break us up?"

"Then fight in pairs. You can pair off with me, Freeman," Wately said pointedly. "The last V of four ships can come down and help us polish them off."

"It's a damned pretty design," Freeman growled, "and I can see our names twisted right in with the filigree work. We ain't in the infantry. I still say a

man can fight better by himself in the air."

"You'll fight as I say, Freeman."

Freeman smirked. Very deliberately, he pulled a bottle from the big pocket of his flying suit. "Let's have a drink, men, before we take off for this blue-printed hell."

Wately's thin body drew tight. His eyes squinted. "There'll be no drinking, Freeman, until this circus is done for."

A smothered exclamation went up among the men. Freeman stared with goggled eyes. "No drinking? Why dammit, captain, there ain't anything in regulations—"

"I'm making my own regulations," Wately said quietly.

Freeman colored. He lifted the bottle to his thick lips. "I'm deaf, dumb, and blind—"

Wately's long arm shot out. He grasped the bottle with his slim hand and with a swift movement hurled it against the toolshack. The liquor ran in a brown stream down the boards. For a minute, Freeman stood with his empty hand before his face like a fixed thing. Then, with his nostrils flaring, he legged toward his ship.

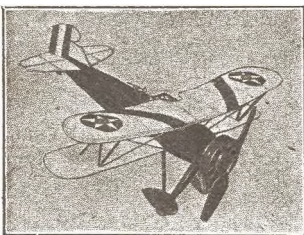
"You'll be pairing off with me in the first section, remember that," Wately called after him.

Wately legged into his own ship. He jerked a look along the line. The kid was in the end ship. LaMarch was ready and waiting to lead the second section of the flight into the air. Grimly, Wately jabbed the throttle wide. The

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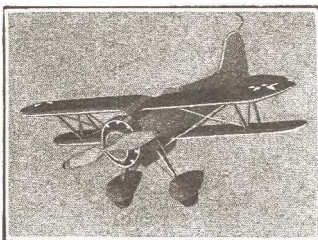
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wild shudder of the Hisso, sent the battle lust scorching through his blood. Without waiting for the chocks to be pulled, he whipped the rudder. The Spad walked off the chocks, surged down the field, and lifted.

Grimly he circled up—up—up! Eight thousand feet—ten! Still he climbed, until he was at twelve thousand. Then he cut east across the thin ribbon of the Aisne. Bleared and vague, the earth swam below him. It looked like putty moulded roughly and scratched with a fingernail. But Wately knew it wasn't putty. It was slime and filth, trenches and graves, shell holes and ruins. Trenches, peopled by boys who had hardly tasted of life, and yet were staring into the grim, bony face of death. Roads that were churned into a froth of mud by horses, motors, feet, and wheels—all hauling up fodder to feed the insatiable lust of the guns that were never still.

**S**UDDENLY he saw them, between Stetin and Spincourt. There was no mistaking the mottled wings of Von Berger's circus! Wately signalled. The flight strung out. Then he went down in a spiral. Like ten demons they dropped. Faster—faster!

Wately's eyes were slits in his face. His face was a mask of chalk framed by black leather. He saw the green and gold wings of a Fokker whip past his rings. He dragged the stick. Nose up! Now—now!

The Vickers, before his squinted eyes jumped and rattled on its mounting. Gray burst of tracer leaped out. The first burst sliced harmlessly through the Boche's fuselage. Wately whipped into the circle. The rest of the flight spun on his tail. They formed a great spiral. The Jerries were locked out!

Wately felt his blood pump hot and swift. He fingered the stick. His thumbs snapped down. A Fokker went down flaming. Another German lunged in to break up the play. That man was struck dead by a single slug from a Vickers. The mad design was working! The Germans were taking the thing hard. They formed another circle outside the Spads, but their guns were pointing into clear air where they could do no harm.

For a mad interval that design worked perfectly. The Boches that drove in to break the circle were hammered back by the guns. Unless the Germans could get on the inside . . .

But there had never been a trap that Von Berger's circus couldn't break. The Fokkers zoomed up. Higher—higher! Above the Spads! Then they came down in a long line right through the center of the circle. The Spandaus vomited flame and death. A Spad exploded. The rest of the Spads wavered . . .

Wately hunched low, cursed. He spun tighter, to take up the slack. But another Spad went down in flames. Wately fought to hold the men in their Fokker-blasting maneuver. It was their only chance.

But Wately had hoped for too much. The circle suddenly broke to the four winds. Wately cursed and spun in a mad vril, searching for Freeman.

Freeman had been the first to break, and he was to be Wately's partner. But Freeman was on his own, 'way across the fight, trying for a shot at a ship with a yellow belly!

Wately tensed. He could see Dobbins and Ollie Fergus doubling up on a mottle-winged Fokker. That was the proper way. He could see two other Spads shunting a Fokker clear and feeding it death in converging streams.

Wately cursed. Dobbins was taking a wild chance. Wately cried futile words. "Pull out, damn you! Pull out—"

But the kid wouldn't pull out. He and Ollie were taking a chance to make a swift kill. They lashed in. A Fokker went down. They spun to blast another. But four Fokkers came down all at once on those two Spads.

Wately gunned his Hisso. He stiffened. He could hear Spandau slugs batter into his struts. Splinters of spruce whipped back in the slipstream!

Wately legged the stick. His thumbs were ready on the trips. There was nothing in front of him. Again the batter of slugs! He jerked a look back. Through the sheen of the Mercedes behind him he could see his opponent—no mistaking that fat face with the waxed mustache. Von Berger!

Wately held the stick grimly. He shoved his foot out—top rudder! But he held the stick back too long. He bit his lips as the hot slugs tore through his pit. He was up against a master. No sloppy maneuver could save him!

In that moment, the world, for him, narrowed down to his little cockpit, the Vickers mounted on his cowl, and the death that rode his tail. For minutes of eternity he circled, fishtailed, zoomed! Still that death chewed into his struts, his wings, his crashpad. There was blood on the shoulder of his flying suit. There was glass in his hands from the battered instruments. There were splinters in his chest from the shattered struts.

Eyes bloodshot, heart pounding, Wately threw the stick from him. He forgot the design. Let the Fokker follow down if it would. A Spad could outdive anything with wings. Let the Boche butcher come and get him. . . .

The Spad plunged like a mad thing. Wately was flung back against the pad. Down—down—down! Swifter—swifter! A thousand feet, with the earth spinning before him. Two thousand feet with the Hisso coughing and sputtering. Three thousand feet with the wings chattering and the struts drumming in the sockets.

