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What America's real air strength is today?
Turn to page 6
Why a lot of airminded non-college men are peeved at the sky training set-up?
Turn to page 22
How our civilian aero program should be safeguarded?
Turn to page 25

FLYING ACES

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FLYING ACES

A. A. WYN, Publisher
HERB POWELL, Editor
VOLUME XXXII APRIL, 1939 NUMBER 1

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Trip-Six Trap

By Donald E. Keyhoe

Author of "Raid of the Wraith," "Guns Over Gatun," etc.

Illustrated by Jon L. Blummer

CHAPTER I

THE BLACK GHOST

For almost five minutes, the man from Tia Juana stood furtively watching the Air Corps fighters lined up on Lindbergh Field. The chartered car which had brought him at high speed to San Diego had already departed. But still he made no motion to enter the airport office, though the northbound plane was nearly ready for loading.

A moment longer, he remained back in the shadows, eyes narrowed behind his tinted glasses. The Army ships were Seversky P-35's, and he could dimly see the muzzles of Browning guns protruding from their cowls. That in itself was peculiar—Air Corps fighters with mounted guns were seldom seen except in maneuvers or target practice. And their presence at a commercial airport only added to the mystery. There were six of the P-35's, and back by the first hangar he glimpsed an equal number of pilots. One of the ships had just been warmed up. As the unseen man watched, a mechanic switched off the motor and crawled out, and down the line a second mechanic started the engine of another P-35.

The look of suspicion slowly died out of the man's eyes. Whatever the reason for this strange activity, it could hardly be connected with him. No one but himself knew that Richard Knight, fugitive secret agent, was in that part of the world. No one knew it save Doyle, his former co-agent, whose almost frantic code message had brought him hurrying across the border—even though it meant risking arrest.

Reminded of the need for haste, Knight turned from his intent regard of the Army ships and entered the waiting-room. As he passed the newsstand, headlines of an evening paper leaped up at him:

SECOND MYSTERY AIR CRASH

He stopped, the brim of his slouch hat turned down over his eyes, and quickly purchased a paper. There was no time now to read the story, so he shoved the paper into his coat pocket and hurried to the ticket office. His face, tanned to a mahogany, showed no trace of nervousness. But in spite of his grim self-control his pulses began to pound. At any large airport, there was a chance of running into some one who might recognize him, in spite of his attempts to alter his appearance. Complicated disguises had never appealed to him, except when there was no other way. He was relying now on the tint of his beribboned glasses to make his dark-blue eyes seem black, and to combine with his deep tan and black
First, a plane crash in Chicago—then a second disaster in Seattle, 2,000 miles away! Was there some sinister, devilish relation between them? That question burned in the mind of Richard Knight, fugitive agent. But now a Coast Airline DC-3—the very ship he himself had attempted to board—was diving past his speeding Seversky. And at one of its windows, a stark white face was pressed against the glass—a gaunt visage which in the next instant became a grinning skull!

Hair to give him a foreign look at a casual glance.

"One to Los Angeles, señor," he told the man behind the counter. "I wish to take the plane leaving at ninety-five."

"Sorry, the Coast Airline ship is all filled," said the ticket-man laconically. "Reservations sold out early this morning."

Knight fingered the flowing ribbon of his glasses.

"That is unusual, no?" he said. "Especially after this so bad news?"

He tapped the paper protruding from his pocket. The other man looked at him oddly.

"There's a lot of unusual things going on, mister, and that's not the half of it."

"I could, perhaps, hire a small plane?" Knight said anxiously. "It is imperative that I reach Los Angeles as soon as possible."

"All but scheduled flights and Service ships are grounded—by order of the C.A.A.," replied the ticket-man. "Afraid you'll have to take a bus or a train this time."

K N I G H T turned away, went swiftly to the door that lead to the loading space. He emerged in time to catch the muttered words of two Air Corps pilots who were approaching the building.

"—some crazy hoax," the first man said. "A body couldn't burn that fast."

"I tell you the General himself saw it," retorted the other officer. Then he checked himself abruptly as he saw Knight. Thereupon the two disappeared within the airport building.

The tall secret agent gazed after them curiously, then turned and strode toward the parking space for cars. But as soon as he was out of the brighter lights he halted, slitting one hand inside his coat. A mirthless smile twitched the corners of his lips as he stole toward the hangars. A sardonic Fate had already marked him as a traitor, and every effort to prove his innocence had only added to the ugly charges against him. What he planned to do now would make small difference in that sinister list.

The second P-35 from the end of the line was idling, and the other one, which had been warmed up, was being started again. Mechanics were at the controls, and Knight hazarded a guess that the pilots he had encountered were going in for some last-minute instructions. He crept toward the nearer ship, hoping to reach it before the floodlight went on for the northbound ship's take-off. He was within twenty feet of the fighter when one of the men down the line saw him and came dashing toward the ship. Knight leaped to the cockpit, thrust his suddenly drawn .38 against the startled mechanic's head.

"Jump! And make it fast!"

The man all but fell out of the ship. Knight whirled, drove a sharp left hook to the jaw of the second mechanic, who was almost upon him. The Army man fell, and in a flash Knight was in the Seversky's cockpit. He jammed the right rudder pedal hard down, gripped the throttle. The motor revved up with a roar, and the fighter's wheels crabbed free of the chocks. The red flash of a pistol cut the shadows, and another gun blazed as two Army
Pilots came racing from the hangar. A bullet drilled through the Plexiglass enclosure. Knight bent low, sent the fighter thundering out onto the airport, past a DC-3 which was being loaded. A red light blinked furiously from the tower, and floodlights went on with a sudden bright glare.

The P-35 shot down the cleared runway, lifted swiftly. Knight cast a hasty glance backward as he retracted the landing gears. The other Seversky which had been warmed up was streaking after him, and still others were hurriedly being started. The fugitive agent hurled his stolen ship into a sudden split-turn that brought him back across the airport at less than fifty feet from the ground. For an instant he thought he had shaken off the Army pilot. But with a tight reversion the other Seversky now plunged in after him.

Tracers snaked over his head, yellowish in the glare. Knight nosed down, and the bellowing P-35 seemed on the point of piling headlong into a hangar. There was a second when the shredding tracers ceased, and with a lightning jerk at the stick Knight hurled the fighter into a vertical zoom. Rolling out, he raced across the tip of Coronada and on up above the dark Pacific. With the Army pilot shaken off, he held his course out to sea for about an hour, then swung in a gradual curve back to the north, climbing steeply.

There was a radio in the Seversky's cockpit. Knight turned it on, listened on several settings. He caught the routine weather broadcasts, airline dispatches, and plane-to-ground reports along the Coast and nearby areas. But there was as yet no mention of the stolen ship.

He smiled dryly as he switched off the set. G-2 was evidently keeping it off the air, spreading its dragnet by ground wires to avoid tipping him off. They would probably suspect that he was some foreign spy making off with the Army ship to deliver it and its secrets to other spies below the border. In that case he might be able to reach Los Angeles, he reasoned, from that outlying spot, and start his appointment with Doyle.

"If humanly possible, be at Griffith's Park airport before midnight tonight," the Irishman's code had read.

Knight had caught it on a special high-frequency set in the Sikorsky Clipper that had been his shifting base ever since the famous affair of the Four Faces. Though he had wreaked the plans of that far-flung criminal empire to seize vital American defense secrets, a dying traitor had obtained him with his last words, and he had been forced to flee in the luxurious amphibian which the Four Faces had used as their flying headquarters. Tonight, the Sikorsky lay securely hidden in Mexico, where he needed it as he dared bring it. It would have been suicide to fly that ship back into the States.

"—be at Griffith's Park airport before midnight."

The words ran through his brain again, and on an impulse he reached into his pocket and took out the newspaper. Switching on the cockpit light, he scanned the headlined story:

"Twenty-five persons were killed today in a second mysterious airline crash when a Skylobe of the Rocky Mountain Airliners plummeted headlong into the heart of Seattle, causing a disastrous explosion and fire. By a coincidence, this second airline to crash within forty-eight hours also struck an aircraft plant, causing damage estimated in the millions, with at least a hundred new flying planes destroyed."

A bizarre element was injected into the mystery when it was reported that Captain J. S. McNeill, the senior pilot of the ill-fated airliner, sent out a wild plea for help just before the crash. Two amateur operators stated that McNeill screamed something about a "Black Ghost" in the middle of a regular report that he was preparing to land. This, however, was denied not only by the Civil Aeronautics Authority or airline officials."

The Skylobe was within a few miles of the Seattle airport when it hurtled to the ground, engines still at full speed. Four night watchmen at the Braden Aircraft Plant were killed in the explosion. They were cremated, along with all on board the plane, in the resulting fire. Pending investigations, further details are being withheld.

Knight stared at the paper, skipped over the list of the dead, and read another reference to the first crash:

"This second disaster, closely parallels the crash at Chicago, two nights ago, when a sleeper-plane of Central Skylines dived into a hangar of the Barnes Aircraft and Engine Works and set off an explosion and fire which almost completely demolished the plant. The veil of secrecy thrown about this first case lends weight to an earlier theory of sabotage on board the airliner."

There were several columns more, including descriptions of both crashes by eye-witnesses and theories by various experts. Mechanically flying his course to Los Angeles, Knight read every word. He had kept well out to sea, to avoid being reported by observers who might have heard his engine, and this course had added thirty miles to the straight airline distance to Los Angeles.

He was still puzzling over the two mystery crashes when he passed over Long Beach. From his altitude of 20,000 feet, the lights of Los Angeles were only a gleam in clouds, but he could check his position by cross-beams on the San Pedro and Los Angeles radio stations.

He started down in a long glide, throttle cracked. The easiest course was to attempt a quiet landing at Griffith's Park, keeping in readiness for a swift take-off if necessary. He might even be able to take off right there at Griffiths, but without having his stolen ship spotted at once.

Knight turned on the radio again to tune in the range-beacon at Burbank and offset his course for Griffith's Park. As he turned the dial he heard a tense voice come through:

"... Trip Six ... Leonard, Trip Six, to Burbank! Clear? Zenith Express ships both missing ... can't wait for procedure—"

Knight sat up tautly. Trip Six was the DC-3 from San Diego—the ship he had intended taking to Los Angeles. Instinctively, he opened the throttle and nosed down to reach Trip Six's altitude for approaching Burbank. The Seversky dived down through a misty darkness that was slightly decreasing as the glow of Los Angeles became perceptible ahead.

The fighter was down to 5,000 ft. when a curious current of air struck its wings and threw it into a slip. Knight battled the stick as the P-35 shook in the turbulent air. There was another violent bump, then a freezing sensation went up his spine. Something had whirled behind him, whistling that was never before heard by any of his pursuers. He squinted into the blur. He snapped on the landing-lights, but the misty sky mocked him with its emptiness. As he stared around him, the voice of the Burbank operator rattled into his earphones:

"Burbank to Leonard, Trip Six! What's happened? Why don't you answer?"

The last word was hardly finished when a frenzied cry came over the air:

"The Thing! It's got me—the Black Ghost!"

The voice of Trip Six's pilot rose in a bloodcurdling shriek—then broke in a horrible silence. Knight dived at full-gun out of the clouds, saw the red and green lights of the airliner less than half a mile away. As he raced after it, the DC-3 pulled up in a sharp, crooked, zoom, then pitched down steeply, as though desperate hands fought the controls.

(Continued on page 56)
They Had What It Takes

XXVII—C. P. T. ULM—GREAT AUSSIE PIONEER

By ALDEN McWILLIAMS

1—Born in Australia in 1892, Charles Phillipe Thomas Ulm differed from most other sky pioneers in that he did not turn to flying until he had reached the age of 27. It was in 1919 that the great possibilities of aviation in the “Down-Under” country inspired him to learn to fly. Then he immediately planned to develop an Australian air system.

2—Ulm later became associated with the renowned Kingsford-Smith, and together they formed the Australian National Airways. Striking flights around the great continent followed. Then in June 1928, Ulm accompanied Kingsford-Smith when the latter flew the Fokker Southern Cross in the first astounding trans-Pacific flight from San Francisco to Sydney.

3—After an efficient round-trip sky run to New Zealand, Ulm and Smith took off in 1929 to make a fast journey from their home-land to England. Unfortunately, they were forced down in Australia’s Northern Territory and stranded for 12 days before being rescued. Despite this set-back, however, they flew on to Britain in 13-days’ flying time.

4—Meanwhile, the activities of Australian National Airways had lapsed, so Ulm returned home to revive them. But with the depression years badly affecting this worthy commercial venture, his reorganization plans went awry. Then Ulm again turned to record-flying. He went back to England, got an Avro Avian light plane—and flew it to Australia in seven days!

5—Next, this veteran sailed to the U. S., and in December 1934, he set forth from Oakland with two companions on what regretfully proved to be his last hop! Headed for Australia, he roared south-westward—and disappeared between the Mainland and Hawaii! Plane wreckage recently found in the sea near Honolulu may be the remains of Ulm’s ship.

6—Not only was Ulm the type of pilot who could work successfully alone but he could also work co-operatively with others to achieve outstanding historical flights. He was to Kingsford-Smith in the sky what Britton was to Red Grange on the gridiron. And so Australia has written a great name on the World’s Honor Roll of the Air—C. P. T. Ulm!
Sky-Power Facts

By David Martin
Author of "Sky Fighters of the North," "Deadlock In the Orient," etc.

With an Illustration by Arch Whitehouse

JUST WHAT IS—
America's real air strength today?
The true measure of sky power?
Our best way to build it up?
The actual value of man power?
That bogy called "obsolescence"?

In this revealing feature, our article-writing ace, David Martin, has been given free rein to argue out these, and a slew of other, pressing questions in his own piercing, straight-from-the-shoulder way. And whether you see eye-to-eye with him or not, you'll surely agree that he's done a swell job in clearing the smoke screen from these much-muddled matters.

Sky-Power Fancies

ice in the world—in the face of other statements that would have us believe that M. Cot has dragged the French Flying Force down to the point where it is comparable to that used by a third-rate South American republic.
Soviet Russia is held up for second to none in sky power or else there is just one badly frost-bitten aircraft factory there, outside of which firing squads trigger volleys of bullets at the latest batch of mechanics who left a No. 6 nut off the blower of some Muscovite low-wing Special.

Italy, we are informed, is putting an awful fright into France and England because the Roman air service is anything up to nine times the size of those boasted by the Limeoys and Style-Setters put together—or else the Mussolini men haven't yet got over the shock of having their best planes shot down in Spain by 1927 versions of the Breguet.
Meanwhile, Germany is the big bad wolf of Europe's air forces, with anything up to 10,000 first-line sky fighting planes. Either that or she's an upstart nation militarily with little more than a blamed good propaganda bureau.
The one thing that most of the returning experts do agree on is the sky power rank of the United States. We rate somewhere between Equador and Patagonia, they appear to have decided. And unless something is done quickly our country will be bombed off the map, gassed to a fare-thee-well, and generally given the old Orson Welles.

The remarkable thing one notes about all these fancy experts who come back from abroad is the amount of statistics they can absorb with one week in Germany and a visit to one Heine aeronautical factory.
But it is most pertinent to observe that none of them actually come out of Hitler-land with any real up-to-the-minute detail information—no more, in fact, than is to be found in the 1938 edition of All the World's Aircraft.

For instance, not one of them tells us what type guns are being mounted on these vaunted 10,000 German military planes, their caliber, or where they are mounted. Nor do we hear any

(Continued on page 8)
THESE FIVE TYPES OF FIGHTING PLANES PROVE—that America is not so fast asleep as some of our newspaper-writing aero critics would have us believe. Basically, says Mr. Martin, we already have an excellent sky-power foundation—one upon which we can build an air bulwark second to none. And, he declares, the establishment of a single, unified sky force is the first step in going about it.

**Curtiss P-40**
A NEW FIGHTER TYPE WHICH IS EQUAL IN SPEED AND FIGHTING POWER TO ANY OF HER TYPE ANYWHERE IN THE WORLD.

**Curtiss Dive Bomber**
A SOUND NAVY TYPE BOMBER FOR CARRIER DUTY.

**Flying Fortress**
The original twelve of these famed Boeing bombers have flown 1,800,000 miles without an accident of any kind!

**Bell Airacuda**—A NEW TYPE OF MULTI-SEAT FIGHTER WHICH MAY REVOLUTIONIZE MILITARY PLANE DESIGN ALL OVER THE WORLD.

**Consolidated XPB2Y-1**
A NAVY AERIAL DREADNOUGHT APPEARING YEARS BEFORE ITS TIME, BUT A SPLENDID FLAGSHIP-BOMBER CAPABLE OF ENGAGING AN ENEMY MANY MILES OFF SHORE—THE WHOLE WORLD SECRETLY ADMIRES THESE GIANT FLYING BOATS.
thing about the specific squadron disposition of all these fighting jobs.

As a result of all this ballyhoo concerning the strength of foreign air power, the United States has been whirled into a lather of rearmament, and President Roosevelt has virtually asked for 10,000 new fighting planes. And in the wake of this, many of the same experts who originally caused most of the excitement are now telling us not to get perturbed, to lay off trying to build 10,000 planes, that the country cannot produce 10,000 planes (although they just declared that Germany could and did), and that as soon as they are produced we would be obsolete anyhow. Some go even further by battling against the effort to turn out a big flock of new air pilots.

In other words, the lads who orated the loudest (after the Munich pact) that France and Britain should rearm—should build or buy planes anywhere to stop the marching of Herr Hitler—now orate twice as loud when the same idea is suggested for this country.

But all this is aside from our intended subject. What we are trying to get at is a careful study of America's real air strength. What exactly do we have? And what precisely do we need? What is good equipment and what should be tossed out? Do we lack man-power, machine power, or both? Is our present "double" air service system right, or should we consider a unified sky force such as was long argued by Billy Mitchell?

Now before attempting to find the answers, it is only fair to state here that the writer has not been to Europe within the last twelve months. Nor has he flown any of the foreign fighters. And so, readers, don't hastily push forward to nominate him into the front rank of the aforesaid contrary aeronautical "talk-it-uppers."

But the writer has flown under war conditions, and he has studied military aviation for more than twenty years. And he asks you, therefore, to bear with him while he discusses air power as it relates to the American scheme, with which he is thoroughly familiar.

To begin with, the true necessity of air power, as we see it, is a complete aerial organization, unhannered by politics or association with either the Army or the Navy, except for mutual co-operation. Such a sky service should be designed to meet and overcome any direct attack made by any possible enemy. The leaders of this organization must take into consideration the geographical conditions involved—and it is not merely the strength of numbers that will count but also the perfect co-ordination of men and machines.

Air power, as far as America is concerned, must main-

certain standards of tactical efficiency, gunnery, co-operation, and squadron morale. Speed in itself is not enough, as has been shown in Spain, where the Messerschmitts and Fiats were often shot down easily by slower flying Russian Chas-tos. Anyhow, when we are told about a new military type, we first inquire about its armament, where the guns are placed and the arcs of fire. As long as the plane has a dependable engine, we are not so interested in small m.p.h. variances. A ship's fight-ability is more complex than that.

The Air Corps has issued requests for new single-seaters of pusher design that will do "at least 425 m.p.h. All this is very interesting, and we are awaiting now to hear about the establishment of a special high-speed training school where exceptional pilots will be taught to fly them—if and when we get that new speed demon.

Until such a school is established, it will be impossible to find enough pilots with enough high-speed experience to fly 425 m.p.h. fighters and make up a complete squadron. The British pilots who are flying the new Hurricanes and Spitfires had to take the old Schneider Cup training course before they were allowed to fly the new speed demons. On top of that, they must wear a special body harness to keep their insides where they belong in high-speed turns.

At present it's our feeling that American pursuits or fighters are fairly comparable with any in the world. We have planes that do well over 300 miles an hour—if you must have your speed. Generally speaking, these ships of ours are well built, and have reasonably long ranges so that they spend as much time over sea to intercept enemy raiders in the air or on the surface. True, we have the same minor troubles that all countries experience in new equipment. The Seversky P-35 gave minor trouble with its bearings and the Curtiss P-36A fighter was grounded because of mechanical trouble in the retracting landing gear. But these points were merely mechanical and were easily remedied.

Here, we must spell out that a long while, our country has been specializing in the development of air-cooled power plants for military jobs, and in doing so, we have attained the top in that particular motor sphere. However, with excellent liquid-cooled engines being produced abroad, together with Germany's success with the aero Diesel, we Americans are finally beginning to realize that we've got a bit lopsided in the motor field. After the last Curtiss Conqueror plant came off the line, we went dead on liquid-cooled engines—and saw foreign countries forge ahead with them.

But today we're seeing the light, with the new Allison liquid-cooled plants showing the way. We trust, too, that experimentation will soon begin on a top-notch American aero Diesel. Let's go, motor makers!

As for the design of Attack ships and in attack aviation tactics, the United States leads the world, we believe. But there should be more night flying to perfect this specific program. Our bombers are comparable to any on the planet, too.
But they have a fault in the lack of good guns and suitable arcs of fire. Experts who should know—experts both here and abroad—agree that the Boeing Flying Fortress could be greatly improved by installing better guns and more effective gun positions. The present "blister" guns are efficient from a streamline point of view, but they are not particularly adaptable for real air fighting. Pertinent developments have been started on the Douglas B-18, and they should be considered on the big Fortresses.

In Observation aviation, the United States has a wealth of fine material, both in flying and radio cooperation, such as the best aerial cameras, and excellent communication devices. The Douglas O-46A's, now in use by nineteen National Guard units, are being flown regularly. Therefore, there will be trained personnel to handle these observation jobs should there be an emergency.

As to figures on Army air strength, we must take the word of Major General Arnold, Chief of the Air Corps, who states there are approximately 1,500 first-line planes in our Army and that about 1,000 more are under construction or on order. It is also understood that about 2,000 multi-engined bombers are to be called for, although this figure is only approximate.

It is known, however, that there is a grim shortage of modern equipment in many of our squadrons—this, by no means at all. Meanwhile, the War Department is checking over several ideas for a new air cannon, and in the interim a temporary weapon is being put together at the Army Ordnance Factory. This trial gun is to be tested out on the new Bell fighters. We believe it is a 37-mm. gun, perhaps one similar to that devised by the American Armament Corporation. We understand that the Army Air Corps is experimenting with a new type of armor suitable for the protection of aircraft crews. And thus military plane design may be revolutionized. By a novel arrangement of various types of resistant sheet, this armor boasts the quality of deflecting even a high velocity missile. This is truly one of the first real forward steps in the sky-fighting line since the World War.

A

S TO THE NAVY, no one disputes the statement that the United States has the most efficient system of aircraft carrier aviation, and American Navy flyers are among the most skilled in the world. We have six aircraft carriers afloat, all ready for action. At present, we understand, both the Lexington and the Saratoga are being somewhat remodelled. More elevators are being provided for moving aircraft up and down between the flight deck and the hangars. Also, that mechanical trouble noted in the new Enterprise and Yorktown has now been completely remedied.

Some of our cruisers have hangars carrying eight aircraft, as well as suitable catapults for launching. In addition, we have three aircraft tenders—the Langley, Wright, and Patoka.

The following numbers again are approximate, but we believe that there are about 1,500 first-line Navy planes available and that about 700 more are on order or under construction. Here, we have to remind our readers that a great deal of the Naval Air Service money goes into the heavy patrol-bomber types. There are the Consolidated XPBY-1 and the Sikorsky XPBS-1. A new super-flying boat which will cost about three million dollars, is also rumored. Moreover, there are the Sikorsky S-40 Minuteman type, the S-42, several Martin jobs, and other commercial ships to draw upon if an emergency should arise.

What are really needed are more bases, both fixed and mobile—for none of the Navy’s three tenders is so hot. The Patoka has been designed, for the accommodation and servicing of dirigibles, while the other two are admittedly obsolete models that should be replaced. It is quite possible, however, that the Childs and Williamson, obsolete destroyers, will be decommissioned and made over for aircraft tender duties. If, as has been hinted, the Naval Air Service is to be enlarged to 3,000 first-line planes, many more Naval air bases will have to be the Consolidated them. And we have before us the report of the Navy Board that 41 new bases are already under consideration at strategic points in the Atlantic and the Pacific. Twenty-five of these would be for the accommodation of Navy planes. Construction of fifteen of these bases will be begun in the future, according to a late report. All this, then, should satisfy us that we have at least a sound Basic air force. Available figures give us a total of at least 3,000 first-line planes, which compares favorably with any of the nations likely to become a menace to the peace of the nation. Our flying service personnel is of the best. It enjoys as good training as any given to the men of other air forces.

The truth of the matter is that Germany will have all she can handle in her European problems without attempting to bother the United States. And what is more, it is now a well-known fact that Germany does not have a consistent fuel supply. Indeed, at the time of the September, 1938, crisis, she is said to have had only enough fuel for three weeks of active service flying!

Geographical conditions prohibit Germany from attacking the United States, for, while her pocket-battleship navy has been well played up in the press, it is known that it is not strong enough to attempt any

(Continued on page 55)
Slaked Limeys

IF the British Air Ministry had not pitched a Camel drome near Bar-le-Duc in France during the Big Brawl, this particular screenplay episode would never have happened. But let’s get right into the story—

Major Frederick Fyer-Sayles put his flyers to work the same day they moved into the sector where Major Rufus Garrett’s Ninth Pursuit Squadron of the U. S. Flying Corps was taking it on the button. And the first flight they ran into a battle over Mont Sec between Captain Howell and his buddies and a quartet of nosy Alb crates.

Lieutenant Phineas Pinkham was certain that “A” Flight was doing all right without the help of the Limeys inasmuch as Bump Gillis and the Captain had each sent two Jerries well on their way to Valhalla before the winged Camel caravans showed their humps. Already the Boche camera bus that the Albs had been chaperoning was making a dubious landing on Allied real estate.

“Lookin’ for cold meat, them beef-eaters,” Phineas sniffed as a Camel whirled across the sky over his dome. “Beat it, you pip pips!” he yelled, not that any could hear him.

A Limey went down a sky chute after the very Von that Howell had bopped with a one-two punch from his Vickers. Meanwhile, the surviving Krauts were chased back over the lines into their own yard by Pinkham and Gillis, and when the two swung back toward Bar-le-Duc a captain of infantry squinted up at them from a trench on the border of No Man’s Land and grinned like a villain in an East Lynne production.

“Yes, sir, that was a damn good shot, Captain!” he cried. “Perhaps we should give the Limey a medal!”

“ meda—mead—a medal!” yelped the Kraut. “I’ll show ye what a medal is!”

“Very good, very good!” said Captain Howell. “Now let’s get back to the show.”

“Right, sir!”

“If we keep going like this, we’ll be in the war before we know it!” said Pinkham.

“Indeed!”

But the Limey kept on going like this, and before they knew it, they were in the war.

“The Spad right overhead,” he said to a shavetail, “two guesses who’s in it! You can recognize him by that nightshirt flyin’ from the wing. That’s Phineas Pinkham. And I’m not forgetting that crackpot. In Nancy he put wax vomica in my brandy. Well, it was a nice front seat we just had for this sky show. But if them buzzards think they’ll get confirmation from this outfit, they’re wrong. What I mean is that those Camels were shootin’ pretty straight today, Lieutenant!”

“They sure were, Cap’n! They sure were!”

MAJOR GARRY’S SPADS were sweeping down to look things over. Phineas Pinkham spotted the wreck of the camera ship in a sheep pasture, and he also saw that a big Allied jalopy was stopping not far away from it. Two newly landed Limeys were talking out of the machine as the Camels were organizing overhead preparatory to going back to the Limey drome.

For a wonder, Phineas Pinkham, the miracle man from Boone-town, Iowa, was landing his Spad intact. He anteloped to the wreck of the Boche tussenger and got there just as a British red tab was poking the business end of a service pistol into the prop boss of a bleary-eyed Heinie pilot.

“What’s goin’ on here?” Phineas wanted to know. “I demand that you stop botherin’ the prisoners of the Ninth Pursuit Squadron, as did you have to climb upstairs and knock down a Kraut who was already coming down? Take your fish-hooks off, you tea guzzlers.”

“Blast yer eyes, you bloomin’ blighters,” the red tab huffed. “I’ve prevented this ‘un from heascape’ at the risk of my own life. I discovered him after a bit of a struggle and ’e’s my prisoner, what?”

“Wait ‘til I say something’ before you act like you was deaf,” Phineas bridled. “He is the prisoner of the Ninth Pursuit Squad-ron. You say you got him after a bit of a fight,” huh? Why, that Kraut could not pluck up a daisy with both hands. Awright, take your water pistol and put it in your pocket, as I bet it’s so rusty it wouldn’t—”

“Gad, Colonel, did you ever see the like of ’is cheek? You’re jolly well

Boyles-Ryce began to complain of a terrible disturbance in his mid-section. Then three more Limey Camel drivers got as green as turtle soup and called for double-quick first aid.
Phineas made a swipe with his knife. Then there came a loud KER-WHA-A-A-A-ANG and a strange object hurtled across the sky and smashed into the Alb's whirling prop.

demand rest—resist!—Well, we will demand our rights, as we have been framed. Them Yanks was cockeyed if they say they saw that Yorkshire puddin' glutton knock off the Von. I had a prisoner stolen right out from under my paws by a couple of Limey swivel chair riders, too. Them cheerio boys can't do this to us! Why, the lowdown tea drinkers—if they want trouble, we'll—"

"Oh, shut up," the Old Man bellowed, stepping out of the Operations Office. "Get down off that table, you loud-mouthed, spotted monkey I just got a call from the British drome. They demand an apology from Paul Revere! Now you and I'll be in "7a", two days, and I'll have to write your mother—"

"Haw-w-w-w-w!" Phineas guffawed joyfully. "It will be a long trip before they find where his bones are. Pull my leg, eh, what? Pip! Pip! They were a howl. I wonder did they catch the Von, as when I saw them last, they—er—I mean, I heard about it. A dough told me, an—"

"You're a plain and fancy liar," Major Garrity erupted. "Only you would give that red tab a name like that!"

"Well, he wouldn't take John Doe—er—awright, I insulted the Limey fatheads. They were stealin' our prisoner—and how long will we stand for this, fellers? Are we mice or are we men, huh? Blistar the blinkin'—er—we will show them fish-and-chip chappies, eh? We will show them in "7a", and we can lick 'em again. My great-great-grandfather, Benjamin—"

"That's enough out of you, Pinkham!" Garrity roared. "We can't expect to win this war without co-operation from the British squadron. We're shorthanded here, and the French have been catchin' plenty of hell for the last week. We need those Camels in this sector, and if I catch you promoting more bad blood between those British flyers and this outfit, I'll bust you wide open from your tonsils to your heels."

"That's the old fight!" Phineas snorted disdainfully. "A burglar robs your house an' you find out his address and take him the silver he overlooked, haw-w-w! We get robbed by the Limeys and then turn our kisers for another punch in the chops. Of all the guerrers I was ever in—well, I will not be polite to them pip pips. I'll get hunk! They are still sore at us for dumpin' their tea overboard an'—"

HR-R-R-RO-O-O-O-OMM!

WILD YELLS came from the outdoors. A machine gun chattered and Sergeant Hugh Casey dived through the door and skidded to where Phineas Pinkham stood. Bullets came in after Casey and stabbed holes in the floor of the Frog farmhouse. A bottle of catsup broke up near the C. O., and its contents made a mess

talkin' to a superior officer, you—you blinkin'—I Take the prisoner to the motor car, Colonel. I'll—what's your name, Lieutenant?"

"John Doe."

"Hmph! Want to pull my leg, what?"

"I wouldn't mind," Phineas countered. "Just step over here an' I'll tear it loose right from your shoulder. Haw-w-w-w! Awright, I won't kid you. Here's my right name—Paul Revere."

"That's better, Lieutenant," the red tab snorted. "Now get along with you, Revere. I will report your insolence to your squadron commander. Colonel, these papers from the Boche's pocket will please Brigade no end. Map of Jerry ammo dump near Spradl TOPPING, eh, what? A little bit of hall right?"

"The bunk!" Phineas yipped. Then he shot a look at the Kraut that the red tabs had confiscated as their own property. The Teutron had now gathered his marbles again, and by the look on his square pan, he seemed ready to try to make a break for dear old Potsdam at the first opportunity. Reluctantly, the Yank went back to his Spad and got it off the ground with a low zoom that nearly scalped the red tabs who still stood beside the wreck of the Heine camera ship. And when he got upstairs he saw that the British were having quite a time of it chasing the Boche around the field.

The Ninth Pursuit Squadron's troubles with the Limyes had not even started, however. An hour later a Camel pilot claimed the Heine that Howell had knocked down, and Major Rufus Garrity respectfully informed his buzzards that a Yankee infantry outfit near the Meuse had confirmed it. Captain Boyles-Ryce, Limey flight leader, had been credited with the descendu and no mistake. So tempers went berserk in the Frog farmhouse outside of Bar-le-Duc. Phineas Pinkham got up on a table and delivered a tirade that would have made an anarchist's beef sound like a recitation of Little Bo Peep.

"We will not stand for it from them pip pips bums!" he yowled. "We will go over to the Limey squadron and
out of his tunic. Flyers panicked, wriggled to whatever protecting screen the room offered.

When the shooting was over, Bump Gillis crawled out of the fireplace with Captain Howell and Phineas came out of Glad Tidings Goomer's domain on all fours. He had a dishpan over his head and was hollering that the man monkey was wedged under the stove and could not get loose.

"It—it was that Boche Baron!" Casey choked out.

"Rittmeister Fritz von Frankenstein. He ain't human. That's the th-third time he has come over an' shellacked us. Why don't you aviators do somethin', huh?"

"Sergeant, Lieutenant Pinkham growled with mock dignity, 'you forget your rank, as we flyers demand some respect from von Frankenstein, huh? That bum! I'll get him yet, I'll—'"

"You better hurry," Garry sneered. "He's got 79 victories so far. In another month they'll be calling the late Red Knight a piker. There's 200 British pounds for the flyer who brings him down. They might as well make it a million. Great sports, the Limes! Ha! Ha! They'll be fighting like that now from Alaska to a million pounds before we know it. All right, break this up! Casey, get out of here. We don't want you gold-bricking around the drome. There's a Spad or two, I believe, that are not exactly in the pink."

Phineas Pinkham had been thinking. The Old Man's last remark to Casey had given him an idea. Gold and pink went together. Further, he thought, his assembly could function in high gear without interruption. After awhile his ingenuity went into operation and he decided to take a trip to Bar-le-Duc as early as possible. The Limes, he told himself, had better have plenty of proof the next time they stole a descendant when there were Spads around.

Phineas was giving his mental attention to the von, too. For ten days the Boontown Barn had been aware of the fact that the Munich Monster had been hogging the spotlight in Mars' playhouse. Moreover, he had made disparaging remarks about Lieutenant Pinkham. Just three days ago he had dropped a package down onto the drome of the Ninth, and in it was an article of wearing apparel. A present for Henry Lee—

Phineas Pinkham—a pair of feminine skivvies trimmed with pretty lace.

As a result, Phineas had taken more ribbing from his flying mates than could be found in a million umbrellas. He had been the unkindest cut of all. So far as Lieutenant Pinkham was concerned, the war correspondents could describe the big gueerre plan thus: "Phineas Pinkham vs. Von Frankenstein."

To a finish, I'll say, Harry."

The events of the early patrol were also still irking the spleen of the resourceful Yank. He knew all about the Camel layout. D.H.4's had once used that Frog real estate plot before being moved to what Chaumont considered a more strategic location. Phineas took a box of cigars from a shelf and started crumpling the stogies to bits.

"Limey wisenhimers," he growled. "The Yanks fixed their tea wagon before. I'll give 'em more than the pip-pips, all right. Now to fix that flying coat sleeve—"

"Well, Cuthbertie ol' thingie," chirped Phineas, "I'll now bid you over-the-river, pip-pip, toodle-oo, and cheerio."

"A" FLIGHT went up after the early patrol had returned a little the worse for wear. Von Frankenstein had been out looking to fill some more graves, and he had not missed by much. Howell and his surly brood saw little in the way of Potsdam sky stock. They sent a Rumpler back to the Rhineland for repairs. But that was all. Finally the flight leader swung back home and signalled to his mates to follow. But Phineas Pinkham took a detour on his own and had a forced landing on the British drome run by Major Fyer-Sayles, K.B.

"Cheerios an' all that bloody rot!" the Boontown Spad jockey called out to his pilot. "Ay, wot the cap's petrol no end, eh, what? Haw-w-w-w! Fawncy anythin' on a Limey drome bein' out of gas! Hop to it, Alkie!"

