AIR TRAILS

STREET & SMITH PUBLICATION

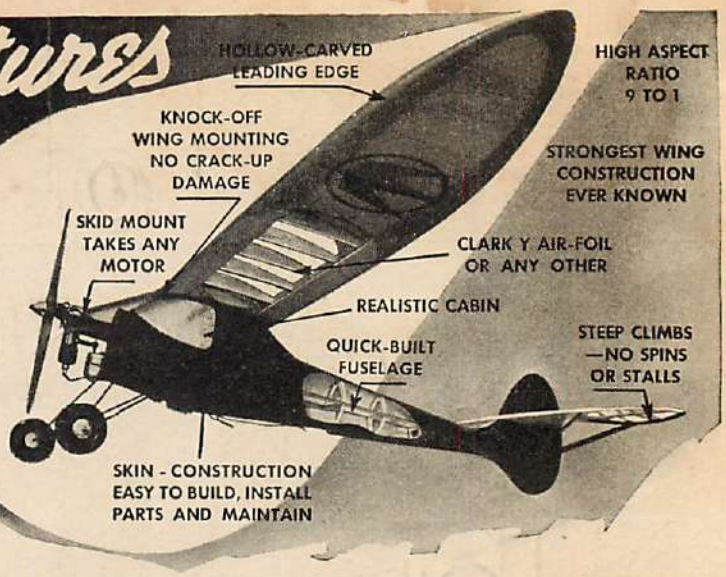
15c OCTOBER 1939

AIR COPS IN THE LAND OF THE SHEIK

(by a former R. A. F. Pilot)

IGOR SIKORSKY - DETROIT NATIONALS - TENTH SOARING CONTEST - JACKIE COCHRAN

Unmatched Features of MEGOW'S Super Gas Powered COMMANDER



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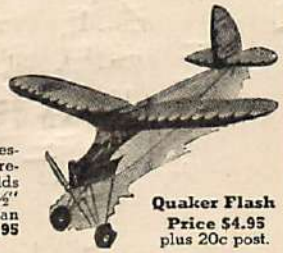

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LADY BIRDS

A Guest Editorial By JACQUELINE COCHRAN

HUNDREDS and hundreds of women from all parts of the United States write me every year seeking advice about entering aviation. Invariably my answer is the same. I believe aviation is essentially a man's game, especially the commercial and combat end. I think a woman has just about as much business flying a commercial transport airplane professionally as she would have driving a railway engine.

As a sport, flying their own planes, racing, or in certain branches of experimental aviation, there is a place for women. I say this not from any belief that women do not make good fliers, but because I think they have a more important duty to fulfill in life. With me flying is an avocation and not my vocation.

More women, however, are taking up flying every day, and I think that if and when another war should come to our country, women aviators will have an important part to play. I see no reason why a thousand or more trained women pilots could not be mustered into service in a national emergency to fly ambulance craft or planes carrying troops and supplies. Every woman pilot so engaged would release a male pilot for active fighting duty at the front.

There is a very important duty that women everywhere can perform in connection with aviation. They can do this by flying themselves, if not as pilots of their own ships, then as passengers of the air lines. They should encourage the members of their families and their friends to use air transportation. The more passengers to fly the air lines the better the service will become, more airplanes will be manufactured and more pilots trained. All of which will go to form the nucleus of our defense aviation.

I love to fly. All my life aviation has held a vital interest for me. It has become an integral part of my business, my sole means of transportation over the country. During the course of a year I fly from sixty to seventy thousand miles. About ten thousand of this I do on the regular air lines, the remainder I do in my own Beechcraft. I can cover more territory and cover it faster.

My regular flying keeps me in constant training, so I do not need special work before entering a race. Being a graduate nurse also helps keep me fit, for, man or woman flier, there is no life which demands a more rigid self-mastery than that of an airplane pilot.

One of the greatest services women of the United States could render to private aviation would be to make their own home town air-conscious. I'd like to coin a slogan: "Put your town on the air map." To do this the easiest way, paint the name of your town, your State and a directional arrow on the tops of your most prominent buildings. Many a flier would bless you for the thought as he came out of the clouds, without a radio, wondering where he was. One sight of those huge letters and he would be located and orientated, and the name of your town would forever remain a pleasant memory.

Naturally, all of us actively engaged in aviation are happy in the thought that we have contributed something to the greatest advancement in transportation ever known. I am looking forward with great pleasure to the time when I will be able to fly the Atlantic Ocean on passenger craft. It will be faster, cheaper and a great time saver. I feel sure that the service given by the Atlantic clippers will be one of the most popular of any in the air-transport field.

A proof of the importance of women in aviation was recently demonstrated most strikingly when several of the major air lines gave free transportation to any wife who accompanied her husband on an airplane trip. As the wives realized the safety and comfort of air travel their objections were removed from this newer and faster modern transportation. The majority of the women agreed that from that time on they would travel by air whenever possible. And encourage their friends to do the same.

On June 13th of this year I had the thrill of piloting the giant land plane, the DC-4. It was a thrill equal to anything I have ever experienced in the air. I know that if it were possible for every man, woman and child in this country to enjoy a ride in this, the world's largest land plane, they would realize the comfort and the safety of flying.

We Americans live in the greatest country in the world. Aviation is a thing of vital importance to our comfort and national well-being. Women can get a great deal of pleasure from aviation as an avocation and do a great good for the country by *(Turn to page 64)*

Reg. U. S. Pat. Off.

AIR TRAILS

ARTICLES

FEATURES

DEPARTMENTS

MODEL ITEMS

Full color cover photograph by Hans Groenhoff

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C.A.V.U.

This may be old by the time it is read, at the rate aviation changes from day to day, but right now it's news and mighty good news. The air corps has at last tired of all the various records claimed by foreign dictator powers and has decided to gather in a few for the United States, and gather in it did, several of them. The interesting and eye-opening part is that these new records now held by the United States air corps were made with standard military aircraft with standard crews, engines, and loads. No "five-hour" engines were used or special fuel, or trick equipment, as has been occasionally the case in several so-called record flights produced on the other side.

These new air corps records are as follows. The first one was set by the two-year-old YB-15 super-Flying-Fortress for speed over a closed course. This "old" wagon carried 4,409 pounds payload over 3,107 miles at an average speed of 166.32 miles per hour. Not bad at all considering that when the ship finally came down there was still enough fuel for another 1,000 kilometers of flight, or nearly another 1,000 miles.

The second record was set three days previously when this same ship soared to a new weight-carrying record of over fifteen tons to 8,200 feet. A new international mark.

Record number three was taken from Italy when a Grumman amphibian, the OA-9, broke the international record for ships of this type with an average speed of 186.094 m.p.h. for 1,000 kilometers. The old record was 159.8 m.p.h.

The fourth record to change hands in the right direction was for speed when a Boeing YB-17A Flying Fortress set an average speed record of 259.398 m.p.h., carrying 11,023 pounds of payload.

Number five was for altitude with weight. A Boeing YB-17A carried 11,023 pounds to an altitude of 33,400 feet above the earth.

By now there may be more, but that will do for a starter. It is gratifying to see that the A. C. is beginning to realize that the American people like to be able to point to a few records. It is true that records will not protect our shores, but they will make it easier for the A. C. to obtain funds and ships to do this very thing unless such records lull the people into a sense of false security. Let's bust some now for production of more planes.

★ ★ ★

These records were broken as part of the anniversary of the first airplane purchased from the Wright Brothers for the army, just thirty years ago. This celebration took place at Wright Field, in Dayton, O., on August 2nd. Military planes from all over the country flew to this field as part of the great nationwide demonstration of air strength. Air Trails flew with the army to Dayton in a Douglas B-18A bomber on Tuesday. The next day your editor was allowed to occupy the second seat in a Northrop A-17A attack ship during a formation flight and demonstration by the 90th Attack Squadron, and right here and now, he will state that for excitement and interest, try to top riding in one of these.

During the anniversary celebration on this day over 100,000 people jammed the airport to look at the planes on display and watch the demonstrations.

The army did a splendid job of handling the show, but many of the boys were disappointed in the lack of really new and sensational ships that were expected to be on exhibition and failed to materialize. Possibly these will be rolled out later on when a few more records are to be brought back to this side of the pond.

★ ★ ★

During the demonstration at Wright Field, many flights of military planes covered the entire country in demonstration. Mr. Happel and Mr. Winter, also of the Air Trails staff, flew over most of the New England States with a formation of the 2nd Bombardment Group in Douglas B-18A bombers. During their flight, which lasted over seven hours, Mr. Winter discovered that the Flight Engineer assigned to their particular ship, Sergeant O'Donnell, was an old Air Trails fan, an active model builder, and the head of an active model club at Mitchel Field. He related how he first ran across Air Trails on a boat from the Philippines to China. All ready, fellows? O. K.: "It's a small world."

★ ★ ★

To us the outstanding performance of the A. C. demonstration flights was the record flight of a Flying Fortress from Burbank, Calif., to Floyd Bennett Field, New York, in nine hours, fourteen minutes, and thirty seconds. While this sort of record with standard crew and load would be of interest only to Americans, it is a mighty comforting thought that the West coast gang can join the East coast gang with all their equipment in a bit over nine hours.

★ ★ ★

It is a pleasure to find that the Public Relations Section of the air corps is headed by Major Arthur I. Ennis, the new chief of this division. Major Ennis feels that the public press and magazines form the best medium for the dissemination of information and statistics on this branch of the service. More power to him and his department. Rest assured that with his co-operation and that of his assistants, Air Trails will bring you all available news and photos of service aviation.

★ ★ ★

Here's a new idea for crop dusting by plane. It's not exactly crop dusting, but rather sort of a preventive against being dusted with hailstones. The Italian blind-flying schools are experimenting with bombs to be exploded in the middle of hail-forming clouds to prevent the hail from forming and falling to damage crops below.

★ ★ ★

A novel safety test was recently performed as a preliminary to Imperial Airways' transatlantic air-mail service. Fuel dumping in an emergency may prove extremely dangerous if the dumped fuel comes in contact with the metal hull of the ship in flight. To be sure the dump valves and pipes would not allow this on the specially built flying boat *Caribou*, designed for North Atlantic service, the plane was painted with "a petrol-indicating paint." The plane took off and the fuel dumped under emergency conditions. When the plane landed, there was no indication of any contact from the fuel. Nice idea, Imperial! Incidentally, we received a letter by the first flight across the Atlantic on this same *Caribou* to add to our collection of first covers. Thanks, Imperial Airways. *(Turn to page 67)*

THIS WINGED WORLD

Presenting in photographs interesting highlights and personalities in modern flying as seen through the lenses of aviation s cameramen.

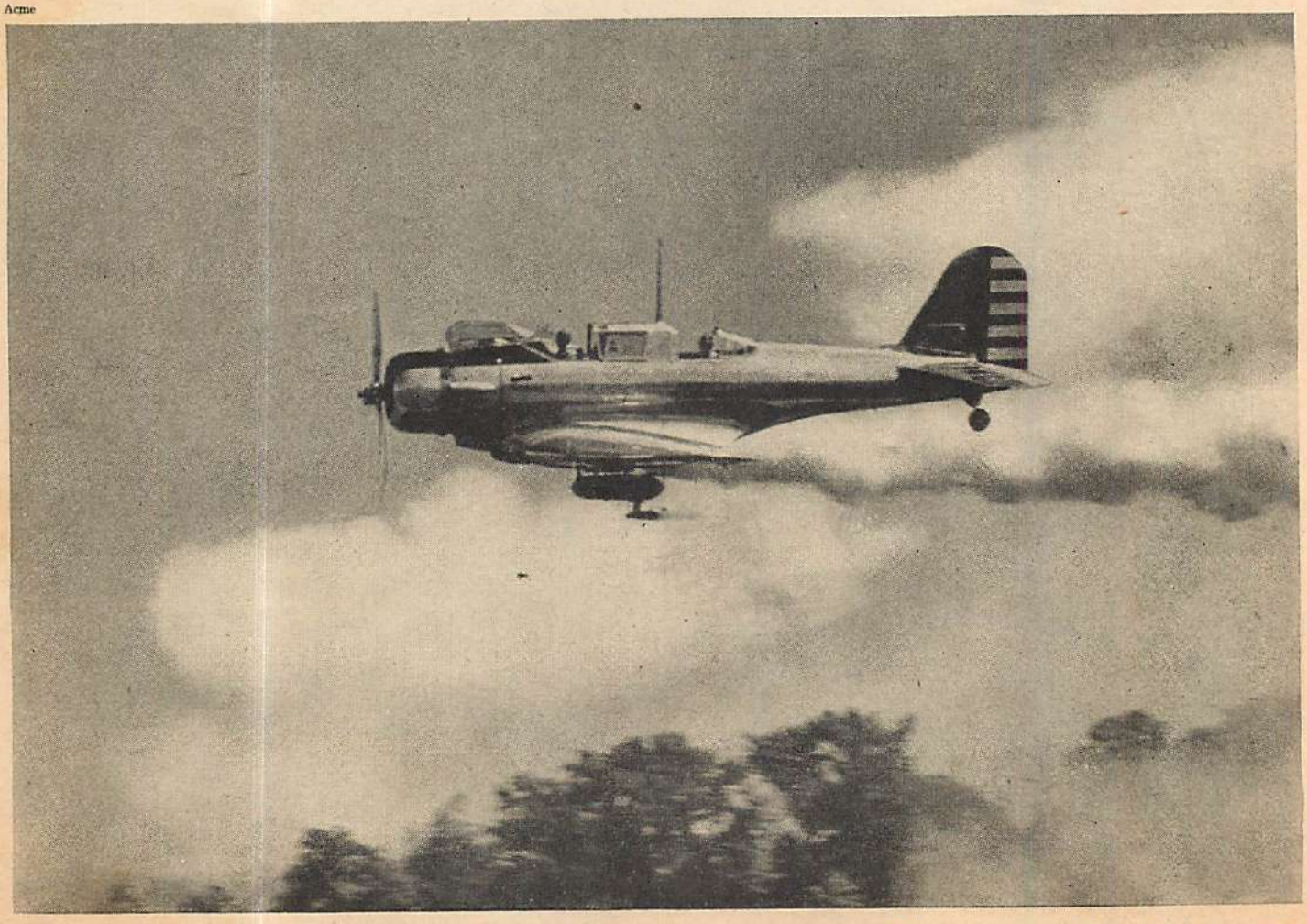
This Winged World

A propeller's debut. America's first four-bladed controllable prop installed on a Curtiss P-36A for initial flight tests.

Wide World

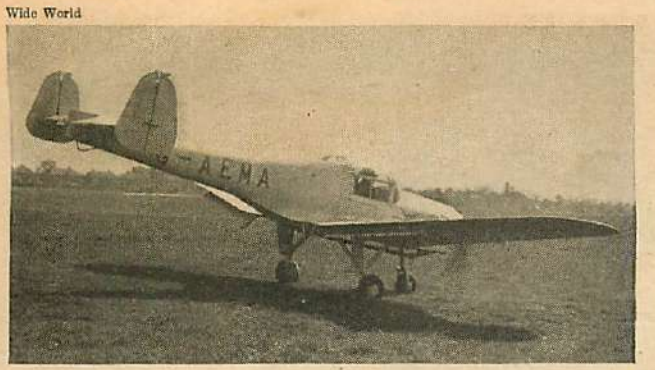
Ho, hum, what'll I do with this stuff? Robert H. Legg, of Geneva, N. Y., amid trophies of Nat'l Intercollegiate Flying Meet.

Acme



Pardon my smoke! Major William Flood, U. S. army air corps, lays a smoke screen over Edgewood Arsenal, Md., during maneuvers.

Wide World

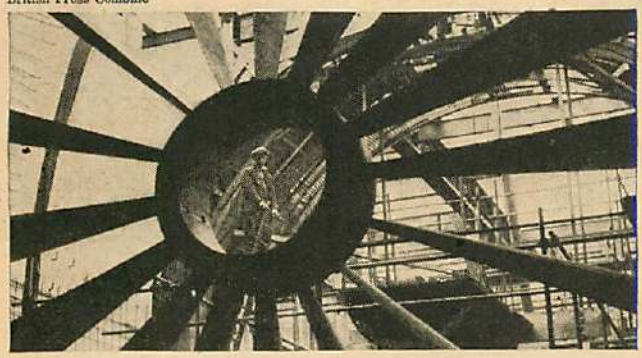


Built for training the novice, this English Cygnet light plane can be flown by even a layman with very little instruction.

Rudy Arnold

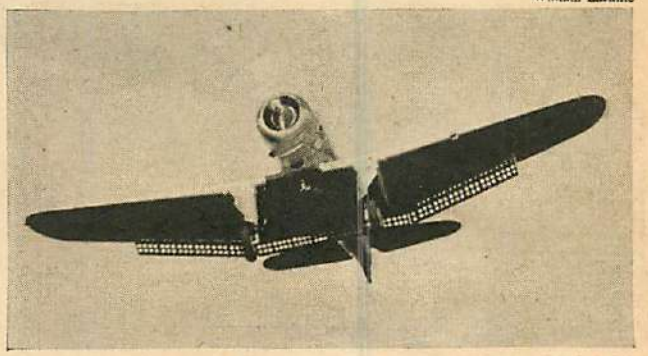
Swap even? Joe Weider, left, owner of this 1908 Reo, makes an offer to Ed Wormald, pilot of the new Luscombe beyond.

British Press Combine



This weird Japanese flag design is in reality the cement air-straightener in the new R. A. F. wind tunnel for testing ships.

William Larkins



No, Willie, not moth holes, just the flaps on the newest dive-bomber, the Northrop BT-1, perforated to stop tail buffeting.

Better than the original! Reginald Denny, movie actor and model builder, examines perfect model of Vultee V-12 built by Doering bros.

Off on an historic flight! The first flight of a rotary-wing scheduled mail route from Camden, N. J., to roof of Philadelphia P. O. Building.