He could feel his mind going numb. Now was the time! He pulled the stick back. The Spad struck against the air as against stone. The spars creaked and groaned. The controls beat madly against his clinging hand. The air went black before his face. His ears were stopped with crazy noises. There was a rending, cracking noise. . . .

Wately rubbed his eyes to bring sight. He beat his fist against his head. But before he could see the damage to the Spad, the hot lead struck at him again. He looked back. There was von Berger

waiting for the Spad to lift!

In a frenzy of impotence, Wately spun. He lost his senses over this death that clung so tenaciously. With blind stupidity, he flung his ship head on for von Berger! With the speed of light, the two ships screamed prop to prop!

Wately was hardly conscious of his action. He only knew that this death that played with him must be hammered from the sky. But von Berger was swift and cool. There was a buzz-saw flurry of shots. A tangled skein of tracer fastened the two ships with a web of gray and gold. Then the Fokker dipped under the Spad with hardly an inch to spare.

**C**ONSCIOUSNESS struck back. Wately cursed. Von Berger was again boring in with twin streams of flame spitting from the snouts on his cowlings. But before the Spandau slugs could strike home, Wately was conscious of the rest of that play. The kid, Dobbins, was coming down to save him. Ollie had been killed in that first mad tangle. The kid was taking a lone, foolish chance to save Wately!

Riding the kid's tail were two more of the circus. Wately groaned. He whipped his ship around. A Fokker blocked him. Then the kid was feeding lead to von Berger. Von Berger was forced off with a conked Mercedes. He was no fool, this German Ace. He hit for the earth in a long flat glide.

The other two Fokkers lashed in to finish off the kid. Wately tried to make a whip turn to save the kid. His rudder moved slightly and stuck. He cursed. Jerking a look back, he saw a shred of leather jammed in the hinge!

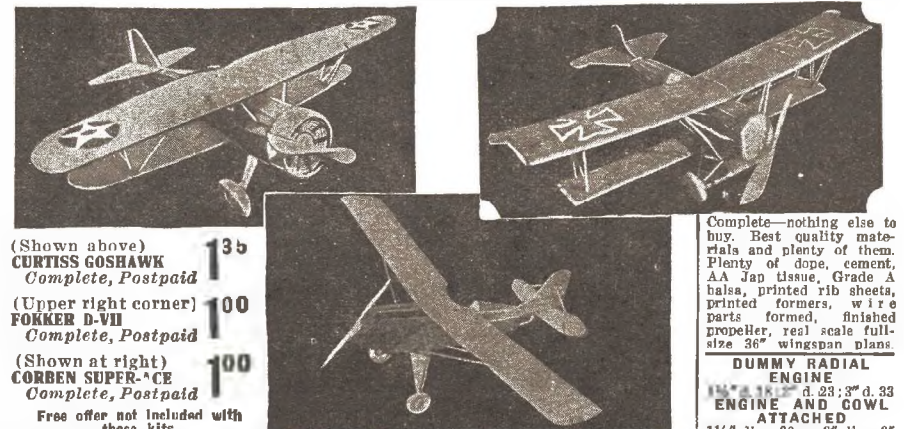
Wately fought with the stick. He could see the hot lead reaching for the kid. He got his Spad around in line with a Fokker. His thumbs snapped down! Rat-tat-tat-tat...! Down went the Fokker in flames. Wately grunted. There were more Fokkers coming down. Wately thundered in to pull the kid free. He got in line with the other Fokker on the kid's tail, but in so doing, he put himself into a hail of death.

But Wately didn't care. He saw the kid pull free with an aileron hanging useless. Then Wately looked back into the eyes of death. A Fokker was firing at him—and Freeman was riding the tail of that Fokker. Freeman was saving him! At the same time, two more ships were trapping Freeman even as he was trying to make the turn.

Through bleary eyes, he could see Kid Dobbins in the crippled Spad, breaking up the trap that held Freeman. The thing was madness. There was a wild flurry of shots. Then Dobbins was going down with a cracked and ribboned plane. Wately cursed. He couldn't follow in his crippled ship...

Freeman, Wately, and the Fokkers whirled upward in a mad dance. Like chaff, they were, lifted by a puff of wind. They reached the dogfight. LaMarch had come down with the rest of the flight. But the circus had the whip hand and was pressing its advantage. Wately groaned as he saw the observation busses moving into position.

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Two of the circus swooped down upon the slower ships. Those heavy Breguets hadn't a chance. A Spad went down in flames. A Fokker followed in a crazy spin. Another Spad limped home. Dimly, Wately saw all this. He saw one of the Breguets run home, and he saw the other sent down with sagging wires and clipped controls.

Grimly he signalled his men home. They had done what they could. A wise retreat was better than a foolish defeat. Like a fixed thing, he tooled his ship back to Passavant.

He was the first down on the home tarmac. He legged from the pit, and without a word to the mechs he headed for the canteen. He needed a drink. Needed it damned bad! Kid Dobbins was gone! That thought throbbed in his brain.

He pushed into the canteen, ordered cognac. Without waiting for a glass, he put the bottle to his lips. Like fire the raw stuff burned through his blood.

The flight stomped in, Freeman at their head. Freeman took his own drink. Then he wiped his mouth with his greasy sleeve and turned on Wately.

"It's getting regular, ain't it?"  
 Wately turned slowly. "What do you mean?"

"This running away," Freeman barked.

Wately paled. Freeman was speaking the truth for once.

"The kid was right about one thing," Freeman went on hotly, "it was Berger's circus all right. Here's your money,

captain." He slapped a roll of bills on the bar.

Wately shoved the money back. "You paid the bet up in the sky, Freeman. Keep your money. But you still owe the kid an apology."

Freeman glared. "A p o l o g y be damned."

"He pulled you off the griddle, Freeman," Wately said definitely.

"All right," Freeman said tightly, "what do you want me to do—cry? It was that damned design of yours that got us into the trouble."

Wately slapped his hand against the bar. "The design was all right, Freeman, but it was made out of rotten cloth. If we'd stuck to that spiral, we'd have won that scrap. The Boches might have gotten one or two of us in that dive, but they couldn't finish us all off. You were the loose thread that broke out of the cloth with your notions that every man's for himself alone. If the kid had thought like that—"

"Shut up, Wately," Freeman growled. His face was hot and red. "Maybe I do owe the kid a debt. I don't like it myself. He's the last man to whom I want to owe anything. But he's dead, savvy? Can a man pay a debt to a dead man?"

**R**AW passion was flaming in Freeman's face. The men in the room stared at their drinks. LaMarch, the Frenchman, broke the silence.