"The nyme is Cuthbert to yer, Letenant!"

"Haw-w-w-w! Well, I got to get fueled up, anyhow. And where is there a drink of water on the premises? Oh—er—is that a well out there, Cuthbert, ol' thing?"

It was a well.

Then three Limey officers trotted over to the oasis just as Phineas Pinkham was lifting himself a pail of cool water. He took a gulp, set the pail down on the edge of the well, then exclaimed: "Strike me pink an' even pinker! If it ain't the jolly Rogers! I bet you still think you shot that Kraut down yesterday, you bums. You would steal the fillin's out of this."

A Limey with a well-waxed mustache introduced himself as Captain Boyles-Rye. "Why, Letenant, where are your American manners, eh, what? We jolly well never sooner arrive in the sector than you Yankees try to steal a Boche from us. Tsk! Tsk! Atrocious manners, ol' turnip! What? Now, Letenant, you blinkin' well know what!

"Listen, you cheerio bums," Phineas yipped as he kept one arm over the rim of the old oaken bucket, I still say you robbed us! You and your red tabs. That puffy adder you call a colonel stole our prisoner, too, Oh, I won't forgive you bums with the pip. A Pinkham never will be any more than an elephant. If I see one of you gettin' shellacked by some Vons and I am going by, I will make out I didn't see a thing. I jolly well will, old radishes! Pip pip, what? Well, I guess they'll know before you steal my watch."

The Limey non-com came up and said: "Letenant, yer Spad weren't empty, naw. Yer 'ad 'nuf a tankful, yuss."

"N'kiddin'" Phineas grinned. "I knowed ye had to get a new measurin' stick. Cuthbert, ol' thingie. Well, over-the-river, toodle-oo, and some more cheerios."

The Limes watched Phineas take off and disappear into the sky. Captain Boyles-Rye shook his head. "Wonder what the beggar is up to? Got to keep an eye on that freckled chap, eh, what? We jolly well got the wind up on the Yanks, no end. Their kites are blowin' 'igh!"

THAT NIGHT the Limes wondered what was the matter with their tea. They complained to Major Fyer-Sayles. Captain Boyles-Rye said: "Terrible taste, Sir. Perfectly filthy. Drank two cups of it, Sir, to see if we jolly well imagined it. 'Ave a spot of it, Sir?"

"Quite, Cap'n. Possibly an inferior grade, eh? I'll look into this. British Expeditionary Force no stronger than their tea?"

Major Fyer-Sayles sipped at a cup of the stuff. He wrinkled his nose, then his brow. He took a big gulp, then drained the brew and smacked his lips. "Deucedly odd," he mumbled. "Gad, I know tea. This is most 'orrible, Captain. Call the mess sergeant at once. Possibly a tainted pot he—"

There was nothing amiss so far as Timmins, the mess (Continued on page 73)
Snapshots of the War

Above: This Albatros D-3, flown by Oberleutnant Friedrich Karl, Prince of Prussia and an officer in the German Air Service, was shot down in 1918 by a Royal Air Force pilot flying a Sopwith Pup. The Prince later died of his wounds, although he did manage to make a fairly good landing, as will be noted by the excellent condition of the plane. That number "8" on the side of the fuselage somehow makes her look like a racing job.

Below: A German plane with Allied markings! Yes, this ship—one of the famous Argas seaplanes—was shot down by a Canadian squadron working with the British Royal Naval Air Service. Then it was painted with English insignia and flown to an engineering base, where it was carefully studied. Note the swept-back wings, the stepped hull and the cockpit which appears to be completely enclosed! Seems like our "modern" improvements are not as new as we thought.

Here is a little known plane of the World War. Listed as the Vickers Bullet, this ship appears to be a combination of the Camel and the Spad. A 110 h.p. Clerget rotary was probably used as the power plant. Although we did a lot of digging in the files, we couldn't find any record of this type ship ever having been put into production—but she does look like a sweet flying job.

These Photos are From the Collection of W. R. R. Puglisi

Below we have one of the few available pictures of the rare Fokker E-V, Oswald Boelke, one of the most famous German flyers of the Big Scare, used this plane as his personal ship. Especially interesting is the fact that this type was the first of the renowned Fokker brood of bi fighters to be fitted with two Spandau guns—this through Toni's early gun gear system.

Left: Seated in his favorite Fokker triplane ready for action, we here see Heinrich Gontermann, officially credited by the Kaiser's war office with 29 victories. And there's plenty of determination reflected in this ace's face, too. The loading mechanism of the Spandau guns, the small windscreen and the distinctive German-type poppet may be observed here. Our print also indicates that Gontermann, like the present-day Fuehrer, was partial to a close-cropped mustache.
By Frank Lambert
Army Flyer

In the sky, all flyers are brothers. Especially is this true of military pilots when they are flying in close formation. And when they are roaring along just a few feet above the ground, the relationship is stronger than blood.

Every formation maneuver, you see, must be performed like a perfect play in football. Let any pilot miss a signal or slip out of position, even for a second—and several lives are endangered. For the slightest contact between two planes may result in instant destruction for both of them. And often for others nearby, too.

You've got to have altitude in order to bail-out or recover control—and altitude is something that Attack pilots must learn to get along without.

Formation work at a spare 75 feet—the regulation Attack altitude—is most unpleasant unless you have complete faith in the men around you, particularly the ones just behind. When you lack this confidence that the man behind you is going to manage somehow to keep his prop away from your tail and out of your hair, every turn near the treetops becomes a nightmare. But with plenty of trust in the flyer on your tail, you are free to concentrate on proving to the airman ahead that he's justified in having faith in you.

My first real scare in flying came from lack of confidence in the man behind—and it was the man ahead who almost paid the price!

We were students, just learning to fly the flat formation peculiar to Attack aviation. And perhaps I had better explain here just what is meant by this. Anyone knows who has watched military flying, all formation work is based on the three-plane "element," each element consisting of a "leader," plus two wing-men flying slightly to the rear, one on each side.

When the leader banks his plane for a turn and the others bank with him, the wing-man on the outside of the turn pulls up, while the one on the inside drops down a little so that the wings of the three planes are kept in line and the whole element banks like one big plane.

That was the fundamental system we had been taught. But when we started training for advanced Attack work we had to learn a more difficult method.

"Take it from me," says Frank Lambert, "this business of learning the low-altitude method of surprising enemy ground troops calls for a type of compressed flight that packs the close-shaves of a life-time into an everyday routine!" And Frank knows because they had him doing it. But hardly had he got used to this regular flying fare of cutting it fine, when hare-brained Element Leader Flugler came along and cut it finer than that—

Attack flying, they told us, really means ground attack flying, and pilots who train for this branch of military aviation must learn to fly as near to the ground as possible, even when flying in formation. To sneak-up on ground troops and nail them before they have time to scatter is the object. In short, they explained to us that Attack pilots must learn to fly a "compressed" formation at all times. That's the easiest way to fool the enemy.

But we quickly found out that it is not the easiest way to keep out of trouble.

We began as wing-men, flying beside our instructors. And initially we kept dropping down on the inside of turns—for it was the natural thing to do. It prevented us, you see, from "running over" the leader when he turned toward us, and it kept our planes in the same relative positions as when in level flight. That way, we could still see the leader's plane by looking out between our wings.

But when they began instructing us always to keep the leader's head "on the horizon" our peaceful days were over. It sounds simple, but it isn't. It means that when the leader turns in your direction you cannot drop below and partially under him to turn on almost the same radius. You must make a steeper, shorter turn on the same level and cut your throttle quickly to avoid over-running him.

Many times I failed to drop back early enough, causing my lower wing to "cover" the leader as we rolled into a bank. Then, when he turned in the opposite direction, I often was a bit late in finding exactly the right position, whereupon his plane would be entirely hidden by my top wing.

Of course, when I could not see his plane I had to pull away in a hurry, locate him again, then try to catch up once more to meekly take my place in the formation. At best, only the wheels of the leader's plane were visible while he was turning away steeply, and only the nose of his plane could be seen by the opposite wing-man on the inside of the turn.

In the new monoplanes, visibility is somewhat improved. But Attack formations are still ticklish, no matter how many times a flyer may have flown them. Those turns especially!

They were certainly ticklish for me. The thing was that I wanted to be very considerate of my instructor. In fact, just to make sure I wouldn't run into him when he turned toward me, I continued to drop below him in the usual formation style.

But he showed no gratitude for my good intentions.

For several days he kept waving me up, and he always politely called my attention to my error after we landed. Still, I didn't seem able to conquer my cautious tendency to slip down just a little when he turned toward me.

One morning he ceased waving me up to the proper level—and I looked for trouble. It came! Just before the next flight, he called me aside and spoke very briefly and to the point: "I am afraid you haven't enough nerve to become an Attack pilot. Anyhow, now we are going to find out."

We took-off but did not climb. The blurred pattern of ploughed fields, pastures, and mesquite thickets sweeping past a few feet beneath my instructor's wheels! Boy! I have to admit I became
slightly dizzy. One wrong move—and it'd be curtains!

The instructor kept glancing back at me. Then he would stare suggestively at the various objects that were passing not far below my own wheels. Finally appearing to be satisfied, he nodded his head and began a turn toward the other wing-man. I opened the throttle and followed him around as closely as I dared, afraid that if I lost my position a hill or a tree might get in the way before I could get my bearings.

After we straightened out, he took one long, sober look at me as though trying to make up his mind about something. He seemed to be taking a kind of last look, and I could feel perspiration trickling down from my armpits. Then he nodded his head in my direction and turned his plane toward me!

I jerked the throttle, held the stick tightly as we rolled into the bank, held my breath, and tried to hold my position. I knew that as long as I could keep my eyes in line with the leader's head and the horizon I was no nearer the ground than he was—and he was quite near enough, so I kept that line-up tenaciously. I knew that if I took my eyes off the leader to watch the ground I would probably run into him—and end up on the ground anyway. So I was determined to stay close—and to stay up.

When we straightened out—safely, thank heavens!—his expression did not change. He continued to make turns. He flew even nearer the ground than before. I was tense and rough with the controls, but at least I did not slide downward on the inside of any turns. Thus no mesquite trees were damaged. Meanwhile, I was perspiring so freely that my goggles fogged up and I had to push them back so I could see clearly again. At this point, my instructor began to smile faintly, and soon we returned to the field. His face still bore the trace of a grin after we landed.

"I notice," he said slowly, "that you have quit dropping down on the inside of turns."

I said "Yes Sir" very weakly. I was exhausted—but I was still an Attack pilot!

SUCH A TEST as that just related often served as a final examination on that first principle of Attack flying—which was "Stay Flat." A pilot who cannot overcome his tendency to rise or drop with his leader's wings has no business in an Attack outfit. For the larger formations are also kept as flat as possible. Now then, a normal "Flight" consists of three elements of three planes each, with the second and third elements slightly to the rear of the first and lined-up at a 45 degree angle on one side or the other. Anyway, when the leading element makes a right-angle turn, the second and third elements must cross over to the inside of the turn. If they didn't, they'd be left behind. This maneuver we found to be a fairly easy one, even though we had to cross over mighty close above the tails of the element ahead.

But when the leader turns toward the second and third elements, the pilots in the formation really begin to earn their flying pay! For when this happens, the leader is turning his element directly into the path of the other six planes. They, of course, turn with him. But while a wing-man may slow down just enough to fly the turn on the inside and not get ahead of his leader, a whole

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An abrupt, wrong-way bank while "grazing" a hill top! It was this erratic maneuver, sprung by the German student, Fluger, leader of the First Element, that got the writer and his fellow attack flyers into a jam. This graphic sketch by our artist, Alden McWilliam, illustrates the episode. The First Element having just turned, we find the Second and Third Elements still in the act of swinging over. And we see the author—piloting Ship "s" of the "Meat" Element—badly caught, during the cross-over, between the upper wing of the First Element's Ship "u" and the wheels of the Third Element's Ship "r."
element simply can’t do it. That’s because the difference in distance is too great. Since airplanes cannot stop and mark time while the leading element swings around on the outside, the second element must slow down somewhat and cross over during the turn, finishing on the opposite side and thus equalizing the distance. At the same time, the third element must be crossing over the second—with the result that the second element is literally sandwiched between planes crossing above and beneath it at the same time. That was why we called the second and third elements “meat elements.” And that was why I was not very happy while flying as a wing-man in the second element of those student formations.

**Our Worst Mix-Up** happened as we were nearing the completion of our training. The instructors had almost finished with us, hence they no longer formed a part of the formation but instead flew at a distance, from where they watched us practice our formations for the final review.

Now then, the job of leading the nine-plane flight was intrusted to a German Army officer named Fluger—a veteran war-pilot who was attending the school as a student and was about to graduate along with the rest of us. Granted, he was a good pilot—no doubt he’s one of Hitler’s best today. But he lacked smoothness and his abrupt method of maneuvering made him a difficult leader to follow.

Furthermore, he had little regard for our inexperienced nerves. Once when I came in from a flight on his wing, mechanics discovered oil spattered on my plane and were mystified when they found that it was not my engine that was throwing the oil. Then I remembered that Fluger had swept us across a formation of bombers and that I had looked right into the cockpit of one of them as I skimmed over. Sure enough, we learned that the bomber had a bad engine that was throwing oil. It was almost unbelievable, but the oil that spotted my Attack plane had undoubtedly come from the engine of a bomber in another formation!

But I would have preferred rolling my wheels across bomber wings to being a wing-man in the “meat element” of one of that German’s “flying circus” formations! The Chief Instructor had already warned him about some of his worst antics—after he had stomped a herd of cattle into breaking down a corral fence on one occasion, and almost knocked a brakeman from a freight train on another.

Fluger, however, took all these commands with good humor. His last bawling out had come after he had scattered our formation by putting us into a flying column and then pointing his nose at the sky, all of which left us windling in a chain of propwash.

“Could you see that the other planes were stilling and falling out of formation from trying to follow your steep climb?” demanded the Chief Instructor gruffly.

“Yes,” replied the German safely. “They were terrible!”

On the morning of my big scare, Mr. F. seemed calm enough at the take-off. It was a sunny day and the rising air currents caused even our steady old Curtiss A-3 Falcons—we didn’t yet have the Northrop A-17A’s—to pitch about considerably.

But when I looked past the leader of my own element, I could see that our Jerry flight leader was already cloaking. As his plane pitched and bucked in the rough air, he patted the cowling and pretended to soothe it as though it were a horse. To our surprise, he then led us all the way up to fifteen hundred feet.

While we were still wondering about the reason for this extra altitude, he made a wide, diving turn that almost scattered the whole flight. No, flat formations are not suited for climbing or diving turns. Nevertheless, he continued his dive, and by the time we regained our proper positions the flight was roaring low over the flying field, downwind.

Below us, a squadron of pursuit planes had arranged itself in formation on the field. And it was just about to take-off when the leader saw us coming. We could see the startled faces of the pursuit pilots turn up at us as we passed directly over their heads.

All our planes were now flying just a few feet above the ground to simulate the attack, but after we crossed the field the second and third elements had sense enough to rise to a higher level in preparation for a turn. Friend Fluger then turned away from the echelon—as he was expected to do—so there was no difficulty.

But that surprise “attack” on our own airdrome was (Continued on page 72)
If the "New Caesar" Raids "Carthage"

THE DRAMATIC STORY BEHIND OUR COVER PAINTING

WE IN THE UNITED STATES, reasonably secure in our geographical position, are prone to consider Europe as a veritable seething pot of war. We can point out how for centuries bloody battles have been fought on the nationally-conglomerate continent across the sea. We have read of great marches across the Alps, retreats from Mons and Moscow, the battles of Austerlitz and Waterloo.

But for determined and indeed almost continuous strife, what are all these as compared to the raging combats that have been staged at Carthage? That great city of antiquity, founded in 814 B.C. by the Phoenicians, was destroyed for the first time by the Romans in 146 B.C. And thereupon was born a heritage of war and destruction that stimulates the imaginations of men to this day.

Most striking of all is the fact that this historic battleground may now once more become the scene of strife—for France's modern city of Tunis in north Africa lies at the very site of ancient Carthage!

Consider the fact that this teeming center, which more than 2,000 years ago was attempting to resist the raids of Roman Legions, is now threatened by an individualized warrior named Mussolini, a modern Caesar. Two thousand years have brought a new civilization. Yet Carthage (its new name of Tunis does not alter the point) is still marked by the Roman Legions!

The insistent clamor for the possession of this commanding African post is truly an old story. France and Italy have had these arguments before and again, and it is to have them as long as the ancient site of Carthage is the strategic stronghold it is. A glance at your map will show how this projecting section of land, if properly fortified, can be a major factor in swingng the destinies of the Mediterranean if Mussolini should decide to carry forward his present plans for a new Afro-European empire.

Yes, Italy fully realizes the value of the "New Carthage"—and France, its present holder, knows it. Meanwhile, Great Britain will probably be satisfied as long as this fought-over colony remains in friendly hands.

The Berber natives of Tunisia have seen their land swept in turn by (take a deep breath here) the Phoenicians, Romans, Vandals, Arabs, Spaniards, Turks, and the French. These followers of Mohammed must view the ruins of ancient Carthage—once termed the "Queen of the World"—with mingled feelings. For it appears that a lasting peace is not to be.

France-held Tunisia is considered a menace by the new-day Romans. Indeed, it can actually be seen by many Italians, since it lies less than 100 miles across a thin strip of sea from Marsala, in Sicily. Thus, the nationalistic men of Mussolini would be happy to back a military effort to regain this commanding outpost.

In the interim, the true Tunisian patiently hopes for the day when he can throw off all foreign yokes. The young men of the land would welcome the time when Tunisia can take its individual place in the great State of Islam and help re-unite Africa with the East.

The Italians know all this, too, and they'd very much like to play the native element against France, hoping to gain Italian loyalty along the route. Mussolini understands the value of military display, and he has made the most of his efforts in Ethiopia. Now his propaganda bureau is taking great pains to sell the Tunisians on the advantages of Italian rule over their native province.

The Tunisians, on the other hand, are probably willing to play this diplomatic game, as the French oppose the Italians, in hopes that out of any resulting war they may be able to rise to demand their own national freedom. As a background for a 1939 war, this "New Carthage" would provide many interesting topographical features. The territory of Tunisia is a land of barren desert, oases, and mountain plateaus. In the northeast, the temperature seldom goes over 90. But near Tunis proper and along the Sahel coastal country winds often blow in from the desert, bringing extreme heat and blinding dust.

Westward from Tunis stretches a region dotted with salt lakes—known as shotts—depressions which in the wet season may become lakes. As they begin to dry up, these shotts become impassable quagmires, then they eventually harden so that men and animals can pass.

All these things will have to be considered in any modern war staged in Tunisia.

There are many fine and valuable harbors in Tunisia, as there were in the days of Carthage; and today the French Navy has placed its main naval works and an arsenal at Sidi Abdallah. There are also Bizerta, which boasts splendid shipping accommodations. Here there are shipyards, a dry dock, a submarine base, and an air base. This set-up, according to inside information, is backed to no small degree by the British, who continue to keep one eye on their Mediterranean life-line.

A French Resident General controls Tunisian finances, commerce, public works, and foreign affairs. But a native Bey, titled as Regent, otherwise rules the land. Meantime, the French Government has extended the jurisdiction of the local native councils.

French army posts are scattered all over the country. But to a great extent, the troops are natives under French officers. The Tri-Color has been openly rushing Tunisian fortifications because of the new threat from nearby Italian Libya. And reports have it that a minor form of (Continued on page 78)
The Clue of the Breda Brood

By Arch Whitehouse

Illustrated by Aiden McWilliams

I T'S TAKING A CHANCE,” Brian “Coffin” Kirk muttered. “Flying a stolen foreign bomber-fighter this way. And having no registration and no papers is asking for it. But when I tell them what happened up there at Dulit, the Governor ought to do something about it.”

Behind Kirk, curled up in utterly exhausted animal sleep, lay Tank, his flying and fighting ape-pal. Tank had drawn the hatch cover shut and was reasonably comfortable, and Kirk knew he could rely on the gorilla if anything turned up.

Kirk’s route followed the coastline up past Barham Point and across Kinabalu Peak to Sandakan, which lay on the other side of Lubuk Bay. The speedy Heinkel would eat up the distance in two hours or less.

Ahead lay safety, rest, and officialdom tinged with warm friendship for Kirk, who almost single-handedly was fighting the diabolical ring of war mongers known as the Circle of Death. And Coffin was still congratulating himself on his amazing luck in escaping from his last adventure with the agents of the Circle who had trapped him in the grim lethal chamber of old Dulit.

“Old Cockosaert, their leader, got away in one of these Heinkels,” Kirk thought. “I wonder what the devil they will be up to next?”

The feud between Kirk and the bloody Circle of Death had been raging since twenty years before when Kirk, then a mere child, had escaped, with the aid of a trained ape, from the Berlin zoo where his father, an American espionage agent, had been cruelly betrayed and shot down in cold blood. It was that crimson-stained scene that forever flickered in the memory of Brian Kirk and prodded him on against bitter odds to win revenge for the man who had sired him.

Again that scene flashed before his eyes as he caught the outline of Lubuk Bay in the velvet half-light of the Borneo night. He drew his features into a mask of hatred. The Circle of Death had now swept its scimitar into the Far East.

“I wonder where that murderous Belgian will head for now?” Kirk pondered. “He said something about captured Dutch tankers. But it’s dollars to dingbats they’ll try something else—even though we managed to block off their fighters.”

The Heinkel was approaching Sandakan now, and Kirk forgot the Dulit affair to consider his landing and the explanations to come. As he circled the city, throttle back a notch or two, “Coffin” again thought of the description of Sandakan he had gleaned from his studies. He repeated to himself the information bearing on this tropical center.

“There are 13,000 people of various races, creeds, and color in Sandakan, and Sandakan is located more than 10,000 miles from the seething center of strife-ridden Shanghai. A small detachment of British and native constabulary maintain peace and defense for the territory of British North Borneo. And,” added Kirk, “they are helped along with their Lee Enfield rifles and Lewis machine guns.

“There are nine wireless stations in the region,” the reports had stated, “a state bank, and two British Residencies. The commerce amounts to less than ten million dollars a year, but Sandakan is important because of its geographical position in relation to the Philippines, Singapore, Hong Kong, and Australia. And several of the Democratic powers are interested in the safety of British North Borneo, although most of them would officially deny it . . .”

With that much remembered, Kirk circled the north side of the city, and his eye followed the main line of lights which ran southwest toward the open country beyond. He had been
With a scrawnych of ripping members, the starboard wing of the first Fiat buckled. But then, before Kirk could swing around, there came the sudden shock of battering Safat lead—and their Breda was in flames!

advised in Singapore as to where the new R.A.F. field was located, and he was making a mental map on the end of the line of lights to figure out just where the air-drome lay.

But just then the faint thud of concussion caught the stolen Heinkel and made her wing-tips dance. Kirk was all ears and eyes. Then he glanced down again and discovered that all the lights below had been suddenly extinguished!

"Queer!" he muttered. "Some defense measure I suppose. Since I haven’t reported in they’re taking no chances."

Kirk looked about the cockpit for a radio set, but he had not been aboard long enough to completely familiarize himself with the layout. He circled the city again, trying to figure the German lettering on the panels of the speedy fighter-bomber. And even though he was well versed in the language, he took several minutes in selecting the right switches to put the set in action.

Then he called the station ZGW—a temporary designation given to the R.A.F. headquarters station there—but got no answer.

Kirk frowned a little at that and started to call again. "Something queer about this. Hello! What are those flashes down there?"

But concussion again caught up with him—and now he knew.

Bombs!

Sandakan was being bombed! Some one was dropping "eggs" on important points of the town! The Circle of Death, perhaps . . .

"Come on, Tank," Kirk bellowed over his shoulder.

"Get up, you lazy rascal, and keep your eyes open."

It was well that the simian reflexes of Tank responded. Kirk had sensed that something was wrong, and during the few minutes in which he had been vainly attempting to get in touch with the R.A.F. field somewhere below, fate was bearing down on them out of the Borneo darkness.

The hunched figure in the back seat uncoiled, rubbed a hairy hand across his broad nose, and sniffed. He shot a preliminary glance at Kirk, and then instinctively moved toward the Krupp-Spandau movable gun grip.

INSTINCT, that blind mode of action, came to Coffin Kirk’s aid in the next split-second instant. He gave the control-column a nimble twist, flushed the rudder over, and pressed against his belt as if to urge the Heinkel to faster speed.

As the fighter-bomber came around, two forked spurs
of flickering tracer light flashed overhead and spanned across the upper wing-tip. Tank responded with a low jungle growl and yanked the gun out of its cradle.

“Wait a minute,” ordered Kirk. “Let’s first see who they are.”

Tank blinked, pawed at the gun again, and looked up toward the winged thing that spat death at them. Then he yanked the Krupp gun around, took his usual wide-eyed bead, and fingered the trigger.

“Wait a minute,” Kirk warned again. Then he ripped the Heinkel around so he could get a better view of their attacker. He explained it to be another Heinkel, but it turned out to be an Italian ship.

“Hello! A Roman this time. Looks like a new Breda 65.”

The jet-black ship was a two-place, low-wing with a folding undercar. In the nose—ringed in with a deep circular cowling—was an 850 h.p. Alfa-Romeo engine. Not a super-speedster this ship, but a neat piece of equipment for bombing, combined with excellent maneuverability and get-away. Kirk took all this in as another spatter of tracers fanned down at them from four 7.7mm. guns set in the leading edge of the Italian plane’s full-cantilever wing.

“That baby can be flown like a single-seat,” Kirk yelled at Tank, who was still fingering his gun with sleepless anticipation. “Let him have it, fellow!”

The simian crouched over the spade grip, pulled the trigger, and held the gun steady. Kirk watched, treadled the rudder, and brought Tank’s fire dead into the nose of the black raider.

“That made him twist,” cried Kirk. “Hold it, Tank!”

The black Italian bomber swerved away as if startled by the sudden onset of combat. Kirk took advantage of the opening, hoiked the Heinkel up, snapped her over hard, and came around at the Breda and opened fire. Tank’s great paws were on his shoulders as he drew the bead. There was only one heavy caliber Spandau-type gun under the Heinkel’s hood, and Kirk knew his aim had to be true.

“Breda-a-tot-tot-tot-tot-tot-tot-tot-tot-tot-tot. . . !”

The single streak of fire spat out like a javelin from hell. Vibration rattled along the metal framework of the Heinkel and Tank danced with animal glee in the rear pit.

“Got him! Smoking already?” Kirk called as Tank jambered excitedly.

The Breda twisted in agony and tried to evade the torturing fire that engulfed the ship in a shroud of death. There seemed to be smoke coming from the Italian ship, but it was only faint in the glare of the flame from the Breda’s exhaust.

“That’s queer,” reflected Kirk, giving her a final burst. “I’ll play safe, he may be trying to turn!”

The Breda was out of control now, slipping and sliding off on one wing. Instinct again seemed to warn Kirk, and he drew clear, but kept the Italian ship in sight.

“There’s something screwy about this,” Kirk muttered, as he kept distance from the floundering bomber. “He’s going down all right, but there’s something queer in Scandcinavia.”

The Breda fell off and dropped into a slippery spiral. It was evident that she was definitely out of control, but they followed it down until it struck into a jungle copse near a great spraying waterfall.

“That should finish him,” Kirk reflected as he circled again, waiting to see if the wreckage would burn.

They swung around twice, but no answering signal of flame came up. And Kirk had to be satisfied with the realization that no plane could land safely in a dense growth like that and get out again. He made a quick check-up on his map and figured the Breda had gone down about ten miles southeast of Sandakan.

TANK now had the hatch open and was leaning out into the slip-stream. He looked down and made strange noises through his nose. Kirk leaned over, lugged the axe inside, and jammed the hardaway away.

“Well, that was that,” Kirk said to himself, audibly. “Now we’ll find out why those lights went out and what all that bombing was about.”

Kirk put the Heinkel into a climb again and headed back for the Borneo city, wondering how he was going to find the field without the aid of ground lights. He decided to try radio again, but the thing only spluttered and died cold.

“That’s queer. Everything is out now!”

He fumbled with the set for a minute or two, then realized that the motor was turning over unevenly. Kirk made a quick adjustment on the Daimler-Benz throttle, but the spluttering became more pronounced. Even Tank sensed the tension and peered over Kirk’s shoulder.

“He didn’t put a burst into us this close to Sandakan, did he?” asked Kirk, as if he expected Tank to answer.

The German engine did not respond to any mixture adjustment. Kirk switched over to another tank, tried again. The spitting and sputtering became worse. He stared about with a helpless grimace. He wished they had parachutes.

The spluttering now became still worse and she started backfiring through the carburetor. There was a final cold explosion, and the engine quit dead!

“Okay, Here we go, Tank. Bundle up and get ready for a crash.”

Kirk peered over the side and sought an open stretch of ground to pancake on. But the earth below was a dull gray patchwork of nothingness. Then without warning something blew out below that appeared to be a landing signal.

“Looks fairly good down there,” he argued to himself. “Sure—it’s the field. I can see the hangars now. Damn camouflage almost fooled me. But they’ve got a first for us.”

He brought the Heinkel around in a wide circle and made his approach in the direction of the smoky blaze that appeared to be set up in the middle of the field. The controls were going lopy now and he had to wrench the ship about hard to get any action. He worked on the pneumatic undercarriage gear to get his wheels down, and there wasn’t a sight of relief when the red light on the dash finally changed to green indicating the carriage was in order.

The field was clear to his vision now, and Kirk was satisfied that he could get in safely—engine or no engine. He banked into the wind and let her ride gently. Then for the first time he realized that the blaze was not a landing flag at all, but a burning mark made in the sand to warn of enemy activity. “Whew!” gasped Kirk. “What a night!”

The Heinkel floundered over the billowing heat from the burning ship and Kirk nosed her down, felt for the wheel brakes with his heels, and then waited for her to touch.

The Heinkel stabbed at the earth once, dug in hard, floundered and pushed up into a dull balloon bounce, then dropped back with a metallic thud. Before Kirk realized what was happening the bomber-fighter came to a sudden stop, dipped her nose—and went over on her back.

That was all Kirk remembered.

COFFIN KIRK awoke sometime later with a clatter in his skull like that of blacksmiths building rocket-arsens. Some one seemed to be tugging at his shoulders off under his nose, and his eyes were peering into a crazy-quilt maze of light. Finally, it all cleared and he shook himself into some degree of sanity and stared about him.

Heavy legs, greasy tropical shorts, red hands, and businesslike belt buckles made up the lower portion of the cyclorama before him. He raised his eyes a trifle and noticed a ring of bedbugs dancing in the waves of sash. It was the decorative ribbons and R.A.F. wings. Farther up were tanned necks, sturdy chins, and faces that bore official frowns—and grease.

(Continued on page 61)
Through the Aero Lens

Under the British term "medium bomber" this Bristol Blenheim, now being supplied to the Royal Air Force in large numbers, is venerated by the Englishmen as the fastest model of its class in the world. A low-wing, full-containment job, the Blenheim is powered with two Bristol Mercury engines. It has a service range of well over 1,000 miles and an official top speed of 275 m.p.h. Indeed, some reports have it that the Blenheim can do 385 m.p.h. at 15,000 feet! Observed the "frog-nailed" prop of this plane, also its sturdy retractable undercarriage.

This German Heinkel bomber has a top speed of 225 m.p.h. and a range of 600 miles. A two-placed designed after the earlier Heinkel fighter-bomber, it's equipped with nose, spinner, a three-bladed prop, and a sliding hatch over both cockpits. Reported as an export model, it may be seeing service with South American air force within a short time.

Here's a shot of Jackie Cochrane's Wasp Jr. powered Beechcraft which was flown by Max Constant in the recent New York-Miami Air Race. In case you didn't read about it, Max roared home to first place, too. Jackie, you'll remember, used the high-speed Sportsman AF-7 when he topped first honors in the 1928 Bendix race—so maybe she's forgotten the even owns this Beech.

Yullee has now again attracted all aero eyes, this time with an improved model of the V-11 shown above. Tagged the V-12, it's a Twin Wasp powered job which we understand will be offered in the export market as either a three-piece bomber or a two-piece attack ship. As a bomber she turns in 222 m.p.h.; as an attack ship, 247 m.p.h. at 19,000 feet.

You've surely heard tell of that young wizard named F. G. Miles—the fellow over in England who's turned out that sweet series of ships which includes the Miles Falcon, Magister, Mothcock, and all the rest. Anyhow, maybe the secret of such success lies in letting one's attractive wife take a hand at the drawing board. But all kidding aside, Mrs. Miles HAS been a mighty big help to her husband in his work. FIXING ACTS is pleased to introduce this famous couple to you here.

Right: This scene, taken inside a compartment of the huge, 14-place Boeing 314, is the sort of thing that makes the old-timers of aviation weep. For it proves that flying is becoming more nerve-stirring and risky every day, doesn't it? Yes, it certainly doesn't! And Harold Mansfield, of Boeing, tells us that those davenport-type seats "are deeply cushioned with a special yellow substance made of curly and rubberized Australian horse hair." What, oh what, will the barnstorming of yesteryear say to that? Altogether, now—let's be honest, it's a good old cry. The old days— are gone!
On the Light Plane Tarmac

NOTES ON THE YOUTH AIR MOVEMENT

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TRAINING FOR THE LUCKY FEW?

FOR YEARS, we of FLYING ACES have been staging an almost continuous campaign in this department urging that a "break" be given "the young man in the street" who wants to fly.

In the early years of this effort, we were probably more enthusiastic than efficient. We simply kept singing the chorus about getting people into the air. Exactly how it could be done was a somewhat hazy question.

Still, as the years rolled by and we carried on through the aviation doldrums that followed 1931, the picture became a little more clear. By that time, we had managed to sift through many piles of monthly mail from our readers and found out just what it was the average aviation enthusiast actually wanted to do most of all.

It's quite true that many of our correspondents had ideas about joining the Army or Navy Air Service. Quite a few, too, pictured themselves at the controls of modern airliners. There was a time there, also, when the Border Patrol had a grand following, and then it was the Coast Guard. What's more, certain features in our magazine brought a lot of fellows to hanker after test piloting and trans-ocean flying.

Well, all that's perfectly normal. There's a little bit of Robin Hood in all of us. We like to imagine ourselves in the rôle of some popular legendary character. We all go for the King Arthur yarns. We canter the London-to-York road with Dick Turpin, share a flagon of mead with Mad Anthony Wayne, and draw a bead over a squirrel rifle with Daniel Boone.

In other words, we all secretly yearn for deeds to do as individuals—deeds in which something or someone is defended, the poor are protected, and right goes trampling over might.

This type of "yen," no doubt, is the basis of true patriotism. Those who have it play stirring parts in national defense—often with no desire for reward in the form of either pay or rank.

Today these people want to fly—not necessarily in the trim formations of the Army or Navy, but simply to satisfy a spirited urge. And these are the people we have had in our mind ever since we started to do pieces in favor of some scheme that would enable a lot of people to fly safely, cheaply, and as often as they desired. We have continued to believe that the more people we can get into the air, whether as amateurs or professionals, the better prepared will be our country should an emergency arise.

It was with profound satisfaction, then, that we read President Roosevelt's statement that something was going to be done, through the National Youth Movement, to teach several thousand suitable persons to fly under official Government supervision. Our heart was lightened. This was the real thing!

But then came the rude awakening. From Congress on down the plan took a panning. Certain aviators blustered the newspapers with criticism. Feeling competition, some of the small flying school operators let out a squawk that scared the polar bears up in Greenland.

Some of the arm-chair defense experts loosed a barrage to the effect that the plan was screwy. And most of us who had been suggesting the idea scurried for bomb-proof shelters to evade the explosions.

The thing is that no scheme, however clean of line and intention, will satisfy everyone. Anyhow, our guess is that the anti-plan aviators, who live on the headlines of their deeds, don't want everyone to fly simply because as soon as a lot of people take to the air, that same lot of people will realize that there is nothing much to it. That, in itself, would whirl away the halos that many have placed on the air heroes.

The squawk of the small flying school operators is that for years they have been hanging on to a slim existence and that now when the masses are to be taught to fly, they will get no part of it because all the flying will be done at the bigger fields. It's tough, too.

Meanwhile the long-suffering ordinary chap figured the move would finally enable him to go to some nearby field and get flight training. But when he actually read the details of the plan, he discovered that it was the college guy who is to get in on the free flying—not the $25-a-week lad who for years has had his eyes aloft with the hope throbbing through his veins that some day he might actually get the opportunity to win a pilot's ticket.