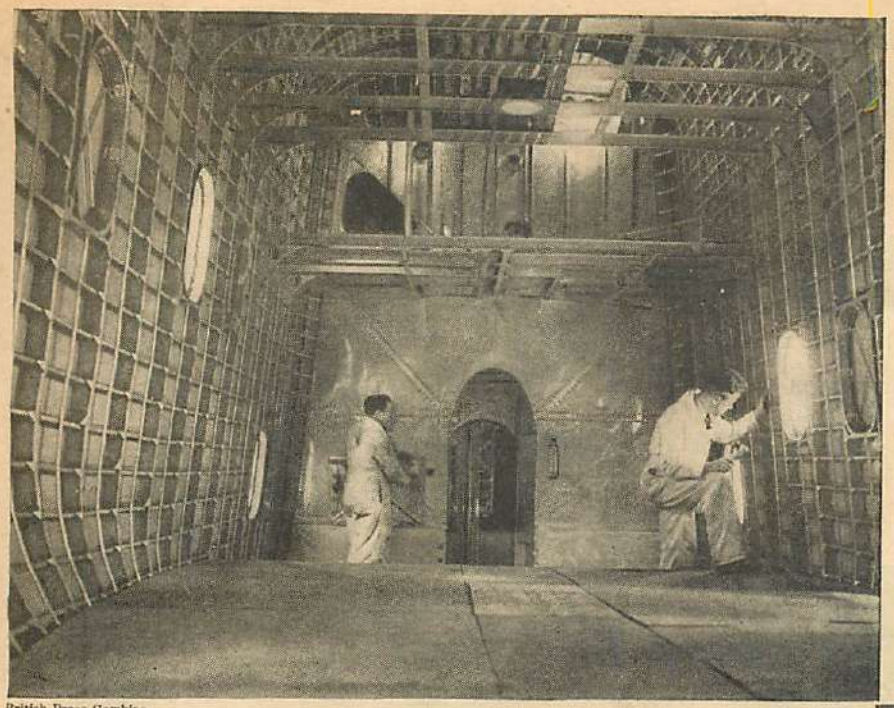
Above, a letter from Capt. Eddie Rickenbacker, head of Eastern Air Lines, that inaugurated the route.

International News

Mrs. Arlene Davis, of Cleveland, is the first woman in the United States, if not the world, to hold a heavy-transport, unlimited, commercial, land and seaplane rating.

Nope, not a mistake! Al Bennett, famous pilot, goes around demonstrating his Edo pontoons by landing on regular grass-surfaced airports and then taking off again on them. Try it?

This Winged World

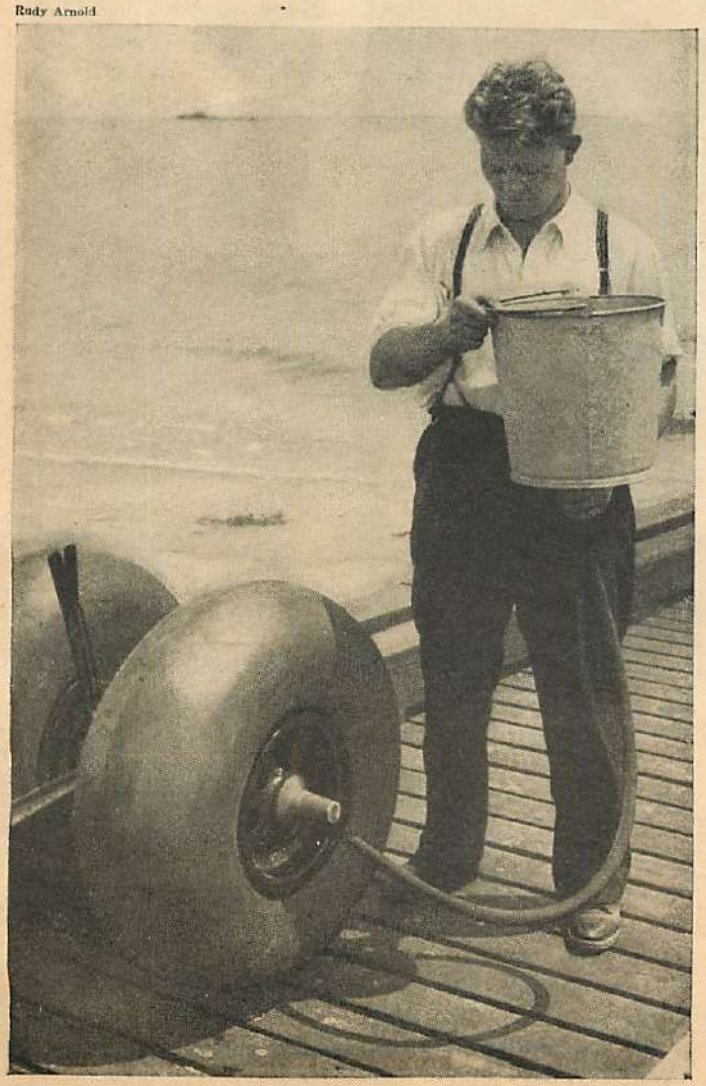


British Press Combine

An interesting photo of a light-plane hangar? It could be, but in reality this is the unbelievably large interior of the British flying boat "Golden Hind" being readied for tests. Note two "floors."

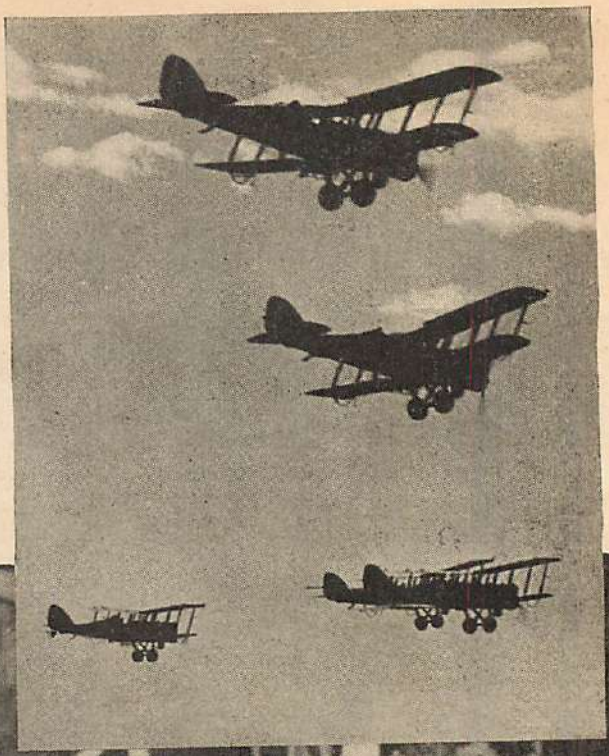
German sport plane, with plenty of "oomph," is the Messerschmitt Taifun, capable of 190 m.p.h., yet with a landing speed of 50.

Rudy Arnold



In order that tires of American Export Lines beaching-gear are not too buoyant, they are half-filled with water before inflation.

AIR COPS IN THE LAND OF THE SHEIK



When a bounty was placed on Sheik Mahmood's head, he replied with offer for the head of the King of England, inclosing the above picture of himself (holding Luger) surrounded by his bodyguard. This bandit conducted long reign of terror before capture by R. A. F.

By EDWARD DALY

British airmen fly with drama daily in their job of policing Iraq.

THE British government, in 1922, became seriously alarmed at the poor showing the British army was making in effectively suppressing the intertribal strife in the mandated territory of Iraq.

Formerly known as Mesopotamia, the country lies between the two rivers, Tigris and Euphrates, and is bounded by Persia, Arabia, Kurdistan and the Persian Gulf. Students of early scripture will recognize it as the "Promised Land" of Moses, although in the writer's own opinion, Moses, to say the least of it, was guilty of an overstatement.

At a cost of about a hundred million dollars annually, small detachments of British and Indian infantry were scattered throughout the country in hastily erected forts. The death rate, due to the belligerent attitude of the Arabs and the many diseases for which the country is notorious, was appalling. What little success the English did enjoy in their efforts to pacify the country was solely due to the few overworked airplanes which, having the ability to be here, there and everywhere, were able to nip many of the incipient uprisings in the bud.

Readers of this article may wonder just why the English should interest themselves in the country at all. A glance at a map will show that Iraq lies directly across the air route to India and the Orient. Whoever controls Iraq has a strangle hold on every air line to the Far East.

The "white man's burden" is seldom assumed by John Bull, or by anyone for that matter, unless the burden can pay for itself. Consequently, the mandate was accepted with enthusiasm.

A secondary inducement, if not the more important one, was the discovery of the Mosul oil fields in the northern part of the country. Financed by British capital and operated by American engineers, these oil wells provide the much-needed fuel for the Mediterranean fleet.

However, the cost of these twin blessings was terrific, and a revolutionary method of controlling the country was decided on.

The troops were gradually withdrawn and a system of air control was introduced. The country is particularly suited for air work. For eleven months of the year ideal flying conditions prevail. The ground is drab, flat and monotonous, presenting perfect landing facilities at every point. A forced landing in Iraq, by night or day, has few of the hazards encountered in other parts of the world.

That, of course, is looking at the matter from a purely flying point of view. The reception one might receive at the hands of the temperamental inhabitants is liable to extreme variations. On the one hand, if they are peaceably inclined, they will treat you to mountainous feasts of roast sheep, and as a sign of their happy attachment for you, will put the eyes of the carcass on your platter and courteously await your opinion of this delicacy. It is difficult to wax eloquent over this gastronomical oddity, but under the stress of circumstances it is surprising the eloquence of which we are capable.

On the other hand, if the luckless aviators have been operating against the tribe into whose hands they fall, they are treated to a slow and merciless torture, unprintable indignities being forced on them before they are put to death. The writer has seen some of the results of Arab torture, and it is not a pretty sight.

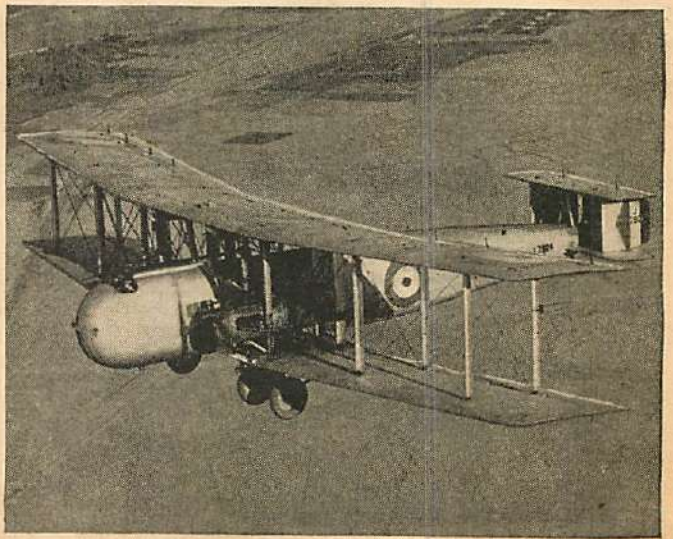
In a country where there are no roads and which is served only by one railway track, roughly bisecting the land, on which the trains go a long way in a long time, any form of military control that places reliance on ground transport is almost doomed to failure. This was particularly true of Iraq, where in addition to marauding Arabs there were flies by the billion, pestilence and a temperature frequently touching one hundred and twenty-five degrees in the shade, to contend with.

With the advent of the airplanes many of these difficulties assumed a minor importance. In the first place, the isolated garrisons were abandoned and one central and two subsidiary air bases established. The speed and mobility of the planes enabled them to get to any given spot in the minimum of time. They could fly above the flies! Anyone who really thinks that winged insects are just one of the lesser of life's evils ought to spend a few months on the banks of the Tigris where vast clouds of these blood-suckers will descend on any white man and, having feasted to their fill, will buzz off to tell their neighbors of the new manna from the skies.

The largest of the three air bases was built at Hinaidi, seven miles to the south of Bagdad, which is the capital of the country. The station accommodates three squadrons and an aircraft repair depot. A fine hospital was also built and a school of tropical medicine established to combat malaria, enteric and sand-fly fevers.

There have, naturally, been many changes in the types of aircraft used since the Royal Air Force took the country over. At the present time there are two squadrons of Hawker Harts—two-seat general-purpose biplanes with Rolls Royce Kestrel engines—and one squadron of Vickers Virginia troop-carrying bombers *(Turn to page 59)*

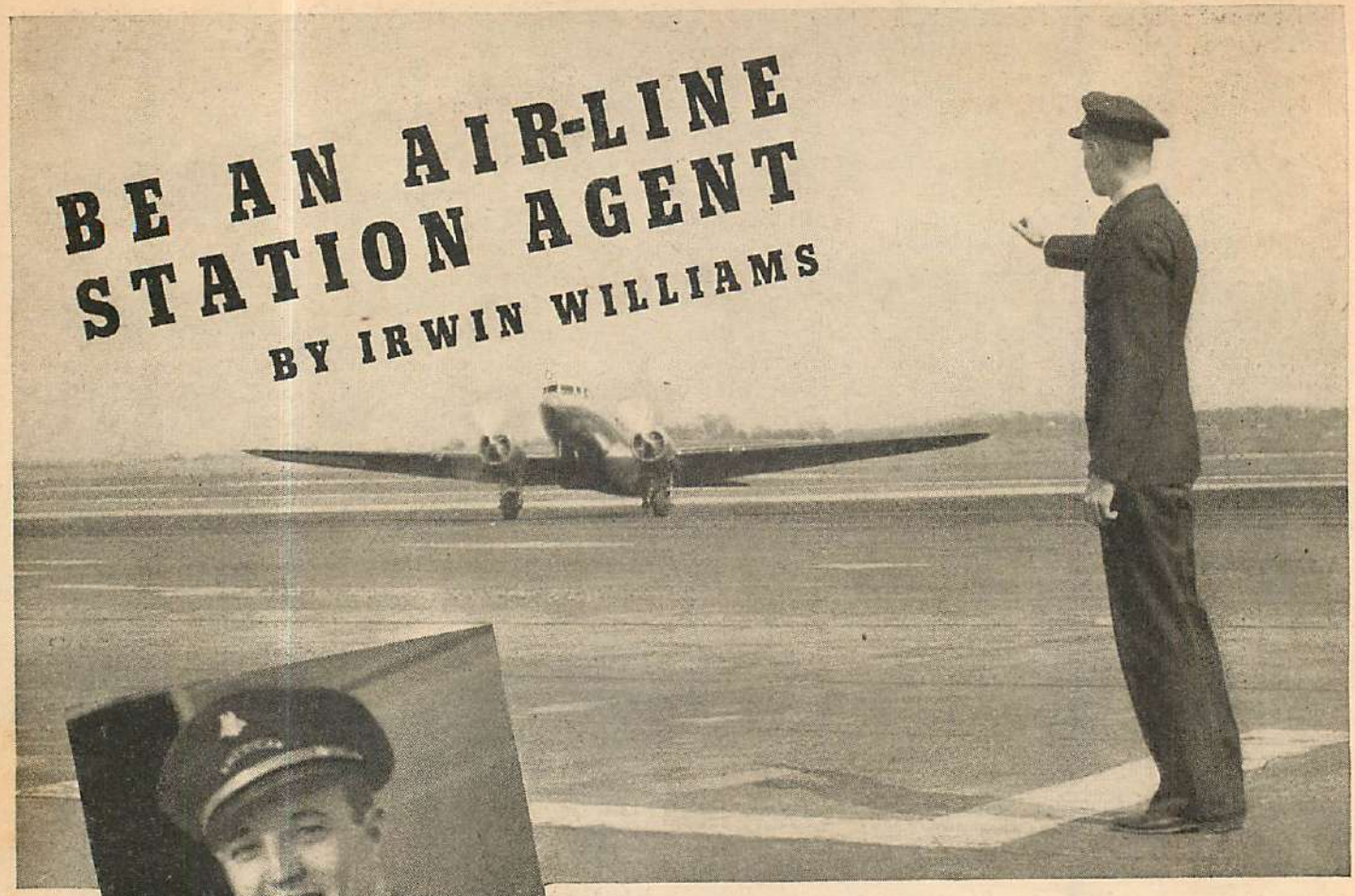
On guard in the Dyala River. A group of four Supermarine flying boats at anchor beside Arab village near the capital of Bagdad.



On the lookout for any brand of trouble. This Vickers bomber drones over the Iraq sands as part of routine law enforcement.

BE AN AIR-LINE STATION AGENT

BY IRWIN WILLIAMS



Keep her coming and a bit to the left! Station agent guiding the pilot of a transport to the loading ramp with series of hand signals.

The author, instructor at Parks Air College.

There's plenty of action even on the ground in connection with aviation.

THE position of air-line station agent offers the young man who has been inoculated with a love for aviation one of the most fascinating and promising futures attainable in the fast-growing air-transport industry.

Strange as it may seem, there are many of us who have approached the field of aviation with ambitions other than that of becoming an air-line pilot. It is true we all love to fly and pilot a ship. Many of us do fly, but not as a means of livelihood. We prefer to qualify ourselves for one of the many responsible ground positions available with an air line, and then, during our leisure hours, do our flying as a private sport.

For those of you who desire to enter aviation from an angle other than that of piloting, I heartily suggest your starting in through the ground-operations department as an air-line station agent.

"Well," you may ask, "what is a station agent?" Those of you who have utilized the services of an air line undoubtedly know who such an employee is by the efficient way in which you were served from the time you inquired concerning the line's services until you had completed your flying journey. For those of you who haven't used the air lines, let me submit a brief description of a station agent's activities.

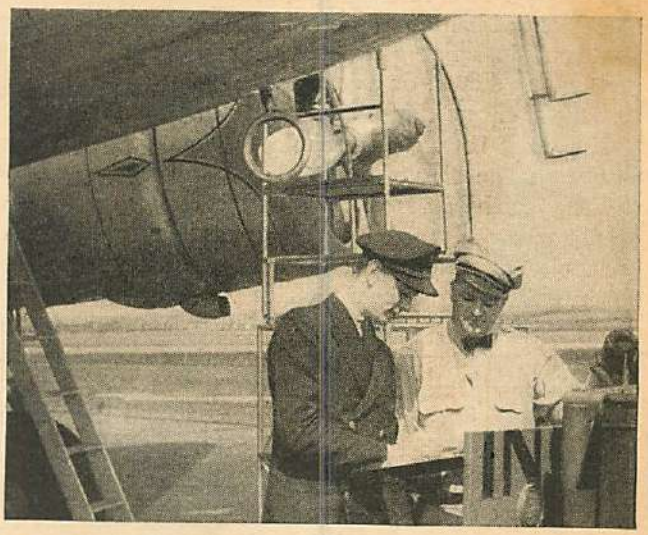
No doubt you have visited an air terminal. While watching the huge twenty-one-passenger transports arrive and depart from the loading ramps, most likely you have noticed the immaculate-appearing and uniformed individual who guides the pilot as he slowly taxies his ship up to the desired loading gate, and who signals the pilot away from the ramp by a snappy military salute after the flight has been properly unloaded and loaded again. This, performing one of his duties, is our station agent.