"I have the thought, monsieurs, the lads not dead. Perhaps one could find



heem, eef one had the courage—”

Freeman shattered his glass on the bar. He turned toward the door with sudden determination. His shaggy head was hunched between his shoulders.

“Where you going?” Wately demanded.

“To pay a debt,” Freeman ground out, “and when I pay my debts, I pay ’em in full. I’m going out to get the kid!”

LaMarch protested. “*Sacre Nom*, monsieurs, but eet ees I should go. Eet ees written I must fall victim to *le diable Boche*. Let me fetch—”

Wately shoved LaMarch aside. “If anybody’s going, I am. The kid was my friend. He went down because he helped me in the first place!”

The three men went out arguing. The flight watched them with wonder. Within five minutes, three freshly fueled ships lifted from the tarmac, circled swiftly, and headed for Etain.

Wately was the last one up. He gunned his Hisso wide to overtake the madmen. The black splotch of the Argonne whipped beneath his trucks. He struck Cumiers. The air screamed past his head. As though it was a great clock, his heart pounded in his chest marking off the miles!

He stared down. The trenches! La Neuville! And now Etain!

Wately sped between LaMarch and Freeman. He signalled them to stay up while he made the landing. LaMarch shrugged. Freeman shook his head savagely. He was going down into that wooded country himself. Wately cursed. If Freeman wanted to die,

let him die!

Even as Freeman started down, four ships of von Berger’s circus crashed out of a cloud. They came savagely. Wately shot a warning burst and split up the distance between himself and LaMarch. They had to work together—to make a design of their own—a design for dying!

Freeman kept on down. Wately cursed. Freeman was a fool! The Fokkers lashed in spraying hot lead. They came in together working smoothly, battering the Spads between them! Wately’s thumbs snapped down. “Rat-tat-tat-tat! His tracers lanced through empty air.

Two of the Fokkers fixed themselves to Freeman’s tail. The other two kept Wately and LaMarch busy. LaMarch fought with a swift viciousness. Like a rapier he was, daring all in swift, brilliant thrusts. He sent Vickers fire scorching through a Fokker.

The Boche spun free and whipped back on Wately. Wately skidded flat for a no deflection shot. Rat-tat-tat-tat. . . The Mercedes coughed a wreath of flame. The Fokker swirled down.

Then Wately could see a band of foot soldiers plunging through the broken woods. He tensed. They were looking for something. Someone had tipped them off! Perhaps von Berger.

At that instant, a wild peal of thunder screamed down from the sky. Wately hunched down. He understood that sound. Mercedes! He jerked a look up. The rest of von Berger’s circus was coming down, with the mad butcher at their head!

Wately had time to send his ship in a crazy vrilie across Freeman’s nose. Freeman jerked a hopeless look into the sky. To go down now meant suicide. Not to go down meant leaving his debt unpaid. He made his choice swiftly. The living had to stick together against the common enemy—death! The air seemed to explode in one mad flurry of rainbow wings. Tracer spun a web of madness about the suddenly born hell!

There wasn’t a chance of running away. The earth was too close. The three Spads stuck together, whipping in a mad circle. The Fokkers trailed them, trying to spread them out where they could be killed.

But the Spads clung to their narrow course. The Boches were afraid to shoot for fear of hitting each other. They tried broadside after broadside at the flashing Spads, to no avail. Three ships, well handled, were standing them off!

But Wately wasn’t fooling himself. The thing couldn’t go on for long. The mere weight of numbers must make itself felt. One lucky shot by the Boches. . .

At that instant, hot lead cut through his pit, searing his leg. Another burst almost cut his controls. Still he thundered in the circle, his Vickers growling hot under the insistent chatter.

Wately knew that the end was near. Hot lead beat like hail into his pit. He hunched down. His instrument panel burst into bits of glass, metal, and wood.

Dimly he was aware of spots like mud against the white bosom of the cloud above him. The rest of the 169th! The colonel’s blue Nieuport was leading them! All of the patrols that had been left at the field were in the flight. Thirty planes!

But they would be too late. Wately knew that. He threw the stick from him and went down. No use to roll, whip, and fishtail. One mad dive might decide the issue!

**D**OWN—down—down! Two thousand feet of madness. Two thousand feet of speed that made his head swim. Then he flattened, and a vicious force seemed to hammer him into the seat of the ship. He looked back and snorted. The Boche that had been on his tail was going on down fighting the controls. The heavy Mercedes was taking that ship down into hell.

But that Fokker hadn’t been alone. There was another ship behind it, waiting to hammer Wately into the same hell to which he had so fervently consigned the Boche. And he recognized the pilot of that second ship—von Berger!

Wately felt his blood turn to ice. He had played his trump card and he had lost. He could see the Spandaus bear red. He could feel the death plucking at his sleeve. And then, dropping out of nowhere, he could see Freeman lunging in on von Berger’s tail.

That was all he had time for right then. He whipped his Spad in a mad circle and stiffened in the pit. Up from those scattered trees through which the Jerries were searching, lifted a Breguet.



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Wately let out a shout. The observation bus of the first patrol hadn't cracked up!

The big bus circled up swiftly. A Spandau slug caught Wately in the leg. He could see Freeman trying for a shot at von Berger, but Freeman was afraid of hitting Wately. The controls bucked and jerked. Closer—closer he could hear the slugs hammer their way. But suddenly they stopped.

Wately jerked a look back. He stiffened like a thing frozen. Pounding alongside of von Berger was the Breguet. In the rear pit of the Breguet was a man with a grim, white face. That man was swinging twin Lewis guns on a scarf ring. Swinging them across the belly of von Berger's Fokker!

Von Berger knew the man he had to get. He let Wately go. He had to get the man in the Breguet—Kid Dobbins! The observer had been killed when the Breguet had gone down. Dobbins had taken the man's place and he was earning his passage.

What happened then was almost too swift for the eye to follow. Von Berger whipped back in a beautiful Immelmann. He struck for the Breguet with both guns dripping flame! His slugs struck the tail—ate their way forward. . . .

Wately emitted a despairing cry. He couldn't get in to save Dobbins, who was coming back from the dead. Freeman couldn't get a shot at the Fokker, either. He was too far ahead of von Berger. But Freeman could do something else, and he did it.

He whipped his Spad around. He cut in between von Berger and the Breguet. His wing-tip fouled the Fokker on the center strut. Bounced off! Batted into the whirring prop! The Mercedes was struck from the cradle by the impact. Freeman's plane was spun around.

His spinning blade sawed its way through von Berger's top wing. The German was hurled from the wreckage, and Freeman fought his way down in a crazy spin!