It's true that G. Grant Mason, Jr., of the C.A.A., recently pointed out that this program should not be considered as "the whole story." Nevertheless, with all our digging we've been unable, at this writing, to find any contemplated provision for flight training for the non-college "young man in the street." And that's a damn shame!

APL OFFERS PROMISE

Perhaps there is some hope in a new organization that has been brought to our attention. Perhaps we need something more than a lot of blasts in a magazine. Perhaps we need some sort of an organization where actual flesh and blood plays a part, rather than paper and printer's ink.

The Airplane Pilots League has temporary headquarters at 516 Fifth

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Avenue, New York City, and within a short time it will have offices in Washington, D. C.

At present it is composed of a group of pilots headed by John L. Scherer, a well-known aviation editor and sports columnist for the Rochester Times-Union. Jack, as we know him, is being assisted by Stanley Gerstlin, another flyer-writer.

Anyone holding a student pilot’s permit or any higher flying license is eligible for membership. The APL is not connected with any other magazine; it is a non-profit organization, and every member has a vote. The dues of $1.00 per year includes a membership card and a suitable lapel wing pin.

The object of the APL is to unite the 40,000 student pilots and the 21,000 licensed pilots into one strong organization so that they can effectively combat administrative or restrictive aviation legislation, achieve modification of several present laws which are very unpopular with pilots, and co-operate with the Civil Aeronautics Authority by acting as a go-between for the Authority and the private pilots of the nation.

The APL also favors the creation of a Civilian Air Reserve which would be fair to operators of both large and small aircraft, which accepts pilot members and has a roll of only 2,000 pilots, this can hardly be considered a representative organization of flying men.

The APL has hopes of sponsoring a “Little National Air Races” which would be open to non-professional skymen.

We believe that many of our readers will be interested in the Airplane Pilots League, thus we have offered this information in event you fellows want to give it a further check.

“TILL STILL RENT MINE”

THIS MONTH’S prize letter comes in a somewhat roundabout way, from a fellow who is a friend of ours. We were talking to him some time ago on the way down to Hightstown, N. J., where we tried out the new Piper Cub powered with the 50-h.p. Franklin motor. Anyhow, this lad is our idea of a real light-plane pilot. He has a number of swell things to tell you about the problems of flying a sport craft—and particularly a rented one—and we are more than pleased to welcome his letter to the Tarmac and let him take two bucks.

Light Plane Editor:

I’m an average (I think) pilot, but I’m still wandering from field to field renting my airplanes. I have had some very enjoyable contacts in this way with a few of the good operators in aviation, of which I believe there are all too few. And I have refused to fly at some of our so-called business fields.

Anyhow, the feeling has come over me that there must be quite a number of pilots in the same state of mind as I find myself—well along in hours and with a certificate of competency, but not quite ready for my own ship, though still wanting to fly in the meantime. If such is the case, they must look on the situation much as I do.

Have you ever driven to a field with the urge for a hop and deciding that if the set-up looks right you’ll rent a job for an hour or so and just fly for sheer fun? I have lots of times. But too often I have seen only one ship available—and that one getting its routine check, even though its Saturday or Sunday! Having been to several airports on week days, I know very well that the planes could be checked earlier without straining the schedule. Why, in cases like these I have been asked to help gas and service a ship! Of course, I’m not above it. But I came out to fly, not to work.

And have you ever wanted to go cross-country in a rented bus? Well, most of the operators just plain don’t (Continued on page 73)
All Questions Answered

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

Ken Brindal, South Australia:—The Fairey Battle has a top speed of 257 m.p.h. and a span of 54 feet. The clipping of the plane you sent in is that of a Douglas DC-2. Glad you have liked our "Conroy" feature.

Donald Buckberry, Romulus, Mich.:—So you want to contact any FLYING ACES reader who has the model planes for the Douglas O-46A observation ship and the North American O-47A? Perhaps some of our readers can straighten you out.

Billy Jacobs, New York City:—The drawing you sent in is of a French Miniautre. The "Miniautre" is a small seaplane used early in the World War by both the French and the British.

John Hezlip, Carlinville, Ill.:—I believe you can still get compressed air motor parts at the Cleveland Model and Supply Company, 1386 West 67th Street, Cleveland, Ohio.

Cleon R. Newman, Corning, N. Y.:—The roll of drawings you sent in are very interesting and show some talent. But they are not suitable for reproduction as they now stand. Technically good drawings call for the use of drawing instruments and suitable paper for the work. Air story illustrations must also have drama and action to build up the plot. Cover scenes demand even a finer type of work. You have a good foundation, but you require more actual experience and study so that you may learn the various problems of the game.

T. Osato, Chicago, Ill.:—Your lengthy letter received recently concerning our charge that the Russian armies of the World War were not among the greatest is most interesting and your compilation of Russian victories give evidence of your sincerity. However, you cannot ignore the series of events that led up to the Treaty of Brest-Litovsk. The list of victories you have drawn up is okay in one sense. But none of them were major conflicts. And blaming the big defeat on lack of ammunition and dirty work at court, does not wipe out the fact that the Russians were soundly beaten.

Milton Mitchell, Milwaukee, Wis.:—Frankly, I know of no book that will teach you to fly. You must learn by actual flying. You can get much fine information, however, from Assen Jordanoff's book Your Wings.

Fred Compo, Ballston Spa, N. Y.:—We are always open for new aero jokes.

Address Wisecrack-Ups, care of this magazine. First, however, read the note at the top of the Wisecrack-Ups page in this issue.

Leo Marcus, Woodhaven, L. I.:—Yes, I wrote the article you referred to in your post card communication. I suggest that you consult Hamilton's Complete Model Aircraft Manual for the answers to your questions on model airplane design.

J. A., Hood River, Ore.:—I would suggest that you first check with a competent Government physician before you give up hope concerning your physical condition for military aviation. Not being a physician, I cannot make a statement regarding your case.

Abraham Gisser, New York City:—Your suggestions concerning the manner of building up the air services are all very good—except that you ignore the fact that this country only has about 38,000 skilled workers who can build modern planes. When we have about 100,000 such workers trained, the chances for improvement will be much better.

Dan Williams, Gadsden, Tenn.:—Many thanks for your Christmas card. Dick Grace can be reached through the batros, as the magazine you clipped it from states. The Albatros triplane had small double struts, not single interplane struts. So you are right.

Pat Blackledge, Laurel, Miss.:—The actual official figures on the Hurricane and Spitfire are: Hurricane, 335 m.p.h.; Spitfire, 355-plus m.p.h. The 355-plus figure was given out on the Spitfire at the recent Paris Aero Show. It indicates, of course, that the job does better than 355. But much more better, we have no idea. Unofficial figures, though, are 375 m.p.h.

Bill Colley, Riverside, Calif.:—I know of no plane called the Grumman Hell-diver. The insignia of Major Garrity's Ninth Pursuit is a mystery only Joe Archibald can solve. Actually, however, the Ninth Squadron during the World War was a night-observation outfit, and today it is an airship squadron. The insignia for the latter is a triangle made up of three elongated links inside which a rising sun is shown against an horizon of blue background. You have a type of Airship Black Bullets design and we'll have to buzz over to Long Island and see if we can work it out with Barney O'Dare. Maybe he could sell his boss on it.

George W. Hering, Hales Corners, Wis.:—The new Allison 2,270-h.p. engine is still under test and not ready for installation, as far as I know. It is a 24-cylinder plant using four rows of six cylinders each mounted on an oval-shaped crank-case. The Cunningham-Hall GA-38 was not a military model. It was a two-place monoplane powered with the 145-h.p. Warner Scarab engine. The Bell Fighter is not in service yet, and I have only just learned that the air-cannon to be fitted are something special designed by the Army Ordnance Department. Beyond that know nothing about the weapons. There are no further details on the French Delague, either. It was not on display at the Paris show, so it apparently is not ready for display or performance as yet.

Robert G. Shaw, Victoria, Australia:—Static balanced ailerons are those balanced through leverage to a small mass weight which makes it easier to move the control surfaces. They will be noticed as small streamlined weights mounted on a short rod above the hinge line of the elevators or ailerons, as the case may be. The pitch angle of a prop is best defined as the angle which the chord of the blade section at any particular place makes with the horizontal (Continued on page 28)
“Plan For 20,000—But Plan For ’Em Right!”

LET’S start off with three questions: Would you care to become one of the 20,000 pilots to be trained by the United States Government? On the military score, do you realize what it takes to become a military pilot? And do you know the actual percentage of successful candidates, who actually pass the Primary Flight Training course at Randolph Field, our “West Point of the Air”?

You do know, of course, that if President Roosevelt’s plan is accepted a sum of $10,000,000 a year will be provided to train 20,000 young men as civilian pilots. And we take it for granted that in case of an early war most of these pilots will be redesignated into the squadrons of the Army or Navy Air services.

Incidentally, Dr. George Gallup, the gentleman who runs the famous American Institute of Public Opinion, has “sicked” his survey corps on the American public—and he’s discovered that 87 percent of the population favors a sky training plan while only 13 percent put thumbs down on it.

Now, then, add this striking fact to the layout of figures: The records at Randolph Field disclose that out of the 300 or so accepted as candidates for flight training each year, only about 51 percent actually stand the gaff of this tough course and get by. It must be understood, you know, that the original 300 had already passed the physical and flying testing tests. What’s more, those proving themselves able to “take it” at Randolph still face another course at Kelly Field!

In short, the fact that a war-scared Government is willing to donate $10,000,000 a year will not produce 20,000 first-class military pilots. The kind we turn out at Randolph and Kelly are not made on money alone.

“But wait a minute,” you say, “This is a civilian flying program.” Our answer to that is: We know it—but nevertheless the factor of building up potential air force material is very much the moving motif of the scheme. And that being the case, it’s well for us to keep it strongly in mind.

Now what means will be taken to select these 20,000 would-be pilots? What precisely will they sign up for when they accept this training? What personal protection will they get? And what will happen to them once they have learned to fly?

Are the candidates to be selected entirely from the college crowd—or will the plan be broadened to give the high school fellows a “break”? Will the training go beyond the simple rudiments of training-plane flight, or will it include a certain amount of time on not-quite-obsolete service planes? Is it possible that the candidates will complete this training and then find themselves members of the U.S. Army or Navy and under the complete jurisdiction and formal discipline of these services?

Exactly what happens in Europe during the next few months will have a bearing on this last important point. We would like to know in this event, just what the status of these candidates will be once they have put their names to the applications. Will they be bona fide members of the national defense? Will they be considered in the same light as the 1917 soldiers who “signed up for the duration” and as such come into the same classification as enlisted men who can be shunted about, ordered hither and yon, and rushed into any branch of the service from Tank Corps to the Engineers?

We of FLYING ACES feel that we have pioneered in this “20,000 pilots and 8,000 war planes” business. We began to point out the need for such expansion nearly ten years ago because we felt the little flight ships in all the other aviation magazines were overabundantly cheering the trans-Atlantic heroes, the wonders of the Ford trimotor, and the growth of commercial aviation, we in our lonely voice were trying to draw attention to the fact that something should be done about our air forces.

But no one seemed particularly interested in the Air Services in those days. And whenever we so much as suggested that foreign powers were going ahead in the matter of high-speed fighting ships, we promptly got a slew of letters telling us to forget about war. “Instead,” they said, “get people to paint the names of their towns on their barn roofs.”

So now, after the idea has at last percolated into the noggin of the Government, they are scaring us to death with the immensity of the plan they hope to put over. Is it any wonder, then, that we’re afraid all this will be carried out in a slipshod, over-night fashion? We remember full well the boasts and statements made in 1917 when the United States entered the World War. Initial high hopes and glorious promises frequently collapsed. Seven hundred million dollars and a whole year of time were wasted, whereupon our great resources, wonderful engineering skill, boundless enthusiasm, and high-voltage energy were as nothing—because the system was hurriedly planned, then unsoundly executed.

Today, they want to train 20,000 good civilian pilots in double-quick time, seeming to forget that an Army Air Corps Cadet under normal conditions can get but 90 minutes of flying per day for a full year and even then is not considered first-line material. Let the reader understand that we realize that 20,000 pilots will be needed, make no mistake about that. But before diving into the deep end, the promoters of the plan should check, re-check, and re-re-check to make sure they’ve got their scheme actually drafted in can’t-miss style.

Since we’ve stuck our chin out this far, we’ll now make an attempt to approach the problems involved:

First, insurance should be sponsored by the Govern-
plane when the airscrew is laid flat on its boss on this horizontal plane, its axis being vertical.

K. A. Rides, Christchurch, N. Z.:—I have no record of the first actual use of the seaplane catapult aboard a cruiser, so I can't answer your query, although the clipping you sent me is very interesting. I have learned this subject up from many sources, but no one seems to have bothered to list the first naval catapult take-off. Perhaps some of our readers have a clue to this mystery.

William Bowen, San Antonio, Texas:—The most recent reports have it that there are nineteen Federally-recognized National Guard air units. Each National Guard squadron is supposed to be provided with eight observation planes. In the general organization scheme they have what is known as Division Aviation consisting of one Observer squadron and one Photo section for each of the eighteen Infantry divisions.

Norman Rowe, Milton, New Hampshire:—Many thanks for the clipping on Mata Hari and her execution. I found it very interesting. The Curtiss P-36 uses the 1,100-h.p. Twin-Wasp engine. The Curtiss P-36B being powered with the 1,000-h.p. liquid-cooled Allison motor. No performance figures have been given out on this ship. The details of Tony Fokker's latest plane will be found in this month's Modern Planes Album. It is known as the D-23.

Noel M. Aldridge, South Africa:—Safety slots are used to prevent stalling and are usually placed in the leading edges of the wings. Landing flaps act as air brakes and slow up the landings—or assist in take-offs by increasing the lift of a part of the wing.

Walter Gasko, St. Louis:—Anthony H. G. Fokker can be reached at his works in Amsterdam, Holland. The fastest plane of any type in the world is the Italian Macchi-Castoldi racer which has done 440 m.p.h.

John Sillett, Hollywood, Calif.:—The Ford tri-motor monoplane which used three 420-h.p. Wasps back in the 1932 era had a top speed of 138 m.p.h., cruised at 115, landed at 50, had a ceiling of 16,300 feet, and flew a normal radius of 580 miles.

Joseph Rawlinson, Salford, England:—I must disagree with you. Most gas produces a light smell. However, it would give protection against illuminating gas in a bombardment. There is no way of telling if it is poison gas. Perhaps those being distributed over there are not the same—but they should be because there is much more danger from illuminating gas in a bombarding raid than from poison gas. In fact, as far as I can find out no gas bombs have actually been dropped anywhere in any war. Gas of the war poison variety must be discharged from cylinders and under the most suitable wind conditions. It cannot be discharged from bombs that explode because the explosion either burns it or dissipates it completely. Tell this to your Air Raid Precautions officials in dear old Salford. In conclusion, thanks for the kind words on our Kerry Keen stories.

Sam Walker, Chicago:—You are puzzled by all the newspaper reports on the estimated strength of the German A Force. I am informed that it has been dropped because nearly every report is different. But again I must remind you that none of these reports include any actual details on the planes in question. They do...

(Continued on page 71)

The Airmail Pals

The recent war alarm over on the other side of the big pond really threw quite a scare into our British cousins. As you probably know, they were outfitted with gas masks, and instruction as to how to defend themselves in case of air attack. And J. Douglas, of Glasgow, Scotland, one of our Palsters, really had a big enough scare of the scare to last him for a long time to come.

Dough tells us that he was kept busy for several weeks digging trenches in his back yard, instructing the citizens in the use of gas masks, and the like.

"R.H.P.D., you'll never know what a mad time we had of it," he says. "I had intended to write for a Pal, but the turmoil in my country simply kept everything out of my hands except war materials!"

"Well, fellows, somehow Doug did get time to write, and we immediately teamed him up with Rolf Slade, a worthy ink-slinger from Columbus, Ohio.

Nickels come into the office for the Kitty in umpteen different forms, but here's a chap who's really got a swell idea: Ed Brinton, of Philly, cut a piece of balsa just large enough to fit over his jetney, covered it with tissue, and added colored silk trimmings to the bottom of his letter—pretty good, helping the balsa industry, huh? Incidentally, you might like to know that the R.H.P.D.'s Kitty is getting very tough these days. The fuzzy feline is now demanding cream instead of his usual saucer of skimmed cow juice. Yep, we believe he ought to be taught humility.

W. Jankowski, of 8639 Muskegon Ave., Chicago, has been ill for some time now, and he'd like all of his pen pals to get in touch with him.

"Don't any photographers write in?" asks Sid Davies, also of the Windy City. "I don't care how long it takes to find one, just so long as you do. Pleez, PLEEZ! get me a Pal that can talk the gibberish of the hypo hounds and the neg nursers."

Well, after going through flocks and flocks of letters, we finally hooked Sid up with Roger Perrault, of Lynden-ville, Vt., who's another photo phriend—and is just the type Sid's been lookin' for!

If any of you American chaps are looking for a real airdrome hanger-rounder, P. Middleton, of 13 Town-ton Road, West Bredgford, Nottingham, England, would probably fill the bill to a "T". He's been expecting a letter from one of his A.P.'s for quite some time, and has concluded that said pal has dropped him. So see what you can do, fellows, to brighten him up.

That ends the news for this month, scribblers. And now, Bunkley Doo—as our New Zealand Pals say—until this time next month.

—The Right Honorable Pal Distributor

HOW TO GET AN AIRMAIL PAL

First, write the best possible letter you know how. Use your best penmanship—a ball-point or a typewriter. In your letter, introduce yourself fully—for this is the letter we'll forward to the pal we'll pick out for you. Tell your age, your interests in aviation, your other hobbies, and any additional items that might interest a new friend.

Then on a separate sheet tell the R.H.P.D. what kind of an Airmail Pal you want. Send your letters to Airmail Pals, FLYING Aces, 47 West 4th St., New York, N. Y. Be sure to enclose a stamped, self-addressed return envelope, plus five cents in stamps or coin for each pal requested (our fee for the R.H.P.D.'s "Kitty").

We will forward your supply with the pal in line in your area unless you specify otherwise, although we cannot guarantee to fill the bill exactly every time. Your new pal's letter will be sent to you, and yours to him—after which you will correspond directly.

Do not ask for "lists" of pals. We cannot supply them.

REGARDING FOREIGN PALS

Please note, then, that our circulation is only in English-speaking countries (specifically, Great Britain, Australia, New Zealand, and Canada). Therefore we cannot undertake to provide correspondence for your foreign friends, in Deutschland, China, or the Far East.

If you are an American resident and want an overseas pen pal, do not write a pen pal letter. Instead, write a short note telling in a general way what kind of a chap you are and what kind of a pal you seek. Enclose a stamped, self-addressed return envelope and five cents for each pal called for. A foreign writer's letter will be sent to you, then you may correspond with him directly.

If you live outside of the United States and want an American pen pal, write a complete letter as described in the first paragraph of this box, and send it without the return envelope but with an International Reply Coupon worth five cents. Get the coupon from your local postoffice. Your letter will be forwarded to an American correspondent, after which you need only wait for his reply.

(Continued from page 24)
PROOF OF IT
With a terrific ker-ohm, the D. H. observation bus bearing those two stalwart Irishmen, O'Toole and O'Sullivan, crashed into No Man's Land.

Presently, the weak voice of O'Toole was heard from within the wreckage:

“I say, there, O'Sullivan! An' how ar' ya?”

“Oi'm alive,” came back O'Sullivan.

“Sure, an' ye've always been sich a liar, I don't believe ya,” declared O'Toole.

“Begorrah! Thin Oi'm dead!” wailed O'Sullivan. For no damned O'Toole iver dared call an O'Sullivan a liar whin he was livin'!”

IMPETUOUS
Stewardess (indicating safety belt): Now just strap yourself in, madame.

Heavy lady passenger (incensed): I'll ask you not to be fresh! I'm already wearing a girdle!

UNNECESSARY EXPENSE
Pilot (to lady student): And now we'll taxi down the field.

Lady student: Don't be so extravagant. I have my own car here.

SHOCKING EMERGENCY
“Calling all Flying Fleas . . . .
Calling all Flying Fleas . . . . All Flying Fleas must be provided with pants, since a flock of ladybugs have been reported in the vicinity.”

After seeing an arrow insignia on the fuselage of a war plane, Dumb Dora decided it was put there to show the pilot which way the plane would fly.

THE PUNNING PINKHAM
Heinie prisoner (being questioned): Himmel! Mit mein stafel t'ings gedt verse yedt. Nine out of ten of der flyers dey gedt shut down!

Phineas: You mean life is justa toll of Jerries. Haw-w-w-w!

ILLITERATE MODEL
Junior (crying): Wah-h-h! I've gone an' lost my gas job. It flew outa sight.

Mother: There, there, son! You can put an ad in the paper for it.

Junior: B-b-but that wouldn't do any good. It can't read!

SAFETY FIRST
Sign On Flying Flea—Grounded Until After The Duck Hunting Season

Knows His Son
“Pop,” said Junior enthusiastically, “I have some balsa wood, some wheels, a propeller, tissue paper, and paint. Can you guess what I'm going to make?”

“A mess,” came his father's prompt answer.

TIGHT QUARTERS
Greaseball: Yes, I said I saw The Dawn Patrol at the Bijou last night.

Screwball: But how did they ever get in there?

"Well, you WOULD tell Junior about that Mayo Composite business!"
HEINKEL HE.112 FIGHTER

We have been hearing a lot, both pro and con, concerning the strength of the new German air service. And the emphasis, thus far, has been on the great Messerschmitt M-109 fighter, which has been turned out in special souped-up form and also as a normal service ship, the latter differing decidedly from the former in performance.

But now let us talk about another of Hitler's military jobs—the HE.112 developed during the last couple of years by the Ernst Heinkel Flugzeugwerke of Oranienberg, which is near Berlin. This is a single-seat fighter powered with the 660-h.p. Junkers Jumo 210, a twelve-cylinder Diesel power plant driving a two-bladed, constant-speed prop. This engine is a water-cooled inverted-Vee type. Fuel tanks are carried in the center portion of the ship's wing.

The HE.112 looks much like the standard low-wing fighters manufactured in Great Britain. Its wings are cantilever, and the wingroots are swept up at their junctions with the fuselage. The outer portions of the wings are elliptical in plan form, much like those of the Supermarine Spitfire, and they taper in thickness. The whole of the trailing edge is hinged in such fashion that the outer portions act as ailerons while the inner portions are employed as landing flaps.

The plane is all-metal in structure. The undercarriage retracts upward and outward into the wings. And the pilot's cockpit is fitted with a transparent sliding hatch.

Two fixed machine guns are fitted into the sides of the fuselage to fire through the airscrew, and two automatic guns of unknown manufacture are set in the wings outside the prop's arc. Racks for six 22-lb. bombs are ensonced beneath the wings. A two-way radio set is standard equipment.

Top speed is 316 m.p.h.—quite an increase over earlier estimates. And she cruises at 298 and climbs to 3,280 ft. in 1.2 minutes. A range of 2,100 miles at normal cruising speed is boasted.

FOKKER D-23 FIGHTER

TONY FOKKER again startled the Paris Air Show crowd, this time with an eye-opener in the form of the new and unusually designed D-23, a single-seat twin-engined fighter powered with two Walter Sagitta engines.

The motors used are twelve-cylinder, inverted-Vee air-cooled jobs manufactured by the famous Walter Motor Car Company of Prague, Czechoslovakia. They are rated at 600-h.p. each, thus this new Fokker fighter has 1,200 horses under its hood.

It remains, however, that the D-23 is a derivation of the earlier G.1, which featured two tractor radials set into the leading edge of the wings. In that plane, the tail booms proved to be too much of a "blind spot" for the tail gunner.

In this new fighter, the pilot sits high behind the front engine and is protected from behind by the rear engine. And owing to the happy arrangement of the tricycle undercarriage, allowing a longer nose, his forward view is particularly good. In addition, the pilot is further protected by armor plates set in front of his seat and also alongside the cockpit.

Thus we see that after twenty years, designers are again considering the physical risks of the pilot. The last plane that used armor was the 1918 Sopwith Salamander—the original attack plane.

Four guns are fitted in the D-23, two in the fuselage and two in the wing. The fuselage guns are Browning F-N's of 7.9 mm. caliber. The wing guns are of the same manufacture but are 13.2 mm. weapons—in all probability the new heavier Browning gun we have been hearing about. We understand that a special explosive bullet is used in these wing guns.

The expected speed of the D-23 is something like 330 m.p.h.
NEWEST OF FIGHTERS—ORTHODOX AND UNORTHODOX

With the world’s great air powers striving to outdo each other in building huge sky-fighting fleets, the designers are having a field day and startling models are now competing with the conventional jobs.

Herewith, we present two of the unusual ships side by side with two flyers of more standard type.

LOCKHEED 14 BOMBER

A MERICANS should be interested in this late addition to the British R. A. F., since it is an American ship. It is interesting, too, that the British experts, after careful consideration of our types, should select a plane which to the ordinary eye appears to be little more than a revamped high-speed transport.

The first of these Lockheed 14’s has been flight tested. And according to unofficial information—of which there is plenty—it is one of the fastest bombers in the world. Britain ordered 200 of them, to fill emergency needs, and meanwhile it’s said that both flight and maintenance crews will have to be specially trained to handle them.

For one thing, 750-h.p. P. & W. “Hornet” engines are employed, which will be new propositions for the British mechanics. Also new tools will have to be adopted because of the difference in thread-nut measurements in British and American practice. The pilots, moreover, will have to become accustomed to the peculiar characteristics of the Lockheed, which uses the famous Fowler flaps, adding something like 27% to the wing area in flight operation.

Armament details are not available, but it is obvious that at least one and possibly two guns will be placed in the nose turret. Two more will be set in the rear turret and possibly another will fire out of a tail tunnel at targets below and behind. The obsolete dome turret (see sketch) will no doubt be replaced with the new Fraser-Nash armored turret.

They say this job will be used as a reconnaissance-bomber, possibly to augment the Avro Anson patrol in East Coast defense work.

But whatever duties the Lockheed 14 will be required to perform, it will be quite interesting to see how one of our American products stacks up against British military ships.

PAYEN FLECHAIR FIGHTER

THE YEAR 1939 has opened with a startling display of unusual fighting planes. And foreign manufacturers will not have all the edge in the matter of strange craft, either. For we learn on good authority that our Army Air Corps is bidding for a single-seat fighter of 450-m.p.h. top speed, to carry an air cannon, and if possible be a pusher. Maybe Crash Carringer’s Hale Hellion will at last come into its own.

But the most unusual craft to reach mock-up stage seems to be the new French Payen Flechair. That name means “arrow”—and this job certainly looks like one!

Of tandem sesquiplane type, it must be presumed that this ship’s long feathering tail-plane constitutes part of the main lifting surface. Incidentally, it is set slightly below the line of the main wings. Certainly the most striking piece of proposed fighting equipment we have seen in ages, this plane is to be powered by two 100-h.p. Salzman engines set in tandem and geared to drive two concentric airscrews. Yet even with only this 200-h.p. available, the designer claims he will get 285 m.p.h. out of it.

Further reports say the Flechair will have but a single landing wheel under the fuselage and that auxiliary skids for maintaining balance on take-offs and landings are to be fitted to the wing-tips.

Owing to the strange layout, the designer has had a problem placing the pilot where he will obtain the best are of vision both in action and landing. For this reason, the cockpit has been located well aft. As for armament, two automatic air cannon are to be set in the leading edges of the main wing.

Even though the Flechair has been designed on a totally new principle, it might prove to be an impetus to bring military aircraft back to the low horse-power field. And then, if it shows any promise, we may see the seemingly endless high h.p. experiments slowing down a bit.
Flying Aces Club News

By Clint Randall
National Adjutant
Flying Aces Club

AND NOW all you lads of the FLYING ACES CLUB, the March winds are once again starting to blow. Yea, summer's just around the second next corner, and all of you buzzards will soon have better weather for your weekly trek down to the nearest airport.

All of which reminds old Clint of the days when he, too, sat in the bucket seat of a sky buggy behind a few hundred horses that carried him through the ozone over many a square mile of the globe. But let's take-off pronto into the news that you've been waitin' to hear—

THE FIRST letter in the batch is from Lewis Barton, of Clifton, Texas. Although this joy-stick cowboy is a little older than most of you fellows, he's just up to his neck in the old game. He's been interested ever since the Big Fuss, and he says: "I got a permanent crick in my neck from looking for Jerry planes when I was over in France as an engineer."

Well, buzzards, you might be interested to know that Lewis is an F.A. Escadrillian, and is very close to receiving his first award. Religiously, he has shipped us his monthly reports—at times, even sending two a month—and he's about to be repaid for his splendid work in making the Escadrille bigger and better than ever!

And now, do you remember our old pal Tony Mendoli? Well, Tony's about to leave his home drome in search of happier hunting grounds. Yep, he's signed up with the Navy and is now a gobs—almost! Almost, because he's waiting to get a call from the Navy Department any day—in fact, any hour! But he promises to try to work his way into the Naval Air Force and thus keep the good old F.A.C. banner spanning in the breeze.

So let's wish this fellow Clubster luck, boys, in his ambition to reach his ceiling—the Air Force!

Charley Metzler, of Lockport, N. Y.—he needs no introduction to you fellows—has again broken the ice, too. Yep, because of his valuable work in signing new members, he's once more given a chunk of space in the Club News. Here are the new members Charley signed: Harvey Schultz, Ottis Willoner, Phyllis Conley, Dot Lockwood, Jean Pils, Marian Weaver, Doris Metzler, Gladys Weaver, and Tom Mulvey. All of the new girl members just named have banded together to form the FLYING

ACES Nurses Division. Doris Metzler was the organizer.

Bob Day, whose photo appears at the bottom of this page, is a very up and coming Australian who has both feet in the aviation game. He says:

"I not only work for an airline but I am also an old time model builder. And was I glad to see in 'Trail Blazers of the Air' how to build the Handley-Page Bomber! You see, I have been intending to build that plane for a long while, and now that I have the plans there'll be no stopping me!"

Well, that's Determination with a capital "D"! And from looking at Bob's photo, we'd say that chin of his really shows determination—and that he'll probably go a long ways in the aero line. Good luck, Bob!

To R. M., of Coffey Ville, and others who wonder why they haven't received an answer to their letters: If you read the "Join the FLYING ACES Club" page again, fellows, you'll see that it says you must send a self-addressed, stamped envelope along with your letters to Clint. Every member receives letters without return postage, and we're sorry they can't be answered. You see, the staff here at G.H.Q. has to run the organization on a strictly military air service basis. And we're sure that's the way you want us to run it. And now, let's all read the "Join the F.A.C." page once more—so we'll be better Clubsters. Okay?

And now that's off our chest, here's the rest of the news:

BOB WELLS, of Oakland, Calif., has a very sad story to tell. Bob says:

"The last model I built was a Nieuport 28. For one of its flights—which proved to be the last—I took it to Frisco and launched it from the Chronicle Building. It did one loop and then powered for about 600 feet. The model then went into a stall and did a 9-G'er for 36 floors directly to the street! From where I was, I didn't see the ship hit. But if it wasn't wrecked then, a passing street car ran over it and finished the job."

Tough luck, Bob. But you really should feel proud. Yes siree, we'll bet our last Duzs Fastener that your model is the first one that ever did a real terminal velocity dive! And incidentally, how many of you fans know what a Duzs Fastener is?

Lawrence Robinson, of Oak Grove, Mo., and Oral Stowell, of Kingman, Ariz.—along with a host of other fellows—have registered a complaint. Yep, they don't like F. A.—because it's published only once a month!

Hey, do you wanta kill the poor editor with work?

Walt Gunning, Jr., of Remus Point, N. Y., has just finished what he considers to be the best model of his career as a builder. It's a Boeing F4B-4, complete with ignition wires, spark plugs, engine cooling-fins, glass covered instruments, shock absorbers, and a 355-piece replica motor.

We'd say Walt's got something there! Have any of you other fellows built a model that's more detailed?

Ever hear of Ruth Nichols, Cecile "Teddy" Kenyon, Betty Gillies, or Margo Bain Tanner? Sure you have! And you know that they rank among the best woman pilots in the country. Well, fellows, you'll hear something new about them very
shortly. And here, fellows, is why: When 20th Century-Fox Studios decided to make their movie called Tail Spin, they got in touch with these gal pilots and gave 'em nice contracts to come to Hollywood and act as experts on the film. After the picture has been "shot", the pilots will make an air tour of the key cities of the country—Frisco, Seattle, Salt Lake City, Denver, Chi., St. Louis, Detroit, Cleveland, Pittsburgh, Kansas City, Oklahoma City, Dallas, New Orleans, Memphis, Atlanta, Philly, Boston, Newark, and New York. Don't fail to see 'em if your home tarmac is on that list.

Bob Achterberg, of 718 Church St., St. Joseph, Mich., has plans for organizing a state-wide unit of the F.A.C. His program sounds very interesting. And all of you Wolverine Clubsters should drop Bob a line.

And now, how'd you like to have an uncle like Bill Darby's? Bill, who lives in Big Spring, Texas, has an Unk who owns two airplanes—and he taught Bill to fly in one of 'em. Yes, sir, we'd call that a gift right from Vahalla, wouldn't you?

And remember the "old Jennies?" Well, R. C. Dempsey, of Colby, Wis., tells us that he once paid $1.00 per minute for flying time in one of 'em. And what's more, his trip was only as a passenger!

R. Dunne, C. O. of our Dublin, Ireland, F. A. Squadron, is really interested in the Club—and what we mean, really interested! He's just written us that he wants two dozen pairs of F. A. wing emblems for the members of his outfit. Yep, when those Irish do something, they do it in squadron style. And that's a tip to the rest of you.

Ever hear of an aerial bomb for advertising purposes? Well, Bernard Revering, of Perham, Minn., is working on one. He intends to shoot the "bomb" from a shot-gun. And, if the darn thing works, it'll open with a Flying Aces banner streaming from a chute.

But Bernard hasn't got up enough nerve to try it yet—he's afraid he'll spoil his new shot-gun! Sad situation, huh?

JOHNNY BUCHANAN, of Dorchester, Mass., was just in the office here at G.H.Q. It seems that he's an expert metal mechanic and riveter—out of a job! Johnny's heading out to Grumman and Severky to see if there's anything doing. Let's all hope he'll be able to break the ice.

Bill Mickelson, of Racine, Wis., is working hard to put his home town on the aviation map in bigger style than ever. He and a group of other fellows are organizing a couple of NAA chapters for rubber and gas modelers in that good old Badger community.

Personal to Gene Martin, of Waterloo, Iowa: No, Gene, you certainly don't have to join our F. A. Club every month, or every year. You join and you're in! We print the month on the applications just so we can keep our records straight when the new members come in. One application gives you a life-time membership in the Club.

Roy Cameroi, of 1021 Chestnut St., Hamilton, Ohio, would like all nearby fellows interested in starting an F.A.C. Flight to get in touch with him. Roy's in earnest, so give him a break, will ya, fellows?

Ever hear of the N.P.J.A.? Well, it means National Parachute Jumpers' Association, and R. W. Rongenecker, of Peru, Ind., one of our Clubsters, is a full-fledged member. He says: "My experience as a parachute jumper has been uneventful, and there's not much to say about myself." Gosh! Ronny talks about it just like he was ordering a bowl of clam chowder!

Did you ever look at the window of a model store with envy in your heart? Well, Bill Bailey, of Ardmore, Okla., is one fellow who doesn't. Bill's father owns a hardware store in Ardmore and handles Megow models. Guess Bill's Pop has to keep this fellow Clubster of ours away from the model shelf instead of away from the jam jar!

And now, fellows, for the next several lines we'll go through the rest of the mail for choice items: Jim Simpson, of 404 Shepherdt St., Chevy Chase, Md., would like all Flying Aces Clubsters in his vicinity to get in touch with him. . . . George Hamilton, P. O. Box 182, Camden, N. J., will be in Plattsburg, N. Y., in the latter part of August during the Army maneuvers. He would like all you fellows in that district to contact him without delay.

Joe Farino, of Newark, N. J., a 13-year-old lad, is interested in the "lighter things" of aviation. He's scouting around for plans of a man-carrying glider . . . From Halton, England, Bill Froebishere writes in and suggests an all British "With the Model Builders" page for one of our issues. We think it would be a swell idea, and would like all of you English chaps to shoot us a photo of the best model you have on hand.