Before he was accepted as an air-line employee, he had to pass many rigid requirements. First, he must have at least two years of college, or its equivalent, or preferably, special training in air-line operations as offered by the major approved aviation schools. He must be between the age of twenty and twenty-eight, and preferably unmarried at the time of his employment. In addition to this, he must possess a good personality and have pleasant personal characteristics.

You may wonder why the air lines have such high standards for their station agents. The answer is that

Let's see, now, who's missing? Station agent and stewardess checking passenger list to insure correct number on board ship.

Issuing tickets is also part of station agent's duties.



The checking of gasoline load and mechanical status of plane before take-off is a responsibility of the S. A.'s, too.

Two-way communication with planes in flight regarding trip detail is possible by the station agent at all times.

the air-transport companies are making every attempt to give the air traveler the most desirable service available. Today the competing transport companies all offer similar schedules and fares over paralleling routes. They use the same type of flying equipment, the same operating practices, and similar flight-control procedures. Therefore, the air line that offers the flying public the most desirable service is the air line that is going to receive the patronage, and right here is where the station agent can either contribute to or hinder the reputation of the company he represents.

It is the policy of all the air lines first to do all they can to sell air transportation, then offer as much additional service to the public as is humanly possible. Every effort is put forth by the station agent to make your trip by air a pleasant one.

After the line has selected an individual who possesses all the necessary qualifications to make a good station agent, he is placed on the payroll as an apprentice station agent. He is then assigned to one of the many cities served by the air lines for his six-months' probationary period. During this time he is working with one of the senior agents of the line, becoming acquainted with the various duties and responsibilities he will later assume.

When he has satisfactorily passed his probation period, he is raised to the position of junior agent and remains in this capacity for several months, still being under the watchful eye of the experienced senior agent, thus preventing the occurrence of any errors that might be caused through his lack of experience. Mistakes in the air-transport business are either very costly *(Turn to page 62)*

WHAT GOOD ARE AIR SCHOOLS?

By EDWIN LAIRD CADY

The revealing answer to this question of vital interest to all students.

Fyan Photo

Individual instruction in aviation schools is of great value.

ALL I ask is a break." Jack Yoostercrabbin is speaking. But you have said the same thing yourself, plenty of times.

The quickest way to get yourself a break is to complete an aviation course in a high-ranking school. For graduates are in demand. Men and even girls who have real aëronautical training are wanted everywhere.

"What's that?" Jack is crabbin' again. "Why, I know a guy who knows a guy what went through a school and now is driving a laundry truck."

So do I, Jack. I have heard of Ph. D.'s who are tossing hay, and Phi Beta Kappas who are detectives, and electrical engineers who are selling soup. So what? A school does not guarantee your success. It merely gives you a break, or a long succession of breaks. The cashing of those breaks is squarely in your own lap.

The point is, a good school of aviation can give you just about the best chance in the world right now.

"Oh, yeah?" It is young Yooster again, boys—please do not throw anything! "What's the matter with being a chemist, or an engineer, or a salesman or something? Them bimbos keep their tootsies on the ground—"

All of those fields are good. But aviation is the fastest-growing business in the world. Where chemistry, and the automobile, and salesmanship stood in 1912, aviation stands now, with its future all before it and just enough of a past to act as the foundation for the future.

Aviation is about to absorb all kinds of men. It will need experienced, skilled older workers, and plenty of youngsters who intend to make it a lifelong career. The road will be clear for the advancement of trained men. And there will be no oversupply of the skilled. Graduates having a little knowledge of aviation are not being poured out of the general schools as they are into other fields.

Practically every university and college has schools of engineering and chemistry, but *only one out of seventeen* has an aviation school! Nearly all high schools have vocational preparatory courses in engineering, chemistry and other fields, but *only one out of two hundred* has any specific aviation course! Those are recent figures, correct as of May, 1939.

Only about twenty-eight thousand boys and five thousand girls out of six million five hundred thousand public and private high-school pupils are studying aviation in school, and by no means all of these are getting any worth-while instruction. The field is not going to be overcrowded. If you study well in a good school, you can have your break!

"But, mister!" Mrs. Yoostercrabbin's big boy is still with us. "Do I have to go through a school course? Can't I just pick it all up by myself, except for flying lessons?"

It is possible to do so, of course. Some of the best men have been self-educated. Edison was one; Benjamin Franklin and Abraham Lincoln were others. I have known a traffic cop who taught himself chemistry well enough to become a college professor in that subject.

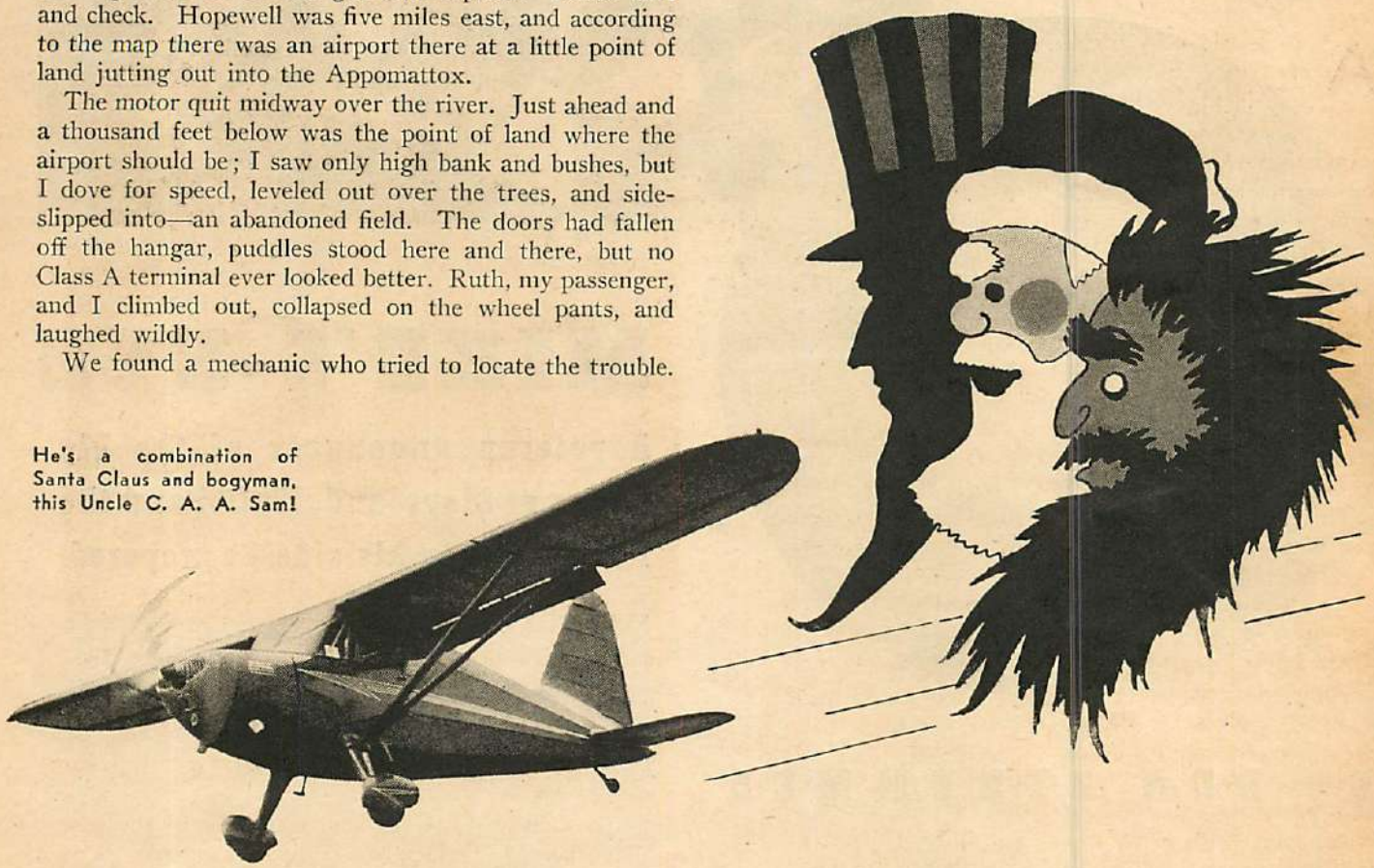
But the self-taught way is the hard way, and gives you the fewest breaks.

Put yourself in the place of an aviation employer. He has two candidates for one job. One has passed a stiff aviation course, the other is self-taught. All other things being equal, which would you pick? Or to express the problem differently, one has proven that he can take on a hard course in a highly rated school and stick to the finish, while the other has proven absolutely nothing about himself. Is not the choosing of the candidate with a good record rather obvious?

This does not mean that the self-taught, "school of experience" boy cannot get ahead. But it does mean that on an even break the man with the school diploma will be preferred. Could you want a greater advantage?

The same thing will apply if a war comes on. The boys with good aviation school records will get the first chances at the clean, exciting jobs, and *(Turn to page 6...)*

GENTLEMAN with WHISKERS



He's a combination of Santa Claus and bogyman, this Uncle C. A. A. Sam!

By ALMA HEFLIN

Here's exactly how the C. A. A. makes flying safe for the private pilot.

THERE have been three gentlemen with whiskers important in my life: Santa Claus, the bogyman, and, when I grew up, the C. A. A. personified in Uncle Sam—who resembles both.

I saw both sides of the gentleman on my way home from the Miami Air Races. We sent a PX from Greensboro to Richmond, a government-paid message giving the ship's license number, the pilot, number of passengers, time of departure, and estimated time of arrival. Airports checked us past by teletype as we flew over. When we were to land, the teletype would report back our safe arrival.

All was on schedule, when I noticed the gas gauge was low. Either the gauge was wrong, or the engine was burning twice the normal gas consumption. Better land and check. Hopewell was five miles east, and according to the map there was an airport there at a little point of land jutting out into the Appomattox.

The motor quit midway over the river. Just ahead and a thousand feet below was the point of land where the airport should be; I saw only high bank and bushes, but I dove for speed, leveled out over the trees, and sideslipped into—an abandoned field. The doors had fallen off the hangar, puddles stood here and there, but no Class A terminal ever looked better. Ruth, my passenger, and I climbed out, collapsed on the wheel pants, and laughed wildly.

We found a mechanic who tried to locate the trouble. Needle valve—spark setting—whatever it was we couldn't get the motor started, so we shoved Suzabella into the shaky hangar, prayed it wouldn't fall in, and went to town.

The keys to the city were ours, and after the excitement of a dead-stick landing, it was hard to sleep anyhow, but we finally went to bed. I awoke first, thinking pleasantly of the efficiency of C. A. A. maps that showed airports with perfect accuracy. Ruth smiled in her sleep about something. Something we did in Greensboro, maybe— Greensboro? *Greensboro—our PX!*

Ruth shrieked as I landed on her stomach on the way to telephone. "Long distance," I shouted. "The airport, Richmond! Quick!" By that time, Ruth was trying to get her ear at the receiver, too.

Richmond answered.

"NC21565 reporting in."

"NC21565? From Greensboro?"

"Yes."

"You're overdue sixteen hours!"

"Yes."

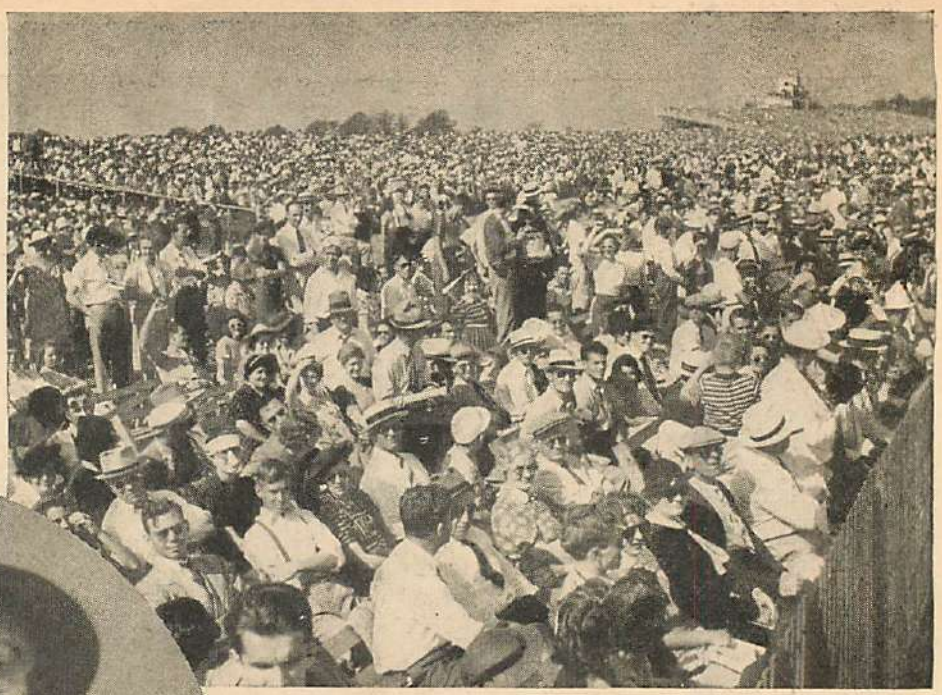
"Are you all right? Where are you? Do you know the teletype and planes all over the East are hunting you? Are you *all right?*"

I took a scared breath. "Yes. We landed at Hopewell. No one's hurt."

"Why didn't you report in?"

"We forgot."

"Forgot!" A pregnant silence. "Do you realize the trouble and expense you've caused by *(Turn to page 56)*



Right, some of the thousands who depend upon the fast, accurate voice of the announcer.

Below, Don Stremmel at work, sun helmet and all. His voice is known to thousands of fans.

MIKE'S-EYE

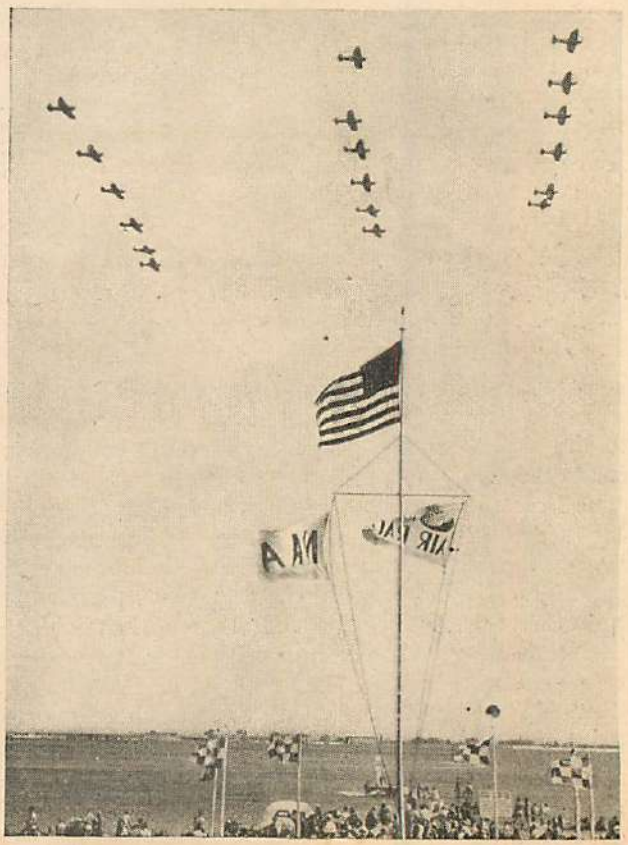
A veteran announcer of the big shows at Cleveland, Miami and the like gives you his side. Be prepared!

By DON STREMMEL

WHAT'S that? You want my autograph? Say, are you trying to kid me? Look, bud, I'm just the announcer on the show. Over there by the fence is Roscoe Turner, Mike Murphy, Flash Wittenbeck, Squeak Burnett, Al Williams, Eddy Rickenbacker and a whole raft of acrobatic aces whose names really mean something to an autograph hound. Oh, you already have their signatures, huh? Well, all right, I'll sign, but I'm warning you, it doesn't mean a thing."

It was in Birmingham last June 4th, at the end of Steadham Ackers' Ninth Annual Air Carnival and I was pretty tired when he asked me to sign his smudged and sweat-soaked program. He seemed hurt and disappointed at my gruff remarks. He was a clean-cut youngster about eighteen years old, now sun-tanned and grimy from looking up into the hot Alabama sun all afternoon and no doubt all yesterday afternoon, too. The Air Carnival is free, you know, with even free parking space and free programs, ten thousand of 'em. The only air show of its kind in the country.

I'd seen kids like him all over the country, but never



Ships that pass in review! A familiar sight at the big air shows and the National Air Races is the army formations.

The Winnah! Col. Roscoe Turner, indispensable figure at all air races, taxis up to crowd after winning the 1938 Thompson Trophy.

VIEW OF THE AIR SHOW

had I been asked for my autograph before, and when I inquired as to why he wanted mine, his answer startled me. Said he intended to become an air-show announcer and hoped I might give him a few pointers. Well, it was funny for a minute, but his serious face showed me that I couldn't kid him out of the idea. Funny, too, because I'd been trying to tell someone for years just how big a headache this announcing business really is. Here was a chance to get it off my chest and at the same time do a kind deed by telling this boy the truth to keep him from going hungry in later years hopping around the country trying to make a living announcing air shows.

I told him to meet me at the drink stand by the hangar in twenty minutes, and he was all smiles as he walked away. I noticed he limped a little, as though he might have a stiff knee joint. Perhaps that was why he wanted to be an announcer and was the first boy I'd talked to who did not intend to be a pilot and win the Thompson, Bendix, MacFadden, Greve and Freddy Lund trophies at least once.

After a show, I'm sort of nervous and worn-out and usually take my time in gathering up my papers and clip boards, sponsor lists and programs, sun glasses, binoculars and brief case, but for some reason I hurried a little to keep my appointment with him. There are hundreds of people roaming over the field and thousands of cars choking the roads to town at this time of day, and I always wait at least an hour after a show before trying to get downtown. Anyhow, it takes about an hour to cool off my tonsils after a show, and talking to this lad might help me relax.