Wately watched the Breguet lumber toward Valmy. Then the numbness left his mind. He understood. Freeman always paid his debts in full! Grimly, Wately shoved the stick against the panel. He had a few debts to square himself. He screamed down upon that woods full of Germans searching for something they would never find.

Wately swept across the cleared space and came down into the wind. He ran toward the tangle of wreckage. Freeman was wiping the blood from his face. He protested feebly, "get out, Wately. The books are balanced. I've paid the kid off. You've got no business here!"

"Shut up," Wately growled. "We've got to work fast before those Jerries find us. You saved my life twice today, and I'm paying up a few debts myself. Jump on my wing!"

As Freeman flattened on the wing, he grinned ruefully. "I've learned one thing, Captain. We never fight alone, and there is a design for killing—a design of ideals and honor. Take away that design and the whole thing becomes a hell of murder. . . ."

The rest was swept away by the surging thunder of the Hisso. The Spad lashed its way through the trees, leaving a little band of Krauts shaking their fists.

As Wately lifted, he could see the Colonel leading the planes of the 169th in that corkscrew design he had taught them. And as he watched, he saw them drive the last crippled Fokker from the sky. A great peace grew in his chest as he nursed the overloaded Spad toward Passavant.

## Japan—Air Titan of the East

(Continued from page 24)

Nakijima-Fokkers for cargo duty.

JAPAN'S Navy Air Service is likewise one of the finest in the world, if we are to believe the figures given out to the recognized aviation handbooks. As far as can be discovered, this service is composed of twenty-two air squadrons. They also have a balloon squadron and an airship squadron. In fact, one of their sheds is capable of housing the Graf Zeppelin, but so far they are confining their airship program to a number of small, semi-rigids until they have trained enough crews and gained experience for their own lighter-than-air designers to get under way. It should be added here that by January, 1937, eighteen new Naval air squadrons will be added to the force.

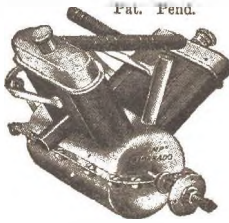
The Navy Air Service headquarters are at Kasumigaeseki, Tokyo, and is under the direction of Vice-Admiral K. Shibusawa. Since the Shanghai disturbances, public donations of funds

for new equipment have reached the figure of 3,187,000 yen, or about \$1,000,000 in real money. The government will add 44,000,000 yen (nearly \$13,000,000) to that this year.

As stated before, Japan was the first great power to put down a keel intended for an aircraft carrier. Prior to that all aircraft carriers were remodeled cruisers or redesigned liners. Today Nippon has the *Hosho*, *Akagi*, *Kaga*, and the *Ruyjo*. The *Akagi* and the *Kaga* are large vessels of 26,900 tons, carrying all modern equipment. They use the most up-to-date system of carrying the funnels overboard during deck action. In short, they are flush-deck type ships that offer every inch of space for landings. The American practice is the "island" type where a main control tower and the funnels are built into an island-like section on one side of the deck.

The Japanese Naval Air Service likewise has the use of the *Kamoi* and

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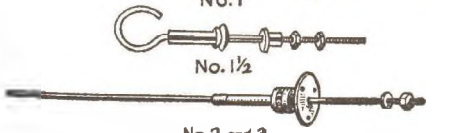
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10 "	22c	22c	40c
11 "	30c	30c	45c
12 "	35c	35c	50c
13 "	45c	45c	60c
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the *Notoro*, listed as seaplane transports, while the battle cruisers, light cruisers, and submarine-depot ships have catapult equipment and carry fighting seaplanes.

Air equipment used by the Japanese Navy is far wider in scope than that used by the Army. The chief single-seater Navy job is the Nakajima 90 ship-board fighter, a trim biplane powered with the 450 Nakajima "Jupiter" engine. It has a top speed of 192 m.p.h. and seems to be a close copy of the British Bristol Bulldog. Indeed, this company has such close manufacturing relations with the Bristol firm that it would seem that they have taken over many of their products.

For reconnaissance work they use the 14-11 sea biplane, with the 450 Lorraine; the Navy-15, with the Hispano 300; and various other in-between types such as the 90, 90-11, and the 90-11b, all sea biplanes with the 450 "Jupiter." These are mostly products of the Nakajima firm, of Ohta, Gumma-Ken. In general these machines have many characteristics of the American Vought-Corsair, being mounted on a single central float and carrying wing-tip bobbers. The pilot sits well under the center-section, and the gunner is close to him with a modern gun mounting. The 90-11b is the landplane version of this craft.

Bombing is carried out with the Aichi-92, a three-seater which may also be used for Fleet spotting; and the Kawanishi K.F.1., a large flying boat, the original of which was built by Short Brothers in England for the Japanese Government. They also use a version of the Kawanishi three-seater job.

Long distance patrols and bombing is carried out with a number of large flying boats of multi-engine design.

Japan's Royal Naval Aircraft Factory, at Sasebo, recently turned out a high-wing monoplane flying boat powered with three 700 h.p. Hispano Suiza engines. Its loaded weight is 26,880 lbs. and the top speed of this monster is 136 m.p.h. Other large flying boats have been built to Navy specifications by Nakajima, Mitsubishi, Aichi, and Kawanishi. They are all giant craft using two or three motors of the Rolls Royce, Hispano Suiza, or Lorraine types.

It is almost impossible to make any true comparison of Japan's air services with those of other powers, owing to careful planning by which they have concentrated on craft suitable for their own particular present use or for their problems of the future. This brings up the point we outlined last month in showing that the Italian Air Service, when considered from the home bases in the Adriatic and the Mediterranean, must be classed very high among the air powers—but the same air service attempting to combat such topographical elements as those of Ethiopia must rudely be dropped several notches because the equipment suitable for sea fighting is almost useless over rugged inland country such as Abyssinia.

Japan, while she may be considered an island empire, has not made the mistake of pouring all her yen into Navy types. A close inspection will disclose that while her two forces are more than capable of national defense, they most assuredly are ideally suited for use in invasion of foreign territory! The direction such an invasion is likely to take will only be known in the future.

A complete list of the various Japanese military types is included with this article. Next month, we will consider the French Air Service.

**Happy Landings**

(Continued from page 31)

ion that modern aviation is not yet ready for the "heavy-oil" engine in spite of the fact that it may be cheaper to run and safer from fire.

It has been discovered that the Diesel is more suited for commercial machines designed for long range work, say up to fifteen hours. The modern aviation engine is powered from about 100 to 600 h.p. It is well above this point that the Diesel would begin to become worth while. It is quite true that the

aforementioned Packard engine was powered at 240 h.p., or somewhere about there, and actually showed up well in distance flights.