Those letters are piling up in front of Clint again, fellows. Another stack was just brought in by the mail truck, and if they're all to be answered 'fore it's time to dash off another Club News page, Clint had better call it a day.

So your N.A. will be seeing ya again next month with more chatter about all of you.
JOIN THE FLYING ACES CLUB

HONORARY MEMBERS

President and Mrs. Franklin D. Roosevelt
Vice Pres. John Nance Garner
Secretary
Rear Admiral Byrd
Col. Sewart
Major C. G. Long
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Maj. A. W. Stevens
Capt. G. A. Anderson
Maj. Earl Lord
Mrs. Charles S. Bayles
Lett.-Col. Theodore Roosevelt

OFFICIAL CHARTERS

F.A.C. Flights and Squadrons are recognized at GHQ only after they have received their official charters. These illustrated documents, printed on fine paper and bound in leather covers, are the seal of approval in the field of aviation, and are excellent for framing and display. Their inspirational text is in keeping with the high ideals and aims of our Club. Each charter application must include a list of proposed group members and their addresses. Each of these members must hold an F.A.C. card, obtained by clipping and sending in the membership coupon printed on this page. If applications are approved, Flight Charts are issued for 25c, and Squadron Charters for 50c. Send the correct fee with your application. It will be returned if the Charter is not granted.

WIN YOUR WINGS

Save This Whole Coupon for CADET OR PILOT insignia of the F.A.C.

GED

Gold finish
All members with Official Membership Certificate are awarded an American Eagle with the F.A.C. monogram: Complete with two others and 10c, entitles members to Cadet Wings. Do not send in this portion of the coupon until you have three. Then send them in all together with a self-addressed envelope and 10c to cover cost of wrapping and mailing.

PILOT

Silver finish
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 in this portion of the coupon until you have five. Then send them in all together with a self-addressed envelope and 10c to cover cost of mailing.

Send the Whole Coupon regardless of which kind of wings you or your mate’s sets of cards are needed for each insignia. Canadians send 15c, or three International Reply Coupons. Overseas senders receive 1/ or five Reply Coupons per set of wings sent. Order now.

DO YOUR TELL SHARE TO ADVANCE AERONAUTICS

To advance the cause of aviation, over 50,000 men and women, boys and girls, have banded together to form the FLYING ACES CLUB.

It is the easiest club in the world to join. Just clip the membership coupon, fill out, and mail it to GHQ with a stamped, self-addressed envelope. Your official card will then be forwarded to the club along with a chance to win promotion and the right to wear the various insignia of the Club.

In the FLYING ACES CLUB there are two kinds of local organizations, known respectively as Squadrons and Flights. A Squadron must have eighteen members, including its leader. A Flight must have a total of six. You can start either of these groups in your own community by enrolling your friends in the Club, then applying for an official charter as detailed in the column at the left. Each member must hold an F.A.C. card. Meetings and activities are conducted among the squadrons and flights according to the wishes of the members. GHQ has established no rulings in this respect, nor are there any dues or fees whatever. The entire idea of the Club is a common meeting ground in an international organization for the lovers of aviation in its various phases. Many local Squadrons and Flights hold regular contests and public events. Many Special meetings for model building and instruction, and even regular flight training.

AWARDS AND THE Aces Escadrille

After the membership card, and Cadet and Pilot Wings, comes the Ace’s Star. This is awarded for enrolling five new members, using, of course, a separate coupon for each. As an Ace, you are then eligible for membership in the FLYING ACES ESCADRILLE, then you may win truly handsome awards. Among these are the Distinguished Service Medal and the Medal of Honor, two of the finest decorations that have ever been designed.

Any member who has reached the rank of Ace is eligible for membership in the FLYING ACES ESCADRILLE, an advanced organization which replaces the old G-2 unit and opens the way for participation in a definite program contributing to the forward movement of aviation.

To enroll, an Ace must apply direct to Escadrille Headquarters, giving his name, age, address, rank, and highest award already won in the Club, and presenting an undamaged, addressed, return envelope. If he is approved for membership, his instructions will be forwarded. Members will be invited to a limited number of American and Canadian members only, at present.

SPECIAL SERVICE!

This Aviator’s Positive Identification Bracelet

Registration and Bracelet Only 25c.

A valuable identification service for F.A.C. members is now offered by the GHQ. It is a War type of bracelet worn at all times. This new service is prompt; Identification is needed, this number may be sent in this space on a stamped, self-addressed envelope. The number will be furnished. When ordering, send your name, address, membership number, and exact description—age, height, weight, color of eyes, hair and complexion, etc., together with name and address of nearest kin. Overseas members may send money order, or registered letter in 2/- in coins or Int. Money Order for same amount.

KEEPERS OF THE LOG

In order to keep in touch with GHQ, every squadron should appoint a member with a facility for writing to the Keeper of the Log. It shall be the duty of the Keeper of the Log to send in regular reports of interesting doings of his squadron. His is an important job, because it is only by means of interesting squadron reports that life can be given to the Flying Aces Club.

Photographs, too, are an important consideration for the Keeper of the Log. Either the Keeper himself, or any other member with a camera, should keep a photographic record of the squadron’s activities, for reference purposes, to show prospective new members, and to allow a selection of pictures to be sent to GHQ for publication in our monthly Club News pages.

The cost of film, prints, etc., would be logical cost is covered by the squadron’s own treasury or could be covered by members’ contributions.

You will be notified of this incidentally, send us prints which have been taken, and completely developed, for use by photo-fan members of the outfit.

CORRESPONDENCE

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

OFFICIAL SUPPLIES

Due to popular request, we have or offered a new supply of F.A.C. stationary and official F.A.C. (paper) pennants. The Stationery Set includes flying Aces Club letterhead attractively hand-lettered, and the price is amazingly low—100 sheets, pennants, full-color 25c. Attractive pennants (with pole on the reverse side) are also 25c.

We also have a new supply of swell embossed rubber stamps. The Aces of the Hour is available at 25c. The Aces of the World are embossed in colorful blue and gold, they’re available at 50c each.

(Overseas prices; Stationary, 100 sheets for 2/-; pennants, 20 for 2/-; wing insignia, 1/.)

APRIL MEMBERSHIP APPLICATION

I, the undersigned, hereby make application for membership in the Flying Aces Club, and 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 national defense and transportation. I will also be glad to help with club activities. My membership in the Flying Aces Club offers.

My name is

Age

City

State

Do you build airplane models?

Mail this application to the GHQ, together with a stamped envelope. Canadian and overseas readers should apply by means of an International Reply Coupon worth 5c, secured at the Post Office.

FLYING ACES CLUB, 67 W. 44th St., New York
With the Model Builders

Left: CR-R-B-ASH! WHAM! This Jerry Albatross D-4 has hit in an honest-to-goodness Chinese three-pointer in No Man's Land! Chuck Garrett, of Hammond, Ind., built the ship and laid out this striking model scene—which looks real enough to "get by" on the "Snapshots of the War" page. The gray terrain and shell-striped trees especially appear to be the McCoy.

The glad hand of modelers is extended here by two of our English readers, of Guilford, Surrey. Ray Corra and Dennis Allen, the chaps in the photo, are showing the warm friendship that modelers the world over receive from other fellows in the game. Angham, that's the old spirit we like to see. There can't be too much of it.

Below: No, this isn't the Paris Aero Show. These copies of F.A., showing faultily in the background, give it away. But these striking ships—some of George Jafts' prized models—come pretty close to looking like a real-life exhibit. George Jafts from Manchester, N. H. And he's a working modeler as well as an ace-high photographer, we'd say.

This Brown Special "Miss Los Angeles" is just about the slickest model racer we've ever seen. Yes, the builder, Don Barth, of South Bend, Ind., made his 16" job an exact replica of the famous ship. We honor it as our "Model of the Month." For here Don has given us everything down the line from beautiful workmanship to swell photography.

Above: Bill Lynch, of Osseo Park, L. I., is the artisan who turned out this miniature of the Boeing B-17. Covered with sheet aluminum and "riveted" with pins, this "Flying Fortress" took seven months to build—seven months of after-school time!

Right: Thirteen-year-old Doug Lewis, of 639 Lotus Ave., Oradell, N. J., tells us that this gas job, the "Red Zephyr," is only his second gas model. Wow! From her detail and clean workmanship it looks like Doug has been in the game for years! Doug has put this sweet baby through 55 flights without one crackup! And he attributes his smooth landing success to the fact that he's equipped the ship's undercarriage with shock absorbers. And if you want the same sort of easy set-down, then why not "Fit Your Gas Job With Wing Action," as is explained a few pages ahead in this model section? Incidentally, if any of you fellows have a model "13" gas tank on hand, Doug would like to get in touch with you.
A FAST-DASHING flying model of a new Army pursuit! That's the kind of job which we know goes over the biggest study, all you modelers—and that's the kind of miniature skysteer we have for you here in this Curtiss XP-40 pencil-streamlined winged hurricane!

Granted, this striking craft—we mean the real XP-40—is on the secret list. So we don't know the full inside details of how this cloud huntress ticks. And we wouldn't be allowed to give you such sub rosa dope if we did.

But "hush-hush" policy to the contrary, you can still have a staunch and speedy rubber-powered replica of this fighter on your model tarmac. And in this article we give you full instructions on how to go about it.

First off, readers who are familiar with the Curtiss XP-37 will notice that the lines of the XP-40 bear a great similarity to the earlier craft. Upon closer study, however, new details are revealed. The pilot's compartment has been moved farther forward and is completely enclosed by the usual sliding hatch. What's more, a new and more powerful engine—namely, the Allison 12-cylinder liquid-cooled plant which develops something like 1,620 h.p.—is said to drive the XP-40 at a speed better than 350 m.p.h. And top speed? Well, rumor has it that the ultimate velocity is in the neighborhood of 400 m.p.h.!

Wow! No wonder they're hush-hushing her!

Machine guns within easy reach of the pilot are the latest Browning .50 caliber type. Another appetizing bit we'll pass on to you is the stirring gossip that recently reached the ears of Walter Winchell. This story has it that our Air Corps master-minders are somewhat worried that the XP-40 may fly so fast that it will be darned hard for our flyers to aim 'er straight!

The XP-40 is the latest modification of the original Curtiss Hawk 75 low-winger which made the last of the old Hawk biplanes look like a wartime Jenny by comparison. The fuselage of the XP-40 has been effectively thinned out behind the cockpit, resulting in the attainment of increased speeds through streamlining. The wing is of all-metal structure, internally braced, and completely housing the retracting landing gear.

Ailerons, rudder, and flippers are of metal construc-

When our Air Corps gets "bet up" over a sensational new military machine—then it's time for the F.A. to step in and give you model fans a corking copy of 'er. Well, fellows, Curtiss HAS turned out such a ship—the striking XP-40, rumored to be the fastest fighter in the world. And now here, in double-quick style, we have Jesse Davidson presenting you with a keen flying replica of this remarkable low-wing combat job. Go to it, modelers—then trace out the top view of the body.

Reverting to the fuselage plans for a moment, notice the section starting just aft of the sliding hatch, marked "C-C". At this portion the upper part of the fuselage is channelled. To get the proper form and contours, make a stiff paper template of the portion to be channelled, trace the template in its proper position, and carefully carve out the channel. A fuselage cross-section template at "C-C" will provide the depth at the extreme width.

The next step is to carefully eliminate the wood portion of the fuselage which forms the cockpit housing. The section is identified on Plate 1 between "B-1" and "C-1". The slanted broken line at "C" indicates the angle at which the rear portion is cut.

Later—after the fuselage has been hollowed—this portion is completely covered with celluloid to form the cockpit enclosure.

The fuselage blocks are carefully pried apart with the aid of a long, thin bladed knife. Another inside template must be made and cut to shape by following the series of dotted lines which indicate the wall thickness throughout the fuselage design. This template is then traced onto the inner side of each fuselage half. All of the wood inside of the new outline is to be removed. You'll find that the walls are about 1/16" thick all around the fuselage except the portions near the nose and the extreme tail. Use a sharp knife and work slowly and carefully. When near the bottom of the shells, use coarse sandpaper to smooth out the rough spots near the 1/16" wall.
and then finish the sanding job with very fine paper.

Both shells are afterwards given three coats of dope, both inside and out. Brush over with fine sandpaper between each coating of dope.

Cut out a small door from one side of the fuselage. The piece of wood which is removed cannot be used for the door, so shape another piece to fit. Use small pins for the hinges and the door knob. Join the shells together by applying cement generously along the inner sides of both halves and then press them firmly together. Place a couple of rubber bands at intervals along the fuselage to keep the shells firmly together while drying.

When this operation has been completed, small parts such as the rear wire hook, tail wheel, and parts "F-1" to "F-6" are cut to shape and cemented in the positions indicated.

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

Thin sheet celluloid is bent to the required shape, allowing a small edge to overlap the body sides. Apply cement to the wood and glue the celluloid in place. The frames shown on the windshield on Plate 1 may be duplicated by placing black paper strips in their respective positions.

FILLETS AND WINGS

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

A plan view of the left wing is shown complete. By going over its outlines with a hard pencil, applied with sufficient pressure to make its shape visible on the reverse side of the page, you may then use the same plan to build the right wing panel. Twelve ribs, each cut from 1/16" sheet balsa, make up the necessary amount for both wing panels. The wing tips are cut to shape from 1/16" flat balsa and are glued at the joining ends.

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

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

TAIL AND LANDING GEAR

THE TAIL surfaces are made from 1/16" by 1/4" sheet balsa. An exception, however, is made for the inner rib of the stabilizer parts. This rib is marked "F-1" and is cut to shape from a piece 3/16" by 3/16" by 1/8". The thicker outer-edge gives more cementing area when the stabilizer halves are joined to the body sides. Apply glue carefully at all joining ends, keeping the parts flat until they are thoroughly dry—this will prevent warping. The tail surfaces are covered on both sides and prepared for doping in the same manner as the wings. But dope only one side at a time.

The landing gear legs are made in two parts. The lower parts, "LG-1", are cut to shape from hard balsa. A razor edged blade can be of great help in this operation. Study all three views and get a clear picture in your mind before starting on this work. The upper portions, "LG-1a", are carved to shape from separate pieces and streamlined. It is cemented to "LG-1a".

Part "LG-2" is cemented to the landing gear in the position shown on the plans.

TO MAKE THE PROP

CARVE three blades to shape from 3/16" sheet balsa. Then join them at the center with glue, and then re-inforce additionally by cementing small triangular blocks between each blade (see drawing on Plate 2). The rear of the spinner nose-block is carved away to accommodate the hub of the prop. Apply cement to both prop hub and the back of spinner cap, and press 'em flush together. Allow plenty of time to harden.

For motive power use six strands of 1/8" flat Para rubber. Fasten an "S" hook to each end of the strands. (Continued on page 80)

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**Bill of Materials**

(All wood is medium balsa except where otherwise specified)

- Two blocks soft balsa 1" by 3/4" by 15" for fuselage;
- Two strips balsa 3/8" by 3/4" by 8" for leading edges;
- Two strips balsa 3/8" by 3/16" by 8" for No. 1 spars;
- Two strips balsa 1/16" by 3/4" by 8" for No. 2 spars;
- Two strips balsa 1/16" by 3/4" by 8" for trailing edges;
- One sheet balsa 1/16" by 3/4" by 8" for wing ribs, tail surfaces, etc.;
- Two pieces soft balsa 1/2" by 2 1/4" by 7 1/2" for wing fillets;
- One piece balsa 1 1/4" square for propeller spinner;
- Two pieces hard balsa 3/8" by 1 1/2" by 1 1/2" for landing gear part "LG-1";
- Two pieces hard balsa 3/8" by 1 3/4" by 1" for landing gear part "LG-1a";
- Two pieces hard balsa 1/4" by 5/16" by 1 1/2" for landing gear braces "LG-2";
- One block balsa 1" by 2" by 6" for parts "F-1" to "F-6" inclusive;
- Three pieces hard balsa 3/8" by 1 1/2" by 3 3/4" for prop blades;
- One length .020 wire 6" long for wire fittings;
- Bottle of clear cement, banana oil, 1 sheet jap tissue, colored insignia, large bottle of aluminum paint celluloid, small bottle black paint, six feet of 1/8" flat rubber, and two copper washers.

[35]
Build The

Hütter H-17 Sailplane

There's probably a swell thermal rising over the vacant lot down at the corner right now. So why not take advantage of it? All you gotta do is grab your balsa and turn out this extra-special corking soarer—and you'll be all set to go. Nick Limber tells you how right here in this snappy article.

Take 'er away, Nick!

Although man flew in motorless craft long before the Wright brothers made their first hop at Kitty Hawk, it is within recent years that the art of gliding and of glider design has taken real root and been recognized as an important branch of aviation. The Treaty signed at the end of the World War is said to have had the greatest influence in the development of the glider, for when the German aviation enthusiasts were prohibited from building large numbers of powered aircraft they turned to motorless ships in a big way.

Many excellent gliders have been produced since then. And among the best is the Hütter H-17, designed recently by Ulrich Hütter. Primarily developed for flight training, this craft features exceptionally light but sturdy construction and long, flat glides.

It is stated that the machine has attained an altitude of 800 meters and remained in flight for 31/2 hours. This performance indicates the exceptional properties of the ship. Undoubtedly, if sufficient care is exercised in constructing your miniature, ace-high flights will be attained from your model tarmac, too.

CONSTRUCTION OF THE FUSELAGE

In constructing the fuselage, the modeler should first build the framework structure and to this cement sheet balsa formers, in order to shape the top and bottom of the body. Strips of 1/16" sq. balsa are used for the framework. Formers, shown on Plate 2, are traced onto 1/16" sheet balsa. After cutting these from the sheet, cement them to their respective places, as indicated in the side view and cross section diagrams.

From a soft balsa block, 1 1/2" by 5/8" by 1/2", shape the nose block. Formers "A" and "B" are made of 1/16" sheet balsa and cemented to the fuselage. When these have been fastened securely, the nose block is glued in place.

Using 1/32" sheet balsa, cover the forward portion and under surface of the fuselage as indicated in the first plate. The drawing clearly indicates the direction of the grain of the covering.

By Nick Limber

Photos by Sorky

Landing-skid, tail-skid, and wing-rest are now added to the fuselage framework. The tail skid is made of 1/16" sheet balsa and bamboo; the other two are carved from 3/8" sheet balsa. Number 0.020 wire is used for the launching hook, which is fastened to the landing skid. A pair of pointed-nose pliers are needed to bend the hook, as shown in Plate 3. It is necessary to cover the exposed portion of the hook with rubber insulation, taken from electric wire; for there will be a tendency for the hook to cut the rubber launching cord at every take-off.

TAIL ASSEMBLY

The tail surfaces are made of 1/16" sheet and 1/16" square balsa, formed as shown on Plates 1 and 3. Trace the outline of the surfaces onto the sheet balsa and cut them out. Then cement the strips in place and allow the cement to harden. It is advisable to place a flat heavy object over the assembly to prevent it from warping while drying.

Cover the units with tissue, using banana oil to attach the paper to the frame.

FORMING THE WING

Each rib should be traced onto a sheet of 1/16" balsa, cut out, and sanded to shape. Note that twenty-six "C" ribs are required, and only two of each of the others. Ribs shown on Plate 2 are full size. The plan view of the wing assembly, however, is not actual size.

The wing is constructed in two halves. Measure the required length for spars, leading-edge and trailing-edge, and cement each rib in place. Note that a 3/8" gap is allowed between ribs. Shape the wing tip from a strip of bamboo, and, after the cemented joints of the wing structure have hardened, glue it in place. The forward portion of the structure is covered with 1/32" sheet balsa. This covering extends from the upper spar, around the leading-edge to the bottom spar. The rest of the wing is covered with tissue.

Cement both sections of the wing together after (Continued on page 51)
OUTLINE OF RUDDER

ELEVATORS MADE OF 1/16 SHEET & STRIP
WING RIBS MADE OF 1/16 SHEET, LEADING EDGE OF 1/8 x 1/16 BALSÁ, TRAILING EDGE OF 1/16 x 1/8 BALSÁ, SPARS OF 1/16 SQ. BALSÁ.
FUSELAGE MADE OF 1/16 SQ. AND 1/16 SHEET BALSÁ
News of the Modelers

NEW YORK GETS WAKEFIELD

THE Greater New York Chapter of the NAA will sponsor this year's Wakefield International Trophy Contest at the New York World's Fair.

For the fifth time out of the 11 years that the Wakefield event has been held, the cup was won last year by an American, Jim Cahill, of Indianapolis, being the 1938 victor. Thus this famous international contest will be held in the United States again.

An invitation has been extended by the NAA to all nations to send their teams to compete. Those fortunate enough to place in their country's National Elimination Contest and bring home a winning prize will be feted at the Fair as they have never before, according to the NAA. A gala program of entertainment and sight-seeing has been arranged for the visiting teams.

Irwin S. Polk has been named Wakefield International Trophy manager. Wakefield officials of all nations are invited to declare their intent to participate by writing to Mr. Polk, 429 Seventh Avenue, New York City.

NATIONALS SLATED FOR JULY 5-9

The 12th National Model Airplane Meet will be held in Detroit, July 5-9. And this year's tournament promises to surpass even last year's contest, which was widely acclaimed as the best ever held.

The contest again will be sponsored by the Exchange Club Council of Detroit, which consists of 25 Exchange Clubs in that district.

Arthur J. Vhay, Operations Officer of last year's meet, has been appointed General Director of the 1939 Nationals. Irwin Polk once more will act as Meet Manager.

An insulation competition, similar to that held last year, is again planned. So thorough an "artificially" inclined may now start doping out an insulation which will symbolize the work that the National Exchange Clubs and the NAA have done for aviation-minded model builders.

H. A. Thomas, of Little Rock, Arkansas, was the winner of last year's insulation competition. And his design was incorporated in the official insulation of the meet.

N.Y. CONTESTS PLANNED

The Metropolitan Model Airplane Council, composed of model clubs in the New York area, has announced its gas model program for the coming year.

The first meet will be held on April 2, using the new NAA rules. There will be the regular endurance event and a special event for novelty ships and radio controlled models.

An invitation seaplane event will be conducted in August. But the site of this contest has not been decided upon as yet.

Another invitation meet has been scheduled for September.

The Council is conducting a census under the supervision of Louis Garami to determine the trend in model building in the New York area. In this manner information as to whether model builders are swaying toward gas models, endurance models, or gliders can be determined in advance and activities planned accordingly.

A survey is also being made to determine which fields are available for power model flying in the vicinity of New York City. When this survey has been completed, the Council will seek assistance of City and aviation officials to obtain a suitable field for the petrel job flyers.

Model airplane clubs, rubber or gas, are invited to join the M.M.A.C. for participation in the various activities.

NEW GAS MODEL RULES

HERE are the new NAA rules for gas model competition:

Engine run reduced to 20 sec.; for non-competitive flying, the engine run remains at 30 sec.; any run of less than 40 sec., or an engine run of less than 20 sec., shall be considered a delayed flight; and, instead of the highest time of three official flights, the total of all official flights shall serve as highest time in contests.

Three separate classes were established, with the following wing areas: Up to 225 sq. in.; from 226 to 450 sq. in.; and over 450 sq. in. The cubic displacement of the power plant shall be restricted as follows: In the first class, no engine with a cubic displacement of greater than 0.20 may be used. In the second division, engines must range in displacement from 0.20 to 0.30. In the third division, all engines over 0.30 may be used.

Other measures that were passed by the board were these: The 8 ounce per sq. ft. ruling has been retained; a duration record cannot be established unless the time is 2% greater than the present existing official record; class "E" for R.O.W. gas models has been added.

WIN F.A. SUBSCRIPTIONS

LATE in December the Gas Model Airplane Association of Southern California held a huge contest in which there were 289 official competitors. And these fellows declare they set something like a record by turning in 440 official flights between 7:30 a.m. and 1:30 p.m., with a 45 minute recess called at eleven o'clock.

Four subscriptions to FLYING ACES were donated to the following winners: Frank Jeffers, of Los Angeles; E. A. Stockton, of Avalon; Elbert Weather, of San Diego; and Clarence Moffet, of Los Angeles.

Altogether there were 83 prizes awarded. Some of the top-flight modelers were: Leslie Zeidler, 10 min., 20 sec., with a motor run of 25 sec.; Dean Stockton, 10 min., 3 sec.; Elbert Weather, 6 min., flat; Bob Bowman, 5 min., 50 sec.; Kay Butcher, 2 min., 24.5 sec.; Bob Huber, 2 min., 15 sec.; and Sandy Abrenica, 1 min., 5 sec.

C. W. Hess took first place in the low-wing event. His time of 1 min., 9 sec., gives him permanent possession of the trophy.

SCHROEDER SETS RECORD

ART SCHROEDER, Syracuse (N.Y.) Model Airplane Club member, brought national recognition to his group when he recently established a national record for junior class gas models for 1 min. and 41.5 sec. in the meet, which was NAA sanctioned.

At the indoor meet held by SMAC recently, the following fellows took top places in the stick event: Al Towle, 6 min., 14 sec.; J. Chadwick, 6 min., 8 sec.; R. Sanders, 6 min., 52 sec.; Ed Guth, 3 min., 56 sec.; Bill Hayes, 3 min., 35.8 sec.; and George Keisel, 3 min., 12.8 sec.

In the indoor fuselage event Bill Hayes, J. Chadwick, George Keisel, and Ed Guth were the top-notchers. Bill Hayes really went to town when his model turned in 1 min., 28 sec., to set a new city record.

"DOWN-UNDER" DOINGS

LATE reports tell of a decided increase of model activities in New Zealand. An exhibit of outstanding merit was included in the recent Rose Show at New Plymouth. It consisted of a display of 25 flying models made by boys of the Te Kuiti School under the guidance of their teacher, Mr. John Allen.

WACHUSSETTS' WINNERS

DURING January the Wachusett Model Aero Club, of Fitchburg, Mass., held its first meet of the new year. Howard Payea flew his Super-Flea at the tourney for the first time and took top honors. The Flea turned in consistently good flights, eventually showing its tailskid to other contestants with a flight of 37 sec. Art Hamions, one of the newest members, placed second. Joe Cushing capped third.

The Fitchburg group also announces that they will hold another of their "Fly-For-All" meets on April 2nd. A prize will be awarded to the modeler who turns in the longest flight—regardless of what type rubber-powered model he may use. All are welcome to attend.
Fit Your Gas Job

With Knee Action

By Gordon Reeves and Oliver Steigerwalt

Did YOUR gas buggy ever hit the rough ground for a convulsive jarring landing? If it has—and we know it has—you'll want to fit your cloud comber with this efficient K.A. gear. It's simple as all heck to build. And we're not kidding a bit when we say it'll smooth out your gas job set-downs in zipping-quick style.

two small cotter pins; and one dozen ⅛" by 3" rubber bands. There you are—that's the entire list. Not much, huh?

But let's stop gabbing and get down to the actual construction.

STRUTS

The STRUTS are made of ¼" piano wire. Cut the wire to the proper lengths and smooth off the ends with a file or sharpening stone. (To save hacksaw work you might break the wire to length by filing notches, and then snapping.) Bend the wire as shown in the drawing. But be very careful you bend the wire in small arcs instead of in sharp bends.

Heat the lower ends of the rear struts to a cherry red, then flatten them with a hammer. Drill the hammered portion close to the end, using a 3/32" drill. Then put the struts aside until you begin assembly.

PIVOT AND SLIDING GEAR

Cut two pivot-blocks for the inner ends of the axles (from your brass bar) and file 'em to shape. The holes for the front struts are drilled to ⅛". Slot the blocks with a hacksaw, then drill 3/32" holes (see drawing) to mount the rear struts.

The four slider-blocks are cut out and filed to shape. Drill two parallel holes in each block ⅛" apart, using a 9/64" drill—one hole in each block only half-way through. Remove any rough edges with a file and sandpaper to prevent their cutting the shock absorbers.

ASSEMBLY AND ADJUSTMENT

Last on the list comes the assembly and adjustment of the finished parts. Clean all the strut ends and coat them with a film of soldering flux. Heat the soldering (Continued on page 80)
HOW TO MAKE THIS SIMPLE K.A. GEAR

COPPER TUBING

LANDING GEAR JOINTS BOUND WITH THIN WIRE AND SOLDERED

WIRE OPTIONAL

RUBBER BANDS

WASHERS

COTTER PIN

FRONT VIEW

GUSSET PLATES ON SIDE AND BOTTOM

THE GREATER THE DISTANCE A LESS TENDENCY IN TWISTING.

DISTANCE "A" SHOULD BE GREATER THAN DISTANCE "B"

TUBING SQUEEZED NEAR THE END TO KEEP THE ARM FROM FALLING OUT

FILLED IN WITH SCRAP METAL AND SOLDERED

COPPER SHEET IS SOLDERED TO THE TUBING

PIECE OF TUBING FORCED ON THE ROD, SOLDERED AND THEN ROUNDED.

RUBBER BANDS

METAL RINGS

BRASS

METAL RING SOLDERED ON

MADE FROM A SOLID PIECE

FLATTENED OUT AND DRILLED

SIDE VIEW

DRAWN BY - LEONARD WIECZOREK

NO. 2-56
How to Select
The Correct Engine

“Goldern it ‘blazes!’ is only a mild variety of the cussin’ you hear when a gas modeler has doped out a swell ship—and then can’t figure out the right engine to put in ’er to get the best performance. “Shall I power her with a Propwash Ace, a Baby Whatzis, or a Mighty Mazurka?” That’s always been the big question, But now Phil and Ben have kicked through with a simple method of getting the answer before you can say “empennage.” And here y’are—

OBSERVATION at a slew of model meets has focused our attention on the fact that many modelers are ill-planned. The horsepower was either too much or too little, or the wing area was too great or too small. It seems that many potential gas modelers lack the necessary rubber-model experience to guide them in their selection of a correct combination of model and motor.

In order to correct this tendency in beginners, we have evolved an interesting aspect of what are called Nomograms—charts enabling you to find an unknown factor in graphical fashion.

If you have a model, you already have figures representing the weight and the wing area. And with these two figures, the chart gives us a graphical means by which to determine the proper engine with which to power the model. The chart, which we will say one with a 300 square inch wing area and a 1/5th horsepower engine, can be flown. But because it is a freak arrangement the chart will not show any figures. Thus the chart acts as a brake to goofy designs—by not registering.

The Nomogram consists of three tabulated columns, which we will refer to as “left,” “center,” and “right.” This graphic graph represents the weight of the model in pounds (including the weight of the engine). Since the chart is to determine what class of engine to use, you may wonder how you are to guess the weight of the unknown engine. But you will surely be able to judge the approximate weight of the engine, and when you project the solution you can add or subtract the difference.

The center column represents the wing area of the model in square inches, and the right hand column is the engine selector. This column is divided into four classes: “A,” “B,” “C,” and “D.” If you will look at the drawing, all engines have been grouped into a division representing an approximation of their horsepower rating. Although a group of similarly rated engines may vary slightly in horsepower, this variation will not cut any ice.

It is assumed that the modeler using this chart already has a gas model kit or a gas model design. In this case, the graph will serve to show an optional number of engines that may be best suited to the performance of the model. If the model is already constructed, you can easily figure out the wing area and the weight of the model. And by marking these two points in the proper columns, draw a straight line with these two points into the right hand column. If the line intersects the ”C” portion, then you have a choice of any class “C” engine listed at the top of our Nomogram. If we left out any particular engine in which you are interested, simply check its horsepower to determine its classification.

If the line intersects the motor selection column close to a division of another class, it is advisable to use the larger engine. It is better to use a little more power, than not quite enough.

By Phil Zecchitella
and Ben Shereshaw

The dotted lines on the chart represent three problems which will serve to illustrate how the chart works:

Problem “A” is the case of a model weighing 7 pounds (see left column). The solution is in group “D” (see right column). Problem “B” is a model weighing 5/4 pounds with 1,000 square inches of wing area. The chart solution calls for an engine in class “C.” Problem “C” is a model weighing 2 pounds with 400 square inches of wing area. The answer to this is an engine in group “A.”

Airfoil selections in the lower “A” category (Pee-Wee and Condor motors) should possess a lift-drag ratio over 20. Choose an airfoil such as those from the Gottengen family for this class. It is likewise imperative to use Gottengen airfoils in the upper class “A” engine group. (We believe Gottengen’s to be desirable in the other three classes, too, though modelers may try other types in these categories if they wish).

If you have an engine without a model, and are in doubt as to how large or what type of ship to build for it, you may reverse the procedure by working back from the right hand motor column. With a fixed point on this column representing the type of engine you may have, move a straight edge up and down the left column, pivoting from the fixed point of the engine column in arc fashion. By doing this you will have a number of possible combinations from which to choose from.

Let us assume you have a 1/5th horsepower engine—a class “B” power plant. Place the straight edge at any point in the “B” division of the right motor column. In pivoting from that point, the extremes in the model weight column allow you to build a model weighing 1 pound with 900 square inches, or a model weighing 10 pounds with 350 square inches. These are freak combinations if there ever were any!

Why do these combinations show up here? Well, the chart has been primarily designed as an engine selector, to read from left and center columns toward the right. When used in this manner, no crackpot arrangements are possible. The ideal wing loading should keep you from running into this sort of thing, a maximum wing loading should be first established—one not to exceed 13 1/2 ounces per square foot of wing area.

You can determine wing loading, in pounds, by dividing the weight of the model by the wing area. Multiply by 16 to get it in ounces. The ideal wing loading should also keep you within the new NAA gas model rules. Since the overall efficiency of a model decreases proportionately to the wing area of the model, a larger model will have better flying and soaring characteristics.

And now, fellows, rip out our Nomogram accompanying this article—Shereshaw’s Motor-Choosing Chart. Thrown it in your file for future reference. You’ll find it’ll come in very handy.
Shereshaw’s Motor-Choosing Chart

MOTOR CLASSIFICATION

A • BRAT
CHUN
HUSKY
ELF
TROJAN
BANTAM
PEE-WEE
CONDOR

B • BUNCH
CYCLONE
MORTON

C • BROWN
HURLEMAN
OHLSSON
SYNCRO-ACE
TLUSH
Denny-Mite

D • FORSTER
Comet

MOTOR SELECTION COLUMN

A

A

A

A

SOLUTION C

A

B

B

B

B

B

B

B

B

B

B

B

SOLUTION B

C

C

C

C

C

C

C

C

C

C

C

SOLUTION A

WING AREA OF MODEL IN SQ. IN.

TOTAL WEIGHT OF MODEL IN POUNDS

CHART FOR CORRECT MOTOR SELECTION

BEN SHERESHAW
A FLYING ACES MAGAZINE PLAN
What Do You Say?

Here's your corner, buzzards, and it's open to all readers who have a model argument they want to get off their respective chests. Make your comments short and snappy, and we'll try to squeeze 'em in.

--SCRAM--

Model Editor, FLYING ACES:

I am very pleased to tell you that I have finished building your gas powered Scram. She is a beautiful flyer, and her climb is exceptionally steep. The only thing I changed on the model was the thrust line—which I placed about 2" higher. This was done because of the strong winds we have had for the last two months—I was afraid of a stall if I built her according to the design.

A few days ago Scram made an excellent flight. I gave her enough gas for a minute's engine run, and sent her off. She climbed rapidly, and by the time the motor cut out she had gained a good 700 feet of altitude! It glided for about twenty-five minutes, and then landed about three miles away in a patch of woods.

Scram is such a top-notch model that I'm going to attempt the South African record in the near future.

--IVAN H. TUCKER, Johannesburg, South Africa--

Model Editor, FLYING ACES:

Regarding the Fredriksson-Mensing-Riedesel feud, it is quite possible that Riedesel's Moth flew at forty-odd miles per hour. Haven't Messers. Fredriksson and Mensing ever heard of tall winds? With a good breeze of forty m.p.h., the plane could attain that speed easily—without any propeller at all! And in a good hurricane, the F. A. Moth could make Howard Hughes' crate look like a Jenny!

Mr. Riedesel didn't state in which direction his model flew—although it is taken for granted that it flew on a horizontal plane. Yet Mr. Riedesel might have dropped the Moth in a 9-G dive off of the Empire State Building, with half a cannon ball attached to its nose. Under those conditions the ship would make forty miles per hour!