He was waiting by the hangar with a pencil and notebook when I got there. Seems he intended to put down a set of rules and regulations and then study them when he got home. Maybe someone should make up a little book entitled, "How to Announce Air Shows in Ten Easy Lessons." Anyhow, I told him it might be better just to let me tell him a few of the things he could study up on and then think it over and decide later if he still wanted to have my job. I told him that I had an hour to spare, so there was no hurry for his decision on the matter.

"It's a big headache, son," I began. "You must first learn to fly so that you can understand and feel what the pilot is going through to properly describe his maneuvers. You should make at least one parachute jump to learn what really happens when a guy bails out. I made seven in my time, but didn't learn any more on the last six than I did on the first one. My wife has made exactly one hundred and eighty-eight jumps and still doesn't know any better. You must know enough about 'chutes, their weights, types and construction to be able to talk on the subject for as long as fifteen minutes sometimes while the ship carrying the jumper is getting into position over the field or is climbing for altitude, at the same time keeping the ship in your view even though it breaks your neck.

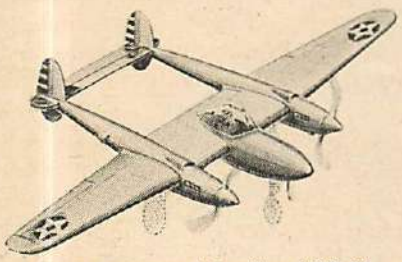
"You never know what kind of an act you'll see at an air show. Three years ago, at a show in Ohio, they had ten horsemen out on the airport play a game of Russian polo. Did I have a time trying to describe that! You must know all about gliders, too. Quite a lot of shows have a glider tow with an airplane. At Cleveland last year they had four gliders from Germany that put on a swell show. I got a lot of information on gliders from my wife who is an old-time glider pilot and one of only six women in the country with a 'C' rating. You should know about models, too. Most shows have a few gas models fly around early in the program and you are called on to announce what is happening. You must be able to tell the difference between the *(Turn to page 68)*

PURSUIT AVIATION — today and tomorrow

BY FRANK TINSLEY

SINCE the beginning of organized warfare, the basic principles of military strategy have never changed. Their tactical application, however, is dependent upon varying conditions, weapons and geography, and is therefore in a state of continuous flux. The most important factor in this constant development of new tactics is the equally constant improvement in armaments. The airplane, latest weapon to find a place in Mars' armory, is still a relatively unfamiliar instrument in its master's grasp. Nevertheless, he is gradually getting the feel of it, and in spite of the airplane's bewilderingly rapid development, tactics are being devised properly to exploit the arm's vast potentialities.

As in the case of all other weapons, tactical requirements have forced the development of military aircraft into specialized channels. General types, suitable for bombardment, fighting and reconnaissance, have emerged, and these in turn have split up into even more highly specialized subtypes. So we find planes of the fighter category gradually subdividing into three definite classes. These classifications are not based upon size, number of crew, number of engines, et cetera, but upon the specific tactical duties that the type is called upon to perform.

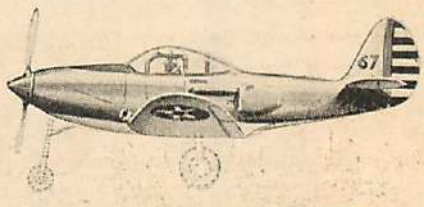


The twin-engined Lockheed XP-38.

The Middleweight Fighter. The conventional pursuit plane now found in all air forces is an excellent example of the median class of fighter. It is a single or two-seater of medium size and weight, fitted with the most powerful engine available. It is well armed, tremendously fast and has a range of around six hundred miles. A descendant of the World War "scout," this class of fighter has been brought to a high state of development in England, where defensive tactics call for a speedy, formidable, medium-range intercepter. Among the best of these ships now in service are the Supermarine Spitfire and the Heinkel 112.

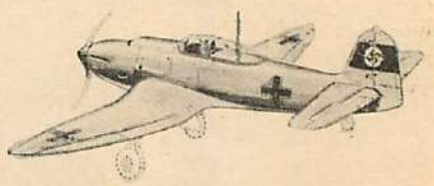
Protected against sudden attack by the broad reaches of the Atlantic and Pacific oceans, United States tactical requirements have slightly changed the European formula. We tend toward a somewhat heavier pursuit ship in which extreme speed has been subordinated to increased range, great structural strength and all-around fighting ability. A similarity of tactical considerations existing in Russia explains the Soviet predilection for American types.

Long-range Multiseaters. The ever-increasing range of modern bombardment planes has brought a second class of fighter into existence. This is the "escort" variety of high-performance, long-range, multiplate fighter of which the Bell Aircuda is the prototype. It has a number of uses in independent air operations. Employed as a protection to friendly bombers, the escort-fighter convoys the big ships to their objectives, provides advance-guard reconnaissance and furnishes the preliminary ground attack on the enemy defenses. Acting alone, long-range fighter squadrons can be used for distant interception of hostile bombers and for harassing attacks on their bases.



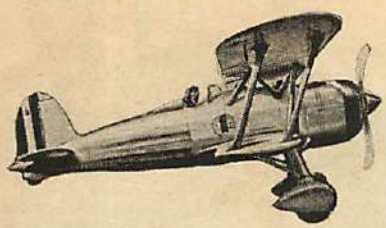
The speedy American Bell XP-39.

This type of plane is being developed by all of the principal air powers and is usually designed for a combination of duties. Thus, the Italian Breda 88 is a fighter-bomber, as is France's Potez 63 and Breguet 690. Examples of long-range ships built primarily for fighting include our Aircuda, the Hanriot 220 and the Seversky Convoy. The similarity of characteristics required for high-performance high bombing, attack, fighting and long-range reconnaissance, will probably result in the telescoping of these more or less related functions into a single all-purpose type. All these duties are within the tactical province of an independent air force. This fact, plus the evident economy and flexibility of such a type, will undoubtedly hasten its development.



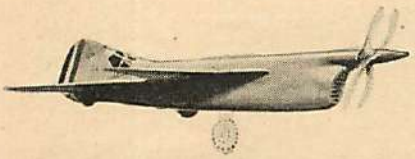
Germany has her Heinkel 112.

Lightweights. A third subtype is just beginning to appear over the fighter horizon. This is a lightweight, comparatively low-powered single-seater, adapted to short-range, local defense of cities, manufacturing centers and strategic points. This class, also useful for front-line service with the army, is designed for quick, cheap, quantity production. It is equipped with a minimum of instruments and gadgets and is slow enough to be safely handled by pilots turned out by wartime training schools. The French have developed several good ships of this type, a fine example being the four-hundred-and-fifty-horsepower Caudron Cyclone. A United States prototype is the lightweight Curtiss 21, said to have a diving speed of more than five hundred miles per hour.



The Italians favor the Fiat CR-42.

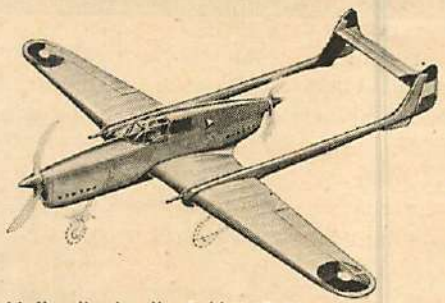
Unconventional Designs. During the past year or two, designers of fighting planes seem to be more and more inclined to depart from the conventional formula. Late models display a tendency toward a radical rearrangement of layout and equipment. Engine placement has very evidently come in for some heavy thought. Wing flaps have become commonplace and slots of various types are beginning to appear. There is a definite trend in the direction of tricycle-type landing gear. Twin, fixed machine guns, universal fighter armament since the World War, have given way to four, six and eight-gun batteries. In many ships, they are being replaced in whole or in part by shell guns ranging from 20 mm. to 37 mm. in caliber. Armor for cockpits, nose rings and fuel tanks is being tested, both here and abroad. 1939 certainly seems to have ushered in an era of experimentation. Aërial rearmament has become a race of ideas as well as one of numerical strength.



France has her radical Flechair.

Engine Placement. Twin-engine fighters have become popular in the medium and long-range classes. The power plants are being placed in every conceivable position. The Hanriot 220 features the conventional outboard tractor arrangement. Laurence Bell's Aircuda revives the old twin-pusher idea, using one-thousand-horsepower liquid-cooled Allisons. The Koolhoven F.K.55 mounts its Lorraine Petrel within the fuselage, behind the pilot's seat. Bell's new XP-39 single-seater follows the same formula. Both have long shafts, passing under the pilot's seat and geared up to take tractor props.

Tony Fokker, always original, contributes a single-seater with tandem engines fitted with tractor and pusher propellers. The pilot sits between them in an armored cockpit. This machine has the same general layout as his two-seater Reaper. Another tandem job, and one that makes Fokker look conservative, is the Payen Flechair. This odd ship has its supporting surfaces set hind-end-to, lands on a single, center wheel and has a power plant reminiscent of the record-breaking Macchi seaplane racer. In addition to these arrangements, all of which are based upon conventional engines, we have Allan Lockheed's new Unitwin hookup of two Menasco engines driving a single propeller. This highly original power plant, in a larger size, may yet find its way into a fighter formula.

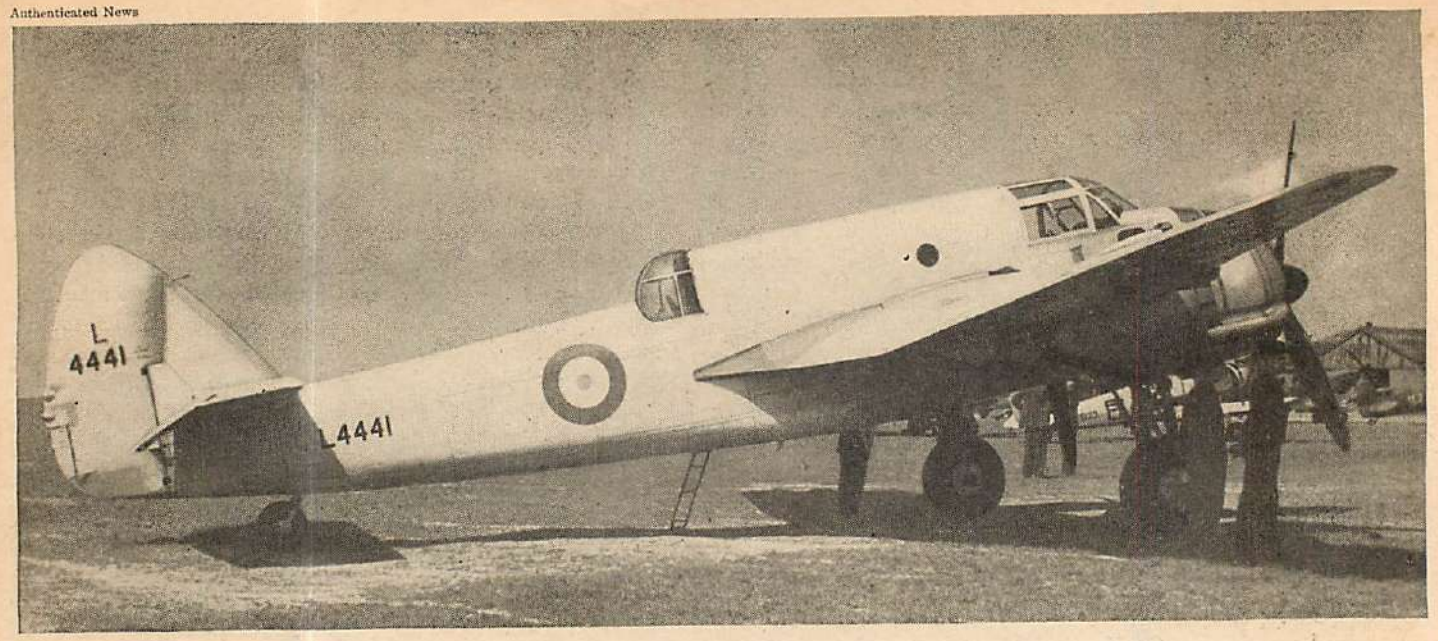


Holland's deadly Fokker D-23.

Wing Arrangements. Aërial operations in Spain were conducted on too small a scale satisfactorily to settle doubtful points of tactics. There was, however, enough "dogfighting" to bring up the question of speed versus maneuverability in single-seaters. Both monoplanes and biplanes, German, Russian and Italian, received a fairly thorough test. Geographical and tactical requirements differ, however, and so we find the old argument still going on. Proponents of high-speed, monoplane fighters point out the necessity of "first catching your hare." Successfully to attack speedy bombers, they say, the pursuing plane must be at least one third faster than its quarry. Yet the monoplane wing, essential for high speeds, does not provide as much maneuverability as the biplane arrangement. And maneuverability won many a fight in Spain. Some authorities even go so far as to say that the fast intercepter is totally unfitted for action against ships of its own type. They argue that two such fighters passing each other at four hundred miles per hour, separate at a rate of eight hundred miles per hour. At this prodigious speed, the ships will be out of sight before they can complete a turn! Their only value against other fighters, it is contended, lies in a one-shot, surprise dive.

Another objection to fighting at such extreme speeds is the fact that even ultra-fast guns can deliver but one or two shots in the split second of *(Turn to page 61)*

Present designs and future trends in pursuit aviation change almost as rapidly as the speed of the ships themselves. Here are todays'.



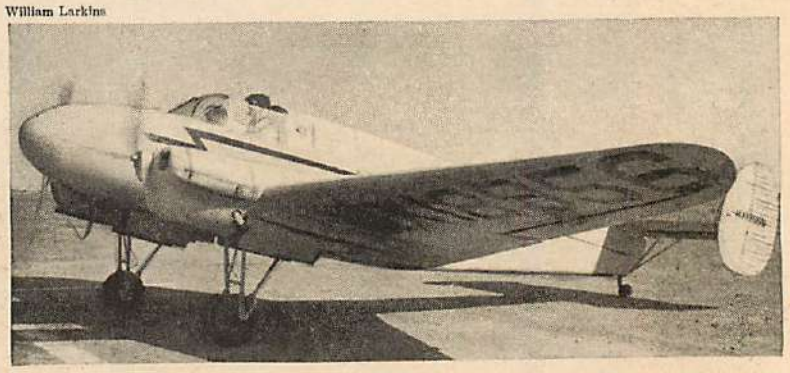
England's latest and best of its type. The sensational Bristol Beaufort bomber, with unique rear turret, carries crew of four.

AERO ALBUM

William Larkins

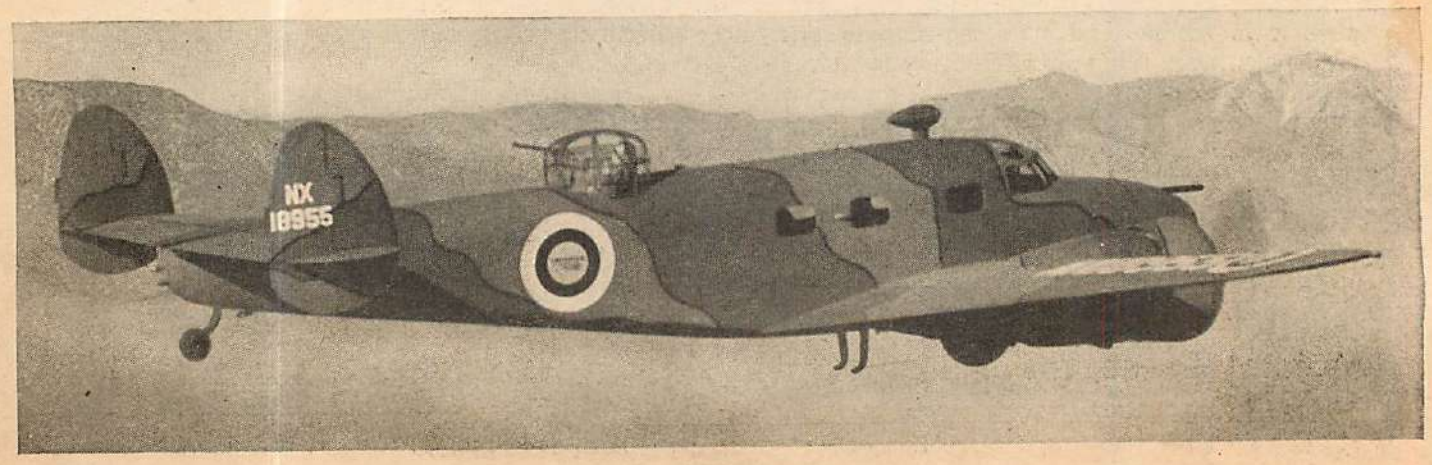
The familiar Douglas TBD-1 torpedo-bomber for sea duty shown in a not-so-familiar pose with the wings folded up for stowage aboard aircraft carriers.