However, engineers all over the world have come to the conclusion that while the Diesel is more economical, it is too heavy to be considered today when pay-loads are the big item. A gasoline engine weighing a little more than half the Diesel of the same power, has a big edge on the compression-ignition motor. The top overhauls of the Diesel are cheaper to carry out than one on a gasoline motor, but a complete overhaul would be considerably more expensive owing to the great wear on cylinders, piston rings, and bearings.

Another point is the comparative lack of flexibility on the throttle the C-I motors display as compared with the gasoline engine—and this is an important point when we consider the "touchy" throttle work often faced during a take-off.

If a Diesel can be built up to, say, 1,000 h.p. with a reasonable ratio in weight, it would be suitable for certain

commercial planes, such as long-range freight ships. Many enthusiasts for the Diesel are of the opinion that the C-I motor has been given the go-by because gasoline engines are used so much in military types and thus get much of the publicity and backing because of the high speeds attained. They point out that most air powers could easily finance the research and experimentation necessary to overcome most of the weight problems encountered.

And so there's still a chance for a smart young man who can give us a Diesel for aviation.

### Flying Aces Club News

(Continued from page 56)

Cadet or Pilot Wings, and before the party was over everyone was "sold" on membership in the F.A.C. Paul proving such a delightful host, we decide to tarry a while in Tacoma.

Were it not for the fact that bad weather prevails, as this is written, in Australia we'd do another "Southern Cross" and give you some first-hand information concerning the wonderful progress being made by Terry McManus, of Cranebrook, and "Gary" Cameron, of Fairfield, Sydney. However, we'll try to make up for missing this flight by giving you a picture herewith of Major Cameron's unit, which is indeed a swell one. And so, from the beautiful City of Tacoma, we bid you adieu until next month.

—DOUGLAS ALLEN.

### Light Plane Tarmac

(Continued from page 33)

plete book with blueprints, detail drawings, and full instructions for building this amazing craft are to be found on practically every book counter in Europe.

The "Flying Flea," thirteenth of a line developed by M. Henri Mignet, a former glider enthusiast, has no ailerons or elevators. It has a rudder, but no normal tail fin. Lift is obtained with two main wings, but they are not set as in the biplane. The lower wing is situated just behind, but not quite clear of, the top wing. The vertical distance between the two is very small, which gives the craft an unusual appearance. Control is secured by altering the angles of incidence on the top plane, which is hinged and easily operated by a control lever. The latter is linked up in some manner with the rudder so that the machine makes a stable right-hand or left-hand turn. This appears to be the main point in the safety of the ship, for it is apparent that side-slips are almost impossible. Thus one of the earliest trials of the beginner is eliminated and he only has to fly with the stick and not worry about coordinating with his rudder bar. A small 17 h.p. motorcycle engine gives the Flea a speed range from 25 to 62 miles per hour.

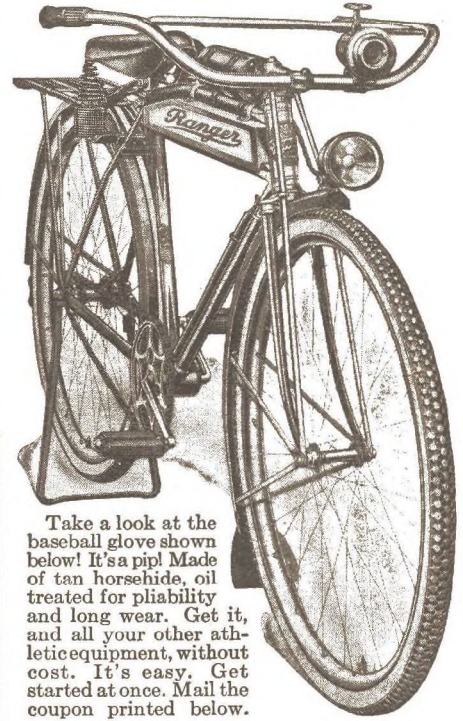
**T**HE problem of what is and what is not a safe airplane will be one of the big questions in the future for the Bureau of Air Commerce to solve. As is well known, plans are under way to reduce the tight physical examinations

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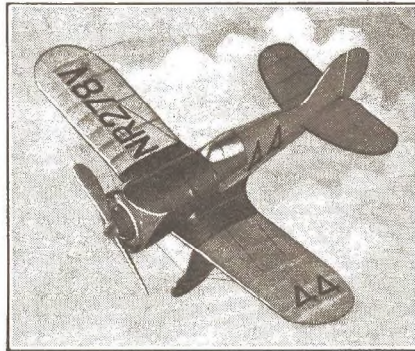
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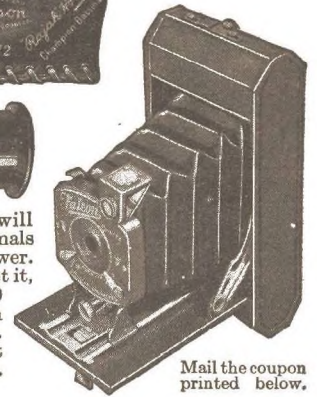
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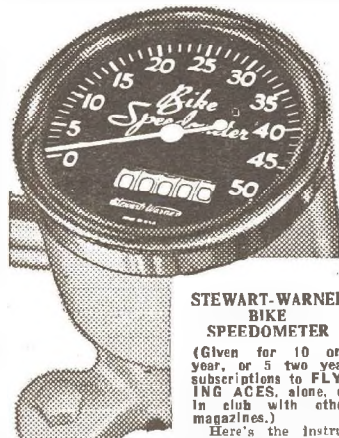
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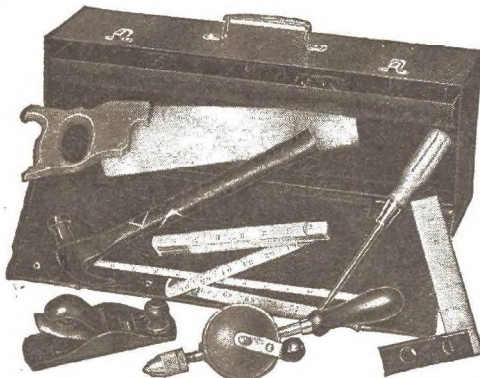
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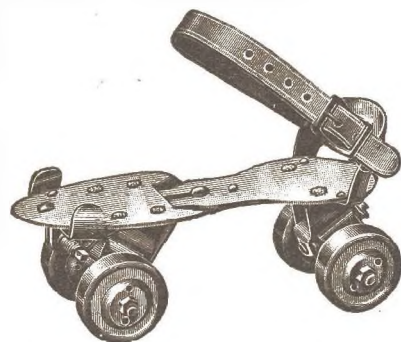
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and rigorous license requirements for those who intend to fly only special light planes belonging to a certain "safety" category. This point has been well taken by many in the aviation industry, but now the disturbing situation arises as to who shall declare that such-and-such a plane is "safe" or that the Whosit Special is not "safe."