--H. H. HOLDER, Napier, N. Z.--

Model Editor, FLYING ACES:

I want to take this opportunity to tell you that I think FLYING ACES is the best aviation mag in the world. I built the Ol Reliable from the plans in the January, 1939, FLYING ACES. And if there was ever a swell ship, it's she! My model flew like a bird—and never turned in less than one minute duration. One time she got in a thermal and landed in a distant and strange back yard.

I built two of the Ol' Reliable models and both were swell. Altogether there were a total of six of these ships made from my plans—four by pals of mine.

--BILL KELLETT, Woodstock, Ont.--

Model Editor, FLYING ACES:

I have been reading your mag for...
The Hütter Sailplane
(Continued from page 40)

they're completed, forming 1/4" dihedral at each tip. After the cement has had sufficient time to harden, glue the wing to the fuselage at the wing-rest block.

A celluloid windshield cemented to the fuselage also acts as a support in joining the wing to the fuselage. Glue the spar from 1/16" hard sheet balsa. Then cement the spars into place, making certain they are firmly anchored at each end.

COLOR SCHEME for the craft may be decided by the builder. It is advisable, however, to use a combination of a bright light and dark colors. Although Plate 3 suggests a color line detail designed by the author, the modeler may not use this if he does not care for it.

Colored dopes were used in the original model, as this type of paint is most available to model builders, and undoubtedly far superior to any other type finish for model aircraft. The rudder insignia consists of a black swastika in a white circle, the official German emblem. (We accidentally got the swastika aimed backwards on Plate 3—but we're sure you'll forgive us.) This may be drawn with India ink on a piece of white paper and pasted to the rudder after the unit has been painted.

FLYING

ADJUSTING the model for flight will require a certain amount of practice if maximum performance is desired. Add a bit of modeling clay to the nose or the tail of the craft until it balances perfectly when held at the wing-tips. Allow the model to glide out of your hands from an elevation of about 4 feet on its first flight. Observe the glider during this flight, and if it tends to stall add more clay to the nose.

When the craft performs a perfect glide, you are ready for the initial flight. But before launching with a rubber cord, glide the ship several times by hand. Increase the altitude of the take-off with each glide. In this manner, you may carefully observe the habits of the ship and make the necessary adjustments.

When launching the glider by rubber cord, the number of strands of rubber used will be determined by the weather conditions. For example, when the weather is calm, only two or three strands of 1/4" flat rubber should be used. If it's a bit breezy, several more strands will be needed for a proper take-off.

When launching the model with a rubber cord, the ends of the cord are fastened to stakes driven into the ground. The distance the model is drawn back when launching by this method can be determined only by actual flight experiments, but will undoubtedly be found to be approximately the same as the distance between the stakes. It is advisable, incidentally, to place the stakes at least three feet apart.

Even though a glider is not commonly thought to be an airplane, don't you make the mistake that it isn't when flying your ship.

Direct 'er into the wind for take-offs, inspect her after each flight, and exercise all other precautions that you use with your rubber powered models. Above all, make doubly certain that the glider is in the exact center of the shock cord when using the two-pole method of take-offs.

WANTS ANTI-AIRCRAFT MODELS

Model Editor, FLYING ACES:

I've been interested in anti-aircraft models and have built several—mostly military. I would like to see models of anti-aircraft guns, anti-aircraft machine gun emplacements, and searchlight equipment. Why not have one of your real hot-shot modelers make up plans for these objects?

I have read your magazine for the last six years, and I must say that I have yet to experience the time that I read an issue and found it uninteresting. From cover to cover I think you quite fill the needs for every type of fan.

Harold Hoberg
Chicago, Ill.

(Editor's note: What do the rest of you fellows think of the idea?)

TRYING "TRENTON TERROR"

Model Editor, FLYING ACES:

I have just started building my first gas model, which is the Trenton Terror, from April 1938 FLYING ACES. From comments I have heard on this job, I knew it would be the best one to start with. And if the Terror comes up to my expectations, it'll be the best model in these parts!

Andrew Martin
Berwick, Pa.

ANOTHER "TERROR" MODELER

Model Editor, FLYING ACES:

The Trenton Terror was my first gas model, and it proved itself to be a wonder. It flew straight on its third flight, and I didn't find it until the next morning. Here's to more models like the Terror!

Ken Coleman
Elkton, Pa.

BILL OF MATERIALS

All wood is hard balsa unless otherwise specified.

- Ten strips of 1/16" square balsa for fuselage and spars;
- Three sheets of 1/16" sheet balsa for ribs and formers;
- Two sheets of 1/32" sheet balsa for covering;
- Four strips of 1/16" by 3/4" balsa for leading and trailing edge;
- One bamboo strip for wing tips;
- One block of soft balsa 1 1/4" by 3/4" by 3/4" for nose block;
- 1/4" for landing skid and wing rest;
- Tissue for covering; number 420 wire; colored dope; banana oil, and celluloid.
Detailed Plans of the Wartime Junkers J.1

(especially reproduced from our files for you World War Fans)

**Optional Exhaust.**
Overall length - 29 ft. 8 in.
Parabellum.

Junkers & Co.
Dessau.

The Junkers J.1 - Plate 1

Junkers J.1.

Lower wing span - 35 ft. 7 in.
Upper wing span - 55 ft.

Aileron wires.

Prop.
Sky-Power Facts versus Sky-Power Fancies
(Continued from page 9)

practically as much damage as one only recently completed.

We have been studying the figures concerning the world’s fighting planes of 1935 as compared with those of 1933. Well, in the fighter class there is actually very little difference in top speed between the first-line equipment of 1933 and those built five years later in 1938. As a matter of fact, the Boeing P-26A of 1933 had a top speed of 235 m.p.h.—Whereas, the British Gloster Gladiator of 1938 does only 250. In 1933, the French Dewoitine did 231 top, whereas the highly famed German Messerschmitt—the standard job—is capable of only 310.

Sure, that extra 79 m.p.h. is something. But what we’re living is that a flock of those 1938 Dewoitines could still cause plenty of trouble in any man’s war. So don’t get the idea that 231 m.p.h. jobs might just as well be consigned to the ash heap. Besides, the anti-Hitler nations didn’t stop building planes in ’33. No, they have some swell 1938 models, too.

A like comparison in the observation and bomber types is equally as interesting. Let them dub the ’33 craft of this category “obsolete” if they want to. Still, a few hundred of those models would be handy to have around if the guns again begin to boom.

It would be nice if we could plan our military plane output so that we’d have absolutely nothing but last week’s first-line planes on the runways when war broke out—instead of last year’s. But unfortunately we can’t do that. Using the word “obsolete” in this fashion, practically every new plane run off the production line is “obsolete” by the time it is given over to some service pilot in a standard squadron.

It takes about five years from the time a new plane is first conceived by the designer until it has reached a squadron and is ready for service flying. Then again, we must remember that most modern military ships are simply improved types, or derivatives of former models. We only have to look over the long line of Hawks, Hawkers, and Fiats to see this point. So just what is an obsolete plane?

Hundreds of “obsolete” planes were used in the World War—and they seemed to have done a darned good job. We have been told so many times by the arm chair critics that World War Germany put out much better planes than the Allies, who were always fighting with “obsolete” planes. Still, when we go back and look at the figures, somehow the Allies won the war in the air—and how! The Americans, in particular, did a good job with a lot of old Salmons, Breguet, D.H.4’s, Spads, and ancient-vintage Nieuports.

As THIS is being written, the newspapers are still loaded with big feature articles stressing either the need, or the uselessness, of putting through a 10,000 plane order. Most of the writers are following newspaper policy, or, if they are service men, they are often stressing the requirements of their own particular branch of national defense. Yet, neither the Army nor the Navy spokesmen seem, as we go to press, to realize that first and foremost the air services require men! If they do realize it, why haven’t they talked it up?

The finest pursuit in the world is a grounded, useless thing if there’s no man in the cockpit. That man must be a trained airman, versed in the art of flight, skilled in the use of the plane in battle tactics, reasonably expert in the use of arms, and above all equipped with

(Continued on page 71)

LINED UP ON THE RUNWAY for the
Next High-Revvin’ FLYING ACES

FACT—Major Benard Law’s thrill-filled, laugh-loaded, picture-packed account of how he pioneered an airline in revolution-racked Mexico. Lively anecdotes told exclusively for FLYING ACES readers.

Another up-to-the-minute aero article by David Martin, our ace sky writer.

And don’t miss J. Lloyd Conrich’s “Screwball Skymanship”—an ancient history rib-tickler on man’s first attempts to fly.

FICTION—“Invisible Staffel,” a brand new War-sky mystery featuring Philip Strange.

The latest corking adventure of the red-masked Griffon.

Plus “Spin Money”—Phineas Pinkham’s newest 9th Pursuit mirthquake.

MODEL BUILDING—A great parasol flying model—the “Flying Aces Pronto”.

Ray Heit’s “Scappy,” a peppy 5-ft. cabin gas job.

Trail Blazer of the Air No. 13—the famed Army Douglas 1924 ‘round-the-world cruiser.

In May FLYING ACES • On Sale March 26th (Canada One Week Later)
Wide open, the Seversky drew alongside the diving airliner. Knight throttled to stay parallel, gazed tensely across the huge wing. By the glare of his landing-lights, he could see the cabin windows, those near the bow most clearly. At one of the windows, a face was pressed against the glass, and a creepy start of a spin. Knight brought out his, throttle closed to stay even. Then a cry of horror rose to his lips.

That stark white face had become a grinning skull!

CHAPTER II

DEATH-SHIP

STUNNED, Knight sat gripping the stick, the wobbling Seversky forgotten. The ghostly skull leered across at him a second longer, then the P-35 fighter, its speed lost, whirled off in the start of a spin. Knight brought out its 500 ft. lower, and as he gunned the motor a frightful scream rang in his ears.

"We're doomed—Heaven help us—we're doomed!"

His eyes flicked up to the half-stalled DC-3. The airliner's nose suddenly whipped down and with a mounting screech of its wings it plunged toward the edge of the city. Knight had a blurred glimpse of figures crumpled under the controls in the pilot's pit, then the huge ship was gone!

Then a dazzling flash of flame shot up from where it struck below, so bright that he had to hurry away to keep from being blinded. Seconds later, above the drone of its throttled motor, he heard the booming roar of the explosion. He banked away from the glare, shielded his eyes and twisted back in 200 ft. of the spire. The DC-3 had struck almost in the center of a huge aircraft plant, and the flames were spreading rapidly. Knight recognized the plant of the Flint Aircraft Company from its octagon-shaped field.

Two planes were hastily being removed away from the burning buildings, one under its own power. The other, a Flint fighter, caught fire as it was being shoved along a runway, and the mechanics ran to safety. The ship which had taxied clear was a Consolidated PB-2A two-seater, and as Knight swooped past he thought he recognized the pilot. He banked again, glided in to a quick landing.

He was right—the man in the front cockpit was Larry Doyle. The Irishman jerked around as the Seversky slid alongside, then a look of astonishment came into his homely, battered face. Jumping out of the ship, he ran to the side of the P-35 just as Knight climbed down.

"Dick?" he shouted. "How in Hades—where did you get that ship?"

"Stole it," Knight said. "And I may have to run for it any minute."

"You saw what happened?" Doyle said breathlessly.

"Yes—and more," Knight said in a grim voice. As swiftly as possible, he told Doyle of the starkly rigid face that had so suddenly turned into a skull. The Irishman stared at him in benumbed.

"Then it happens before the ships crash!" he said blankly.

"What do you mean?" queried Knight.

"Both the other cases, the bodies were—" Doyle stopped, gripped Knight's arm. "There! That's what I mean—look close, by that second ship."

Knight peered toward the burning plant, and a shiver went down his spine in spite of the heat. Part of a human skeleton was smoking on the ground, where the force of the explosion had catapulted it.

"It was reported just the same at Seattle and Chicago," Doyle said hoarsely. "The coroner at Chicago said it must be something that burns all the flesh off instantly and leaves a skull.

Knight shook his head.

"What I saw happened before the explosion. And that makes it even harder to figure out. There wasn't any fire—not even a bit of smoke."

"Thank Heaven you got here," muttered Doyle. "We look like we dodged the job onto me—G-2's angle, anyway and I'm stunned. That's why I sent that code. But I figured you'd use the Sikorsky; I had it all set for you to slip into Griffith's Park without anybody suspecting."

"That ship's too big—somebody would hear those four motors and start wondering," Knight gazed somberly at the blazing ship where the DC-3 had struck. "I just missed being in there. If they hadn't sold all the seats, it would have been the end of Dick Knight."

"You got away, didn't you?" said Doyle. "And here I was the one—who?"

"Never mind," said Knight. "I didn't get on board. But I did steal one of the escort ships, so we'd better talk fast. I'll have to get away from here before I'm spotted."

A CROWD was already gathering along the side of the field, as the first fire companies arrived on the scene. Two squad cars followed the trucks, and police-liners were hurriedly formed. Knight looked past the burning Flint to where a little group of men was getting the attention of the crowd.

"Who came here with you?" he asked Doyle.

"Nobody," said the Irishman. "I was intending to pick you up—that's why I brought a two-seater."

"How did you happen to be here, instead of at Griffith's Park?"

"Got a last-minute message from General Brett," Doyle stared at his former chief. "Judas Priest! You don't think it was a fake?"

"Looks like a scheme to finish you off," said Knight. "Whoever's engineering this must have known you were in charge of the investigation. This would have been a good way to get rid of you."

"Why, the dirty rats!" thundered Doyle. "If I ever get my mitts on those birds—"

"Then you have some idea who's back of it?" interrupted Knight.

"Not even a guess," Doyle said grimly. "But the C.A.A. says the motors of the ship at Chicago were wide open when it hit, so it wasn't a forced landing. There's crooked work somewhere, all right."

"What about that first 'Black Ghost' message?" cut in Knight.

"The first one?" Doyle said, startled. "You don't mean there's been another one? That this crash also?"

Knight pointed to the heart of the inferno.

"The pilot of Trip Six shouted the same thing—that the 'Black Ghost' got them just before the crash. And that's not all. There really was something up there—I saw a black blur, and something went past me so fast I almost threw my ship out of control."

"Don't tell me you've started believing in ghosts?" ejaculated Doyle.

"I've a hunch this ghost might prove pretty solid," said Knight. "I'd like another chance to meet him!"

Knight pointed at the smoldering skeleton and guleped.

"Well, nobody ever said I was yellow. Let's go, then."

He started toward the two-seater, but Knight stopped him.

"Wait a minute. I want to see if I can arm a bomb in a bank that hasn't been burned. The explosion may have tossed part of those skeletons clear."

"You've a fine taste for nicknacks," grunted Doyle. "But I'll see what I can find. You'd better stay back here—I think my G-2 card will get me through the picture of you."

Knight waited, leaving the Seversky's motor idling. In four minutes Doyle was back, gingerly holding a fragment of bone in his handkerchief. Knight started to examine it, but before he could take a good look Doyle gave an exclamation.

"Here comes a couple of ships, Dick! One of 'em looks like a P-35."

Knight wheeled. The first ship, a Seversky like the one he had stolent, moaned down across the field and landed near the other end of the burning plant. The second ship was a Fairchild, with "World Novice" painted on its side, and camera-guns fixed on both wings. It braked to a halt not far from the Consolidated, and a man climbed out with a news photographer's Graflex, leaving another man at the controls.

"Turn your face away, Dick," Doyle said hastily. "'G-2 is just aching for a clear picture of you."

"Don't worry, he's after fire pictures," replied Knight. "But at that, we'd better take off before that Army pilot—"
"What's the matter?" demanded Doyle, as Knight left the sentence unfinished.

"On a round behind this ship," Knight said softly. He ducked back of the P-35, waited until Doyle had joined him. "Did you recognize him?"

"Huh?" said Doyle. He peeped around the tail of the fighter. The man with the camera was gazing intently at the fire, his hatchet profile etched sharply against the flames. Doyle gave a violent start.

"Wiegand, the Austrian jewel smuggler, or I'm a Hottentot!"

"It's Wiegand, all right," said Knight. "But there's no jewel angle to this business. I always thought there was something behind that smuggling racket."

"But what do you suppose is the idea of the newshawk act?"

"What's more important, who is he serving?" Knight said tersely. "Doyle, we've got to nail old Hatched-Face and have a little talk."

"But how?" He'll put up a squawk. Those wings will be sticking their noses into things and you know what that means.

"We'll have to risk it. Start your motor again—I'll try to shanghai him into your ship. A little tap on the head will keep him quiet until you reach Griffith's Park. I'll follow with the P-35."

The man in the Fairchild was leaning out, watching the fire, on which Wiegand had trained his camera. Knight stole around the tail of the Seversky, his hand on the gun under his coat. Neither man was aware of the other. The stealthy manner in which the Austrian dashed the P-35 into position, his constant glances over his shoulder, convinced Knight that his companion, too, was aware of an enemy. And thoughts of those two Austrian soldiers, who had been so spiritedly executing their mission, flashed through the officer's mind.

Fairchild was blocked he whirled the Austrian around toward the two-seater. Doyle jumped from the pilot's seat, pistol reversed, but Wiegand threw himself sideways, darting a bullet into the air before the Irishman could stun him.

"Help! It is the traitor—Knight!"

The Army pilot had swung out of his ship and was half-way toward the Fairchild. At Wiegand's cry, he jerked around and his right hand darted for a .45 automatic. In that instant, the Austrian to the ground, plunged under the two-seater's wing. A slug from the .45 tore through the left wingtip, and another bullet whistled past his head. He sprang away from the ship, so as not to bring Doyle in range with the Army pilot's gun. But the third shot never came. Per Wiegand, leaping to his feet, had vaulted into the cockpit of the stolen P-35, and the Army man, with a sudden shout at recognizing the ship, was dashing after him.

Five or six policemen were sprinting toward the ships. Wiegand's accomplice kicked in the Fairchild's inside door and ran from the supposedly harmless camera-guns two streaks of flame belched at the running officers. Three of them fell, mortally wounded. Knight triggered two quick shots at the killer, but the Fairchild whipped into the wind and roared down the highway, with Wiegand's ship close behind.

Knight whirled to Doyle, lifting his gun so that the P-35 pilot and the policemen would see it plainly.

"Drop your gun!" he snarled. "Now, get into that ship!"

"An Irishman let his pistol fall, and scrambled into the rear cockpit. Knight threw himself into the front seat, with police bullets zipping perilously close to his head. Opening up the motor, he sent the two-seater racing after Wiegand's ship.

"Is it crazy?" Doyle howled through the interphone. "Why'd you pull that gun on me?"

"How would you explain it later?"

Knight retorted. "Three men would be ready to swear you helped me escape. This way, you've a perfect alibi.

"I could cover it somehow," said Doyle. "Now you've given the fools another case against you."

"One extra point won't make much difference," responded Knight. "Look out! Wiegand's coming back!"

The Austrian had shot into a zoom and whipped back in a 180-degree turn. Now, guns blazing, he pitched down at the speeded Consolidated. Knight lifted the two-seater ten feet from the ground, his thumb flung out the nose flat until Wiegand's tracers were within yards of the screeching wings. Down went the right rudder pedal, and with a violent skid the ship was out of the Seversky's range. Before Wiegand could twist around, Knight sent the P-2A up in a furious chandelle.

The Fairchild charged in, its masked machine-guns pounding fiercely. Knight fired a burst from the stick-gun, and his slow Brownings spat out two firey blasts. Guiglio diveIed frantically. Knight hurled another fusillade after the false camera-ship, rolled back to fling a burst at Wiegand. His thumb was on the trip-button before he saw there were now two Sever sky's in the air.

"Hold it!" Doyle bawled through the interphone. "That's the wrong ship!"

A Split-Second Burst had already ripped from Knight's guns. He bunted the rudder, and the P-2A swerved away. A hall of cupro-nickel slugs pounded the two-seater's wings as Wiegand took advantage of the turn. Doyle unlumbered the rear guns, sent a long burst across the cowl of the Austrian's ship. Wiegand pulled clear with a snap-roll, and went streaking off into the northeast. Knight raced after him, climbing to get above the fighter and keep it in sight against the city's lights.

"Somebody must've hit the other Seversky's engine," Doyle said through the phones. "It's making a forced landing back at the field."

"Where's the Fairchild?" said Knight, not taking his eyes from Wiegand's ship.

"Can't see it," reported Doyle. "Guess you scared out our friend Guiglio."

"Something odd about that," muttered Knight. "Guiglio's an Italian name—and he looked Italian, too. Wiegand's outfit's from his own country before Hitler took it over—and that might mean he was secretly a Nazi. Maybe there's something to that rumor of their agents working together."

"Where do you suppose Wiegand's heading for now?" said Doyle.

"I don't know. We'll have to keep him in sight if possible. It's almost a sure bet that he knows what happened to those airmen."

"It's a crazy mess," growled the Irishman. "Even if we nail Wiegand, we can't prove anything on him."

"We'll risk that," Knight retorted. "The main thing is to keep from losing him."

The F-35 was clearly outlined against the glow, and Knight had no difficulty in keeping it in sight until it was beyond Pasadena. By this time Wiegand had climbed to pass the San Gabriel Mountains, and by holding his own altitude Knight was able to ease in close enough to see the Seversky's exhaust flames.

Twice, Wiegand changed direction, evidently to make sure he was not followed, but each time he came back to the first course. But he kept as close as he dared, and at the end of half an hour he was elated to see the fighter nose down.

"Where are we?" Doyle asked eagerly.

"Somewhere over the Mohave Desert," Knight said through the interphone. "It looks as though—"

T-t-t-t-t-t-t-t-t-t! Without the slightest warning, a row of bullet-holes appeared in the top of the Plexiglass enclosure. Knight swiftly rolled to the left.
“Get him, Doyle!” he shouted as he came out.

“But there’s nobody on our tail!” roared the Irishman.

Knight threw a tense look backward. The flicker of an exhaust, not even a single tracer showed in the darkness behind them.

But a hail of bullets was pouring into the two-seater’s tail!

CHAPTER III

SYP-Devils’ Den

WITH a muttered oath, Knight jammed the stick forward and threw the Consolidated onto its back as though for an outside loop. As the ship went over he snapped into a tight roll. The two-seater yawed in a violent current of air, and for the second time that night the fugitive agent felt, rather than saw, some strange thing rush past in the gloom. Banking swiftly, he flashed on the landing-lights. A dark blur fitted up from the two bright tunnels, and before he could save himself, Wiegand’s P-35 came plunging in from the side.

Doyle hammered a savage burst at the Austrian, and Wiegand shot underneath to avoid the glare of the lights. Knight backsticked, feverishly searched the sky for a sign of the enemy cobra blue. Another burst from the Browning struck Doyle’s guns gouged at the left wingtip and Knight swore through set teeth. He whipped around with his thumb on the stick-button, suddenly glimpsed a coal-black wing in the edge of one landing-light beam.

“I got it!” he roared. His thumb went hard on the button, and the Browning’s cut loose with a snarl. The black wing whirled out of the beam, and was gone. Knight hauled the two-seater into a zoom, swerved into an Immelmann. There was no sign of the mystery ship, but the turn threw Wiegand’s fighter in line with his guns.

The Austrian banked madly as Knight’s tracers ripped into his wings, and at the same moment Doyle gave a wild yell.

“Look out, Dick! It’s the Black Ghost ship!”

Knight corkscrewed into a fast channel, with tracerless bullets crashing across his cowl. Doyle’s guns blasted and the bullet-barrage abruptly ceased. Knight whirled in his seat, stiffened as he saw Doyle’s target.

For a moment in the glare of a black Hawker Hurricane, a weird hooded figure was glaring down at the two-seater. The hood, like the ship, was a dull black that gave off no reflection of light, save for two narrow slits for the pilot’s eyes. There were no distinguishing marks on the ship. And the protruding tips of the guns were a coalblack to deflect light rays.

Even with the glare of the landing-lights almost directly upon it, the black Hawker still looked like a phantom ship. Knight tripped the Browning, rolling the Consolidated into a vertical turn. The Black Ghost kicked inside the turn, sideslipped out of Doyle’s fire and disappeared in the darkness.

Wiegand’s guns were now spurring again, and Knight climbed steeply to keep from being boxed between the two ships. The Austrian stopped firing, darted away in the shadows. Knight switched off his lights, hoping to spot Wiegand’s exhaust flames. But almost at once a blinding, searing blare hammered the two-seater’s wings.

The burst seemed to be coming from above and to the left, Knight clipped a warning to Doyle through the interphone, hurled the Consolidated into a tight climbing turn,—at the same moment snapping the lights on again. There he is—he’s trying to dive past!” shouted Doyle.

Knight nosed down, plunging after the mysterious Hawker. His guns were ranged on the black ship’s tail when Wiegand came charging in to the unknown pilot’s aid. The already bullet-torn fighter flew to pieces over Knight’s head.

“Take that cut-throat!” he yelled back at Doyle.

“Can’t—I’ve got a jam!” bawled the Irishman.

Knight braced himself, hauled the PB-2A out of the dive and around at the plummeting fighter. One furious burst leaped from his guns, straight for the nose of Wiegand’s ship. Smoke gushed out from the Seyversky’s cowl and hid the Austrian from view. Knight rudderred clear, hastily searching the gloom for a target. Wiegand’s ship had broken away. Flames suddenly forked back through the smoke that hid Wiegand’s cockpit.

The Seyversky went into a flat skid, and out of the oily smoke the Austrian’s tumbler figure appeared. White flashed, blue flashed, and Wiegand opened the seat-pack chute which Knight had left in the ship. The blazing fighter whirled threateningly close to the spreading silk. But Knight had no time to see what happened, for the Black Ghost streaked down to stitch vengeful lead across the two-seater’s wings.

Knight started an Immelmann, rammed the stick forward as Doyle gave a shout.

“Hold her straight, Dick! I’ve cleared the jam!”

The muffled pound of the rear-pit guns was cut off by the scream of the wings. But Doyle’s defense came too late. The motor’s thunder abruptly ended as the Black Ghost’s final burst clipped the distributor head. Knight grimly nosed down, zigzagging to evade any further bullets. The Black Ghost held his fire, diving downward, and the glare of the falling Seyversky.

“Sorry, Dick!” groaned Doyle. “Another second and I’d have had him.”

“It’s all right, old man,” said Knight. “We’re not licked yet. I think our hooded friend is trying to capture us alive—and we may be able to fix him.”

H E had cut off both the switch and the main fuel-valve, and the ship was howling down in a steep dive. By the light of the flamer, two parallel mountain ranges were visible, a long, narrow valley between them. Wiegand’s chutes were streaming down at one side. Knight watched the burning Seyversky crash on the slope of the nearest range. It blazed up brightly, and a huge plume of smoke gave him the wind direction.

“Where’s the Black Ghost?” he flung back at Doyle.

“Circling over us. Just out of range—the yellow rat!”

“See that level spot across the valley? I’m going to land there. Be ready when you see the Black Ghost if he makes any sudden dive for us.”

“I’ll blow him right out of his hood!” returned Doyle.

Knight lowered the landing-gear, swung into the wind. Wiegand was drifting down a quarter of a mile away, and he couldn’t save himself in time. In his harness and stare across at them. The Austrian flicked a glance toward the ground, then waved both arms in a signal to the Black Ghost.

The hooded pilot nosed down, diving well out of range until he was below the PB-2A. With a sharp crack he charged upward at the two-seater.

Knight dropped the left wing in a vertical slip, throwing the Hawker in line with Doyle’s guns. The Irishman cut loose with a fiery blast, and the Black Ghost hurriedly pulled up into the gloom.

The maneuver took the PB-2A to within 500 ft. of the ground. Knight rudderred out, leveled off, then fished out to kill the ship’s forward speed. The two-seater was almost at the stalling point when he suddenly realized there was something peculiar to the ground. It was too flat, too artificial looking . . .

“Brace yourself!” he suddenly shouted back at Doyle. “We’re going to crack up!”

With a ripping sound, the two-seater lunged forward, but the straphanged pilot could not straighten out. He stretched canvas which hid the ground. Knight had a fleeting glimpse of a huge plane, of cars and trailers, and of men running in all directions. Then the Consolidated struck on one wingtip and groundholed to a jolting stop at the edge of an opened space.

The impact threw him against the side of the cockpit, and when his belfaced senses returned the ship was surrounded by a dozen armed men. One of them stepped onto the crumpled wing, shoved a pistol against Knight’s head.

“Gee, that’s no trick, I shoot you.”

His voice had a guttural, Teutonic note that stunned him as a German. Knight looked at the rest of the men as he staggered out of the wrecked ship. Behind the German were two men who looked like Italians, and on the edge of the group, back in the shadow, he saw a face distinctly Oriental. The two-seater had crashed at one side of a cleared area hidden by canvas tarpaulins erected on poles and fastened together to form a rectangular surface about the size of a hangar floor. It was this crudely painted canvas which had given him a warning, too late for him to turn.

A DC-3 bearing the Coastal Airlines emblem stood in position for taking off down the valley. Several rigid, staring faces were visible at the windows. The cars and trailers were drawn up close together, so that they would be hidden under the canvas, and a big fuel truck stood not far from the airliner. Knight could also see a small floodlight unit intended for illuminating the landing-
space beyond the concealed area, but it was not switched on. The scene was lit by the glow of the burning Seversky.

“What will we do with them?” one of the group demanded of the German. “Get rid of them like the others?”

“Let Herr Wiegand decide that,” said the German, gruffly. “He may want to question them first.”

“If I know Herr Wiegand,” muttered another man, “he will make short work of them after their shooting his ship from under him.”

“Too bad we didn’t get him with it!” flamed Doyle.

FOR ANSWER, the other man struck the ex-Marine savagely across the mouth. The blow was smothered and rolled up to the covered space. The pilot taxied just inside, switched off his motor, and jumped out. His slight-built figure was clad entirely in black, and as he strode forward into the group he looked like a sinister being escaped from the Pit. With a flash of the knife from off his hip, he revealed the brown face of a Japanese.

“Kochi! Stand aside!” he snarled. “I will deal with these two Amerika-jin!”

“Not so fast, Nasaki!” a grating voice broke in. It was Wiegand, who had approached from one side unnoticed with a small revolver focused on the arrival of the Hawker. His clothes were torn, and an ugly bruise on his face testified to a none-too-gentle landing. Nasaki turned fiercely at Wiegand’s interruption.

“It was understood there were to be no unannounced attacks.”

“I’ll take care of them, don’t worry,” snapped Wiegand. “But it so happens these are no ordinary prisoners. This ugly gorilla with the broken nose is the Irishman, Doyle. And the tall one is no other than Richard Knight, the Quarterback who was supposed to be a fugitive.”

Nasaki’s slanting eyes blazed.

“When we have been tricked! Knight has been working against us all this time!”

“I don’t know,” Wiegand muttered. “But I intend to find that out—and some other things.”

An unholy look came into Nasaki’s face.

“Give him to me—we Japanese have ways of making men talk.”

“I am not entirely helpless at that game, myself,” returned Wiegand curtly. “But first, we had better make sure we are safe. Did you see any other planes?”

“Only the two-seater,” said the Nipponese. “I shot down the two Army pilots who were escorting the plane from San Diego, as you probably know. There was a third Seversky which did not seem to be with them—I saw it just as I was setting the air-track for the Douglas to strike the factory. But there was no time to bring it down.”

“That must have been the plane in which Knight landed at the Flint field,” said Wiegand. “Doyle came there alone in the Consolidated PB-2A; our last information before we set the trap for him was that he was flying in the passenger, but was flying to Los Angeles. He was undoubtedly going to meet Knight somewhere else, and our false order brought them both to the Flint field.”

“If you had been more careful, they could not have followed you from there,” Nasaki said sharply.

“I thought at first that Doyle had been killed,” growled the Austrian. “He and Knight were hidden behind the Consolidated when Guiglio and I landed in the Fairchild to photograph the effect of the new explosive.”

“Then do you still think Guiglio now?” broke in one of the Italians.

“Probably on his way here,” replied Wiegand. “He escaped after a battle with these two.”

“Then the Flint plant was destroyed, as planned?” said the German who had turned to fly the machine after his hero.

“Completely,” said Wiegand. “But after we finish with the Douglas plant tonight, we will shift operations to the Atlantic coast while their investigators are busy here in California. It would be foolish to push our luck too far in this territory.”

“You’ve already pushed it too far, Wiegand,” Knight said grimly. “Some smart inspector will guess the truth when they start checking the passenger-lists of those three ships and find all those faked names.”

“Very true,” answered Wiegand. “But even the brilliant Mr. Knight did not guess until he landed here. If you were going to live long enough to pay, I would make a wager with you that they will not know the truth for months, if ever. And long before that time we will have overthrown our principal aircraft factories and wrecked America’s plan for a superior air force.”

“You’re mad,” said Knight. “One slip—and it will mean war.”

WIEGAND laughed sardonically. “No one can prevent a specific nation is back of us. That has been carefully covered. And your stupid Intelligence will never catch us, anyway.”

He turned to the German.

“Schunt, have you changed the number on the old DC-3, as instructed?”

“The ship’s likeness,” replied Schunt. He bared his teeth in an ugly grin. “And the passengers are waiting for their little joy ride.”

Wiegand scowled. “I’m in no mood for jests. And speaking of passengers, there will be only one passenger besides the crew of the Coastal airliner which was returned to the Coastal this morning. We were able to get all the seats except one which had been reserved for several days.”

“But what if the Coastal company should cancel that trip?” put in Nasaki.

“The airline companies always keep going after a crash,” responded Wiegand. “Otherwise, it would focus too much attention on the disaster. Have no fear, their next plane will leave as scheduled; then our men will take it over and fly it here for our later use—and this Douglas will substitute for it and fly the rest of the route. That is, with a slight deviation at the end.”

Nasaki motioned toward the airliner.

“Perhaps we had better exchange details, Herr Wiegand. You are probably not in the mood for another parachute jump, after this last one.”

“We’ll go through with it as planned,” grunted the Austrian. “You’ll fly the Hawker again. But this time before we take over radio control sooner. I’ll jump as soon as I get the ship up to 5,000 feet and on its approximate course. One of the cars can follow to the highway and I’ll drop as near to it as possible. After you crash the DC-3 into the Douglas factory, you come out here and we’ll head for our Eastern base and meet the Trip-Six ship our men seized.”

Wiegand now stopped short, and a tense silence fell over the assembled men as the drone of a motor sounded from somewhere up in the night. A car roared over the head of the rear guard, the Austrian. “But we will take no chances. Schunt, take three men and stand by the machine-guns. Don’t turn on the flood-light unless this newcomer repeats our signal.”

The four men hurried to the edge of the thicket. They peered through the light and, to Doyle’s side glance at Doyle, and he thought the Irishman nodded surreptitiously, though he could barely see him in the shadows.

The drone of the approaching ship grew louder, Knight waited tautly, saw Doyle nod to the guard, and then the light flashed. He turned his head. A pistol blazed close to his head, and he saw the face of his other guard. He fired pointblank, dropped the man with a bullet through his brain. A chorus of oaths and yells filled the air, and he heard Doyle’s voice rise fiercely above them. Then, leaping over the fallen guard, he raced toward the Black Hawk.
slug ripped through his left sleeve, searing his arm like the flick of a branding-iron. It was only a crease, but it jerked him around, and he stumbled and fell backward into the gutter.

"You damned butcher!" he heard Doyle cry. Then the flashlight went out. He got to his feet, started blindly along the edge of the gully. He had gone about twenty-five yards when he saw an improvised gangway to the cabin door of the DC-3. At the same moment another light went on back near the Hawker.

He could see nothing of Doyle, and realizing that he might be recaptured at any instant he ran up the steps into the airliner's cabin. If he could by luck find a machine-gun in the big ship, he might be able to strike back.

Keeping back from the door to avoid any sudden rays from the flashlight, he made a hasty inspection. Midway of the cabin, several seats had been removed, leaving space for a crude bomb-bay. Apparently, this ship had been in the hands of the Japanese and had been originally altered for dropping bombs directly from the cabin until Wiegand had hit on the scheme for crashing entire ships with their deadly cargoes. A cable from a trap in the floor ran forward toward the pilot's cockpit, but that it had been wired up and worked from the safety-wiring with which the release-gear was secured.

Several figures sat stiffly in seats on both sides of the cabin. The nearest one had its head turned so that its face rested against the glass. Knight stared, then realized that the face was a cheap mask such as might be seen on the streets at Halloween. The figure had a queer, unnatural pose—and as he started hurriedly through the ship he saw the answer.

The figures were skeletons, masked and with the upper parts dressed so as to appear like passengers sitting at the windows!