William Larkins

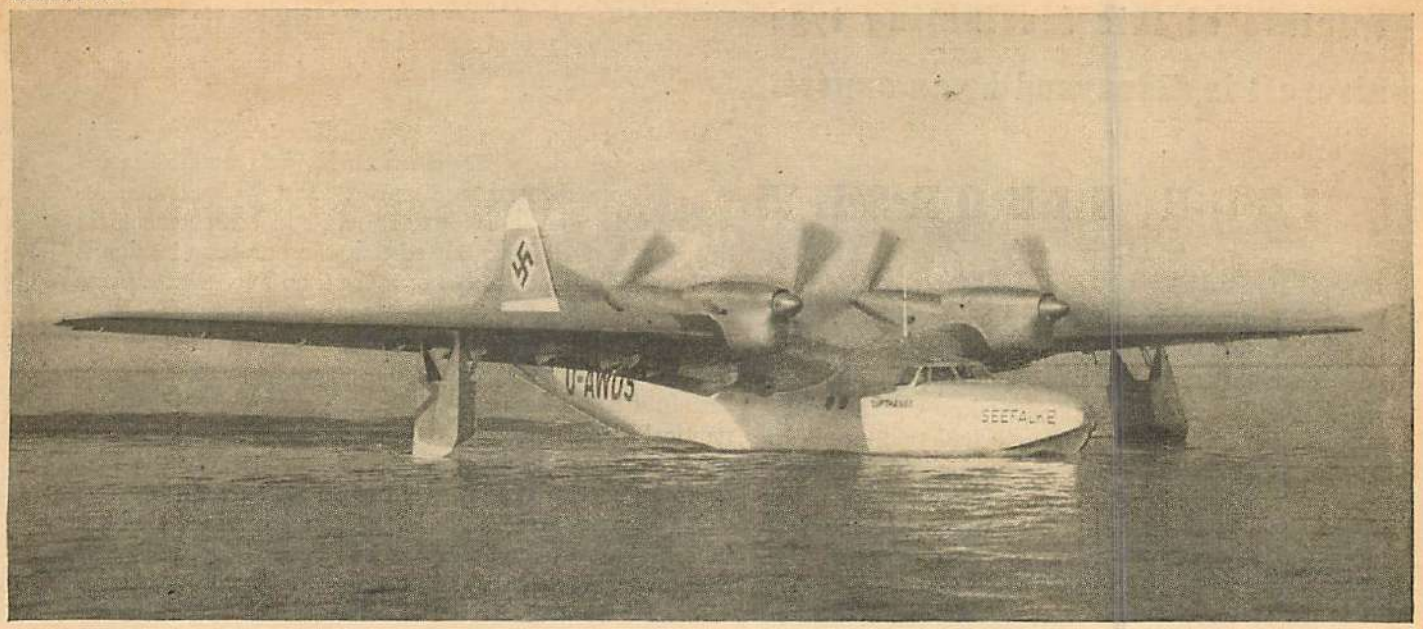


The new Edwards XMBM-1, an unusual twin-engined light plane. This ship was built in the old Stearman-Hammond plant, San Francisco, California.

Bomber on a good-will flight through Central and So. America. Lockheed 212 demonstrator with camouflage and equipment.

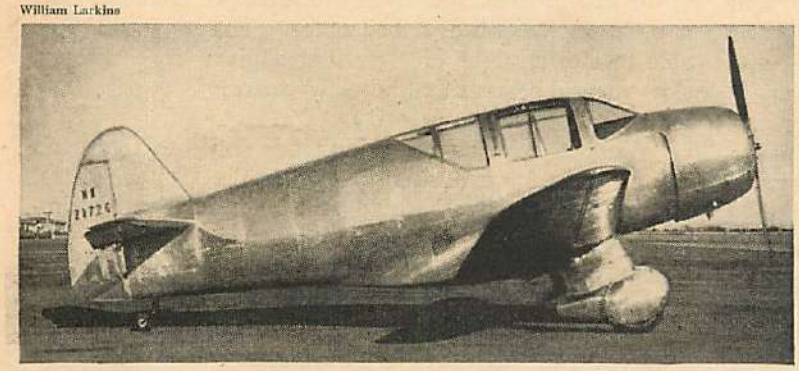


Monkemeyer Photo



The Dornier Do.-26 flying boat of Germany presents something tricky in floats. These floats retract flush with the wing.

William Larkins



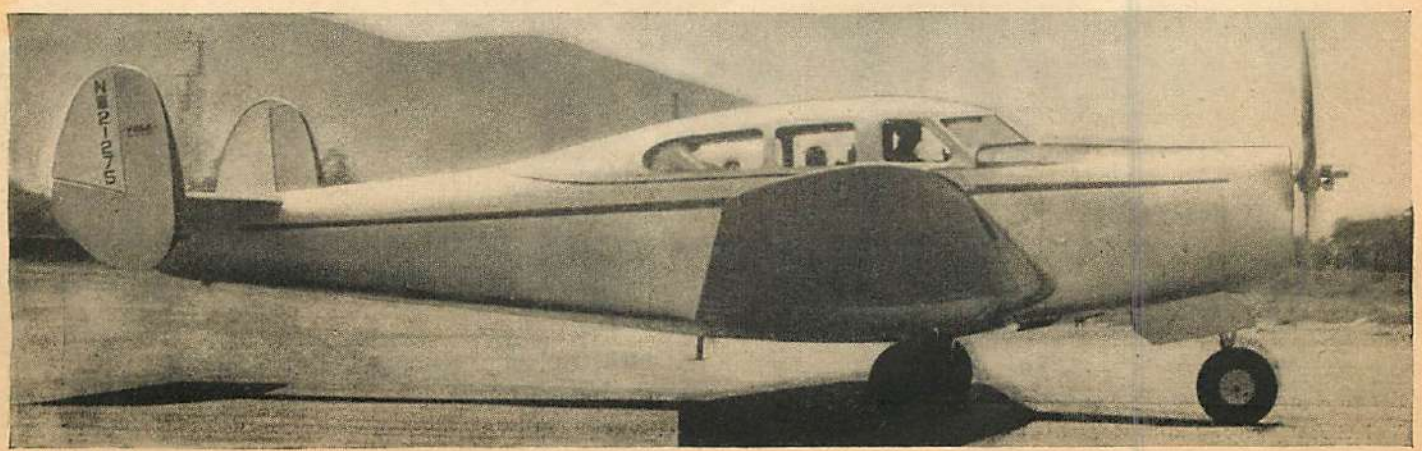
The so-called "back-yard" Paulic XT3-B plane presents a sleek and efficient appearance. The power plant is a 125 h.p. Warner Scarab. Note wheel fairing.

New and not-so-new ships of unusual design and appearance presented for your scrap book.

Albert Malone

An old friend gets her face lifted. A Piper Cub Coupe, with a new tapered wing and flaps. The latter are hand-operated from the cabin.

A new bidder for the short-haul duties of light transport work is the Menasco Unitwin-powered Vega Starliner. Neat!



Gordon S. Williams

The future of this fascinating type of aircraft is discussed by an expert.

DIRECT-LIFT AIRCRAFT

By IGOR SIKORSKY

WHAT is next in aviation? One would naturally believe in noting the progress aviation has made in the past ten years that pioneering in this field is a closed chapter. But—would the automobile industry be as important as it is today if one had to journey to the edge of town to get his car, and if you couldn't drive that car under fifty miles an hour? No, the pioneering phase of aviation isn't closed. Certainly not in the field of the privately owned and operated craft.

When I started my flying activity some thirty years ago, the world speed record was forty-seven miles per hour. This has increased to 441 miles per hour, and altitudes of 72,395 feet have been reached by man. The achievements in the field of practical utilization of flying were equally great. Only ten years ago, on February 4, 1929, Colonel Lindbergh carried the first load of air mail from the United States to South America on a small five-ton S-38, which at that time was frequently referred to as the "Giant Amphibian."

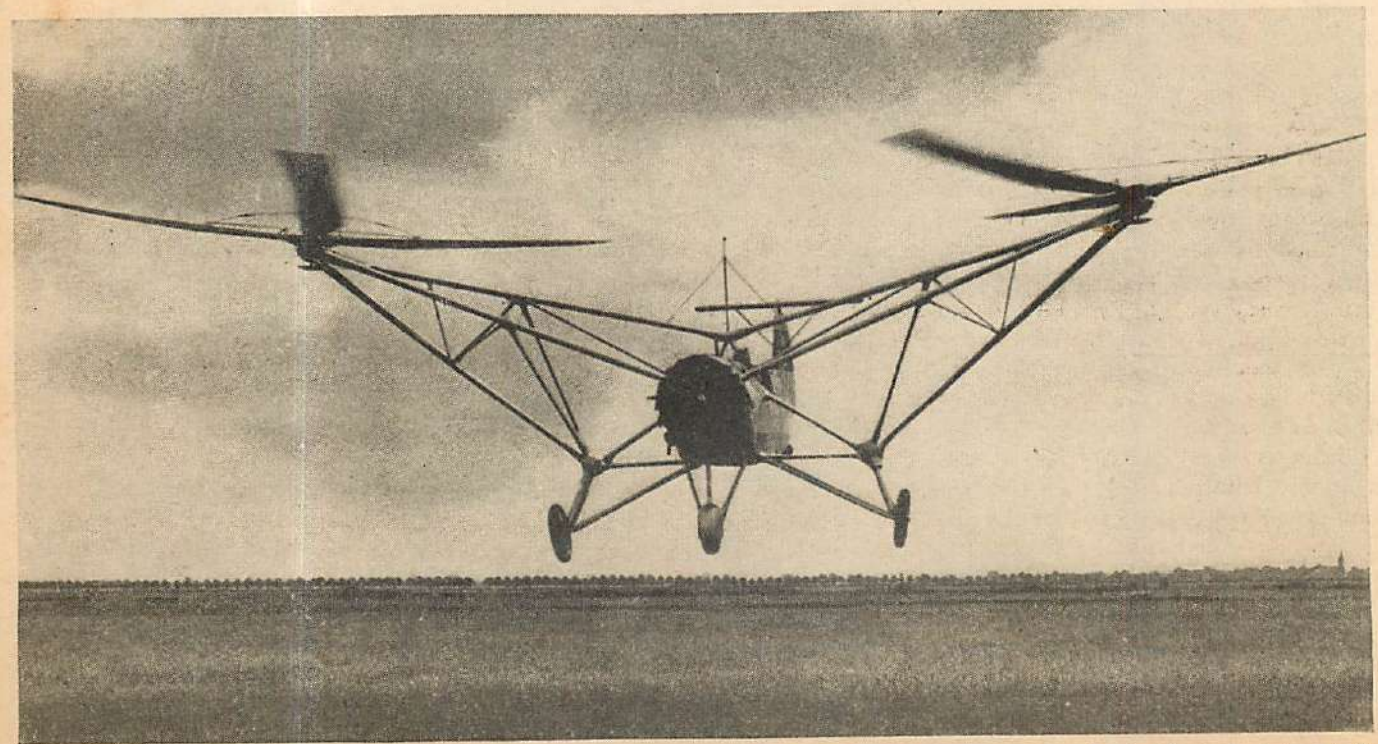
Since then, huge flying clippers have been produced which have extended the passenger and mail transportation from the United States to Asia, and from this country to Europe. A multitude of other remarkable achievements might be mentioned, but on one important point aviation seems to have shown slower progress than was expected ten years ago. Real expansion in private flying, which some time ago was considered to be just around the corner, is still not with us.

Great credit is due to the private fliers and to the manufacturers who have furnished their good and often remarkably inexpensive equipment. But with all due respect to the fine individual efforts and achievements in this line, it must be admitted that the number of ships is still not great—probably not more than one private plane to every twenty-five hundred automobiles in use. Besides the various general factors that can increase the popularity of private flying and airmindedness, there are certain design features to be introduced by the aëronautical design engineer that could contribute to the safety of flying and could extend considerably the field of useful service of privately owned aircraft.

A few years ago, Roger W. Babson expressed his ideas with respect to requirements which must be fulfilled in a flying machine in order to open the way to a general vast expansion of air travel. He wrote: "The nature of the master invention is easy to forecast. In some way it must do the job of a helicopter. The plane must be able to rise straight up, hover at a given spot, make a slow vertical descent and possibly perform as a parachute when the power is cut off.

"Without such an invention, it is futile to figure on one airplane for every five people in the United States. The automobile itself would still be a relatively unimportant industry if you had to journey to a municipal autoport every time you needed your car, and if you couldn't drive it under fifty miles an hour."

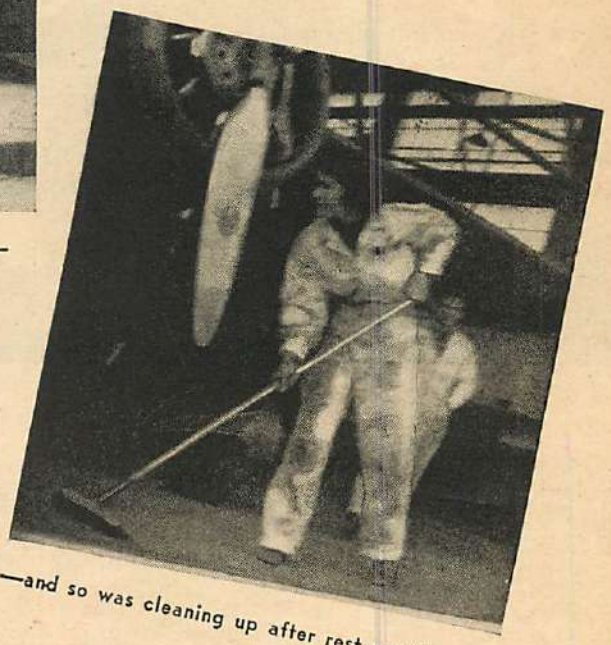
This statement can hardly be questioned. In the field of aircraft, the airplane can be compared *(Turn to page 55)*



The first really successful helicopter is the German Focke Fw.61 shown. Has been flown forward, backward and sidewise in indoor hall.

Swabbing down planes and digging off the mud was part of it—

When a mechanic turns out to be a girl, it's news. Here's her story.



—and so was cleaning up after rest got through.

MISS MECHANIC

By SUZANNE GOUTAL LEONE

BEING permitted to work in an airplane shop of a large Eastern airport without paying a fee for the privilege seemed to be a rare piece of luck. At last, here was an opportunity to be in close contact with aviation and to learn the groundwork besides. It was thus in the fall of 1934 that I began to spend my week-ends working as a mechanic's "helper."

As well as being green in aviation, I made the irreparable mistakes of being fourteen, gullible, and a girl. My first lesson was the futility of taking anything seriously, even good advice, for it was part of my routine to be drawn aside by some well-meaning gentleman who would give me a fatherly talk and possibly a character analysis.

"It's just a waste of effort," one well-known flier told me. "No one will let you do mechanical work on an airplane. A shop, especially on this airport, is no place for a girl of your age, so give those coveralls to someone in the hangar, stop showing off and stay home. They'll soon get tired of kidding you," he concluded, "and chase you out."

Perhaps it was because their repertoire of jokes was endless that the following month still found me scrubbing ships and cleaning motors. Carrying buckets of "prop wash" and "prop pitch" (usually stones covered with wet rags) from one end of the field to the other put calluses on my hands, and I wasted hours searching for cowling stretchers or a broom for the sweepback. After the usual supply of initiations to which a novice is subjected was exhausted, I was used as a dumping ground for old jokes and a testing block for new ones.

Hardly a day passed without bringing me bumps, actually, or to my ego. Smashing my fingers with tools, dropping fifteen feet from the nacelle of a Sikorsky, being inside a jacket when a propeller split the back of it, were but a few reasons why my apprenticeship in the hangar seemed doomed to a very short duration. However, since I did no damage to the equipment, I was permitted to continue.

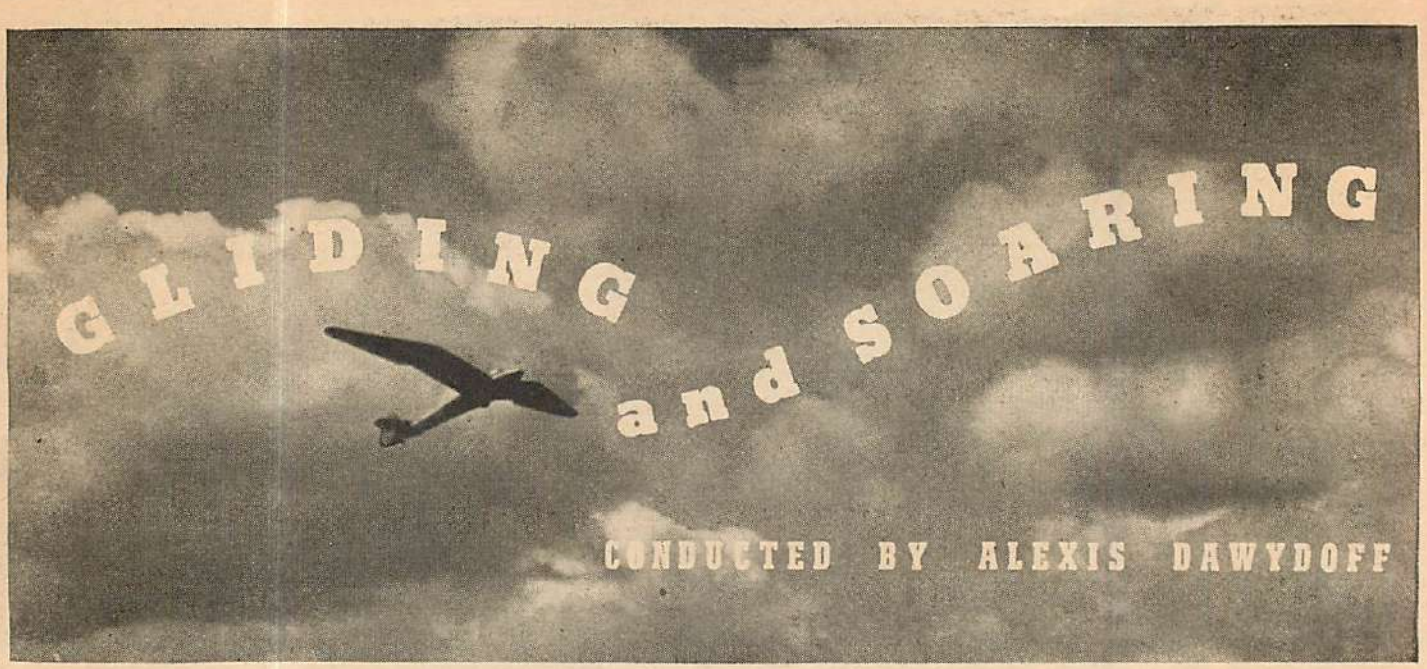
Even routine jobs seemed interesting when concerned with aviation, although they were often tiresome, and, with few exceptions, dirty. The gasoline we employed for cleaning purposes had a harsh, chafing effect on the skin. Often, when using it to remove grease, it gave my hands an odd tingling sensation, vaguely reminiscent of an astringent I used at home, only stronger. My face was covered with more layers of carbon and grease than usual when I mentioned this discovery to the chief mechanic.

"Oh, it's astringent, all right," came the retort. He watched me studiously as I dropped my handkerchief into a can of high-test. Indeed, this method dissolved the dirt rapidly. Nor did it stop there. In a few seconds my epidermis felt like a dried-out shell—too small for my face. I couldn't even look surprised.

Wisecracks came from all directions. My boners were never ignored. "Try drinking some of that. Maybe you'll take off." "Well, anyway," someone howled, "it must have killed all the germs."