The nub of the argument seems to be noted in the fact that many of the so-called "safe" planes now coming out are far removed from the old idea of an airplane—the flying-wing and the Hammond "Y," for instance. Members of the committee who will have the say on what is safe may have preconceived notions as to what a "safe" airplane should look like. They might frown on something unusual in design, regardless of its safety qualities. But let's hope they don't.

## Photo Models in Air Fight

(Continued from page 46)

short time exposure.

You can get different lighting effects by slightly changing the tilt of the lamp shade. No doubt you'll want to do a little experimenting and snap several pictures. After having the film developed, you can have your first-choice prints made from those negatives which show up the planes most effectively.

You will have a lot of pleasure in arranging your planes and lights—and added satisfaction when you show your friends the finished prints. Try it tonight.

## Vortex Theory of Lift

(Continued from page 47)

throw such curves while retaining directional control over the ball makes great pitchers like Dizzy Dean.

In Figure 9 an airfoil section is shown. The airfoil is divided into two parts, upper and lower cambers. To illustrate Bernouilli's theorem in relation to an airfoil, let us suppose a particle of air is striking the leading edge of the wing. As the particle strikes the edge, it is split into two parts, one of which follows the contour of the upper camber and the other the lower camber.

It will be recalled in our study of the atmosphere that mention was made of the fact that the characteristic nature of air when separated is to come together again as particle to particle. Following this it is evident that the two particles flowing over and under the airfoil section must meet at the trailing edge. Examining the cambers, it will be noticed that the upper camber, due to its curvature, is greater in length. It stands to reason, therefore, that if both particles must meet at the trailing edge they must then take equal time to cover their respective distances—therefore the particle traveling the longer route, or upper camber, must travel faster. As in the case of the

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baseball we then have an increase in velocity over the upper camber, and hence a decrease in pressure as compared to the lower camber. Following Bernoulli's theorem, the difference in pressures will tend to lift the wing in the direction of the least pressure.

The Vortex theory, as developed by Prandtl, considers the action of air around an airfoil. It asserts, as shown in Figure 10, that the vortices, or whirls, of air passing off the trailing edge tend to change the direction of

the air flow such that a circular motion is set up around the airfoil. This motion as indicated by our figure, is being retarded under the lower camber, due to the motion of the air, and accelerated over the upper camber. Because of the difference in velocities, we have a difference in pressure, hence we have an airfoil lift in the direction of the lower pressure.

Next month's aerodynamics article will consider the induced lift theory. Watch for it.

## Make The Lockheed Electra

(Continued from page 48)

parts and sand them to the proper shape, streamlining them as shown in top and side views.

When finished, give each surface two coats of dope, allowing each coat to dry thoroughly and sanding between coats. You will notice that the two rudders are mounted at the outer tips of the horizontal tail surface. Cut away a curved slot in each rudder to allow sliding onto the horizontal tail as shown in side view in dotted lines. Next, draw a line near each tip of the stabilizer where the rudders will fit, slide each rudder in place, and cement them on.

### FUSELAGE

**SEATING** arrangement for the passengers and pilots and other details are shown in our plans.

If you wish to make the fuselage hollow and want to put into it the detail shown, you can build it in two halves. Fake the measurements for this type of construction from the top view, which shows the center line running the full length of the fuselage.

Lay the fuselage template on the two blocks of wood which are to form the fuselage and trace around it, then cut along the lines. Fasten the two halves together with a slight amount of cement, then carve out the shape of the fuselage. This done, part the two halves and carve out the insides to make them hollow. Now trace and cut out the cabin and cockpit windows. Before cementing both halves together make the seats and other details. Cement them in their respective places, allow them to dry, then paint them (pearl gray). Put in the celluloid windows from inside of each half and when dry cement both halves of the fuselage together.

The tail should now be dry. Draw a line through the center of the horizontal surface from leading to trailing edges. Line it up and cement it onto the fuselage as shown in our plan, holding it down with pins while the cement dries.

### ENGINE NACELLES AND COWLS

**PRESUMING** you have a lathe, cut two blocks the length and width of the nacelles and at the ends of each piece find the center by drawing cross lines from the corners. Place one end of your first block against the live stock of the lathe and tap the block until the live center is well imbedded into it. Then run the tail-stock center against the

other end of the block, turn on the power, and see that your wood turns true. Take the concave cutting tool and while the block is spinning rapidly, turn it to the desired shape. While you turn the nacelles, check the template with them frequently to insure accuracy. When these are finished, make the cowls and the wheels in the same manner.

### PROPELLER

**TO** make the propellers, first draw a line through the center of the propeller, (front view) from the tip of one blade to the other. Then make a template to conform with one half of the propeller. In turning out the propellers it is best to make them from 1/2" diameter birch dowl. To do this you should fasten each piece in a (3 or 4 jaw) chuck, allowing enough surplus wood protruding on each end of the propeller-ends to avoid striking the revolving chuck on one end and the dead center on the other. While turning them out, apply the template to each from time to time. When you have completed this job, take each propeller in turn and carve or file the blades to the proper shape and angle. Then drill in the shaft-holes. You will notice in the drawings of the propellers that there are two lugs on each hub. These are built-on just inside the hub-rings and facing the outside of the hub rotation. Their pieces are circular in shape. Make four of them and cement them on, then dope each blade and allow to dry.

### ASSEMBLY

**TO** assemble the wing and fuselage, first make a template the shape of the root (center section) of wing and trace this shape onto the lower sides of the fuselage. Then cut away the center portion of the wing and cement the fuselage down in this trough-like hollow, holding it down with pins.

To assemble the nacelles to the wing, cut away a portion of the wing on either side of the fuselage to conform with the shape of each one. Then cement them in place, lining them up by measuring a like distance from the center of each to the sides of the fuselage.

### ENGINES

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ings. Fasten the engines onto the front end of each nacelle, then slip the cowls on and fasten them with cement.

You may build up the fairing fillets between the fuselage and wing roots with either solid balsa pieces, or balsa dust mixed with aerodope. After making these, coat the entire model twice with aerodope and when thoroughly dry, sand cross grain with smooth sand paper.

Color the model with aluminum paint. For markings, paint the usual Lockheed insignia on the fins and the Department of Commerce numbers on the rudders and wings. The lettering is black and the Lockheed trademark is red.