One of the skeletons had slipped a trifle, so that the hat and mask warded to the skull were awry. Knight realized then that he had found the answer to that weird transformation he had observed above Los Angeles. The jolting of the radio-guided airliner had knocked the mask from one of the skeletons in the moment when his attention had been diverted.

**HIS SWIFT SEARCH** of both cabin and cockpit failed to produce a machine-gun, though he glimpsed the radio-gyro pilot by which Wiegand intended to send this ship to a crashing end. Then he was halfway back to the door when the flashlught unit went out and lit up the landing area.

Knight dropped behind a seat, took a candle from a holder on the wall, and thought. The false camera-ship was leveling off; obviously Guiglio had given the correct signal during the hubbub over their escape.

But Knight's heart sank as he saw Doyle. The Irishman had been caught and was standing, hands tied behind his back, in front of Wiegand and Nasaki. The two men seemed to be arguing, but Knight could not hear their words. In a minute, Guiglio joined them, and then to the Q-Agent's constellation the entire group of spies started toward the airliner, two men marching Doyle between them.

Just then, shot a desperate look around the ship. The next instant he had dragged the nearest skeleton from its seat and was racing to the stewardess' pantry. He tore the hat, coat, and mask from the bony figure, whipped off its own hat and coat and ran back to the seat. If they happened to look in the latrine, they would find it finished. But his was the only way out.

In a twinkling, he made the change. Mask in place, his gun hidden on the cushion, under his right leg, he waited almost without breathing. Wiegand's was the first voice he heard.

"What are you bringing this ugly prisoner in here?" Knight heard the Japanese too late for the excitement. Guiglio. I had to kill Knight. Too bad—for we might have learned something from him."

"If he did not roll too far down the gully, we can find his body and search it," volunteered Schunt. "He might have had some vital papers with him, if he was such an important agent."

"I doubt it. But you can search for his carcass after Nasaki and I take off," Wiegand said curtly.

"But why are you bringing this ugly prisoner in here?" Knight heard the Japanese too late for the excitement. Guiglio. I had to kill Knight. Too bad—for we might have learned something from him."

"I'm going to give him a pleasant little ride—into Eternity," Wiegand said harshly. "I've a double score to equal now, after that beating he just gave me. He'll have time to regret he ever saw me—or he's blown to bits by Knight's blood turned cold. Rigid as the other grim figures in the seats, he watched through his mask-slits and saw Doyle tightly bound beside one of the skeletons.

A cheerful little companion for you," mocked Wiegand. "Unfortunately, it cannot speak—but doubtless you would rather be left to your own thoughts in this last hour."

"Herr Wiegand," Schunt said nervously, "it is getting close to the time.""

"I am going to kill the Austrian," announced the radio-pilot for the Wave-length of the transmitter in the hammer. Nasaki, you had better take off at once. Circle at 5,000 and wait for my signal."

The Japanese scowlingly left the cabin, bowed by all but Wiegand and Schunt. The Italian, Guiglio. While Schunt went forward to start the motors, the two spies lifted a curved plate at one side of the bomb-bay.

"Dios!" exclaimed Guiglio. "I would not fly with that load for all the money in the world!"

Wiegand shrugged. "It is safe enough, until I set the switch before I jump. Even after that, it will not detonate until the ship crashes—and by then only this meddling American will be left on board to worry."

One of the motors sputtered into life, and soon both of them were roaring and spitting at each other as they shot toward the butt of his gun, but Schunt came back into the cabin before he could move, and he saw a pistol at the German's hip.

"The radio-pilot is set, and everything ready," Schunt reported. "Good luck. I wish I could be with you."

"I shall be there in twenty minutes," promised Wiegand. He strode forward, and Schunt and Guiglio quickly left the cabin. Knight drew a long breath as he heard the door close. He still dared not self. His head jerked around as though the floodlight was bathing the windows, and one of the spies might warn Wiegand before he could take off.

The motors revved up, idled, and then the big ship slowly taxied from under the canvas. Through the window, Knight could see the Japanese settling down to an advantageous Hawker's take-off. It seemed an hour before the engines opened up and the big Douglas began to roll. The moment the tail was up he darted down the aisle to where Doyle was bound. The Irishman was struggling futilely to free himself. His head jerked around as though he stopped beside him, and a stunned look came into his eyes as the secret agent pushed up the mask.

"Dick!" he cried hoarsely. "How in the name of—"

"Thank the Lord!" whispered Doyle. "I thought you were a goner!"

The ropes fell away from his arms. Knight clasped a shaggy arm and swept his body over to the knot at Doyle's ankles. It proved stubborn, and half a minute passed before he could loosen it. The DC-3 was now climbing steeply, the cabin shrouded in gloom, except for the faint glow that came back from the cockpit. They saw to life, but it was too late for Doyle's ankles when he clutched tensely at Knight's shoulder.

"Look out, Dick! He's coming aft!"

Knight barely had time to spring into the adjoining seat and slip his mask into place. Gun in hand, he waited while the yelling door of the bomb-bay was carried back to the bomb-bay, lighting his way with a flashlught. The airliner continued to climb, on the gyro-pilot.

The Austrian reached down to set the detonator switch, and Knight saw that he had already buckled on his parachute harness. He had no weapon in sight.

Knight gripped his pistol. But before he could even move, something seemed to warn Wiegand. He straightened up with a jerk, one hand flashing under his coat, Knight leaped, and a horrified look came into the Austrian's hatchet-like face as the supposed skeleton suddenly came to life.

With a vicious smack, Knight's fist connected under the other man's ear. Wiegand tottered back, then his knees sagged and he fell in a twisted heap.
KIRK RAMMED the throttles wide open, threw the DC-3 into a vertigo bank. The DC-3 lurched around, and the sudden yell, then Doyle's voice sounded above the roar of the motors.

"Dick! Stop him—in Heaven's name!"

Kirk flung a taut look backward. Crouched behind the bomb-bay, out of gunshot, Wiegand was clawing at the detonator control, his face distorted with a maniacal fury.

Wiegand leaped to the end of the cabin, where the sudden turn had thrown him. As he tried to pull himself up, Wiegand's hand shot to the switch-box.

"Keep back, damn you!" he screeched.

"Or I'll blow us all to hell!"

A hail of bullets from the Hawkers guns came pounding through the top of the DC-3 and struck on the midder pedals, and the crashing torrent went smoking through one side, missing the bomb-bay by inches.

"Nasaki, you fiend!" screamed Wiegand.

"Keep away—I've got them stalled!"

The black ship whirled by, shot up in a furious climb. Knight groaned as he saw it twist around at the top. One bullet through that huge bomb . . .

He jerked around in his seat. Wiegand was on his knees, one hand inside the switch-box. Knight let go the lever that raised the gun, when the whole weight of the weapon ran to the bomb-bay. With a prayer on his lips, he raised the gun and aimed at the safety-wiring which kept the release from moving.

Wiegand's head twitched around, and a wild glare came into his eyes when he saw the lifted gun. Fire jetted from the pistol's snout—and with a sudden grinding the bomb-bay trap split open. Wiegand gave a frightful shriek and plunged through the trap beside the falling projectile.

THE BLACK GHOST SHIP was now almost upon the airliner, its masked guns pounding the nose. Knight snatched at the wheel, hauled it hard back. The Douglas howled up into a steep zoom, and Nasaki shot past, guns hammering. Knight had a blurred glimpse of the hurtling fighter, and the weird hooded figure at the stick.

Then a terrific concussion shook the sky, and the Douglas trembled under a rain of fragments that flew through the blazing heavens. Knight brought the ship into level flight, stared dazedly through the cockpit window.

A huge cloud of bright-colored smoke was spreading across the sky. But the Black Ghost was gone!

A feeling of awe crept over him as he realized what had happened. Either Nasaki's bullets had struck the bomb, or Wiegand's last desperate movement had released the detonator.

He pulled forward, climbed into the cockpit. Neither man spoke for a minute, then Knight reached across and handed the transmitter mike to the Irishman.

"Better call G-2 and explain that call. Tell them to be on the lookout for the real Trip Six ship—and where to spread a search and rescue party over below."

Doyle made the call. Then when he had finished he glanced across at Knight. The fugitive agent was gazing down at the desert, still lit by the slowly descending bright cloud. There was a crossroads almost directly ahead. A strange smile touched Knight's lips as he saw it.

"That must be the place—remember what Wiegand said. I'll be there in twenty minutes."

Doyle looked over the side. The bright cloud slowly touched the ground, and then it almost raced out of sight. He stared back at Knight, and the secret agent slowly nodded.

"Fate's a queer thing, Doyle, Herr Wiegand has kept his appointment, after all."

The Clue of the Breda Brood

(Continued from page 20)

Kirk let out a sigh, drew a deep breath, and asked: "What the devil happened?"

One of the men came over and rubbed Kirk's chins high with a heavy thumb and forefinger. "That's what we want to know. What's the bloody game?"

Disregarding the R.A.F. pilots for a moment, Kirk stared about, instinctive-ly looked for Tank. But there was nothing that looked like the ape anywhere—just R.A.F. blokes in tropical kit.

"The Heinkel?" he asked. "I swiped it from a mob up at Dulit. It's a long story and I want to tell it to your C.O. —some one official."

"It must be a long story," a chap with the tan of a Java hemp and China yellow on his shirt snapped. "What sort of a game do you call that bombing? We spotted you dropping 'eggs' on the Sandakan power station. You can't talk yourself out of that!"

"Power station? You're mad! I had no bombs of any sort. I was at something like 6,000 feet over Lubuk when I saw all the lights go out. I was looking for this field when the lights went dead, and then an Italian Breda—I think it was a 65—attacked me and I had to pink it. It went down about ten miles from here in the jungle."

The faces of the men in khaki changed immediately and there was a muffled conversation off in one corner of the room. The Wing-Commander finally came up and said: "You may be telling the truth, and we're going to take you to the Governor. A lot of queer things have happened here tonight. How do you feel?"

"Wacky. What the deuce happened to me, anyway?"

One of the men poured a scotch and soda and handed it to Kirk. He took it and drained the glass in one gulp.

The Wing-Commander went on: "You were lucky those guns didn't catch fire. Most of ours did."

"But she went right over on her back—for no reason," argued Kirk, getting to his feet. He was shaky, but alert, now.

"Of course. You can't land a fast ship on wheels with no rubber on them," the Wing-Commander explained. "We all suffered the same thing. The damn stuff did something to all the rubber around here. It's a good thing you did crash. We'd have figured you sprayed or discharged the stuff. Now we don't know who did it."

Kirk tried to fathom just what they were saying. But none of it made sense. A chemical of some sort must have dis-integrated all of the rubber—a solution that took the tires right off the wheels.

"Wait a minute," he exclaimed, rubbing his eyes and steadying himself again. "My crate quit cold on me, too. Ignition went out. The radio wouldn't work. Then I went over on my back. But where's Tank?"

"Who?"

"Tank—my man. He was in the back seat when I went over."

A young Squadron Leader broke into the conversation with the explanation: "He cleared off the minute you hit. We saw him running like mad."

"That's queer," muttered Kirk. "I wouldn't figure he'd leave me like that."

"That's why we thought you had something to do with all this. He headed for the jungle, going toward the southwest."

Kirk pondered for a moment and then said: "He probably took a thump on the
The British pilots carried on a muffled conversation again in one corner of the room, and the roaring and clattering went on as usual. Finally, the Wing-Commander came forward and said: "We can't drive a car on the station. All ignitions gone. We'll have to take a traps of some sort. There's one outside now. Want to come along to the Residence?"

"Yes, I think I ought to. The Governor, or will be glad to hear what I'm going to tell him."

"I'm sure he will," the Wing-Commander muttered.

The Residence was typical of British Government posts in the Far East. It lay in a tropical park, with its front steps throwing strange lights on a lotus pond that crept up to one side of the wide driveway. Native troops in gaudy costumes were on guard and there was an air of excitement, even at this early hour. The high-pitched chatter of the Omans and Bugis rattle in direct contrast to the low, crisp voices of the British.

"I don't know whether they were able to get word through on the telephone," Wing-Commander Evans said, as he threw the reins of the shaggy pony to a Dymoke at the foot of the steps. "But I am sure the Governor will see us at once."

"He should," commented Kirk. "It seems as though you birds have a first class crisis on your hands."

Evans ignored the comment and hurried on the steps and disappeared to a Colonial guard who was on duty at the door. They were allowed inside the reception hall, which was garish with Malay decorations and teak furniture. Sleepy-eyed Foreign Service officers in various stages of dress and undress were hunched in every room, indicative of the state of affairs.

The Governor would see Wing-Commander Evans and Mr. Kirk at once, an informed them.

The British official, a keen-looking individual with slate gray eyes, a white mustache, and a grand military bearing, in rumpled whites, greeted Evans at once and threw a questioning glance toward Kirk.

Evans opened with: "This is the man who landed the German Heinkel at the station, Your Excellency. He has some interesting statements to make, I believe."

"All right. Sit down and never mind the 'Excellency' business. We can't waste time. Now what do you know about this affair, Mr. Kirk?"

"I'll take a little time to tell, but it will be worth it," explained Kirk. Then for half an hour the omnium gathered in the workings of the Circle of Death, the recent events at Dullit, and his escape from the lethal chamber of the volcano.

Both the Governor and Wing-Commander Evans listened attentively—and with something akin to fear in their eyes at times. "I've heard of both Cockoos and von Audemars," the Governor muttered reflectively. "But Tamuracho is a new one to me. They evidently planned some major move here in Borneo that would draw the British forces out of Singapore which would give them an opening to—" The Governor stopped short.

"Or the Philippines," prompted Kirk. "Possibly," agreed the Governor. "Then, with the British well occupied here in the Far East, the European Dictators would have a splendid chance of making their next major move—possibly in the Mediterranean. A clever and devilish plan, Mr. Kirk. You say you shot down the Italian—er—Breda plane?"

"Yes, We saw it hit near this waterfall I just mentioned."

"That's up near Salak," explained Evans. "You know the spot well. But it will be hard to get to. As a matter of fact, I don't know how we can get to it until all the damage has been repaired."

"You know, of course, what happened tonight, Mr. Kirk?" the Governor asked.

"Only a sketchy explanation—something about rubber," Kirk replied.

"Um! That's all, eh? Well, I might tell you that nothing quite like this has ever faced me on any of my many posts throughout the Empire. What it is all about is beyond me. And how it was carried out, I am at a loss to say. All we know so far is that a German Heinkel—carrying no markings—bombed the Sandakan power plant. And, as you can see, we are making the best of candles and oil lamps. There is no power anywhere about here."

"It sounds as if it really happened—from about 6,000 feet," said Kirk.

"But you didn't see what happened after that. For some strange reason everything composed of rubber has been mysteriously changed into—Well, into just a dried or flaked composition which then breaks down into an ashy substance."

Kirk frowned and his keen mind immediately saw the possibilities of such a widespread chemical change. No wonder he went over on his back. No wonder his tires disintegrated. No wonder he got his system went out and his motor conked.

His mind raced on as the Governor and Wing-Commander Evans continued the conversation. He reflected on the fight with the Breda and Tank's effort to shoot the Italian ship down. He knew Evans and Governor Mayne were tracking the events of the night as they had experienced them, but he was now considering them from his own viewpoint.

Then he remembered Tank again. Tank, his guardian, his ever-loyal pal. Tank was somewhere out there in the jungle. Something only his animal instinct could tell had called him from the crash of the Heinkel back there to Salak. Tank alone, a civilized ape, trying to solve the mystery of the Breda!

"We've cleared off all the crashes as best we can, sir," Evans said. "We won't be able to get a ship off the ground until the new ignition cable, coated wire, and all that sort of stuff. It will take some time to re-wire and re-tire even one plane."

"There's nothing nearby—such as a seaplane—that wouldn't need tires?" inquired the Governor.

"There might be a small flying boat up at Kutad, but we can't be sure they have any rubber left in their ignitions either."

"Wait a minute," snapped Kirk suddenly. "What about an armored car—something that doesn't require rubber tires?"

"That's right!" beamed Evans. "We have a Mark II.B light tank at the air-drome."

"On metal treads?" queried Kirk hopefully.

"Yes. Of course."

"But what about the engine—the rubber there?" the Governor asked.

"The Mark II.B tank is gasproof from front to rear. She'll work," Evans answered.

"Come on! Let's take that tank and find Tank!" cried Kirk.

What the Deuce are you talking about?" the Governor asked, flicking back his mustaches, "a tank to find Tank?"

"My mate—my gunner man," grinned Kirk. "He's a trained ape, this guy I've been telling you about all the while. He works with me all the time. I'll bet he went back to that crash."

But Evans and Mayne exchanged glances of mystified astonishment. The idea of a British tank being sent out to find a trained ape was more than they could comprehend. It was ridiculous.

"But why?" asked Evans. "What would that get us?"

"I don't understand, Evans?" argued Kirk, snuffing a cigarette butt into a jade ash tray. "Tank, you see, went off on his own for some reason. He sensed something—that's it, sensed something back there none of us would be able to figure—and so he went back. We're not telling where he had in mind or where he is. We're just going to go back there after him and find out!"

Evans appealed to the Governor, whose face now looked like a disappointed walrus! The Governor steadied himself and swallowed a sturdy peg of brandy to give himself a help. He drew in deep breath, smoothed his hirsute handlebars, and said: "Well, it can't be any more mysterious than it is now. You can do it in a couple of hours, can't you, Evans? After all, I suppose we should try to follow up on that crash and see if there is somewhere back there that will give us any idea as to what happened."

The Governor then sat down, a tired old man who had given up to the mysteries of a modern age—airplanes, Wing-Commanders, tanks, rubber-consuming gas, and trained apes. He wished he were back in London parading the Birdcage Walk. "Come on, Evans," boomed Kirk. "Let's get that armored snail and go after Tank. We can first make sure he isn't back, and then try this Salak place you know about."

They left the presence of the Governor and hurried down the steps. They leaped back into the trap and laid a heavy reed across the flanks of the shaggy pony.

"You Americans!" muttered Evans,
with an admiring grin spreading across his face. “You like to get things done in a hurry, don’t you? Poor old Mayne would never be able to match that!”

“I fear the whole Empire won’t ever get over it, Evans—unless this mess is cleared up pronto.”

They laid on the reed again, and the Pegasus in the shafts increased his pace down the cobbled road to a full eight miles an hour.

“I’m telling you,” confided Kirk, “the more I think about it, the more I am certain that Tank spotted something I missed. He wouldn’t barge off like that, leaving me in a heap under the Heinkel. Apes are queer birds, Evans.”

AND FROM THERE all the way to the field, Kirk told the Wing-Commander of the strange adventures he had had with Tank since the hair-raising experience at the Berlin Zoo more than two decades before.

“I wouldn’t miss going with you on this trip for all the planes in the Air Force,” Evans finally said, as he tossed the reins over to an anxious eyed Aircraftman. “Come on! The tank is over here in this shed.”

They made their way past the hangars where mechanics were feverishly working on the planes, ripping out the crippled ignition systems. Their faces were blank masks of apprehension, streaked here and there with dabs of grease. They turned on their raised work-stands and cast anxious eyes toward their Wing-Commander—hoping that he might be hearing encouraging to say about the matter.

But Evans had only more orders, and he spat them out with machine-like precision.

“Come on,” he added to Kirk. “Let’s get going. I want to see this bloke Tank, for God’s sake!”

“Well, hardly,” smirked Kirk. “But he’ll do until some prettler gorrilla comes along.”

They tore open the doors of the shed, and there stood a gleaming metal monster, trim in olive drab paint—with the muzzle of a three-pound pom-pom gun sticking out of its upper, rotating turret. The car ran on flexible metal treads and, as Evans had stated, was completely enclosed and obviously gas-proof.

The Wing-Commander twisted the radio-tuner lever that unlatched a small steel panel in the bow of the tank’s steel body. He lifted the panel and crawled in. Kirk followed. Inside, they found an amazing display of swinging saddle seats, instruments, a single gun-turret and a gunner’s platform. Evans made a quick inspection of the cables and wires, and everything appeared to be in good order.

“You take that seat under the pom-pom,” ordered the Englishman. “Stick one of these helmets on or you’ll bash your brains out when we’re underway in the rough stuff.”

He adjusted several ignition and fuel levers, sucked on the starter, and the Lancaster motor opened with a resounding roar. Evans let her run for a warm-up, meanwhile handing two small rubber plugs to Kirk, indicating with his fingers that they were to go in his ears to protect the delicate hearing drums.

Evans, sitting in the control seat, peered through a small oblong of slatted, proof-glass, and drove the tank out into the open. The firing mechanism consisted of a wide-angled Y-handle, fitted with grips and carrying Bowden cable controls to the engine. There was a simple clutch device on the floor beneath the panel.

Once outside, he throttled the motor down, checked the fuel tank, ammunition magazines, and two-way radio set. He nodded to Kirk, reached forward, closed the entrance hatchway, and sealed it. He opened two vent plates below the oblong peep-hole and fastened a small map before him on a set of straps.

“All set?” Evans bawled back over his shoulder to Kirk, who was trying out the breech of the pom-pom.

Kirk slapped him on the shoulder and nodded.

THE TRIP along the baked roads of Sandakan was reasonably comfortable. But once they left the palm lined highways and entered the jungle and bush, where they had to steer by compass, Kirk realized for the first time what tank crews have to put up with. Tank seemed like more than an hour. “Betsy,” as Evans had named the tank, bumped and lurched across bowers, decayed tree trunks, and rocks. She squealed as her treads slipped over the mud and slithered over the rank vegetation. And as they bounced and thudded, Kirk seemed to have got a free ride on the tank helmet. His shoulders were already bruised and his chest was marked with the blows from crashing into the ring of the turret.

Finally, they came out into a reasonably open sector that ran toward a low range of blue hills. Ahead they could see the thicket of mango palms, cassava, chineona, and wild sugar cane which hid from view the stream that was being whipped to a froth by the waterfall remembered by Kirk.

Evans halted, throttled down, and checked the control lever.

“This is where the Breda came down,” said Kirk. “I remember that thicket over there. The waterfall must be just beyond it. Can you make it?”

“I’ll try. But it may be bad up ahead. Would you mind walking ahead to check the stream?”

Kirk was glad to get out of the leap ing juggernaut and get a breath of clear air. He found a Webley revolver, stuck it in his breeches pocket, and crawled past Evans who had unlocked the hatchway.

“If I only had a bugle now I’d feel like a Boy Scout,” grinned Kirk through the ventilator.

“I’ll see that you get your merit badge,” soothed Evans. “But mind the hooded cobra!”

Kirk liked this guy Evans. He was one of his own kind, and the American was always mixed up in this thing. They were in a mess and they both knew it. What it was all about they had no idea. But Kirk was certain that the Circle of Death was behind it all. They hadn’t gone to this extent—for nothing. He wondered whether it could be another link in the plan old Cockcoaert had talked about in the gassy interior of Mount Dulit many hours before.

The Circle of Death had planned to take Brunel, farther up the coast, and in all probability had managed it. There was no telling whether the strange gas had been discharged up there or not, but Cockcoaert had spoken about a plan that included the capturing of this portion of Borneo and later on the Philippines, which lay only some 450 miles across the Sulu Sea.

Kirk turned back and waved all this as he strode carefully on, testing the ground for the tank.

He was now making his way across an area covered with wide-fronded foliage, not unlike skunk-cabbage. Beneath, the ground was black and fertile, but in sections were found tall grass and ooze off into small areas of swamp land. Just ahead lay a light thicket area shielded with light second-growth. That would be easy for “Betsy,” if the ground was anything like solid.

He managed to guide the tank safely into another section of the better section to traverse, when his ears suddenly caught a familiar sound. First there was a flutter of gaudy-plumaged birds cascading from nearby tree-tops with their challenging squeal of the tropics. And then came the ever familiar kookaburra, hailing the dawn.

The cry came from an indistinct source, but it was welcome music to Kirk—for that cry could have come from no one but Tank!

Kirk turned back and waved an encouraging arm to Evans.

THEN, as if some strange instinct had touched hidden keys somewhere inside the ape, the cry changed to a warning wail. It was repeated in a tone that carried both authority and caution. Kirk dropped to one knee, peered ahead. He signalled for the tank to halt. Went on ahead, then listened again for the call.

It was not repeated, and a new fear crept into Kirk. A length of twisted barbed wire seemed to be twisting around his middle, sending jolts of electricity through his body. He opened hurried ahead cautiously until he found himself approaching the edge of the thicket.

Then, with unbelieving eyes, he saw two large elaborately camouflaged canvas hangars, their draped doors partly opened and the glistening equipment inside revealed. What a sight, what a sight! There was no one present—at least, no one in sight.

Kirk hurried back to where he had left the Mark II B and signalled for Evans to open the hatch. He slipped
inside and explained to the Englishman what had happened. "We must make sure that hatch is gas-tight," Evans said. "We can't take a chance on that stuff now. How far ahead is this clearing?"

"About 150 yards. There's two hangars in there—beautifully camouflaged—but I can't see anyone around,"

"But your monk gave you a warning cry,"

"Absolutely. There's something murky up there,"

"Come on then, let's clean it up," grinned Evans, his face abeam with anticipation.

"Carry on, Skipper," replied Kirk. "But look out for that gunner of mine. He has the shatter glass and here..."

"You do the shooting, I'll drive the orses," answered Evans, letting the clutch in.

The tank rumbled on, lurching and bouncing as it shoved the light trees aside, and nudged her shovel-nose through another patch of brush. Kirk jerked the breech lever of the pom-pom and placed a six-shell clip into the loading block. He thumbed a knurled knob to single-shot action and peered through the glass-covered aperture set in line with the gun sight.

Kirk fadeIn: the clearing now. Evans twisted in his seat and gave Kirk a final glance of assurance before he plunged on through.

They could hear no sound outside because of the rattle of the motor, and Kirk wondered whether his ape was invisible in the thick trees. Evans waited until the tank lurched out into the open, then studied the layout while Evans steadied "Betsy" in the clear.

"I'll hold her here a minute and see what happens," said Evans. "You be ready in case they show up."

The tank rumbled on towards the edge of the clearing while Kirk watched for action over near the hangars. It was long, reasonably wide, and as level as a billiard table. The hangars were huddled deep into the foliage and could never be seen from above.

What a plant!" said Kirk, admiring the appearance of the place. But what the devil is this all about?"

"Let's skirmish it;" replied Evans. "I'll run around the edge here and try to get to the hangars. If it gets hot we can dive back into the bushes."

"Betsy" waddled around on her treads and started to crunch along the edge of the clearing while Kirk watched for action over near the hangars. So far there was not a move, or a sign of life. But when they reached the end of the clearing and were just about to turn left to cross toward the hangars—bedlam broke loose!

FROM SOMEWHERE deep in the field near the hangar, an automatic weapon of high caliber opened up on them. Kirk saw the streaks of fire several seconds after the first burst bluffed into the tank's mid-section.

Evans slammed the slitted steel plates across the front of the tank and squinted through the peep-holes in them. Kirk managed to get set while "Betsy" eased into the thicket again. He squeezed the trigger and the gun slammed back and almost flattened him against the turret top. He moved to one side and continued to fire.

Evans was now out of his seat and was walking a Bren gun through a rubber-bound slot. He, too, opened fire on the mound ahead, and his shots sent up a fountain of stones and damp earth.

"Cr-r-r-r-rump!"

The pom-pom spoke again and the little tank shook under a wave of blasting, earth and flame.

"Got 'em!" cried Evans excitedly. "You blew their blooming rampart away. Let's go after them and tread on their whiskers!"

Kirk never heard a word the Englishman said, but he sensed that "Betsy" was moving forward again. He managed to get another shot into the mound again before he had to hang on to keep his teeth in their gums.

"Betsy" waddled on and they saw three heads appear. Kirk fired, but the shot went wide. The trio of men leaped for the covering behind one was hit by the fire of the hangars, and Kirk blazed another shot which went wide over their heads.

Evans halted "Betsy" near the depression and saw that three bodies were slumped over what appeared to be a fire arm. Then Kirk yelled out of the tank to show them a gaunt, long-armed figure and hurled itself at the racing men.

"That's Tank!" Kirk yelled. "Hey, Tank!"

Evans sat stupefied as he watched the rampart go, two of the men in his long arms, jerk them toward him suddenly, and crush their lives out. Tank dropped the men and came back toward the tank, peering strangely as Evans kicked open the hatch. Kirk dived out first, ran up to the sandbox, and threw his arms around the Englishman's gaunt, long-armed figure.

Evans watched the afflatus of civilization and the jungle, with mixed emotions of amazement and awe. He saw Kirk grab the ape's shoulders, hold him off, and peer into the blank mug that simply stared back. The ape was still there, though he was left of a pair of white slacks, a Navy blouse, and the canvas tops of a pair of sneakers which now had the grotesque appearance of spats, since the rubber soles were no more. They had gone with the Heinkel's tires, ignition insulation, and the rest of it.

Evans, satisfied now that all was reasonable well, crawled out and obeyed Kirk's silent command to come forward and get the okay from the ape. As he approached, Kirk, with his arms about each, conveyed the idea to Tank, who allowed him to relax somewhat while he rubbed his great hands up and down the Englishman's arm.

"You're in," explained Kirk. "I had to explain to him that you were on our side."

"I'm damn glad I am, too," muttered Evans, gently patting the ape on the shoulder. "Did you see what he did to those poor devils?"

"I'll bet he's been waiting up a tree for that for hours. He can be nasty if he decides he's facing an enemy. But he's a grand guy."

"I'll take your word for it," muttered Evans, as Tank swished away and dived into the trench. He tossed the bodies of the men away and snatched at the field gun. Then, before their eyes, he twisted it to junk—bending the steel barrel, breaking the cocking handle off, and shattering the walnut butt across a rock.

"Just like that," reflected Evans. "I hope he doesn't get playful with 'Bet- sy.'"

"Don't worry. He won't, since he saw both you and me get out of it. He'll be with me around."

"Righto! Stick around," said as you Yanks say," grinned Evans. "He might start pulling the armor off—just to keep in trim."

"Let's have a look around here while we've got the chance. We might not be here very long until some one pops in at us again," suggested Kirk.

"But we'll take 'Betsy.' We might need her again. This is too easy," said the Englishman.

Evans climbed back in and headed the tank for the hangar, while Kirk and Tank walked alongside, keeping a close watch on the hangar. Evans pulled up near the opening, then decided to run her nose inside a short distance. Kirk and Tank, working together now, crouched behind the tank until they were certain all was clear.

Evans came out from the hatchway, startled at what Kirk was pointing at.

"What the deuce do you make of this?" the Englishman exclaimed. "Look at this!"

New Breda 65's—about ten of them!"

"Yeah. And look at what they got painted on them," said Kirk, finger-gripping his gun as he walked in. The Rising Sun insignia of the Japs! Italian planes with Nipponeau insignia!"

Kirk put his finger on the round, red disc on the side of one of the fighters. The finger came away scarlet. The paint was still wet!

"GET IT, EVANS?" he said quietly, still looking around cautiously. "Get it? They flew these things here, and put the Jap markings on only a short time ago. Mean anything to you?"

"What does it mean to you?" asked the puzzled Wing-Commander.

"Part of this Circle of Death gag. They have provided these fighters for the Japs. They were brought here somehow—probably catapulted off a mother ship. It doesn't look like they were being fixed for a Jap attack!"

Tank, Kirk, and Evans went over one of the ships carefully. There were two guns under the hatch of each for an observer—Breda-Safats of 7.7 mm.—two more under the hood, firing through the airscrew, and four guns in the wings.

"What a find!" beamed Kirk. "Have you noticed? The ignition cables and all wiring is carried in some sort of plastic material. I'll bet the tires are some sort of faked rubber, too."

They inspected the wheels and discovered that they were the spring-leaf spoke type, and the tires were spring steel coils carefully fitted to the rims.

"We've got to get these babies out,"
snapped Kirk. "How soon can you get pilots here?"

"I can radio through from 'Betsy,'" I think we have that range.

"But you can't get them if their sets are still out of order back there. Try it, anyway."

Kirk still had an idea that there was no radio channel open to Sandakan, and that Evans would have to go back in "Betsy." Anything could happen in the meantime.

Then Kirk and Tank made a careful search of the place while Evans tried the radio set in the tank. They discovered that both hangars were full of planes of the same type, that there was a reasonable amount of supplies and spare parts, but you couldn't use the Bredas had been fueled to the limit.

"Queer," reflected Kirk, trying to fathom the mystery. "Why were these ships brought here, hidden, and then left in charge of a handful of men? Where are the pilots who flew them and where are they being stored here all ready for action?"

He glanced at Tank, who had been following him about like a devoted retainer.

"And what have you been up to since you left me? Kirk suddenly exclaimed.

"What have deuce have you been doing, Tank?"

The big ape stood still, twisted his pinkish-brown mug, scratched his whiskers, and padded up and down on his big bare feet. He had all the airs of a youngster who had been caught on the top of the cupboard and padded the pantry.

"You came back here somehow. But what did you come back for? You saw the other Breda crash, and you probably found it for some reason. What was that reason?"

The ape watched him, his brow even more wrinkled than usual— as if he were trying to fathom what his master was trying to get at. Kirk moved closer to him, stared deep into those hazel eyes, and put on a mental effort to pierce the mind of the ape.

He came back to search for the wreck, the monster that had found it, but he never had revenge in his mind. He wouldn't outrage a corpse—but he might ...

That was it! Tank would come back—just as he would have done under ordinary conditions—and searched the wrecks and the clothing of the pilot.

"Come back, Tank," the American said. "Let's look through your pockets."

A strange light lit up the ape's face and he began fingering awkwardly with his long talons through the pockets of the Navy blouse. He worked furiously, then came away with a wad of soiled paper and a thin leather wallet.

"Now we're getting somewhere," smiled Kirk. "Let's see what you discovered, old boy."

The web had been rudely twisted into a lump and roughly stuffed into the small blouse pocket. The leather wallet was a Ministero dell'Aeronautica pilot's license, issued to one Allo Ravenna, of Turin. There was a badly bent compass variation card, a non-descript business letter, a bill for a revolver bought in Palermo, and a crisp quarto size sheet of note-paper.

"This looks like the business, Tank. You're getting good," grinned Kirk, slapping the ape on the shoulder.

"Thanks, Betsy!"

The sheet was a set of cryptic orders involving the name of a Japanese aircraft carrier, the new Akado—recently completed from a British liner that had been sold several years before for scrap. There were names like Sandakan, Morotai, and Lintang and Lubuk. There was a date and a time specification that made Kirk twist sharply.

"Come on, Tank. Let's see what Evans has to say about this."

They hurried over to "Betsy" just as Evans was crawling out.

"Nothing doing;" the Englishman muttered. "Can't raise a spark of any sort. What's up?"

"Plenty! Look here. Can you figure out any of this?"

"Let's have a look. Where'd you get it?"

Kirk explained while Tank danced around like a trained bear.

"Damned lucky for us," Evans said, after a quick but careful glance at the paper. "They're going to attack Sandakan and Lubuk—that's the other R.A.P. base up the coast—tonight! We'd better set fire to all these ships."

"What for?" Kirk demanded, somewhat amazed.

"Why not? We can't get them out, can we?"

"If you can get pilots up here in time we can."

"You mean I should take a chance getting back and bringing them here?"

"That's right. We'll stay here and hold the fort."

"It's an idea," agreed Evans, beaming. "This paper says they are going to try for a landing—using the Akado loaded with Jap planes and Jap marines—so that they will have a jump on us to attack the Philippines."

"Well, what are we waiting for?"

"Let's figure this out. I could go back in a couple of hours. You could stay here with one Breda ready to take off. If anyone came along, you could hold them off while I tried to get pilots back here."

"That's one idea," agreed Kirk. "Or we could take two out. You see, I'd like to practice on one. Anyhow, you fly a Breda to Sandakan and bring a couple of pilots back with you. Then start the others on their way. How do you like it?"

"That's good, too. It's Guides to quinces they'll be back—probably with bigger bombers, bringing extra pilots to fly these Bredas for the big show which is slated for 11 o'clock tonight."

They left "Betsy" in the shadow of the hangar and ran two Bredas out. Tank was a big help at this task and in no time they had the engines running and were climbing aboard.

"You go ahead," ordered Kirk. "Go back and bring as many of your guys back as you can get aboard. Hang 'em on meat hooks if you have to."

"Righto. And the best of luck."}

K I R K F U L L E M B L E D with the controls. He worked out the statements printed on metal plates in various parts of the cockpit until he found the details of the flap gear, the gun loading sequence and the throttle adjustment.