The wrong remarks inevitably impressed me. When my hand slipped on the jagged edge of a cowling I was cleaning, gasoline again came to my mind. A lecture on carelessness was sure to follow a request for the medicine kit. Someone would certainly say, "Huh, can't you even clean a cowling without doing some damage?" Gas was just the thing, I reasoned, but any satisfaction I felt as I carried out that decision was, as usual, short-lived.

"Hey, greasepants." One of the pilots approached me with great deliberation. "Keep away from that gas. It's high octane and if you have any scratches *(Turn to page 78)*



The Tenth National Soaring Contest

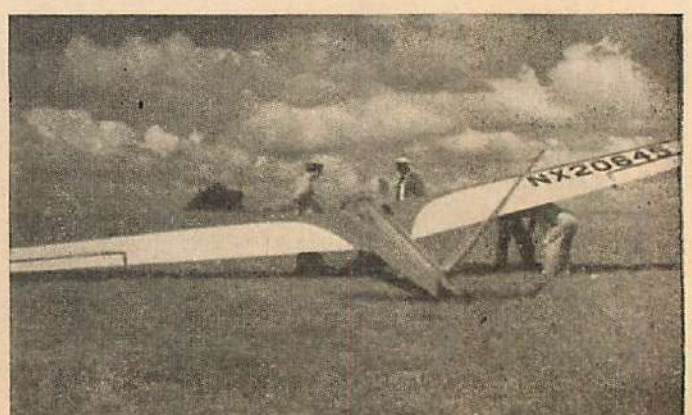
THE Tenth National Soaring Contest was without doubt the most dramatic and record-shattering of all the meets held so far at Elmira.

For the first time the spectators and contestants witnessed two pilots take to their 'chutes. The first to earn his caterpillar was Udo Fischer of Ithaca, N. Y., flying a Goeppingen Wolf. On July 5th, after taking off from Harris Hill, Fischer rapidly gained altitude under a cloud and soon entered it. Flying in its depths without blind-flying instruments, he found the going very turbulent, the ship ascending at the rate of forty feet a second. Attempts to dive the Wolf out of the cloud proved futile. It continued to rise, the wings started to vibrate dangerously, and fearing that they might collapse, Udo unfastened his belt and prepared to jump if necessary. At that moment a violent gust hit the sailplane and he was tossed out of it. Fischer dropped a thousand feet clear of the cloud before opening the parachute, in order not to be drawn into the up draft. He landed safely and his sailplane followed him down in a flat spin, grounding a hundred feet away. The only damage sustained by the ship was a broken nose, the rest of the fuselage, wings and tail surfaces not even being scratched.

The other pilot to use his 'chute during the contest was Lieutenant Robert M. Stanley, who abandoned his record-breaking sailplane *Nomad* when its left wing, damaged a couple of days previously as a result of a rough landing into a small wheat field, collapsed during an aërobatic exhibition. While he was climbing out, the ring of his rip cord got caught and opened the 'chute inside the cockpit. The pilot 'chute tore off as he dove overboard, but fortunately the main 'chute opened and he landed safely in a tree. The *Nomad* flat-spun slowly to the ground, and, except for the broken wing, the damage was slight.

During one of his altitude flights, Stanley's sailplane became so coated with ice that the instruments stopped functioning and he had to leave the cloud in order to thaw them out. As soon as the instruments started working normally he entered the cloud again and rose in it to 14,000 feet. So turbulent was the air here that his metal seat was broken from the tossing around the ship received, and he himself suffered a sprained back.

Several of many sailplanes present at the annual contest. These two popular ships are the Haller Hawk Jr. and the famous Wolf.



The outstanding design of the meet and winner of Aviation Magazine's Sailplane Design Trophy, the streamlined "Nomad."

Meet the champion! Chester J. Decker, winner of the Edward S. Evans Trophy.

Genial Wolf Hirth, "grand old man" of soaring, came all the way from Germany.

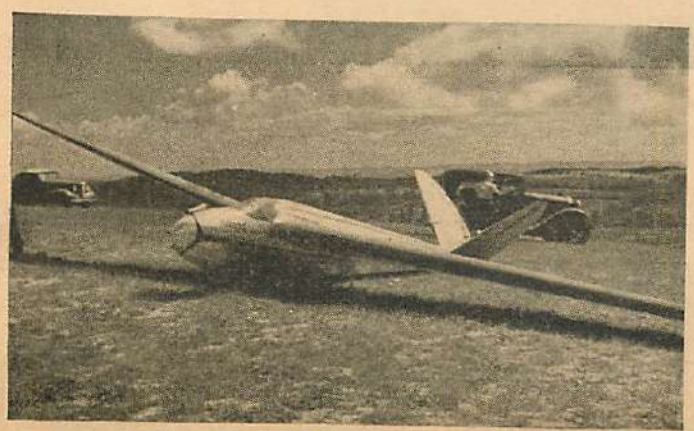
Three of a kind, all pilots, Jay Buxton, Wolfgang Klemperer and Harvey Stephens.

On July 27th Stanley and Decker flew a unique sailplane race when the two pilots set out for the Warren E. Eaton Airport at Norwich, N. Y., for the $200 prize offered by the Norwich Post of the American Legion for the first sailplane to land there. Decker took off at 11:52 a. m. and Stanley thirteen minutes later. For a while they flew separately, without seeing each other. Fifteen miles from their destination they spotted one another while circling at 5,000 feet in the same thermal. Abandoning the up current, both pilots dived their sailplanes for the airport and scorched the remaining distance at some 100 miles per hour, landing there simultaneously and making the race a dead heat.

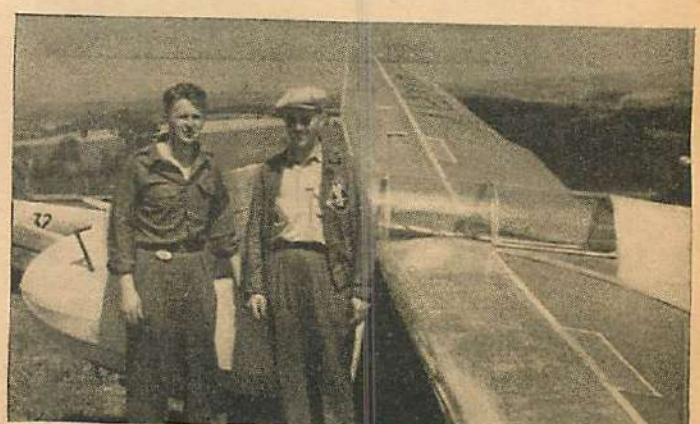
Records went toppling this year. The altitude record was broken no less than seven times, Stanley alone bettering it four times and establishing the national record of 17,264 feet. Lewin B. Barringer, former manager of the S. S. A. and now a member of the Airhoppers Gliding and Soaring Club of New York, broke the American altitude record for two-place sailplanes when he reached a height of 6,560 feet in the club's Schweizer ship. Chester Decker of New Jersey established the American distance-and-return record with a flight of forty miles from Elmira to Hammondsport, N. Y., and return. July 1st and 2nd can be called the Red Letter Days of the meet. On the 1st, Stanley flew his *Nomad* from Harris Hill to North Beach Airport, N. Y. C., a distance of 190 miles; Emil Lehecka, flying his Rhoensperber, landed at Closter, N. J., near the George Washington Bridge, 179 miles. The next day Decker flew his Minimoa 233 miles to Atlantic City, N. J., and Warren Merboth landed his Albatross at Roosevelt Field, L. I., 202 miles.

Three pilots won their Golden "Cs," the highest award in soaring. Chester Decker, John Robinson and Robert Stanley all fulfilled the necessary requirements, which are, incidentally: the possession of a Silver "C," one flight to an altitude of not less than 9,280 feet, and one of not less than 186 miles distance.

This year, for the first time, the United States weather bureau sent a meteorologist to Elmira to give daily weather information to glider pilots. Mr. B. L. Wiggin, who is stationed at Newark, N. J., was in charge of the Harris Hill meteorological station, and with the cooperation of the C. A. A. weather bureau located in the valley was greatly responsible for *(Turn to page 70)*



Another splendid view of the much-photoed Stanley "Nomad," showing sleek lines of nose. This ship set altitude record.



The Associated Press takes a ride. Lon Charles Kappil, A. P., with Bill Dolger and two-place. Sailplane soared over the valley.

GLIDING AND SOARING

Harvey Stephens, awarded his Silver "C" during the contest, checks his Bowlus.

Friend C. G. Taylor, of Taylorcraft fame, chats with Dr. Thorpe. Son Taylor, left.

Sure, the C. A. A. was there. Hammond and Webster, C. A. A.; Barringer, center.

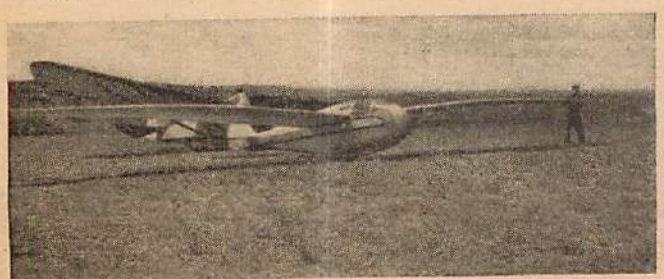
Let's see, where'll I go today? Bob Stanley, center, picks out his destination on a map. Note luggage compartment in fuselage.

You'd grin too if you flew your Albatross from Elmira to Roosevelt Field, 196 miles. Meet Warren J. Merboth, who did it.

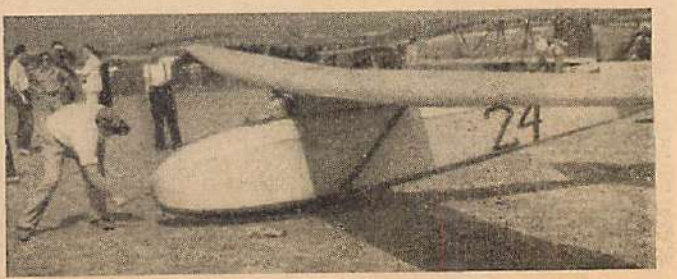
The X. Y. Z. Glider Club of Detroit which won the Air Trails award. The Midwestern Soaring Champion, Elmer Zook, on left.

"Speed" Westphal charts a flight, fills in a report, or something, beside the famous Baby Albatross "Thunderbird" ship.

The sleek Lawrence sailplane, designed by Don Lawrence of Orange, N. J., is steadied by her crew just before take-off.



Well-known Milton Girton, C. A. A. inspector who won his "C" license by many splendid flights. Parker Leonard tests release.



TENTH NATIONAL CONTEST

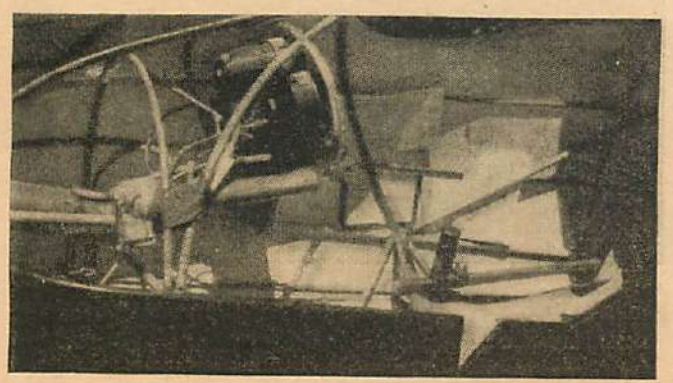
Ye Editor, complete with flashlight, goes for a hop with Lew in the Schweizer.

Dr. Thorpe, of Carnegie Institute, also is "taken for a ride" in the two-place.

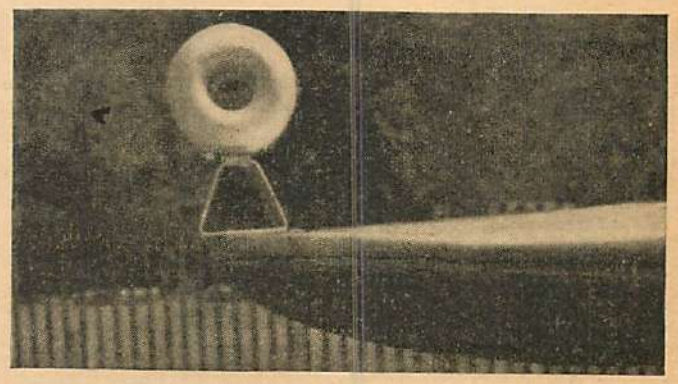
The French pilot and designer, Georges P. Abrial, chats with Air Trails' "Alec."

Mrs. Warren E. Eaton, long a prominent figure in connection with American soaring, just before her take-off from the hill.

Harvey Stephens and Carl F. Happel, of Air Trails staff, in foreground, grab a short rest during a lull in the field activities.

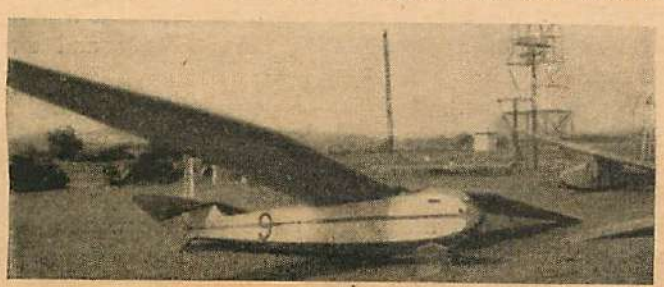


The unique controls of Bob Auburn's "Sunspot," showing the novel "stick" arrangement and the "flit gun" for the B-T indicator.



No, not a "life-saver" but a "thermal-sniffer"! Officially knowr as a thermal gradeometer, installed on the Airhoppers' Schweizer.

Another interesting type at the American Airlines Airport below the Hill, Jim Martin's "Volmer" sailplane with cowl removed.



The famous Ibis, formerly of the S. S. A., recently purchased and flown by R. C. Platt, of the N. A. C. A., shown in cockpit.

PLAY UP THE AIR SERVICES!

GREETINGS, Air Adventurers!

My favorite cigarette advertisement has let me down.

I may be pardoned, I feel sure, if I state that my favorite cigarette advertisement usually carries the picture of one, perhaps two and sometimes three very pretty girls. The latest set-up in the metal frame before me in my regular train shows three particularly pretty girls shouldering cartons of a popular brand of cigarettes. They are in military alignment and wear cocky three-cornered hats that are particularly bewitching. One wears a red, one a white and one a blue hat.

"Hello," I said. "Very good, and about time, too. They represent the army, the navy and the air service, I suppose."

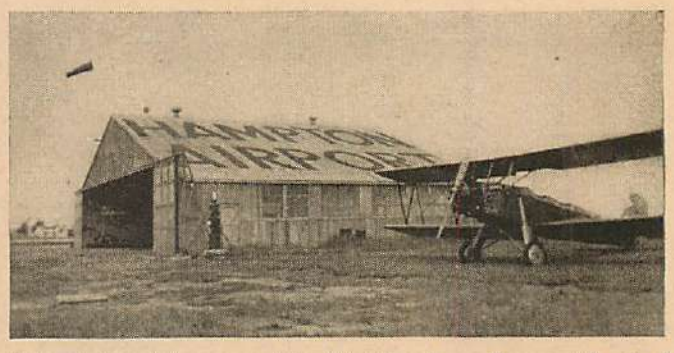
Then I looked again and noted that the hats were all the same, except for the color. Their military shirts were all the same and used some form of a gold-star button and other orthodox military insignia. Then it burst on me what a chance the artist or advertising agency had missed in not dressing each young lady to represent one of the three services.

Perhaps there is some silly law about using authentic military uniforms or authentic insignia on models for advertisements. It is quite possible that some of the No, You Mustn't organizations have enough influence to prevent any form of advertisement which may lead one to surmise that perhaps the men of our service do smoke cigarettes. Perhaps the services themselves have a ban on that sort of thing. I wouldn't know, but it does seem a shame that such opportunities to play up the services are usually ignored or forgotten.

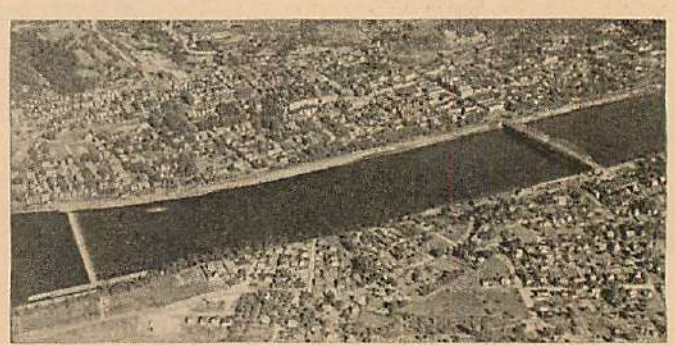
We can pick up foreign publications and see the men of the flying services played up to the limit. It's quite the thing to be seen in a uniform bearing wings. It is quite the thing to have your product, whether it be cigarettes, haberdashery, chocolates, or beverages, shown being used by the members of the flying clubs, at the stands of noted airports, or in connection with intrepid-looking members of the aviation squadrons.

The more I thought about it the more the matter went home. I realized for one thing that I had never seen a War memorial, for instance, in which the men of the air services were depicted. We see heroic groups of soldiers, sailors and marines on top of granite piles. We see men in steel helmets bowed over reversed arms, we see charging figures of infantrymen pounding through tangles of barbed wires, or crouching figures hurling Mills bombs, but we practically never see a man in a flying helmet used to represent the heroism of the air services.

We noticed this when we returned from France months after the armistice. Already, then, towns and cities were hurriedly erecting memorials to those who had served and made the Great Sacrifice. There was glory aplenty for the army and the navy and even the marines, but somehow they forgot the flying men. Steel helmets,



A local airport is snapped by Air Adventurer George Micari of Sag Harbor, Long Island, N. Y. Ship is for private training.