And now, here are those performance figures:

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Cruising Speed at Sea Level at 75% power.....	172 M.P.H.
Cruising Speed at 5000 Ft. at 75% power.....	182 M.P.H.
Cruising Speed at 11,400 Ft. at 75% power.....	195 M.P.H.
Cruising Speed at Sea Level at 65% power.....	160 M.P.H.
Cruising Speed at 5000 Ft. at 65% power.....	170 M.P.H.
Cruising Speed at 13,200 Ft. at 65% power.....	185 M.P.H.

## How to Make the Airspeed Envoy

(Continued from page 53)

the rudder and elevators of sheet balsa. I would suggest doping the tail so that you will be able to get better results when paint is applied. The next step is to glue the tail in place as illustrated in the diagram. A thin groove may be used to demark the stationary parts of the tail from the movable ones. A groove of the same type may be employed to outline the windows of the cabin.

### WINGS AND MOTORS

The wings are next constructed. They must be made of soft balsa. By referring to the top and front view of the ship, the size and shape of the wing is obtained. Sandpaper is used to give cross sectional shape. Details such as landing lights may be put on if so desired. A groove will also prove useful in showing the separating lines between wing and ailerons. The wing is then coated with dope, and the engine fairings are constructed. Soft wood will

prove excellent in the construction of the fairings. The engines and cowlings may be bought at any supply house and placed on the model. The landing gear may be made so as to be in either a retracted or lowered position.

The wings are finally glued on the fuselage. Carefully note the dihedral angle in the wing. The tail wheel must now be put on the ship, then you will be ready to paint your model. In order to get a good paint job, dope the entire model a few more times, sandpapering the surface between each coat of dope. Since this is a commercial model, there is no standard color scheme. The builder may select any color, or colors, he wishes. I would suggest that you use a lacquer paint and that you give the model a coat of clear lacquer after you have completed painting it. The windows and grooves of the ship should be painted black regardless of the color the builder chooses for the model.

## The Gas Model Comes Into Its Own

(Continued from page 50)

tant contests held for powered models. At New York, Bassett won with twenty-eight minutes, but he was allowed unlimited gas. Next year he won the Eastern States Contest at Newark with six minutes on one-eighth of an ounce of gas per pound-weight of the ship. He also won the Nationals that year with

a flight of twenty-one minutes, this time with a one-quarter ounce limit. The Eastern States meet saw Kovel make his record-breaking flight of more than 64 minutes—three times the old record. A month later, I nearly broke Kovel's record, but with a larger allowance on gas. Surely, two exceptionally good days could not be offered as explanation for the hour flights—for other models flown at the same time did not perform as well. In short better model engineering attacked the problem and, presumably, defcated it. Our job now is to elaborate on the principles we have established, and this should keep us busy for some time before we drain everything possible in the way of performance from our models. Expense is involved, for it takes at least \$15.00 to

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build a model similar in construction to mine—minus the engine. I should not advise a beginner to experiment with a costly model until he gets used to the eccentricities of gas craft. Rather, I should suggest a stick model of plain design, and rough construction. With one of these, one can get over his inexperience with the motor and with the action of the plane. As little as two weeks of this sort of work is sufficient to prepare one. I might say, however, that an experienced rubber builder, with a little knowledge of the motor, will quickly get into the "feel" of championship models.

In conclusion, I wish to make one point clear: The field is wide open for the right kind of experimentation. It is impossible to put a limit on the possible performances of this type of craft. We will be building models shortly that can keep directly over the field almost indefinitely and I hope that by that time many of you rubber-model fans will be among the contestants.

In the meantime, FLYING ACES would like to know if you model department readers would like more articles on gas models. Address, Model Editor, FLYING ACES, 67 West 44th Street, New York City.

## The Stinson Reliant SR-6

(Continued from page 36)

ing (side view) and cement it to the fuselage at B9. The 5/8" wheel is mounted on a small piece of .014 wire. This wire runs upward through the small balsa piece and is secured in the 1/8" by 1/4" that forms the hook mounting.

### TAIL ASSEMBLY

THE stabilizer halves and the rudder are laid out directly on the plans or tracings. Provision is made for movable controls—if they are desired. Sheet aluminum of a very light gauge is used for hinges, serving the purpose well and avoiding tedious work. The spars are 1/16" by 3/16". The cross pieces are all cut from 1/32" sheet using the patterns given. The edges are of 1/16" bamboo and are bent around a candle flame to the required shape. Pins are stuck in the bench to hold the bamboo in position until the cement has set.

Cover each side of all surfaces with individual pieces of tissue. If you are building the movable controls, the hinges should be cut to size and attached at the proper positions. Be sure that the aluminum is thin enough to permit free movement of the controls. Dope the finished surfaces lightly and smooth all the edges with dope.

The tail fillets are cut from soft balsa 2 3/4" by 7/8" by 9/16" and sanded smooth. They are attached directly to the sides of the fuselage at the position shown on the side view. The stabilizer halves are cemented to the fuselage on the center stringer. The tail braces of 1/16" by 1/8" are cut to the required length and cemented in place (as shown on the different views).

### WINGS

WINGS are laid out on the drawings preparatory to assembly. The ribs, and flap sections are cut from 1/32" sheet with the exception of the end pieces of the movable sections. These latter pieces are cut from 1/16" sheet balsa. The leading edge of 1/8" sq. is shaped and glued in place. Check its alignment carefully from above and from the front. The auxiliary spar for mounting the ailerons and wing flaps is 1/16" by 1/4" and is cemented in place as directed in the wing drawings.

The fillet blocks are shaped from soft balsa 5" by 1 9/32" by 1 7/32". The longest edge, as shown in the detail, is similar to the wing section and is attached with cement directly to the first rib. The shorter edge is drilled to receive the bamboo hold-on pegs that run through the fuselage. These pegs are shown clearly in both the front and top views. They are inserted in position against the adjacent formers and flush with the top of the longerons, then firmly cemented. The aileron and flap spars are 1/8" by 3/16", are rounded as shown in the wing sections, and are then cemented into position. The tips are of 1/16" sq. bamboo bent to the required shape around a candle flame. The trailing edges are shaped from 1/16" by 3/16" stock.

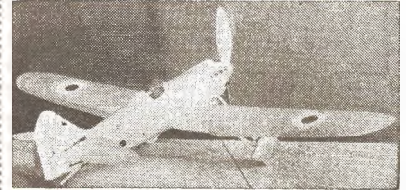
To cover, use a separate piece of tissue for each side of both left and right wing panels, flaps, and controls. Trim all edges with care, and dope all frayed edges smooth.