Then he took off, hammering down the green turf runway, and hoiked carefully as the tree branches and the controls for some time, and then whipped the Breda around, and, with a wave, gave her the throttle and thundered down the landing field. Kirk watched him get into the clear, turn northwest, and hurry back to Sandakan.

Then he pulled up not far from where he saw the big ape climbed aboard and fumbled with the butts of the Breda-Safat guns.

"That's right, mug, take 'em out. And if you have to use 'em, don't waste any slugs," ordered Kirk over his shoulder.

The Breda flew well. She was a little heavy laterally but responded well to the throttle and showed plenty of speed when Kirk turned on the juice. He tried one or two maneuvers, whip-stalled her twice, and satisfied himself that she was agile enough to handle. She came out of a snap roll, Kirk glanced over his shoulders at Tank—and then immediately whipped the Breda around and set himself for action!

A brace of B.R.20's came out of nowhere and peppered the Breda with something that could not be muffled. Kirk was hit over hard and saw that two Italian Fiat heavy bombers were evidently on their way to the long green strip below.

Tank had spotted them first while Kirk was trying out the Breda, and before Coffin could whirl her around to get a good look, the full moon faced the front guns. The ape was spraying the two Fiats with a heavy dosing of Safat lead.

"Hold it!" screamed Kirk. "Wait a minute!"

Tank obeyed, purring contentedly through his massive nostrils as Kirk brought the Breda around. The two Fiats slammed more lead at them and Kirk had to slip her clear before he could come around to set his guns on the big bombers.

"They must have been given the tip-off," he muttered, waiting for his opening. "Probably returning with pilots to guard the planes here. Well, we'll see if they can take it."

The Breda screamed through the skies and vomited leaden hate in long gleaming streams. The lead Fiat B.R.20 took the tracers full force in its starboard wing root and Kirk drew the Breda back gently and twisted his line of fire so that the leaden stream continued to saw through the airfoil supports of the Italian ship. He knew he had scored. Its wing buckled, the Fiat was falling.

But before Kirk could whang around again, something caught the Breda full in the quarter-deck!

Tank let out a soul piercing scream. A plume of flame and smoke, fluttering back over the sealed hatchway, told Kirk that his fuel line had been hit—
In their ship was in flames.
Kirk gave TANK one look, but the ape twisted around, ripped out the guns again, and opened a wild garden-hose fire on the bomber that was banking behind him, hopelessly but gallant stand to the finish!
Kirk peered over the side and saw the landing strip directly below him. He acted fast now and slithered the Breda into a knitting side-slip. The trim-winged bullet-like ship slipped down gently and set the flaps to their limit. The bomber was coming down after them, regardless of the wild fusillade.
Tank was slamming across his own tail.
This was the end—unless . . .
Kirk waited for a thud of bullets as he slipped toward the field. And he waited for that trawl-like wing-tip of the Breda to dig into the lush grass below.
The sideslip was taking the flame and smoke clear of the fuselage, but the hungry fire would soon be gnawing at the ship's vitals.
He waited a few more seconds, expecting any minute to feel the fire wall slide back to his knees and snuff him out of existence.
They were almost down now, and approaching the jungle runway at express speed. Kirk reversed his rudder, bringing the nose around. Then a short sawed-off snarl of the battle-knob, and the Breda eased around into a slow, fluttering glide. The flaps held and she seemed to hang on unseemly wires for a moment.
A curtain of flame and a shroud of smoke whipped up as Kirk went through the automatic motions of landing.

Thump! . . . Thump! . . . Bang! . . . CRASH!
They were down. And by some act of Providence Kirk had forgotten to lower the landing gear. Thus the belly-landing had prevented them from barging into dense jungle brush at the end of the runway.
The rattie of a Safat gun continued as Kirk fought to get clear of the wrecked cockpit.
"Hey, Tank!" he bawled. "Some of your muscle here, lad. Get this damn bus apart!"

The ape stared at Kirk for some seconds, peered out of the shattered hatchway as if it were astonished to find himself on the ground, and gave a final jungle snarl at the Fiat which was still pepperin at them from a tight turn above.

THEN, amid a wild barrage of Italian lead, Tank went bull-in-a-china-shop. His long paws grabbed lengths of stiff dural and his thumbs constricted. The still metal gave like lead-foil. He snatched at stringers, grabbed them with his firm yellow teeth, and tore with savage rage until the fuselage of the Breda had been ripped apart like a shoulder of beef in a lion cage.
Smoke blinded them both, and they seared their flesh as they fought their way out of the cockpit. Kirk grabbed a short lug, twisted it, drew out the brace of Safat guns, and tucked them under his arm as he turned for the hangar.

Then he remembered "Betsy."

He bawled at Tank, who was gnashing his teeth at the Fiats.
"Come on, you fool! Don't stand there baring your dentistry. You can't do anything for them out here!"
At last the ape caught on. Together they ran to "Betsy," lifted the metal hatch, and clambered in. The ape was ill at ease for a moment, for somewhere back in his simian mind he must have remembered being a biological exhibit in a somewhat similar steel cage, placed on view to be gazed upon.
"Take it easy," argued Kirk. "Sit there while I play the organ."
Kirk charged the pom-pom and waited to see what the remaining Fiat would do. He rammed home another charge of shells and watched. The Fiat was being flown in a wide circle now, as if the pilot was not quite sure just what to do. "Betsy," fortunately, was in a secluded position just around the corner of the hangar, and Kirk hoped they had not spotted the British tank.
"We'll get 'em cold if they try to land," he told the ape. "I'll pick out their cylinders one by one and then cut their wheels off. You watch, boy!"
The ape purred, gave Kirk a grateful glance, and then rubbed his great bezerer in anticipation.
Kirk took an angle sight past the corner of the hangar and figured he could just make it—if the Fiat landed far enough out the green strip. Still, he took no chances, but stepped up and started the Lancaster motor so that they could run her out farther should it be necessary.
They watched again once the engine was purring quietly, and saw the Fiat turn in for a landing. Coffin Kirk's eyes sparked with glee and anticipation, for he saw an easy capture. He moved back to the saddle seat below the gun tower and reached for the trigger as the Fiat swished around and set herself for the final glide.
"Now take it easy, Tank," he warned. "You've had enough scrapin to last you for awhile."
But Tank was not satisfied. His eyes tightened into slits and he pawed at knobs, handles, and parts of the interior.
"Now what's up?" demanded Kirk, for he knew the animal had drawn on his jungle instinct to scent danger. Suspiciously, he peered about through the slits.
Then, just as he was drawing a bead on the bumping Fiat, something blinded him! He remembered hearing Tank let out a fiendish squeal, and then four million candle seconds seemed to go off in his brain. Conception blasted all life out of his muscles and battered the electric reaction from his nerves.

COFFIN KIRK'S eyes were in a world of blackness. He knew nothing of the passage of time. He could hear voices, but they meant nothing. Then abruptly he could see strange figures in trim black uniforms. And his returning vision recognized the hated insignia of the Circle of Death on breast pockets!
He put on a silent struggle to gain full possession of his powers of concentration. He listened again, closed his eyes, and waited. He caught words like "Philippines," "Akudo," "Breda," and "Cocksorter"—and then he knew. He struggled with himself and had to restrain the desire to scream aloud.

Kirk then tried to piece it all together: A Fiat bomber coming in to land . . . "Betsy" and her pom-pom . . . He was just about to fire—and then a crashing nothingness . . . Something had slipped up . . . Something had hit them . . .
He rolled his body gently, peered around. Near him, in a half reclining position, lay Tank—trussed and bound.
That was queer! Who could have tied Tank up? They must have gassed them. No, "Betsy" was gas-proof. An antiaircraft gun?
A hundred scenes flashed before his eyes and he saw Evans—Evans, the Englishman who had relied on him. Evans, coming back with as many British pilots as he could carry. Coming in to land—Englishmen coming to their downed comrades.
"Hell," he muttered, glancing over at Tank again. "Got to get out!"
He moved cautiously, as every muscle move brought on jolts of nerve punishment. The men in the black uniforms formed a dim circle off near the opening of the hangar. Kirk had no choice but to adopt an alert position. Something outside was attracting their attention—something with a throbbing boom to it.
That was it! Evans was coming back with his first load of pilots. They were waiting for him—waiting with guns!
Kirk squirmed again and brought his bound wrists up to the long slender fingers of the ape. He shoved against them and whispered over his shoulder.
"Come on, Tank! Go to work, boy! Untie these knots. Let me loose, Tank!"
He waited, and then the hairy fingers loosened each rope and certainly, too, for they were trained and had the background of jungle years at their tips. Fingers that replaced the lack of what men call intelligence. Fingers that were as true and as strong as steel.
It seemed hours before the bindings were off. But once his hands were free, Kirk lay low, turned slightly, and then untied the ropes knotted at the beast's back.
"Now—now, Tank! Can you hear me? Clean the damn lot of them out, and don't stop until I order you. To the fin—

Shawls, yes. But Kirk's pointing finger, directed at the group of men hanging in the hangar doorway, was the "Finger of Death" as far as Tank was
A R Y L  I N G A C E S  [ 6 7

concerned. All he knew was that these men were their enemies and they had to be killed. Animal instinct came to the fore, directed by the intense loyalty to the human being he had accepted as his master.

Kirk looked into the ape’s eyes with glances that carried volumes of words. Then Tank eased away like a writh and skirted the rear of the Bredas. Kirk waited, knowing that the gorilla must carry out the first move to make sure he would work.

Kirk flexed his muscles, tested his vision on points at various distances, then got up and moved quickly to the nearest Breda. Here he removed a Safat gun from its mount and took the metal magazine with it. He drew his weapon, careful to cocked the weapon, and waited for Tank to go into action.

Sure enough! Tank suddenly appeared on top of the front Breda, crouching and poised for a jungle attack. There was an instant of deep silence. Suddenly bellow of animal rage filled the hangar as Tank charged upon the foe.

Kirk darted into the clear and opened fire on the group which stood spellbound and unable to draw sidearms from hip holsters. Kirk then held his fire, equally spaced rounds of the ferocious attack of the simian who was cutting a wide swath through the group, swinging the first wretched swine he had grabbed by the ankles. There was the hollow thock, thock, thock of skulls crashing together, the piercing crack and crunch of breaking bone, dull rending thud of pounded carcasses.

Tank was having a jungle field day! Into the midst of it all ran Kirk, his Safat gun covering the lot. Two game devils tried to get out their weapons and put up a fight, but a swinging burst from Kirk’s gun cut them down.

In twenty seconds a major victory had been scored. The black-uniformed mob lay like reaped wheat. A cruel revenge, perhaps, but nothing compared to what might happen if this band of cut-throats could not be stopped. They represented a far greater threat than a few black-skinned or bullet blasted limbs.

The carnage was ended just as the captured Bredas rumbled up to the door-row. Wing-Commander Evans peered out over the front of the Gnome-Rhone cannons and stared at the shambles, unable to figure it all out, until Kirk, with a weary gesture, waved them in.

“WAT THE DEVIL happened?” demanded Evans, clambering over the tangle of bodies. He grabbed at black Mausers that lay about, and drew a few more open holsters as he came toward Kirk.

“They downed us and we tried to hold them off with ‘Betsy,’ But some one conked her with a nine-point-two, or something,” said Kirk. “And now I’d give a Breda for a drink.”

Evans produced a leather-covered flask and sloshed it toward Kirk. The American unscrewed the top, placed the short neck to his lips, and added a few much-desired thermal units to his constitution.

Around him flashed the movements of British flying men in khaki shorts, light canvas helmets, and sturdy bare knees. Kirk counted at least four. Then Kirk gazed up and down and the bellow of the Fiat bomber’s warming motors. And he rightly sensed that Evans had “told off” some one to fly the plane back to Sandakan and bring in another load of men.

Merey now tempered the movements of the Britons, too, for they went to work with a will on the injured men in the black uniforms. First-aid kits appeared as if by magic, and in no time those left alive were carefully attended to. They were bandaged and eased into the wide cabin of the Fiat for the trip back to the base. Needless to state, also, they were securely bound to prevent any possibility of their attempting to recapture the bomber once it was in the air.

Kirk watched the Fiat take off with decided satisfaction. Tank was wandering about on the ground, his master and the other on the quiet pile of dead of his own efforts had heaped up.

“We’re damned lucky, you know,” said Evans, watching the British pilots as they moved three Bredas out for a take-off. “We managed to get a small spark-set radio going back at the station and have warned Brunei and Singapore, but we have no idea whether they got the message straight. What’s more, we’ve picked up messages from the Akudo, and there is no question now but that they are on their way. It’ll be cut-throat airfight—if we can get into the air in time.”

There was determination in Kirk’s grin. “We’ll get into the air all right. All I’m worrying about now is that they’ll find out we have captured their Bredas.”

“All right,” argued Evans. “Suppose they do. The Akudo can’t turn back now. She’s probably too far this side of the Singapore-Brunei. The Japs will be safer taking a chance on a landing in Borneo than trying to get back through the British defense units now starting out for Singapore. They’ve begun the mess and they’ll have to sit through it.”

K IRK PONDERED on that as he enjoyed a cigarette, allowing the blue smoke to soothe his nostrils. He spoke quietly to Tank and the ape slumbered down.

“If we could only cock off that way,” observed Kirk, “One hour and he’ll be ready to rip five tanks apart!”

“When I want some tanks ripped apart,” said Evans, with a quiet gleam, “I’ll file a requisition for him. By the way, did I tell you? We have a bloke back at the station who’s a bit of a chemist.”

“I hope he doesn’t manufacture your liquor.”

“ ‘No, nothing like that. The thing is that he’s been scraping around and making stuff. Did I tell you? We have a bloke back at the station who’s a bit of a chemist.’”

“ ‘I hope he doesn’t manufacture your liquor.”’

“ ‘About the stuff with which they pulverized the rubber?’

“ ‘That’s it. He’s made a couple of simple chemical tests, and he figures the gas they used is a combination of carbon disulphide, benzol, and nitric acid. He explained to me that he once did some time on a rubber plantation and learned about the various curing processes they employ. It was a bit technical for me, but his explanation seemed reasonable when he explained it. It appears they smoke the gum with certain chemicals that have to be blended carefully. But if they’re not in the proper proportions, the latex element in the rubber goes spismo and they find themselves with a lot of muck.”

“He seems to have hit it,” agreed Kirk, sticking his long legs out for a more comfortable position. “They could make a gas like that. It might cost somewhere between $50. You can tell the devils don’t seem to worry about sawbucks.”

“Sawbucks?” queried the Englishman.

“Never mind,” answered Kirk with a flick of his cigarette. “It’s an Americanism for mazuma. Now, how’s about getting these Bredas busses out of here—any time’s quick—defense if the Akudo gets through and lands a gang of marines.”

Evans agreed, then went on:

“The Akudo carries about forty of those new Mitsubishi 96’s—nasty-looking devils, too. I saw some of them when I was in Hong Kong. You can tell by the looks of them. They look a lot like your Boeing P-29’s, and I’d judge have about the same performance.”

“Whew!” whistled Kirk. “Forty of those against what we can put into the air will give us a very pleasant evening. By the way, what’s the time?”

“According to that damned clock, yes. 1:30 to be exact,” said Evans, consulting a formidable-looking ticking turnip on the end of a leather shoe-strap.

“So we’ve got about nine hours to get ready?”

“Exactly. And in the meantime we can worry about where these Flats come from and what their next move will be.”

“I’ve already been worrying about that,” chimed in Kirk. “We’ll have to maintain a patrol over Sandakan in short shifts until we take off for the place–tonight—just to play safe.”

“A good idea. It will give me plenty of time to accustom myself to the new planes, too.”

“Have you had a look at the Breda
bomb racks? Can you use them?” Coffin came back.

“They’re adjustable. They’ll take our stuff, I feel sure. You know the blokes at the Air Ministry have taken yours now and then. They have our bombs built so that they can be fitted into almost any rack, interior or exterior. Jerry taught us that trick during the World War. German rifles in those days would take both German and British ammunition, but ours was large and reminded one of some despairing soul shut out in a storm. The sable-vested night, which had fallen with a churchyard gloom, was flecked here and there with light flashes from open doors. And behind those doors was strange activity in preparation for the “shock” which was to go on.

The hours hung heavy, even with the excitement of planning and organization. Men sensed what was ahead, realized that a strange menace threatened. A sense of foreboding of secret things, strange craft unfamiliar to their feel and touch. An enemy who had not as yet shown his head.

Some were to live, some to die, in this battle to come. The goal ahead, whether gained or lost, would find record only in the Carolines of secret things, of fantastic papers. Blind faith in a tradition, a national loyalty, an Empire would drive these R.A.F. pilots on, but the world would never know. A mere “Died While Serving Overseas,” would be their epitaph.

Grim, silent mechanics worked like beavers, furred motors and airframes. Armories toiled over unfamiliar weapons and fought with strange mechanisms. They all had to carry on. Grimy, sweat-drenched men came down from their vigils aloft, sought the soothing warmth of baths and clean clothing, and prepared themselves for—for none knew exactly what.

Then suddenly the pent-up spirits of preparation were released. The American—a man whose very personality injected throbbing amperage of courage and enthusiasm—appeared among them, followed by that strange, slant-shouldered figure who somehow forged a link between their civilization and the mammoth strength of the jungle. The combination, coupled with man’s newest and most formidable weapon, the airplane, inspired them with a new confidence.

Twenty brand-new Breda 65’s now gleamed with aircraft grooming. Gummazules flashed with the gleam of oil film, pickand getConnectionals flung like broadswords. Portable arc lights threw eerie glows of circular intensity and spread gaunt shadows of men across the oil-soaked tarmac.

In small groups the men stood about, passing on bits of information concerning the quicks and twists of their new mounts, the manner of loading and re-loading Breda-Safats. A year’s training had been crammed into a few short hours.

Wrist watches were consulted. Then the reliable Evans, who was dead on his feet but yet still retained the erudite dignity of his responsibilities, appeared. He called his Squadron Leaders around him and they bustled up, clicked heels, and saluted gravely.


They saluted again. True, some hesitated as if they wished to say something, but tradition and discipline tempered their emotions. They simply answered: ‘The King’s “Thank you”’.

Evans turned to Kirk, and the expression on his face proved he was profoundly touched. He flicked a tear from the corner of his eye.

“Craziest people in the world, you Britshers,” commented Kirk, likewise moist-eyed, “bust up these ha’penny traps shut—and go out and probably get killed. How do you do it?”

“You should talk,” cracked Evans.

“They have to do it. While in this case, you don’t. But you’ve been in the thick of it for hours—and still you want to go along.”

“Why not? I owe those rafter devils plenty. This is a personal battle with me, and I don’t quit until I’ve cleaned the lot out.”

“A very laudatory objective, my lad,” agreed Evans moving over toward the head layer. “And now how do you like our insignia?”

Then for the first time Kirk noticed that the scarlet discs of Nippon had been quickly but skillfully changed to a familiar outline—the outline of a British Mark II.B tank superimposed by the head of a gorilla.

“Great!” smiled Kirk. “I suppose that is your way of paying a compliment to my pal, Tank?”

“Exactly! And if these Mussolini busses stand up like your—er—your gentleman’s gentleman, then we should put up quite a showing.”

“In response,” added Kirk with a curtly bow, “I’ll tag my particular Breda with the title of ‘Betsy,’ Agreeable to you?”

“Perfect! I had a maiden aunt named ‘Betsy.’ She was a bowler! Once she pulled a letter box up out of the pavement, and asked me if I wanted a blow card a day later!” Lovely soul, old Aunt Betsy.”

“Let’s shove off before we go ‘relations’ on each other,” laughed Kirk. “Else we’ll never blow the old Akudo out of the water. Best of luck, Evans, old lad.”

They shook hands, exchanged glances, and headed for their respective machines.

“Nevertheless I hope I get back to hear further episodes from the adventures of Aunt Betsy,” Kirk muttered.

The Bredas were ordered into two flights of ten ships each. One flock was led by a young, and charmingly theatrical, Squadron Leader named Cliff, the other by Kirk, with Tank in the rear office, as usual. Wing-Commander Evans took the Fiat bomber as his flagship and planned to maintain touch with both flights via radio.

Evans—twenty-one to take on at least forty high speed single-seaters that were well armed and flown by pilots who were charged with the fanatic patriotism engendered by promises of a new Oriental Empire! Even so, the Bredas were manned by highly skilled crews and carried the sort of polish that only skill and training will give.

In addition, all these planes carried twelve light bombs suitable for an attack on the flight deck of the Akudo. And Evans’ Fiat was equipped with British delayed-fuse bombs for attacks on the deck of the enemy aircraft carrier. These planes, with their marksmen and metal landing deck and hurl on through to the more vulnerable compartments below before exploding.

The take-off was as imposing a display as could be imagined. The big Fiat hammered down the parched turf of Breda Airport, and shot across the skilled hands of the Wing-Commander with a young Flying Officer, Lewis, at his side. Up front, a pink-cheeked Limey gunner, hardly in his teens, peered anxiously out of the shatter-proof glass turret and gave a feeble wave to a couple of pals at the wing-tips. There was another officer in the avigation compartment and a radio operator behind the control pit. Still another gunner, who might have been a twin to the one up front, fumbled with the Breda-Safats in the rear turret.

The Bredas took off in chain formation, lined out along the end of the runway, and hammered for altitude. They swung into position over the city, and Kirk saw several cheering signals flash up from the entrance steps of the Governor’s mansion as they turned in glorious grouping and headed up the coast toward Brunei Bay.

Finally, they swung off for Pendassan and cut around the mountains past Jesselton, the actual capitol of North Borneo.

Since their return after taking over the Bredas in the jungle hide-out, Wing-Commander Evans had made a more careful study of the Breda, ordered by Tank, and, with the Squadron interpreter officer, had further learned the general plan of the proposed attack. They knew now that the Akudo planned to appear suddenly off Brunei Bay—about thirty miles southwest of Jesselton—and ease into the sheltered waters and stage their proposed landing of marines, light field guns, and supplies while their planes bombed Brunei, Jesselton, and if necessary, Lubuk and
Sandakan.

Evans, flying high, up front, led the way out to sea once they had studied the situation around Jesselton.

"He’s making all the right moves," reflected Kirk, when he saw the Englishman lead them out over the ocean. "If we can come up from behind we’ll have all the advantage. But, Lord, what a night this is going to be if we do clash with them!"

They flew almost due west for nearly thirty minutes. Then Evans gave a signal and reported that he was going down low in an effort to search the surface below. The two flight leaders repeated his order and headed on toward Brunei Bay, holding their altitude at about 6,000 feet.

The next fifteen minutes were grim, spine-tickling, and eerie. The twenty fighters carrying the Tank insignia opened their formation slightly to cover a greater area and to play safe. Kirk watched the moves of Cliff, the No. 1 Flight leader, and then caught a signal in his helmet phones.

A report from Evans:

"Tank squadron, come the word. Probing for the Jap point due north of Baran. Have spotted enemy fleet approximately six miles off Baran Point."

Kirk glanced at his map in the clips and saw that the spot designated was but a few miles south-west of Brunei.

The speaker phones crackled again and he caught:

"Flight One: Action on target, half left. Enemy planes leaving flight deck of Akudo. Form echelon for attack. Flight Two: Maintain altitude until firing orders. Leaders repeat signal—Evans." In turn, Cliff and Kirk repeated Evans’ signal, and then Kirk saw Cliff’s outfit swing into echelon formation and go down. At first Coffin had no idea what this formation heading for. But as the first flight went down he followed their tail lights and then caught the gleam of a long spear-shaped platform ahead and below—not four miles away. The Japs had illuminated their flight-deck, a move implying total ignorance of the threat above—and which betrayed them to the Bredas formation above. Or were they really ignorant? ...

"They’re getting those ships off fast, though," sensed Kirk. "They’re buzzing off like flies. I hope young Cliff can beat the Jap carrier out of sight so that we can get that plane-loaded baby!"

From that instant on the world went mad!

The first flight of Bredas flew smack into a curtain barrage of 3-inch anti-aircraft stuff that threw a "Hell’s Arbour" of fire at the Breda formation against the ebon night. Kirk saw the flight under young Cliff slam headlong into this Design of Death. Two searchlight beams sworched into the night and slashed the sky savagely.

"Good Lord! They must have known after all—they must have been deked off somehow. Those poor devils slammed right into a beautiful trap!"

Three Bredas flew up before they were within range either of the flight deck or the Jap fighters that were streaming off the carrier like wasps. Flame, smoke, and flickering sections of bright durial added to the crazy backdrop of Duel of Death.

"Their microphone men had the decibel rating of those motors down to the last tick," snarled Kirk. "Those poor fellows were trapped the instant they started down!"

"So Jap Section, Flight Two!" bawled Evans from somewhere below. "Action—fast!"

Kirk repeated the order, then barked it back to the men in his flight.

"Follow me," he ordered. "We’re going down to zero level. They have us spotted by radar. So we’re going down low and attack from their deck-level line. Repeat!"

A baffle of voices came back to him, but it was obvious they had caught the order. Behind, Tank was yanking out the guns in preparation for the battle that they were heading into.

"Only fire at that!" ordered Kirk, pointing down at the carrier. "Only that ship, Tank!"

He wanted no trouble with the ace, who might mistake the Bredas for the centre of Jap Mitsubishi planes. If he confused his efforts to the carrier, he could do no harm to the Britishers.

The flight under Kirk’s command followed him down in perfect formation.

With the gray-green waves rushing up toward him, Kirk pulled out, nosed around, and headed straight for the Akudo. From somewhere above, a trio of Rising Sun ships slammed at them and sprayed the sky with lead. But Kirk kept on, sensing that the gunners in the Bredas behind him would hold them off.

He tightened his belt, adjusted the buckles of his life-jacket provided by Evans—and headed dead for the carrier.

"It’s now or never," he growled, "If that vessel gets into the bay we’ll never stop them. They’ll call for a destroyer fleet and take over like Grant took Richmond."

The Bredas fell in-line-astern on his order, and together they hammered at the knife prow of the Akudo that was still spewing Mitsubishi.

Kirk fingered for the bomb releases and held the Breda dead on the nose of the carrier. He gulped, wondering whether he would make it. But he hung on, and at the Jap carrier came on express speed.

"Good Lord!" he gasped, as a low-wing fighter flipped off the deck and screamed a hair’s breadth across his hatchway.

There was a resonating crash behind as the Jap fighter collided head-on with the Breda following him. Kirk did not look back, but his mind’s eye developed a picture of the wreakage of two planes being run down by a massive carrier that was doing about thirty knots. He winced at that—and pulled his releases! The Breda’s tail went between two Mitsubishi; the release exploded into chunks from the internal racks. He hollered hard to clear another Mitsubishi that was pounding down the deck. He jerked the releases again and let the rest of the “eggs” go full on the deck.

---THEY ADVERTISE--LET’S PATRONIZE---
A portion of the carrier's "island" superstructure then toppled across the deck and floundered across the last three Mitsubishi fighters waiting to get away. CRE-B-E-U-MF! BRE-B-E-U-MF!

Flame, smoke, and concussion battered at Kirk as he shoved off to starboard. He turned and saw Tank sending a wild burst of fire down at a group of bluejackets huddled about a 3-inch gun. A light flashed out and blinded him for a moment, but he cleared and danced in the concussion of a burst of anti-aircraft fire that fanged out from a hidden turret below the battered flight-deck.

The remaining Bredas of his flight followed him and rained their explosives down upon the teak and steel deck, then skidded through the welter of flame and debris each bomb threw up. One Breda ran smack into the lip of the carrier deck and scattered its parts all over the flight deck. Flame billowed out and Kirk knew another brave British crew had gone west.

But by now the Jap pilots were in action against the raiding Bredas. Off to the right, young Cliff was weaving his flight—or what was left of it—in and out of a Mitsubishi formation. The gunners were fighting like Waterloo heroes from their rear turrets, and the British pilots were hammering heavy caliber stuff at the dancing single seaters.

The sky was a mad theater of tumbling fire-balls. Bredas and Mitsubishi fighters locked wings, rammed noses, and slithered into each other from all angles.

Kirk led his mob into it all and gave signals calmly as he slapped short but deadly bursts at the Jap single-seaters. Tank, dancing his jungle war hop, still blazed away madly at the indistinct carrier from which sizzling 3-inch shells continued to blaze.

"Where's Evans and his Big Berthas?" raged Kirk: "Where the devil is that bird?"

Now the American rammed through a scattering formation of Mitsubishi fighters and sought the Fiat. His guns splashed lead at a Jap directly in his path and blew it to bits. He darted clear of the debris and banked to avoid three attacking Mitsubishi. Two Britons in Bredas somewhere above picked two more Japs off, sending one down in flames and the other into the sea. A thick Nipponese hoik so hard he flamed up dead into the path of another and they both went down in a swirl of smoke and flames.

Then, out of the corner of his eye, Kirk caught the outline of the Wing Commander's Fiat. It was fighting its way through a veritable wall of Mitsubishi. Kirk changed his course, barked a crisp order into his phone, and went to the rescue. Number Two Flight slammed at the heavy formation of Mitsubishi fighters, sprayed it with Italian lead, and broke their ranks.

A report then came through from the Fiat, and Kirk slammed at the Japs again—keeping them in the clear until Evans could get set for his personal raid.

Kirk saw Evans dive for the carrier and then saw three more Bredas kick up a cloud of metal dirt blast at the deck, too. It was obvious that they were still trying to get at the carrier deck with what bombs they had left.

"Look out!" screamed Kirk. But the Breda guys were intent on doing what they came to do. They slammed full at the Akudo and released everything they had left amid a welter of anti-aircraft fire and the blinding glare of a lone searchlight that was picking out the raiders.

Kirk saw them hoik up and saw the first blast of flame from their bombs. Then, in the midst of a welter of searing flame, the Fiat flew into the middle of the lot just in time to take the full force of a massive explosion.

"Wow!" gasped Kirk. "One of those Bredas put a bomb through that caught their magazine!"

BRE-B-R-BOOOM!

The decking of the carrier suddenly blew out and engulfed the Fiat which had roared in to loose its heavy armor-piercing stuff.

The great carrier's blazing maw now spewed gigantic blossom of scarlet flame. Great tongues of fire flared out, pierced the Fiat—and hurled it over the side of the still speeding hull.

"Lord!" Kirk raged. "He flew right into it. What the—"

He himself now cleared the doomed hulk and saw men leaping into the sea. He tried to glance down and see where the Fiat had hit, but the blinding glare of flame and the mushrooming smoke blotted out all vision of the water below.

Poor old Evans—and not a boat anywhere.

He roared past again and drew his wing men with him as Cliff rounded up his formation to chase the fleeing Mitsubishi fighters. There was now no carrier deck left, and it was obvious that the Nippon planes left in the air must scurry off.

THEN, before his startled eyes, appeared the most beautiful formation Kirk had ever seen. Six majestic flying boats, glinting in steel-gray, and gay with red, white, and blue cocardes came

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April, 1939
roaring over!

"Cripes, the Navy—our Navy!" gulped Kirk. "What the devil! Who called 'em?"

He caught the identification numerals on the sides of the hulls and saw them go down to the water, great landing lights laying broad pathways for them. He realized that they were Consolidated PB4Y-1 patrol boats out of Manila. They had made the 750-mile flight that afternoon. The Philippine Navy radio somehow had caught the faint sparks of warning sent out of Sandakan. And these planes had hastily flown south.

All this flashed through Kirk's mind as the watchful pilots followed the pall of light from the blunt nose of a Consolidated pierce the smoke and flame to pick out a floundering Fiat. That beam showed Evans standing on the roof of the cabin and waving—of all things—a handkerchief!

"Oh, well. Let the Navy clean up. They always do," muttered Kirk. "I'll take my lads home—what's left of them, at any rate."

He did, and later watched the battle-weary R.A.F. pilots crawl out of their planes at Sandakan and stagger toward the medical hut. Kirk and Tank then rolled up to the "A" Flight hangar and asked that their tanks be filled.

Finally, the American went in to Evans' recording office. Here he conversed with the Adjutant and told him what had happened. Then, while the adjutant hurried off to get a short message through to Singapore, Kirk sat down and scrawled a note. He stuck it in an envelope and addressed it to Wing-Commander Evans.

It read:

"Sorry not to be here on the welcoming committee, but we can't stand scenes. Hope you get your share of it. I have done as much as I am sure that is sure to come. But we have other things to attend to, Tank and I. It has just occurred to me that I must round up the birds who flew the Brethas in. And so—may we meet again, on less exciting terms, I hope. Thanks for the memories, of the junk genes—and a lot of luck.

Brian "Coffin" Kirk—and Tank."

All Questions Answered

(Continued from page 26)

not say where they are, and no one seems to have seen them. Is it true they are not assembled but have been packed away for storage as quick assembly? Who can—or will—say? Also, they do not tell us how many are bombers, how many are fighters, and how many are Army or Navy types. So far, for instance, not one of the experts has stated what kind or type guns all these German planes carry. You have to select one person's story and believe it—or do not believe any. As for me, I have my own opinions and ideas based on what facts are available—and not on estimated figures.

W. Jankowski, Chicago—The Heinkel He. 51 is a fighter-biplane fitted with the 750-h.p. B.M.W. engine. It has a top speed of 206 m.p.h., a range of 445 miles, a wing-span of 36 feet, an overall length of 27½ ft., and a height of 10½ ft. Its full-up weight is 4,180 lbs. As the photographs used by this magazine, all are purchased for reproduction purposes alone. They cannot be sold or given away.

George Cole, Jersey City, N. J.—The foreign magazines you mention can be purchased at the Associated Press Agency, at Sixth Avenue and 42nd Street, New York City. You might write to the Sixth Fighter squadron, U. S. Naval Air Service, care Headquarters in Washington, D.C., for the details and information on their pilots.

BY ARCH WHITEHOUSE

Sky-Power Facts vs. Sky-Power Fancies

(Continued from page 55)

a capable mind that controls his reflexes and enables him to carry out the duties for which that particular aircraft was designed.

We test hard-trained pilots, super-trained observers, and gunners who can make the most of any target under the most trying conditions. Without men, our air service is much worse than obsolete. And the sooner this condition is seriously considered, the sooner American air power will attain its true importance and become a weapon worthy of the land it is to defend.

Streamlined planes are beautiful to watch in maneuvers. Machine guns gleam and sparkle and have a certain blue-black air denoting power. The instrument boards are intricate and intriguing. Bombs have a sturdy mastiff scowl of authority. And the engines impress us with their potency.

But until the hand of a man is placed on the controls that guide the airplane,
the effective factor of the plane is zero!

Many new planes will be needed should an emergency arise. The normal wear and tear of active service flying takes a good toll. And aerial carnage, whether the engagement is won or lost, will deplete the flying equipment by at least 50 percent in the first six weeks of action.

America’s real strength, then, lies in her potential man power. We believe there would be something like 25,000—60,000 persons available for active service duty if war comes within the next couple of years. A great percentage of these can be trained for air duty if a suitable selection system and pre-war training is established.

Man power? Yes, the United States certainly has it—and it should not be wasted through neglect. Now is the time to begin some form of primary training—not after hostilities start.

The Uncle Sam’s first line of air defense is based on the idea that by maintaining an air force in the way of material has been shown. And the American system of mass manufacture, as far as it can be carried out in aircraft building, is as good if not better than in any in the world. We should consider sound types of planes and eradicate the multiplicity of types in order and speed up production. Fortunately, this point has already been considered; for here in the United States we now find fewer types filling the service hangar than in any other major air power in the world.

In closing, we might repeat the fact that our air strength is materially boosted by America’s exceptional geographical position. But though the European and Oriental powers now have all the machinery they can handle in the way of trouble right in their own backyards, we cannot afford to rely on the Atlantic and Pacific oceans to set us off from them forever.

Already other big nations are building long-range bombers that can cross oceans, stage raids, and return. It is against this future menace that a great American air power—boasting plenty of good planes—should be established.

And with the present attendant inroads of dictator theories in South and Central America, that black future may be upon us long before we expect it.

“Attack Formations are Ticklish!”

(Continued from page 16)

only the beginning! The German then proceeded to lead us a merry chase for a couple of hours. And aerial carnage, highways, and bridges, sometimes in column and sometimes in normal squadron formation. His final surprise was a sham raid on a wealthy rancher’s private airport up in the hills—and that was where we almost came to grief.

Now we were all climbing steeply. And at last I was sure that we “meat element” boys were outclimbing the first element. But what about the third element? It had also been cut-off on the inside of the turn and would have to climb over all the rest of us!