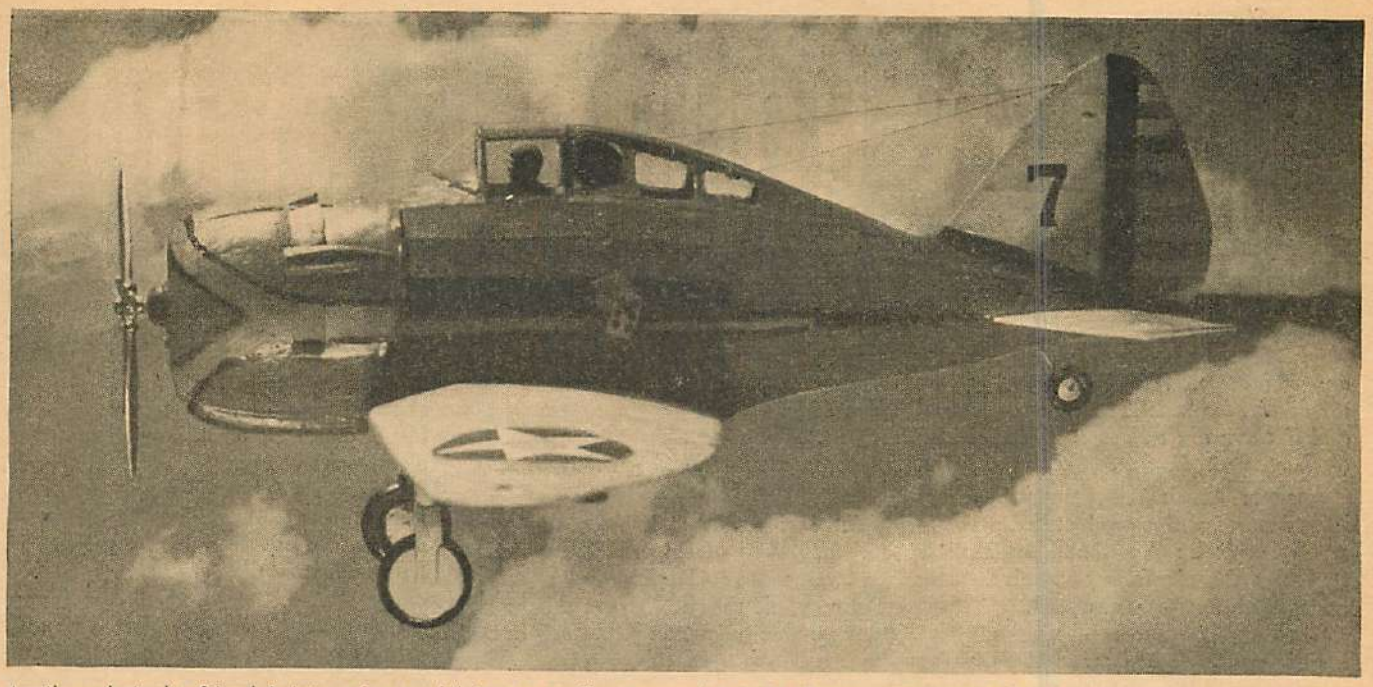


An interesting aerial photograph by an old Air Adventurer, J. Ralph Leister, of Kittanning, Pa., showing his home town below.

anchors, Springfield rifles, torpedoes and laurel wreaths made up most of the designs. No one ever thought about adding a propeller, air-service wings or statues representing the aviator.

But so much for those who have passed on and been forgotten. What about the men who are serving today? What about playing the air services up once in a while? Let's learn to use the phrase, "army, navy and air service."

We wish something could be done beyond the usual Sunday supplement layouts of three Flying Fortresses flying over something or other. We'd like to see something new outside the routine shots of Randolph Field. We want the men themselves played up for what they are worth and given their just due. Are sailors the only



Another photo by friend Leister of a model is an excellent example of "table-top photography." If only that prop was turning!

ones who have sweethearts? Has the army a monopoly on bravery or the ability to grin out of the back of trucks? Are sailors the only ones who go on leave or represent the U. S. A. on foreign soil? What about the air service men in Panama, Guam or Hawaii? There's plenty of "pull" to an air-service uniform with its braid, wings and ribbons. Are marines the only ones who are tough in a scrap?

Let's give the air service a break. Let them represent the fighting forces once in a while. If anything happens they'll be the first ones to come to grips with the enemy. Remember, the air is now the first line of defense, whether you like to admit it or not. So why not play these lads up now?

Come on, America! Let's publicize the air services for a change.

That means you, Air Adventurers!

Your Flight Commander,

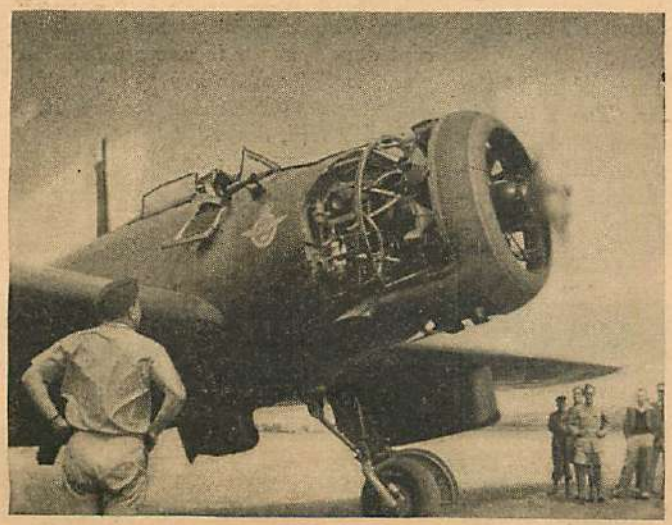
ALBERT J. CARLSON.

AIR ADVENTURERS' NEWS

And now for the mail.

By the way, if any of you Air Adventurers know of a War memorial which in any way pays homage to the men of the flying services, we wish you'd tell us about it. We'd like to put the matter on record in these columns. Perhaps your home town has a War memorial that mentions the War fliers. Perhaps you even know of one erected expressly to the memory of fighting birdmen. We'd be more than glad to hear about it and see if these towns can't get a little special mention. It's a new idea, at any rate.

"I liked your article 'Prelude to War,'" writes M. E. Montes of Mexico City, Mexico. "I think nobody likes the 'sweet smell of powder' and we Air Adventurers shall do everything we can to stop it. I am with the democratic nations, but here in Mexico City there are many people with the dictators and the Spaniards here are with Franco and I don't know just what *(Turn to page 79)*



All the way from Australia comes this fine shot of one of the record-breaking Vickers Wellesleys, by Adventurer Graham Strout.

Actual size of your Air Adventurers pin.

(MEMBERSHIP COUPON)

To the Flight Commander, Air Adventurers,
79-89 Seventh Avenue, New York, N. Y.

I am interested in aviation and its future developments. To the best of my ability I pledge myself to support the principles and ideals of AIR ADVENTURERS and will do all in my power to further the advance of aviation.

Please enroll me as a member of AIR ADVENTURERS and send me my certificate and badge. I enclose ten cents to cover postage.

Name ..... Age.....

Address .....

.....

☐ Check here if interested in model building.

(This coupon not to be used after Nov. 15, 1939.)

WHAT'S YOUR QUESTION?

Question: I am interested in becoming an air hostess. Will you please inform me as to how much training is required and if there are any special schools for air hostesses? E. V., Multanomah, Ore.

Answer: An air hostess must be a registered nurse and a graduate of a recognized hospital. Additional training is given by the air lines themselves after the applications are accepted.

Question: I am interested in flying and have the facilities to do so. However, I am six feet two and a half inches tall and I weigh one hundred and ninety pounds. Would this prevent me from getting a job as a transport pilot if I had the proper training? Also, would it prevent me from getting into the army or navy air corps? J. R., Salt Lake City, Utah.

Answer: Your height and weight will not prevent you from either getting a job as transport pilot or entering the military service.

Question: I have only a three-year high-school education. I want to go to an aviation school. I would like to know if the lack of higher education will keep me from getting employment after leaving the aviation school. With the education I have had, which would be the best field for me, airplane and engine mechanic or pilot? P. H., Denver, Colo.

Answer: Only the army and the navy require that their mechanics be high-school graduates and that pilots have a college education. In civilian aviation the requirements are not as strict, although the tendency in air-line transportation is to hire college men and graduates of army or navy air corps as pilots. You would be better off taking up mechanics.

Question: With a friend I want to build a wooden-structure fabric-covered airplane powered with a motor of 80 or 90 horsepower; the ship to be a two-place, high-wing monoplane. Could you tell me where I could find plans for one and how much will they cost? C. E. F., Donnaconna, Can.

Answer: I do not know of any plans for such type of ship available. I suggest you write to Lloyd Gabriel, General Delivery, Saulte St. Marie, Mich. He may be able to suggest something in that line.

Question: I would like to know the average revolutions per minute of airplane engines and the average revolutions per minute of automobile engines. Is there any difference in efficiency between the two motors? A friend of mine told me that the automobile engine was faster than an aviation motor. Is that true? E. C., Willard, O.

Answer: The average revolutions per minute of aviation engines is approximately 1,950, while the average for an automobile motor is close to 3,000. The aviation engine is more efficient than the automobile one. It is lighter per horsepower and has more stamina.

Question: I would like to know which is the better fighter, the Curtiss XP-40 or the Seversky P-35. Where can I get all the available information on them? What is the name and the address of the manufacturers of the Hamburg Ha-137? How much would it cost to send a letter to them? Where can I get information on that plane? Can the planes be bought for private use? H. C., Dayton, Pa.

Answer: I do not know which of the two ships is the better. The XP-40 is supposed to be faster than the P-35. As both ships are military-detailed, information on them is not available. The Hamburg Ha.-137 is manufactured by Blohm & Voss, Steinwarder, Hamburg, Germany. A letter to them will require five cents in postage. You may get information about the ship from the manufacturers, but I doubt it, as it is also a military plane. A commercial version of the Seversky P-35 has been sold to several well-known pilots. The XP-40 or the Ha.-137 are not available for private use. I do not know their prices.

Question: Could you give the specifications of the Junkers Ju.-90 passenger and transport plane? How does it compare with the Douglas DC-4? H. M., Des Moines, Ia.

Answer: The Douglas DC-4 is a bigger ship than the Ju.-90, weighing ten tons more, and is more efficient; their speeds are identical. The Ju.-90 has a span of 114′ 10″, length 86′ 3″, weight empty 26,840 pounds, fully loaded 44,000 pounds. Its top speed is 236 miles per hour, cruising speed 201 miles per hour.

Question: I am planning on taking an aviation mechanical course and would like to know the physical requirements for a mechanic after he has completed his course. Would I have to take a physical examination to get a job? J. M., Andres, N. C.

Answer: There are no physical requirements for a mechanic's license. Some aviation concerns require physical examination of all their employees, but it is only in connection with insurance and workman compensation.

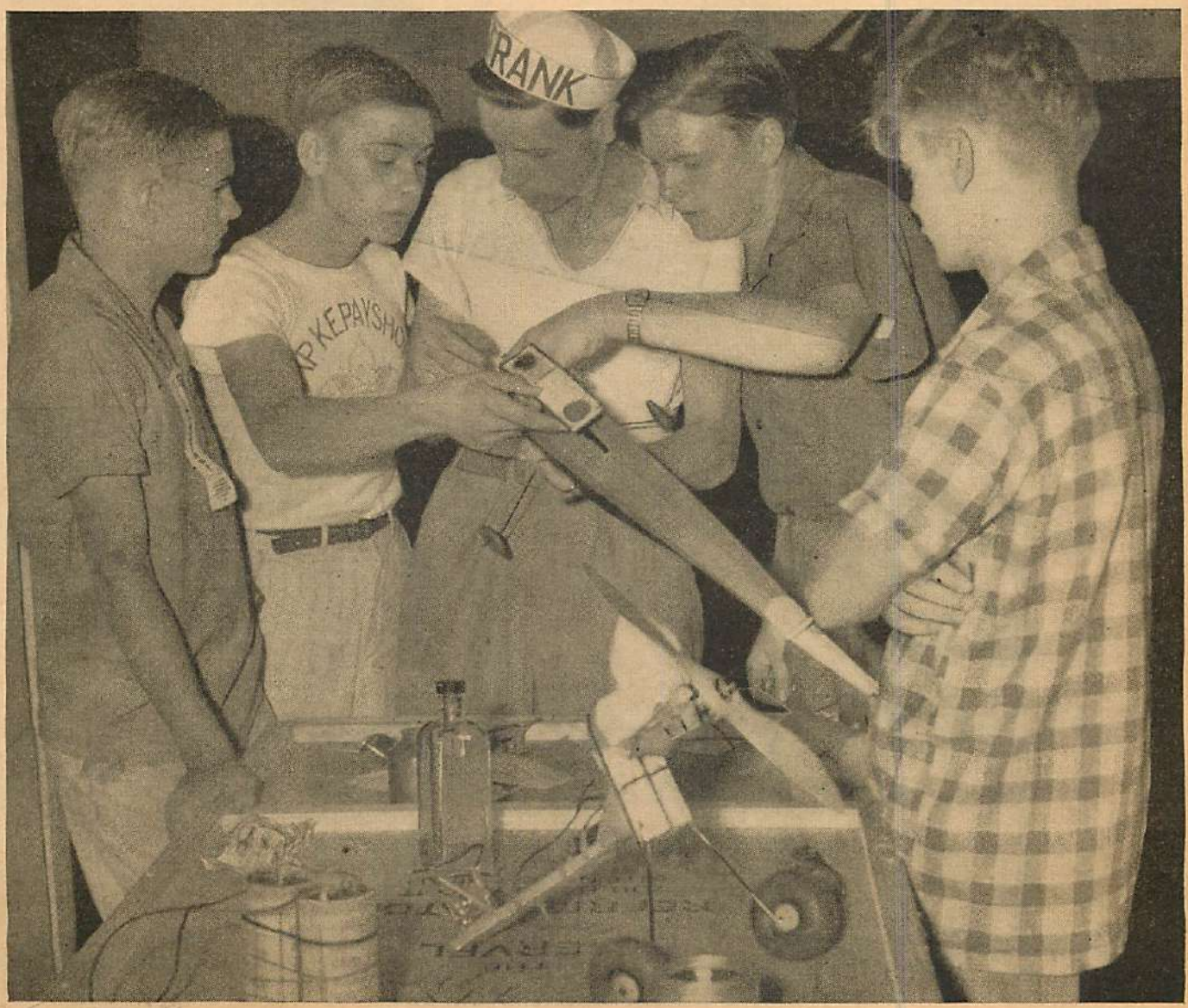
Question: Could you please tell me where I could secure books covering recent developments in aircraft Diesel engines, radial and in-line types, both of American and European make? R. F., Spinning Hill, Sask.

Answer: Write to Mr. Paul H. Wilkinson, care of this office. He has published a book called "Diesel Aircraft Engines." *(Turn to page 67)*

This department will attempt to answer any questions concerning aviation. Those of general interest will appear on this page; others will be answered by mail. Inclose a three-cent stamp to insure a reply. ★ All inquiries regarding appointments for U. S. army air corps flight training should be addressed to the Adjutant General of the Army, Washington, D. C. Those concerning application for naval aviation training should be addressed to U. S. Navy Bureau of Navigation, Washington, D. C. ★ Persons interested in applying for air corps ground training, such as that for airplane and engine mechanics, riggers, instrument and radio men, as well as aerial photography and parachute work, should address the Commandant, Aircraft Technical School, Rantoul, Ill.

THE LATEST NEWS, PLANS AND TECHNICAL DEVELOPMENTS IN BUILDING AND FLYING MODEL AIRPLANES.

AIR TRAILS Model building SECTION



THE NATIONALS 1939

Contestants weighing in for the Wakefield eliminations, as hotly contested as ever.

Suspended animation? Indoor events are popular, especially if you want relief from berserk gas jobs.

Save the pieces! The boys are getting better, though. The ghouls had a disappointing year.

BACK in 1928 modelers from all parts of the country gathered in Detroit for the first national model meet. There were no gas jobs, no microfilm indoor jobs, no radio control and practically no rules. There was plenty of enthusiasm which continued to grow, reaching an all-time high at Detroit last July during the Twelfth National Meet. Seven of the twelve nationals have been held in Detroit. The good citizens have become accustomed to the week-long interruption of their summer calm when hundreds of enthusiastic modelers take over the city.

Contest dates were July 3rd to 9th inclusive. Contestants were registered on Monday and Tuesday at headquarters in Hotel Fort Shelby. Theoretically, all entries had to be in the hands of the committee by June 30th with the dollar entry fee which was not returned. It cost the boys that much to crack up their models and get a good sunburn. But no one begrudged this contribution for the contest expenses. After all, they were given a free dinner at the banquet Saturday night. At first it seemed a limited budget would require the banquet be confined to winning contestants only. But on Friday, Roy Scripps, of the Scripps-Howard newspapers, contributed the additional funds necessary to invite everyone. The crowd in the Shelby banquet room showed that everyone accepted the invitation.

The weather man came to bat for the model hobby with fine weather—a minimum of wind and a maximum of heat. Rubber-powered events got under way on Wednesday (July 5th) at the Wayne County Airport. It is eighteen miles from Detroit—a field of ample size with flat land adjoining. The Moffett Trophy contest and the Wakefield elimination contest are the blue-ribbon events. The outdoor fuselage event for the Stout Trophy was held Wednesday, the six high contestants in this event winning the chance to fly in the Moffett finals—held next day.

Robert Toft, of Minneapolis, turned in the excellent three-flight average of 12:45.3 to top the list of outdoor cabin fliers. V. C. Davis, Jr., of Houston, Texas, was second with 8:47. It was particularly gratifying to see Toft win a first in a national meet. He certainly deserved a first in the gas-model event last year, when he turned in the high time during the first day of the gas contest. Unfortunately, the second day's flying was done under better conditions and Toft's time was beaten. Since he had been required to take all of his official flights on the first day, there was nothing he could do but sit back and watch stronger thermals push him out of first place.

The other rubber-power event held Wednesday was for flying scale models. There seems to be relatively few modelers interested in this event. Despite the lure of one hundred dollars in cash prizes along with trophies and medals there were few entrants. And the caliber of the flying scale models was below that of the models entered in all the other events. Flying scale contests are still in their infancy at national meets and don't seem to have progressed noticeably since they were first added to the program in 1938.

Most rubber-powered model fans missed the stick-

And we thought this a man's game. Parasol good idea.

THE NATIONALS 1939

William Dean built this twin pusher in 1912 and flew it this year with the same rubber. And it didn't break!

Heat made the Wakefield eliminations a nightmare of snapping rubber. Here is one clever trick that worked.