The panels are next forced on the bamboo pins and cemented in place. Stiff paper fillet covers are cut to the shape required by your particular job and cemented to the fuselage along the outermost stringer and to the fillet block at the position designated in the top plan. The front wing brace is cut to the given size and streamlined from a piece of 1/8" by 1/4". The rear brace or strut is taken from the remainder of the 1/16" by 3/16" trailing edge stock. All the struts run from the landing gear fillet upward and rearward to the wing spars. Small N struts of 1/16" by 1/8" are cut to the given lengths and assembled at the designated positions.

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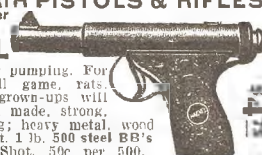
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## COWLING, PROPELLER, AND MOTOR

**T**HE cowling is built up as shown on the top view from sheet balsa discs. They are marked out with a compass and glued up. The front three are 1/4" sheet and are also cut out to the correct diameter in the center to receive the removable motor or plug. The fourth also is 1/4" sheet but has only the square hole cut to receive the plug. The remaining three sheets are 3/16" in thickness and are cut out to the various internal sizes required. After the whole unit has been glued up and dried, it is shaped with a blade sliver and neatly sanded with fine paper. The completed unit is cemented against the front of the fuselage. The crankcase is shaped, as shown, from a block 1 1/16" sq. and 3/4" thick. The nine cylinders are cut from rounded 3/8" stock or are built up of paper discs of alternate sizes. They are well cemented to the crankcase. The square section shown at the rear of the plug is 1/4" thick and permits use of the motor as a removable plug. The small blocks shown on the cowling in our photo of the real plane cover the rocker arm housings. They can be cut to shape from balsa scraps you have at hand.

The propeller blank is cut as shown from a block 9" by 1 3/4" by 13/16". The carving is done in the usual manner. The finished blades are smoothed with fine sandpaper. If good performance is expected, the balancing should be done with precision. Using the pattern given, cut two bearings from tin sheet and bend the points to sink in the wood. Fasten one bearing to the front of the plug and the other to the rear of the prop hub. A loose washer is placed on the shaft between the plug and the prop.

The motive power is 8 strands of 1/8" flat rubber and should be lubricated whether or not a winder is being used. An even mixture of green soap and glycerine is suitable for lubrication and

can be procured in any drug store. Mix only a minute quantity. If brown rubber is used, have the motor slightly tighter.

## FLYING THE MODEL

**T**EST your Stinson over deep grass. If none is available, fly the ship on a few turns R.O.G. As the proper balance is ascertained, the number of turns are increased. The movable controls help to balance the model, but if their movement is more than 1/4", use small lead weights for balancing. If the controls are used too severely, the model will be erratic as soon as the motor is wound out. Don't be indifferent on this point but make the most of your labor. The Stinson Reliant will fly any distance up to 400 ft.—if a winder is used.

## BILL OF MATERIALS

**M**ATERIALS required are as follows: Six 1/8" sq. by 36" balsa for longerons; four 1/16" sq. by 36" balsa for stringers; two 1/16" by 3/16" by 24" balsa for trailing edges, stabilizer, and rudder spars; one 1/16" by 1/4" by 24" balsa for aileron and flap attachment spars; one 1/8" by 3/16" by 24" balsa for aileron and flap hinge spars; one 1/8" sq. by 30" balsa for leading edge; one 1/8" by 1/4" by 18" balsa for wing struts; one 1/16" by 3/16" by 18" hard balsa for wing struts; one 1/32" by 2" sheet balsa for all formers wing and tail ribs; one 1/16" by 2" by 8" sheet balsa for special control ribs; one 1/16" by 1/8" by 9" balsa for N struts; two 5" by 1 9/32" by 1 7/32" soft balsa for wing fillet blocks; two 2 3/4" by 7/8" by 9/16" soft balsa for stabilizer fillets; two 3/4" by 7/8" by 2 1/4" soft balsa for landing gear fillet blocks; two 3/8" by 1 3/8" by 3 7/8" hard balsa for landing gear struts; four 2 15/16" by 3/16" by 1 3/16" soft balsa for wheel pants; two 2 15/16" by 9/16" by 1 3/16" soft balsa for wheel pants; one 1/4" by 3" by 10" soft balsa for cowling; one 3/16" by 9" by 3" soft balsa for cowling; one 1 1/16" sq. by 3/4" soft balsa for crankcase; one 9" by 1 3/16" by 1 3/4" medium balsa for propeller; one 3/8" sq. by 5" soft balsa for cylinders; one 3" by 1 1/8" by 1/2" soft balsa for windshield peak block; and one 5/8" sq. by 1/4" soft balsa for plug holder.

Miscellaneous: one 1-oz. cement; one 2-oz. clear dope; two sheets Jap tissue; 1 ft. .028 music wire; one 6" .014 music wire; three 1/16" by 1/4" by 12" bamboo; one scrap cellophane; 9 ft. of 1/8" flat rubber; 1 pair 1 1/2" wheels; and one 5/8" tail wheel.

## Flying Aces Stamp Tales

(Continued from page 73)

Icarus. Of these two, this stamp probably honors the father who played safe by not trying for any altitude records whereas the high-flying Icarus, according to Greek myth, made a stratosphere ascent, went too near the Sun so that the wax with which his wings were attached melted—and the reckless fellow cracked up.

Italy beat Uruguay to the first use of Pegasus as an air mail design. In 1928, two small stamps of 50 centesimas and five lire values were issued in olive brown and dark green. Where the South American stamp depicted a proudly arched neck, the Italian version has the horse's head thrown back and the fore feet drawn up in a nervous prance. These two designs (see illustrations) provide a fine chance for interesting comparisons. In side-by-side arrangement, it appears that Pegasus is "taking-off" in the Italian miniature and then has attained the air in the Uruguayan portrayal.

But all the myths and fables on air mail stamps are not of ancient vintage. Spain as late as 1930 helped spread to the four winds via an air mail stamp the apocryphal tale of the black cat that was supposed to have accompanied (but didn't) the lone eagle, Lindbergh, on his non-stop hop from New York to Paris. The artists might better have shown his package of sandwiches.

Next month FLYING ACES STAMP TALES will deal with an entirely different angle of this many-sided postal hobby. "CRASH COVERS" collecting is a specialty in itself. When in the past a plane or pioneer flying bus carrying unofficial mail went into a tale spin and cracked up, the mail was in some cases salvaged. Charred covers or water-soaked contents become mementoes of grim and often heroic incidents. Damaged stamps and covers (envelopes) become highly prized and valuable items because of their rarity. A "Crash Cover" is a whole story in itself!