Our element leader glanced back at them—and I saw a frightened look come into his eyes. Whether they would miss us or not, nobody knew. But I was on the inside! I would be the first to find out!

Although I dared not shift my attention from my own leader, I stole a glance backward—and my heart stopped beating! The third element was only a few short yards to one side, turning sharply but sliding toward me, and as we hit each other our planes didn’t have enough to keep us in sight as they crossed-over, they had lost more speed than they could do without and were about to stall right into us!

I had about two seconds to go. Looking toward my element leader again, I could no longer see the first element beneath us. Maybe they were still there, or maybe we had already crossed them. But at least their chances were better than mine; for the third element had already slowed down, climbed, and turned as sharply as it could. Yet still it was most ticklish.

Suddenly, I heard above the sound of my own engine, the roar of another. It was so close that I thought I could feel the propeller beating the air just above my head. Every muscle in me stiffened with fear, but I managed to push forward just a little on the stick. It was most ticklish. But mine did. I couldn’t help thinking about the first element wing-man who might be beneath me. Even so, a fellow can also think of an excuse in a split second, and mine was that if I was hit I would drop on him anyway—which was true.

But what a relief! The roar of a wide-open engine swept over my head and was gone! My leader began to straighten from his turn, and as he did so he noted my slightly lower position. The German that I thought his head indicated that I had better pull up and look on the other side in pronto fashion.

I did both at the same time. And I saw my lower wing rising from somewhere—very near—entirely too near! In the cockpit of another plane. The pilot was sitting upright, so I knew that my wing-tip had not struck him. But I felt like a man caught in the act of shooting someone in the back—for he had never seen me at all.

In another instant, I was back in position, my eyes again trying to make up for lost beats. Quickly, I counted nine planes. What a relief. Nobody lost! We had crossed above the first element and dropped beyond and beside it as the third element stalled toward us. They had opened their throttles just in time and sped away and miss our heads as they passed over.

I felt numb and weak. My left leg began to vibrate against the rudder pedal so helplessly that I had to laugh. It was the first time I got so badly frightened that I laughed afterward, and it was all because I had too little faith in the leader of the third element.

“Say, what’s the idea?” he cracked at me after we landed. Don’t you know I’m not going to hit you? All you have to do is stay in place.”

I was ashamed of myself. And mighty sad, too. I might add, when seven months later he lost his flying speed—and his life—trying to hold position on the inside of a climbing turn at low altitude.

For an Attack pilot, the unpardonable sin is a variation of altitude during a maneuver in formation. Leaders who sometimes climb on their turns are disliked by other pilots, and those who seem to forget the men behind them are dreaded.

After this particular experience with the German, our formation often failed to keep as flat as it might have were while he was doing the leading. And meanwhile we all longed to get out of the school and into a good tactical squadron where we could fly more safely.

BUT THE RESULT was still in doubt! I saw our element leader’s tilted wing passing just above the upper wing of the German’s plane. The German, meantime, was looking at the hill top beneath and was blissfully unaware of the predicament he had caused. But our element leader luckily was peering over the side and trying to gauge our
If the "New Caesar" Raids "Carthage"

The present dispute over Tunisia began back in 1869 after the French occupation. Financial troubles in Tunisia proper resulted in a British-French-Italian board of control which eventually resulted in the territory becoming a French protectorate in 1881. There was simply the usual border "incident" and the French marched in. British opinion backed the move, but Italy protested at the time. Then in 1926, Italy officially recognized the French acquisition.

As the years went by, the number of Italian residents in Tunisia increased. In 1935, the French agreed to allow the Italians living there to maintain their Italian citizenship and own their own schools—which of course resulted in Fascist instruction, plus propaganda in favor of a transfer of sovereignty. About 80 per cent of the "New Carthage" Italians are Fascists, and they have a common leader in the very active M. Santamaria, a newspaper editor.

On the strength of all this, then, Italy feels that the time is now ripe for occupation. And they've "talked it up" in no uncertain terms. To forestall action, the French quickly put over a diplomatic gesture in which Premére Edouard Daladier made an official visit to Tunisia and won the formal declaration of loyalty from the Tuscanians. But this move was dubbed an "act of provocation" by the Italians, thus anything may now result.

So it would not be surprising if Italy—anxious for more area in which to expand, more fertile lands on which to grow food for an increasing population, and for continued maintenance of the "New Roman Empire" military policy—should mount an air attack on the site of old Carthage.

In these days of undeclared war, an air attack is the ideal means of opening a campaign. Such a blow can be delivered with speed and power. And it costs little compared with a major attack involving troop transports and surface-flight action.

What would be more reasonable than to assume that Italy, in its drive to capture Tunisia, will use its air arm as a "feeler" to find out how much strength there is in the French colony, and whether all the arms and armament supposed to be there are actually there?

Our artist has presented on this month's cover, his idea of what an Italo-French sky skirmish over Carthaginian Tunis might be like. He depicts a fast-action dog-fight between two groups of ultra-modern single-seat fighters. It is assumed here that the Italians have launched their raid from a secret air base in Sicily, employing a formation of sleek single-place Reggiane As.11 attack-fighter monoplanes, a new type recently accepted in the Italian Air Service.

These planes, especially designed for low-altitude duty, have a top speed of about 217 m.p.h. They carry three machine guns for ground-strafing, plus a special bomb rack inside the fuselage. The bomb sight aperture is covered with a series of rolling shutters set in the floor.

The French pursuits we show on defense are new Morane M.400's—reportedly all capable of startling performance (see zooming Morane in foreground of scene). They carry an air cannon in their Hispano 12Y engines, also two ordinary machine guns. Their top speed is 310 m.p.h.

Here, then, are all the elements of a rare battle as the Italians attack the ground points and the Moranes fight to repulse them with high speed performance and high caliber lead.

Could the air fleet of the "new Caesar," be victorious—or would French "Carthage" turn back the Roman invader? That is the question. And we may not have to wait long for an answer.

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APRIL, 1939

water pail had been emptied so he hot-footed it out to the well. There he saw two pilots drawing up a bucketful of water.

"We let the bucket down deep, sir," one said to his superior, "if anything fell into the well, we 'ope to find a trace—"

A Limey pilot played a flashlight on the bucket of water. "'Ullo! By jove, Major!" He lifted something off the top of the bucket, a strip of colored paper. Holding it up to the light, he read: "Ropo-Stinko. Odd name, eh, what?"

He looked more closely: "Cigars That Go Boom. Kid-EBber Newtlyy Company. Five cents each."

"Strike me pink't!" broke in Major Fyer-Sayles. He drew himself up in high dudgeon. His jowls inflated and quivered like a wind sock. "Tobacco juice! That's what! In the blomin', blinkin' tea. Quite filthy, an' all that. Frightful joke, don't you think? Find that now—I'll 'reelhead him to a gun carriage. Shoot 'im!"

"I know the bounder," Captain Boyle-Rye said, after fighting off a swoon and wiping large beads of nausea from his face. "It's Lieutenant Pinkham of the Ninth Pursuit over at Bar-le-Duc this morning, he did that. Dropped in for a spot of petrol, though there was ample 'is Spad. Gad!"

Major Fyer-Sayles got apologetic again, fairly blew off steam. He strode to the Operations Office, promising dire punishment for the offending Spad, and reported the terrible act of sabotage.

"That's what I said, Garrity! Tobacco juice in the squadron's tea, no end! Four of my brave chappies unfit for service at the moment, Sir. Proof? Egad, man, you shall jolly well 'ave it! Ropo-Stinko. Cigars That Go Boom. Bah-h-h-h-h-h-h! I demand that Lieutenant Pinkham be put under arrest. Attempted to assassinate British flying squadron, an' all that! Treason, Criminal, and... Major! The blinkin' blomin' idiot. Shoot him!"

"With pleasure," Garrity roared. "I'll have him under arrest in just three minutes. Sorry, Major. In the tea, eh? Tobacco juice—that's bad, yes. The man's a menace to—" The Old Man broke off, hearing the Limey Major hang up on him. Then he bellowed for Phineas Pinkham.

When the Boonetown patriot got to the carpet, the Major casually asked him for a trick cigar. He wanted to fool a smart brass hat in Nancy, he said.

"—er—I am all 'eem, Major," Phineas confessed. "Haw-w—er—I get it! Trappin' me, huh? Oh, don't try to stall! I know what you're up to. Awright, I fixed the Limeys tea wagon. Tea for the Tharles?"

"Pinkhamsey, you put the Frog flyers making faces at us. Now the British are out to nail us. If we want to lick the Boche in this sector, we've got to have full co-operation from the other outfits. You're wrecking the works, you fan-cared imbecile! I promised that Limey Major I'd have you arrested. If don't, he'll go to Chaumont and demand—"

"A fright, arrest me!" Phineas said. "See if I care. Then somebody else will have to get von Frankenstein. Haw-w-w-w! You know how they'll decorate the outfit that gets that big hunk of weeny-wurst. The squadron will get decorated, an' Pershin' will come to shake hands with all the flyers and their C. O. Well, I had an idea how to get the bun, but I will forget it. I'm not appreciated. Bong swar to you, Major—"

"You're still in circulation, Pinkham!" the old man fairly screeched. "But you keep out of Bar-le-Duc and take your name off that Spad. That Limey won't know whether you're in the kink or not. If he finds out—and if I catch you aggravating those British flyers in any way again—I'll—I'll—"

"Oh, you wouldn't do that!" Phineas grinned, backing out. "You won't be sorry for such leniency, Sir. A Pinkham never forgets."

NOW over on the Limey drome there was terrific excitement. A visitor had arrived and strode into squadron headquarters. Thereupon, a batman ran into the quarters maintained by Captain Ronald Boyle-Rye and whispered excitedly into the flyer's ear.

"What, Muggins? You're pullin' my leg, Muggins!"

"I 'ope to drop dead, I do, Capting, if I ain't givin' yer 'eard straight, Sir. Yuss—hit's 'ein—"

"Pip! Pip! Fetch my new boots, Muggins, 'o to it, old chap!"

The British Camel outfit was all agog. A little green mouse monkey came as close to the officers' mess as he dared and stared in the window. "Gor blimee, 'e's in there—lawks!"

The flight sergeant then sent his men scurrying about the drome to police up. Camels got extra inspection in the hangars. Batmen dressed up their flying gentlemen and sent them out of their quarters looking as if they were about to meet Mata Hari. Yes, the Camel drome had been highly honored. The tea outrage was forgotten.

PHINEAS PINKHAM spent most of that same night scheming in his hut. Bump Gilliss complained that the noise of his thinking kept him awake, but Phineas only grinned and shoved his hut further under the blankets.

"A thousand dollars," he grinned. "I could use that nicely!" Getting Frankenstein for the Ninth was imperative, too, for the reputation of Garrity's fly-

ers had suffered at Chaumont during the past few weeks. Why it had been Brigadier Wofford of the British Army who had jumped out of his motor car and capture a Jerry, this carried important information on his person. Von Frankenstein was going to be as hard to get as a six weeks furlough to Paree. Phineas admitted, but he had knocked off the other vons who were supposed to be immune to Yankee skullduggery. By midnight Phineas had it all figured out.

Aerial warfare was at a standstill for the best part of the next day. The sun did not dry up the soup in the sky until four in the afternoon. Phineas Pinkham was called to write the history of the patrol and how Howell's flight over the back again. He circled in the ozone back of Metz, then dropped a corn syrup can weighted down with a chunk of iron. It was a written defy to Baron von Frankenstein, the Munich Monster, the Scourge of France.

That night Phineas sneaked into Bar-le-Duc and while there kept an eye peeled for signs of Limey pilots. He saw none—but one of them spotted him. This fellow followed the Yank to a Frog bazaar that sold hardware and when the Yank lowered himself down among the darkness, the Limey went in and asked the merchant what Phineas had purchased.

"Mais oui! Ze paint of gold, oui, mon ami," the Frog squeaked. "Ze American he say somethin' about 'e 'eimeh-brumum, oui, oui! He says 'e have no case of ze descendus, non. Je ne comprend pas?" He made a voluble negative gesture with both hands and shoulders.

"But I jolly well think I do, Frenchy. Ha! Ha!" the British chuckled. "Donnez moi ze same thing, oui? Ze Americaine, he play the trick, comme sa? So the English have no sense of humor, oh? Pip! Pip! How much argent, mon chappes?"

Phineas made another purchase, however, that the snooping Limey knew nothing about—a bag of the strongest cayenne pepper that could be procured in France. When he got back to the drome, he scouted around for an iron bucket and when he had found one, he hied to his hut and went to work. Yes, skullduggery was apropos all over the sector.

And over back of Metz, a Hun with a head as bald as an egg sat in his quarters reading a challenge. Von Frankenstein's fierce black mustache seemed to leap from one side of his face to the other. "Gott! he ground out. "Ofer Mont Sec at five by der glock on next Vendsday, if you haff der nerfe! Donnorvetter mit Blitzen. Pingham! I will dey! All der flyers could nort do, ja! Gott nie dank!"

Now the next day a Camel and a Spad happened to spot a Rumpler over the Meuse and the two Allied crates went to work on it. They washed it up and it drifted down inside the Yankee lines. This thing came back to the drome and reported, in the presence of the aforesaid distinguished visitor, that he had shot down a German Rumpler. The distinguished visitor shook his hand, all of
which made the Limey's head swell to mammoth proportions.

But then came the argument. Major Rufus Garrity, called up Major Fyer-Sayles and demanded proof that his Spad, Lieutenant Bump Gillis up, had not had something to do with the descend. He asked the British C. O. to accompany him over to Thiaucourt to get a look at the wrecked Rumpler. Fyer-Sayles complied and when they arrived, Lieutenant Bump Gillis pointed to a bullet that had flattened itself against the Mercedes cylinder head.

"Haw-w-w-w-w!" Bump guffawed.

"Carburnde Pinkham had us paint the bullets in our gun belts with gold paint. Laugh at that off, you Limey—or old chaps!"

"Decidedly odd, isn't it?" Captain Boyles-Ryce said with a wide grin in the direction of Fyer-Sayles. "No end, old bean. You should take a look at our Vickers ammo. The bullets were glazed last night. Rippin', eh, what?"

"H-huh?"

"Our compliments to Leftenant Pinkham," Fyer-Sayles chuckled. "Smart fellow, eh, what? Tell the chap to sit down on his cell bunk and think up some more jolly old tricks, Chevalier."

The Old Man had a time of it keeping Bump from trying to choke the Limeys. In fact he had to use all his own will power to keep from punching Major Fyer-Sayles' laugh down his throat.

Back in Bar-le-Duc Phineas got the news and he threw a conniption fit. "Why the dirty tea sponges! Those bums had me followed, I bet. They—oh, I'll get him! You wait!" he raved. "Nobody can steal a Pinkham's stuff for long. It is poison."

MAJOR RUFUS GARRITTY bit pieces of his mustache and was about ready to back Lieutenant Pinkham in anything the Boonton plotter plans to do. Anything short of murder—and even that if he could guarantee a good alibi. But luck had been against the Old Man for weeks. He had to play safe.

But not Phineas Pinkham. In mid-afternoon of the next day, his Spad shorn of all identification, he flew high over Souilly with Captain Howell and the others who made up "A" Flight. He was stillsmarting under the backfiring of his trick. Then, unwittingly, he got separated from the other buzzards and three were left. He tried to get away. There was an ambush behind a cloud. They came tumbling down on the intrepid Yank, opening up with everything they had—and it was more than a handful of pop corn.

"Haw-w-w-w-w-w!" Phineas ululated, and he tried to get back downstairs with a whole pelt. But then the first Fokker D-7 came in from right angles, the second shot up under the Pinkham seat, and the third jockeyed into a position where he could get a pot shot at the nape of the Yank commander's neck.

Phineas stunted the Spad as if it were only a kite in an attempt to save $10,000 worth of insurance money for the U. S. Government. Ping! A wire snapped.

Even so, the Spad was kind to Phineas and did everything he wanted it to do. It even churned out more revs per minute than the maker had ever intended it should. And if it had gone through the maneuvers that the Pinkham starch was running through, it would have been well beyond the reach of the Fokker trio.

"Br-r-r-r-r-r-r!" One Boche got too anxious and cut across in front of Phineas. Garrity's problem shot the Fokker's tail off and there were now but two D-7's left. They were plenty, though.

The Spad was getting well used up when a Bristol Fighter appeared off to the left. Two Camels were nurserying it along—two Camels whose identification numbers showed brightly in the sun.

"Good ol' Limeys!" Phineas yelped. "I was only kiddin' you chappies, Haw-w-w-w-w! Well, there goes the Heimies! Come back, you yellow bums! I was only startin' to fight!"

But the Bristol kept on going—and so did the Camels.

Phineas called them terrible names. Then the Huns came back and started in on him again, and the miracle man from Iowa was battlin' bare where he had never survive to keep a date with von Frankenstein. The Hisso coughed and Phineas felt his heart merge with his tonsils when he looked at the loss of revs on the tachometer. Another cough and the prop in front of him wagged indolently. Fabric curled up from a wing and laid its ribs bare.

Phineas started for the linoleum with Spandaus slugs ripping close to his fan-like ears. The lima of a tall pine tree now made a swipe at the Spad and held on for a few seconds. Phineas, however, had himself unstrapped from the pit by the time the Spad tumbled across Frog real estate. He fell out and went face first into a patch of blackberry bushes. When he crawled away from the prickly entanglement, a couple of dows were looking down at him.

"Cripes, are ya alive, Lootenant? Ya look like ya was used for a target in a knife-throwin' contest between two cross-eyed—"

"Haw-w-w-w-w-w!" Phineas laughed. "Your are a scream. Start runnin' before I get on my feet or I will cut your throat!"

"I was bettin' my pal, here, ya would git down from that fight all right, Lootenant. Pay me, Pooley."

As groggy as he was, Phineas got up and tossed the guns across two meadows. Then he sat down and promised plenty of trouble for the Limeys, "I will go right to their faces an' tell 'em what I think! The first truck that comes along—or—what's that I see over there? Why it's a motorcycle! Them doughs—I better get to it before they double back. He jumped up.

Over the hills and through the woods to the Limey drome went Lieutenant Pinkham. He rode right by a shouting Limey sentry and right into the drome where three Camels crouched. He saw no sign of the Bristol—but he recognized the two Camels that had been with it.

Across the field squatted a long shack with an elephant-iron roof. Little slits

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FLYING ACES

of light were visible at the windows. To the ample Pinkham auditory assembly came muffled sounds of revelry, Toward this center of social activity he rode. He hopped off the mechanical bug and tramped right into the Limey mess hall.

British flying officers, red tabs, and the like, stopped in the midst of a toast and eyed the bedraggled Yankee pilot. Phineas announced that he wanted to talk to two Camel pilots that had acted as nunservants to a Bristol a few hours ago. "Oh, I know the bums are here!" he rapped out. "Their Camels are out there. They are cowards in the enemy's face. They flew right by a dogfight I was in and didn't even stop. They left me fightin' three Krauts. Where are they Limey tramps?"

"That's enough!" exploded Major Fyer-Sayles, extricating himself from the group. "You've got colossal cheek, you ugly, jail-breaking beggar! There were no Camels up with any Bristol this afternoon, you bloomin' blighter! I was at Vanbeek at myself. But I gave orders. A Bristol? Ha! Ha! You're balmy, ol' chap. Now you leave here before I have you!"

"Oh, yeah? I will lick every Limey pilot here who says I'm a liar," Phineas erupted. "They left me to get washed up! Have I got to send you tickets to my fights? Oh, I will report this. See if I don't!"

THE LIMEY PILOTS looked flustered. Major Fyer-Sayles coughed with embarrassment and tried to calm Phineas down. "Lieutenant, ol' bean, you are not yourself, man! We have a very distinguished guest here, and—"

"I don't care if it's King George!" the Yank snapped. "You Limeys are goin' to listen to what I think of you bums. I almost 'went west' just because—"

A lithe figure now warmed through the knot of officers and moved toward Phineas. He wore the uniform of the British Flying Corps and his visored hat shaded his eyes. "I'd like to talk to the American chap," he said to the Limey C. O. "Jolly sort of fellow, isn't he?"

"Oh, don't be sarcastic," Phineas countered. "If you were up there gettin' your pants burned with traces an'—"

Horror and consternation wrestled for supremacy on the faces of the Limey flyers. The C. O. was fighting off a stroke and looked as though he would lose.

"Lieutenant Pinkham," he finally gasped, "you are the Royal Highness, the Prince of Wales!"

"Haw-w-w-w!" Phineas snorted. "Don't kid me. You know I am, ol' chappie?" he said to the distinguished guest. "I am the King of Spades. Haw-w-w-w! What prince would get this chance to get his gosh-darned sword?"

"Dammie!" a red tab said. "This is a positive affront! Major, have that man placed under—"

The guest of the Limey squadron smiled and waved the C. O. back to his place. "Heard a lot about you, old feller," he said. "Hope to have the pleasure to meet you, Lieutenant. But I jolly well will not accept a cigar, oh, what? Ha!"

"Do you know I like you, ol' tomato," Phineas chortled suddenly. "You've got a sense of humor and look more human than these other sour pusses. No kiddin', are you a prince?"

The young officer reached inside his suit and spanked a tin and withdrew a thin leather case. With a smile and a snappy salute, he handed it to the flyer from the U. S. A.

Phineas' eyes popped out when he examined the credentials. He was looking at the coat-of-arms of the House of Windsor, plus plenty of other proof that here, standing in the flesh, was the heir to the British throne. The shock unsteadied Lieutenant Pinkham for a moment, numbed his senses.

But only for a moment. In the next few seconds, while red tabs and Limey pilots stood as if frozen, the Prince of Wales' brain clicked with the usual rapidity. The two-seater Bristol! Camels nursing it! Hurrying away and leaving an Allied ship to the mercy of the bad Boche! Sure, that was it!

Phineas then quickly resorted to prevarication as he flustered with Wales' leather case. Slight of hand was one of his many accomplishments. He pushed a hand into his pocket, quickly drew it out again as though embarrassed, and with a grin he closed the leather case and handed it back to the Prince.

"Gosh, I never figured on meetin' you, Your Highness," he beamed. "How's everything in London? Do they still have swell fish and—"

"Har-r-rump!" rumbled the Limey C. O. "Don't mind the blighter, Your Highness."

Windsor held up his hand. "I'm enjoying this no end, Sir. Fine chap, indeed. Somebody give the fellow a drink."

"Now you're talkin' my language," Phineas laughed. "Haw-w-w-w! A drink would put in his blood."

The Prince lifted his glass. "Happy landings, old chap!"

"You said it," Phineas glowed and drank the brandy at a gulp. "And if you're around Mont Sec tomorrow, you will see me knock off von Frankensteiner Toddle, old chap! Wait till the boys back in the barbershop in Boonetown hear about this. You're a sport, Sir! One of the best I ever met. Cheerio an' all that. Pip! Pip!"
PHINEAS went back to the Ninth Pursuit and directly to his hut. He sat down and pulled a piece of folded paper from his pocket. It bore the crest of the Windsors. He read some writing, then folded the paper up and put it back into an inside pocket.

"Wow!" he said. "I've got the Limeys where I want 'em now! Strike me pink, an' all that slush! Haw-w-w!"

An orderly interrupted with a message that Phineas was wanted in the Operations Office.

When Lieutenant Pinkham limped into the O. O., Garrity roared at him:

"Where've you been?"

"Out with the Prince!" Phineas retorted. "Doesn't he feel a swell guy!"

The C. O. looked aghast at his thorn-in-the-side and swore. "Get out of here," he bellowed. Then he calmed down suddenly. "Ha! Ha! I was only kidding. How about a drink, Pinkham? Could use it, eh? Here—help yourself. Come back later and I'll talk."

The next day would be Wednesday, Phineas mused as he went out grinning, when he had a date over Mont Sec. He had a job to finish before that time, though. The biggest slangshot that was ever lit. He would have to get Casey in the right mood to help him, so he went over to his hut and got a deck of marked cards out of his trunk. Casey would go for them.

And Casey did. "Gee, tanks, Lootenant," the flightsentimental ewe who Phineas gave them to him in the hangar housing "A" Flight's Spads. "I need some francs. Now who ya want killed?"

"Haw-w-w-w!" Phineas guffawed.

"Only the C. O. But why end his worries? I have a tricky job to figure out and put on my crate by tomorrow late in the P. M. Now shake a hand that's held the hand of the next King of England, Sarge."

"Huh? Say, Lootenant, that last crackdown maybe—"

"Aright. Forget it and let's get to work. Fix the内外 to this chunk of wood. We've got to figure out a way to hold—"

Anyhow, Phineas didn't get back to his hut until about two in the morning.

As soon as he hit his bunk he started dreaming that he was in Buckingham Palace with short pants on and silk hose, teaching Royalty how to make an omelet in a high silk hat without spilling the hat.

EARLY THE NEXT MORNING there was a pow-wow in Captain Boyles-Ryce's quarters over at the Limey drome. "The balmy Yankee Lootenant has got a scrap on today with the Boche Baron. I'm jolly well certain of it, old chap, for I've had a man busy checking up on him. Now the Prince would be no end disappointed if an American should down the great von Frankenstein. Frightful black eye to us an all that, y'know. Follow me!"

"Quite, old chap," replied the pilots in chorus.

Boyles-Ryce poured three jiggers of brandy. The Limeys drank to the King and to the Camel skipper who was going to make a try at snatching Frank-
after my skin, too. Why didn’t you join the Navy?"

"Keep your chin up and your blood pressure down, Major," Phineas chirped, climbing into his Spud. "Van Franken-stein has chalked up his last kayo and he will be a stumbler by suppertime. Addo, bums! Contact! Pip! Pip! An’ all that rubbish, eh, what? Haw-w-w-w!"

Meanwhile, there was a Camel purring on the Limey drome with Captain Boyles-Ryce, Limey ace, standing nearby, his monocled eye glued to a wristwatch.

At this time, too, Baron von Franken-stein winged out of Alsace, his eyes as cold as an Eskimo’s back porch, his den- tal assembly bared. "Ach, der Tag!" he gloated. "Neller I lost yuts, sein! Das Pungham he ist already yedt by Mein victory list Noomer Eighty, ja, Ver- dammt opostard! Cumst der Morgen und I gedit idt der Iron Cross from Pots- dam—and Pungham he gedit idt der wooden cross by der grafeyard, vunce ben."

Fourteen flak batteries were built during the gigantic embroglio to get people in a hurrup. Von Franken-stein got over Mont Sec in his favorite Albatas forty-one seconds ahead of Phineas. And when he spotted Garrity’s duelist, he had four thousand yards to cover.opted for the Yank. "Dumkopf!" he gutturated gleefully, showing the stick away from him. "Ach, das ist too easy yedt, ja?"


The Albatos blazed right after the Spud, a hundred yards. Von Franken-stein, the Pinking tabloid just as Captain Boyles-Ryce winged over and came shooting down. Abruptly, Phineas whipped out a knife and cut a cord that was strung along his pit.

"Ach, wha-a-a-angl! Tw-w-w-w-w!

Baron von Franken-stein saw an ob- ject hurtling at him—saw it too late. It smashed into his prop before he could lift the nose of the Al out of range and the whirling piece of engine lumber bashed what turned out to be a bag of pepper to bits and sucked in great whiffs of the cayenne condiment that packed a mule’s kick. The Von’s nostrils were filled with it! So was his throat! He felt as if he were on fire from the neck up. Tears streamed down from his peppers and fouled his gaggles. He coughed, then went jolted. Von Franken-stein had followed suit. The Munich Monster was now rendered as harmless as a kitten, and his crate spun down through the ether.

Then the Limey ace hopped on him before Phineas could go up and spiral down. Vickers pounded.

"Oh, you dirty tea sipper!" Phineas howled, now feeding von Franken-stein a lot of mayhem himself.

The Munich Monster cracked up fifty yards from a Yankee communication trench and Captain Boyles-Ryce and Lieutenant Pinkham swooped low to see some doughs rush out to inspect the re- mains. Both pilots then went home. And fifteen minutes after Phineas landed on the tarmac of the Ninth, the news came through that Captain Boyles-Ryce had downed von Franken-stein.

"Oh, great, great, Pinkham grinnned.

"Why I peppered the paws off of that booge man. Get the squadron car, as we are goin’ over an’ pay a call on them pip-pip palookas. An’ tomorrow we will really see who shot down von Franken-stein. Yes, sir!"

Major GARRITY, Phineas, and Flight Captain Howell sped toward the British drome. They arrived there with their dander up and walked directly into the Limey Operations Office.

"So Boyles-Ryce shotten the Baron down, huh?" Phineas began, pointing a finger right at Major Fyer-Sayles. "Major Fyer-Sayles. Boyles-Ryce knows he is a liar. I got that Kraut ready for the cleaners, and—"

"Garrity," exploded the Major, "this is the last straw, by jove!"

"Blasphast it, Pinkham," the Limey ace said, coming from the mess bar, "you jolly well don’t question my victory over the Biffing Baron, do you? I’ll have you know confirmation came from—"

"Now just sit down, all of you," Phineas broke in, drawing folded paper from his pocket. "Peepin’ Joe’s a note—a sorta diary note—written on Buckingham Palace stationery with a coat-of-arms on it and everything. I mean it don’t belong to no panhandler. Listen—"

"Today, twenty-eighth August, Nine-teen-Eighty-nine, experienced the great- est thrill of my life, no end. After much difficulty I persuaded the pilot of a Bristol fighter—who landed on the Camel drome for fuel—to take me for a trip over the lines. Two Camels ac- companied us as escort and on the way home I witnessed an aerial fight between three Boche and a brave American flyer. The pilot of the Spad fought gloriously, but in vain. I suggested that we take a hand in the fuss, but my pilot insisted that he must not risk my life. So he continued on home . . . ."

Major Fyer-Sayles looked as if he had swallowed a spider. Captain Boyles- Ryce tottered a little and looked around to see where he had left his drink.

"Cripes!" breathed Major Garrity.

"Awright," Phineas grinnned. "Now, should I tell that to the King? What will the Queen Mother say when she finds out you took the heir to the throne over the lines, huh? I bet even the Air Minis- ter will get fired. Boys, what a shake- up in the R.F.C., eh, what, ol’ turnips? Pip! Pip! Cheerio, an’ all that rot. What I mean is—well, who shot von Franken-stein down, huh?"

Major Fyer-Sayles looked daggers, stilettoes, and broadswords. "Uh—er—- Leftenant Pinkham, I—er—will ‘phone Brigade to that effect. Tell the blighlers there was a—er—night mistake—er—uh, yes, if you’ll give me that note—"

"Oh, you didn’t get that in, huh? I will see you after the guerre about that. Haw-w-w-w! Anyhow, we must have co-operation if we are to defeat the Boche in this sector. Comprenny? Any- how, when I get the two hundred pounds cash, I will throw a binge, as our out- last should get better acquainted, eh, what, ol’ potaters? Now just call up Brigade while we are here."

Major Fyer-Sayles obeyed with alacrity. When the error regarding the descendu was rectified, Phineas bowed low. "Bong swar, ol’ beans. A cheerio and a goodnight to Major Fyer-Sayles. Boyles-Ryce knows he is a liar. I got that Kraut ready for the cleaners, and—"

"Pinkham," the Old man enthused as the squadron car rolled toward Bar-le- Duc, "you’re a positive genius."

"It took you a long time to find out. Haw-w-w-w-w!

But, dear reader, there is an anti- climax to this tale. At that very mo- ment a big car was trundling across France toward Laon. In the back seat a young man drew a leather case from his pocket and looked at a diary note that he wanted to finish. He plucked a folded- piece of white paper loose and spread it open. Then the heir to the British throne gulped in great surprise. He read:

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3 Rubber pistols, No. 45 J . . . . . . . $2.25 Please remit. This account is long overdue and we are losing patience with you. If we do not hear from you within three weeks, we will put this matter in the hands of our lawyers for immediate action.

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Credit Department.

On the Light Plane Tarmac
(Continued from page 23)
ment for these flying volunteers, depending upon the true military aspects. No one, either civilian or professional soldier, should be expected to assume air duty without life insurance behind him. This was the first obstacle the members of the British Civil Air Guard faced, and later insurance had to be underwritten by companies in the United States. Eventually, the candidate carried it himself at a small premium fee, and his policy covered him while he was actually carrying C.A.G. duty.

Second, the candidate should be assured that he is signing up for aviation only. His acceptance must protect him from any emergency draft plan which might compel him to serve in some other branch against his will. After all, he is a volunteer and is entitled to such considerations.

Third, all training should be under the supervision of the Government and carried out at recognized training centers by professional flight-training instructors who are fully qualified for this work. This will protect the present schools and civilian instructors and promote co-operation between the civilian schools and the services.

Fourth, selection should not hinge on university training or the lack of it. Such education is necessary for Cadets who are to become Regular Army officers. But we think any civil air training plan should be successful, include candidates ranging down to two years of high school training. A small commission could be formed to investigate the backgrounds of the most successful Air Corps cadets and to study the particular qualifications which have made them pilots. We should find out whether it is primarily education, native intelligence, athletic ability, family background, or simply some inherent quality that makes a man into a fine pilot.

Finally, we should play square in making the selections. No candidate should be accepted simply on his family name, his personal acquaintances, or his political affiliations. Every man who can spare the time—and the program should
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be designed with a very wide scope so that the fellow who works ten hours a day can still be included—should be given an opportunity to take part in this all-important volunteer plan.

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And so, reader, if you're really interested in the training plan sit down and weigh and sift the facts carefully. Don't take it for granted, either, that the Powers-That-Be already see it your way. Write to your congressman and respectfully tell him of just how the plan stacks up to you.

Gas Job Knee Action

(Continued from page 46)

Lower one end of the rubber motor into the fuselage and fasten it to the rear hook. The other end is attached to the manifold on the prop-shaft. Be sure the opening in the front of the fuselage nose is large enough to allow the rubber strands clear operation.

Assembly and Flying

IN ASSOCIATION with the Mayor and tail members to the fuselage apply plenty of cement at all joinings. It is advisable to use small wood props under the extreme ends of the wing tips and horizontal tail members. These will hold the parts in position while drying as well as to serve in properly aligning the members in relation to the others.

The ship is painted aluminum throughout. To get an exceptionally fine finish, apply three coats of wood filler to all wood parts. After the last coat, sand over the wood surfaces with wet emery paper and then dry thoroughly with a rag. Now apply a single coat of bright aluminum paint to every part of the ship.

Parts such as the radiator, wheels, and hinge-lines are touched up with black paint. The rubber markings in red, white, and blue are painted in position. And regulation stars on both upper and lower surfaces of the wings are also attached. The words "U. S. ARMY" are divided by placing "U. S." on the under surface of the left wing and "ARMY" on the under surface of the right wing. The letters should be black.

Before test hopping, glide the model over clear ground. You'll be able to determine in this manner just which way the model should be balanced for power flights. Give the prop about fifteen turns for hedge-hopping flights at first. Tricky characteristics, if any, will manifest themselves during these first flights. Now, if everything is all set, take your XP-40 out to the nearest field, wind 'er up to capacity, and let 'er go—but have plenty of room around you!

Answers

TO QUESTIONS ON PAGE 24

1—Firms are now experimenting with the building of airplane bodies out of plastics (formed in molds under great pressure). If successful production will be speeded up in this manner.

2—A sirocco is a hot, oppressive dust-laden wind experienced in Northern Africa. Notice that it is described as like a hurricane.

3—The Fairey “Flycatcher” was a single-seat fighter biplane formerly used by the British Fleet Air Arm. It was powered with a 385 m.p.h. Jaguar engine.

4—To your knowledge, no German multi-seat plane has yet appeared with any form of automatic turret on board.

5—The Bergamash A.P.1 is a single-seat attack-fighter plane designed for the Italian Air Service.

6—Some Still Live was written by F. G. Tinker, an American flyer. In it he describes his experiences while flying for the Loyalists in Spain.

7—The name Napier “Dugger” is now rated at 1,000-h.p.

8—There is no record anywhere showing that poison gas has been successfully discharged on troops or cities by bombs dropped from airplanes.

9—Aircraft motors can be stopped if ice is allowed to form on the carburetor. When humidity is high, the evaporation of gasoline drops the temperature of the mixture below the freezing point and the moisture contained in the air condenses on the manifold walls. This ice gradually builds up and chokes off the manifold passage, eventually smothering the motor.

10—The word “aerostation” refers to the art of flying or handling lighter-than-air craft, as opposed to heavier-than-air jobs.
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