Why didn't we think of this before? All you have to do is go and get a sponsor. One ship bore this lettering: Helen's Roof Garden.

The trickiest paint job at the contest; also, considering the extreme heat during the contest, the most aptly named. Ship is a Zipper.

model contest which had been dropped with the explanation that there was not sufficient time to include such an event. The stick event has been popular since the beginning of model building. Practically all local and sectional meets include this event. It seems unlikely that it couldn't be included in a two-day program devoted exclusively to rubber-powered events. The Mulvihill should be back on the program in 1940.

Rubber modelers still put their contest hopes in the models with limited power run, fast climb and flat glides. As in all previous contests, the ability to fly a model was what paid dividends. Being able to put your model through its paces when the time comes is still the best contest preparation. Square-sided fuselages still predominated. However, Jim Cahill's success with his Clodhopper design has stimulated interest in the streamline fuselages.

On Thursday, Richard Naudzius, of Detroit, won the finals in the Moffett International Trophy contest with a three-flight average of 3:02. He had placed No. 4 in the outdoor cabin event held Wednesday. Unfortunately, the only international flavor in the Moffett contest was a full team of six Canadians. (Roy Nelder of Toronto won the

Die-hard rubber fan, Jim Cahill, stoops to shade himself beneath a friendly gas job. Incidentally, the Clodhopper was back.

Model builders did all but walk to Detroit. This Chicago truck is typical. One rode a bike.

It takes a brave man nowadays to hold a rubber job for winding. That motor packs a wallop. Oh, so you've found that out. Bob Lichten holding.

trophy in 1938.) It's hard to realize that the boys from Canada actually represent a foreign country. We've come to regard them as "part of the family." With seven years of competition behind it, the Moffett Trophy has developed considerable prestige among modelers. Many of us would like to see an aggressive campaign next year to encourage entries from more foreign countries—even if it is with proxy models.

Only four members of the Wakefield team were selected during Thursday's elimination contest. The finals for the Wakefield were held in New York City in August. James Cahill automatically was made a member of the team by virtue of his winning the trophy last year in Paris. Cahill flew in the eliminations to keep in practice. This was hard to understand, since almost everyone thought he should have saved all his energy and equipment for the finals.

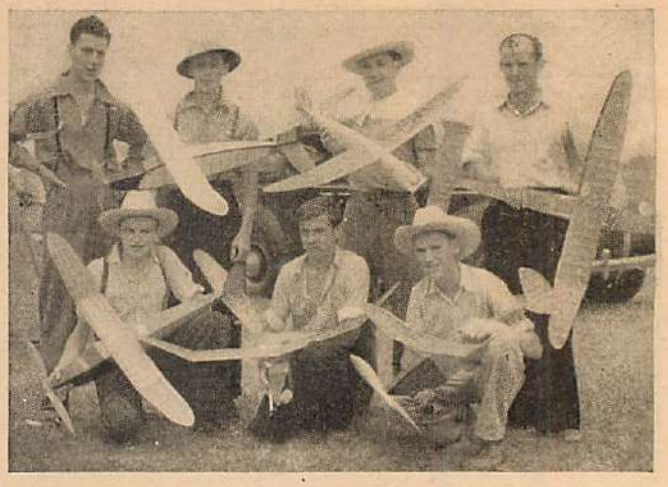
Two familiar names appear among the four elimination contest winners: James Bohash of Detroit and Richard Korda of Cleveland. Bohash was on the 1938 Wakefield team making the trip to Paris for the event. Dick Korda is well known for his successful contest designs. Many duplicates of his designs were entered in the contest. Robert C. Chaille of Miami averaged 8:09 to win the first place on the team. James *(Turn to page 50)*

Left and center—Federal Radio Communications Inspectors Lee and Rauch. Right—William Winter tries to look alert.

Below—Henry Thomas, of Akron, the National Champion, and winner of the Air Trails solo course. Model is a Rearwin.

A story without words. All the youngsters around the airport are proud possessors of broken wings, fuselages, propellers, etc.

AMONG THE CONTESTANTS



The Canadian Moffett team. As indicated by the picture, most builders preferred to put their trust in slab-sided fuselages.

Gordon Murray

Arthur Beckington

Wallace Simmers

Leo Bailey

Frank Zaic

Roy Wriston

Roy Marquardt

Bob Toft

Gordon Light, left center, lends an attentive ear to Walter Good's explanation of "Guff," his famous trophy-winning gas job.

Berryloid winners, left to right: Joe Raspante, Brooklyn, 3rd; C. H. Siegfried, Kansas City, 1st; and Mike Roll, Detroit, 2nd.

Ed Naudzius

V. C. Davis

Leon Schulman

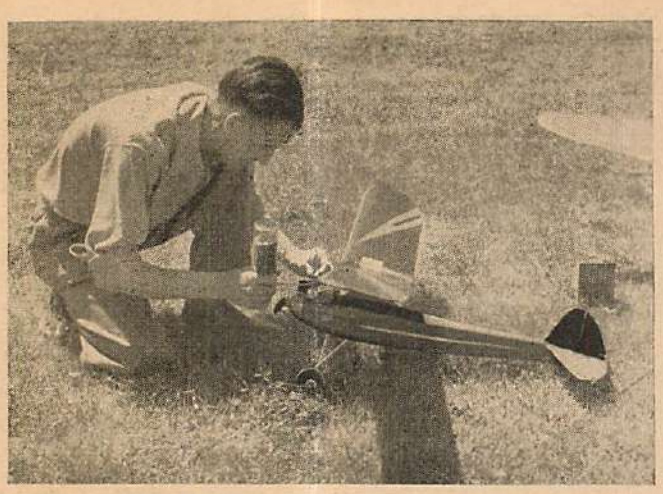
Ed Roush

Dick Korda

Roger Hammer

Bob Lichten

Alvie Dague



Barney Snyder, Modelcraft. California sent quite a delegation.

Pete Bowers, Los Altos, California, on tour of Eastern meets.

AMONG THE CONTESTANTS...

Henry Struck

Kenwood Carter

George Reich

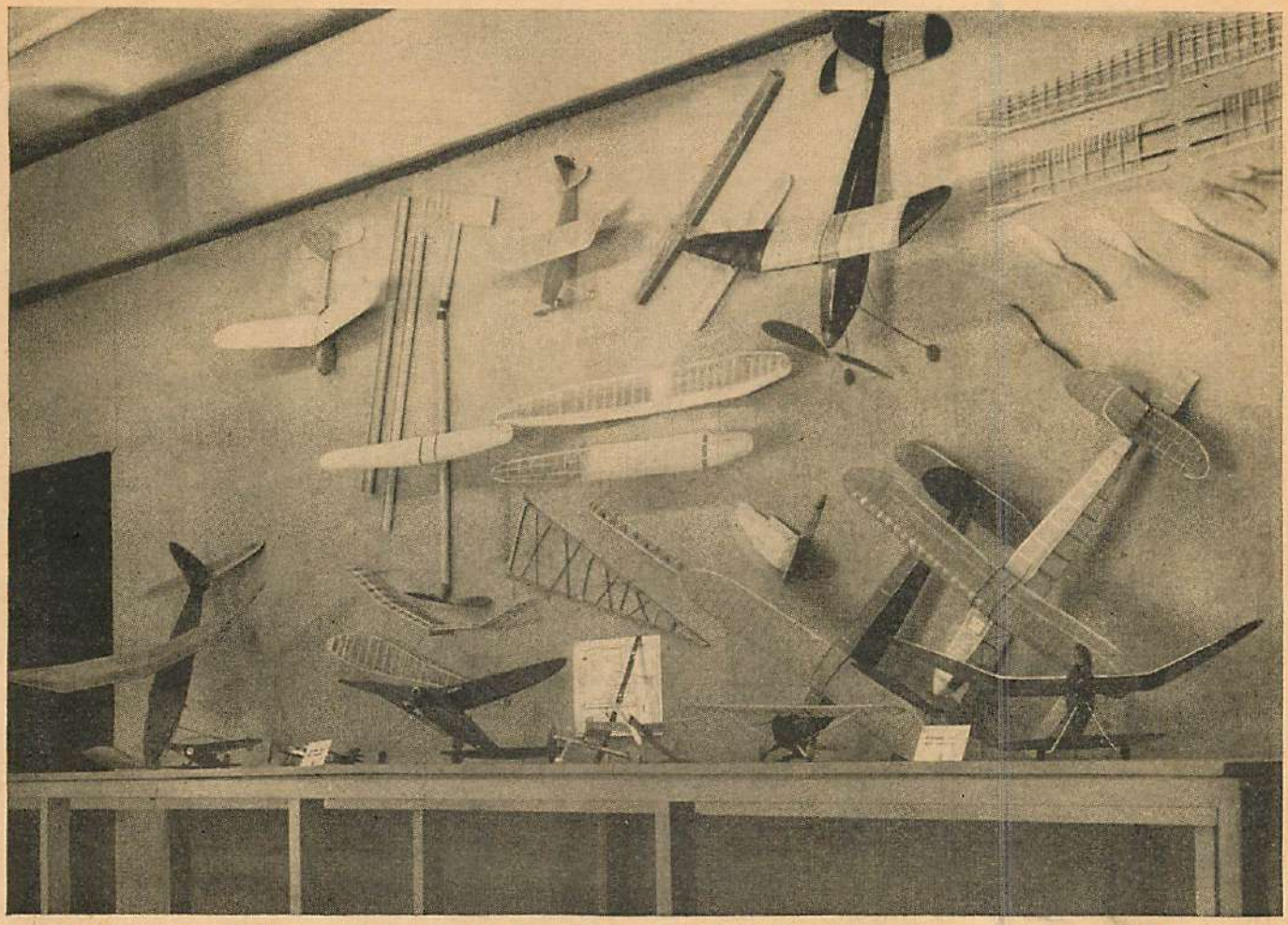
Bud McClelland

Frank Nekimken

Walter Dickinson

Carl Goldberg

Don Mertens



Don't limit the exhibit to finished models only! Show models under construction, materials, plans, etc. It's all of keen interest.

BIG SHOW-OFF

By AL LEWIS

Everyone loves a show. Exploit this to boost club membership.

CLUB leaders—a moment, please!

You know the old one about "if you don't toot your own horn, no one else will." Now, take your club. It's composed of a fine group of active model-plane fliers, your activities are the envy of all, you get an occasional "plug" in the papers, but you just can't seem to increase club membership. Right?

Air Trails takes this opportunity to offer a bit of advice. Everybody loves a show, especially a well-run one. Why not hold a show to acquaint more modelers and adults with the work of your club? Difficult? Not very. There may be some hard work entailed, but the rewards will more than repay your efforts.

Here's how. Numerous model aviation exhibitions have been held with success in various sections of the country. Baltimore, Boston, New York, Philadelphia, Chicago, Milwaukee, in fact, many a modeling organization, North, East, South and way out West, thar, has found an aëro-modeling exhibit an excellent method of spreading model-aviation activity, to build up membership rolls, to gain much favorable publicity, to have a lot of fun and meet a lot of folks who really are interested in what model aëronauts turn out in their workshops.

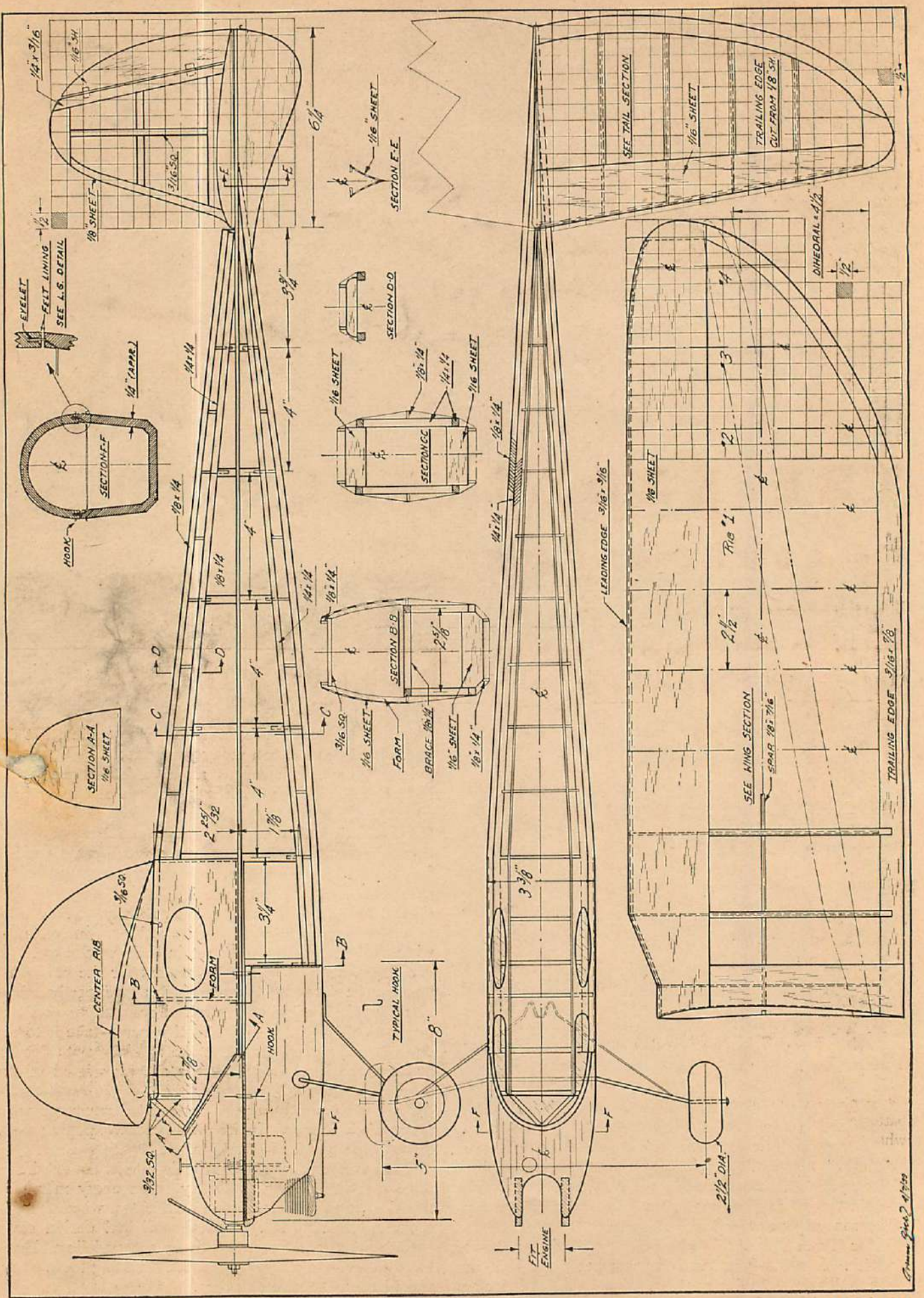
Select a suitable hall and directors for the exhibition who can be depended upon to work and expertly supervise the efforts of all concerned. Present a well-written program of the show to the local papers—take it to the city editor yourself—see that the special-events department of the local radio stations are acquainted of the coming exhibition.

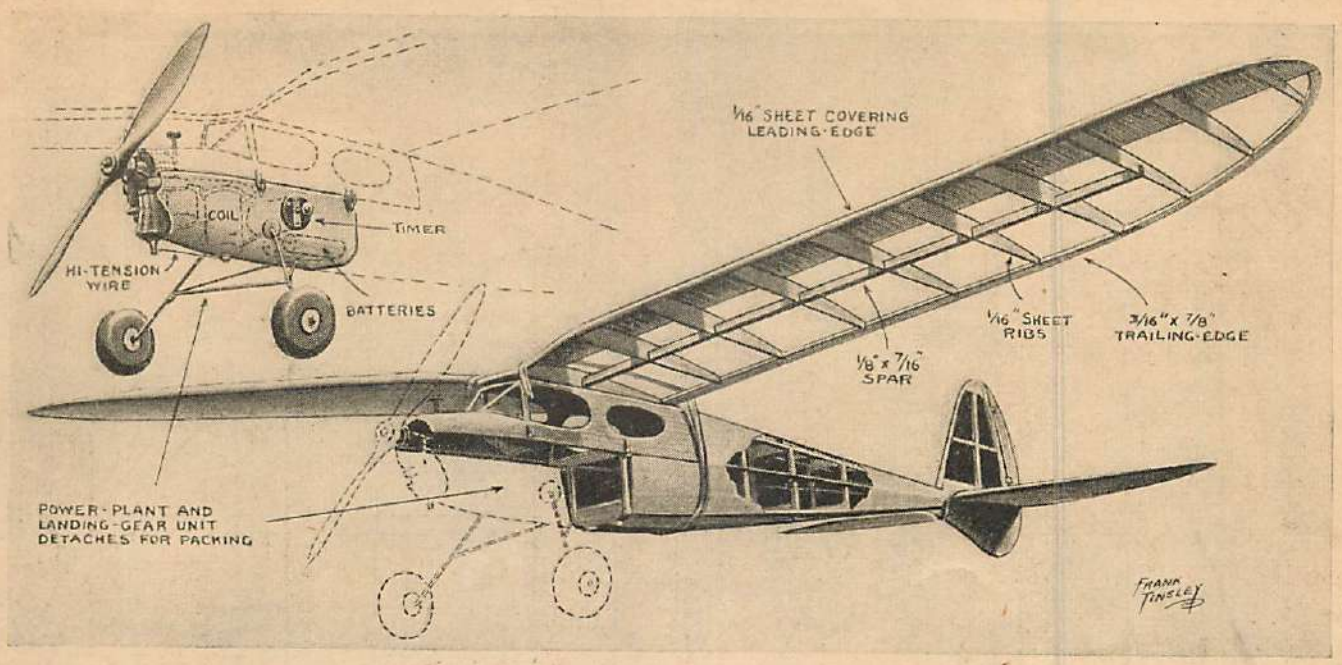
Have club members pass out printed announcements among their friends. Invite schoolteachers, pupils; work through the board of education.

Have everyone in the club participate in the exhibit in some manner. For the display snare every member's trophies, cups, medals, record certificates, winning models, unfinished parts and planes, original design craft. Include all types of models; play up gas modeling. Don't forget to present a display of model-building tools, plans, weighing and checking devices.

During each day of the show, club *(Turn to page 75)*

THE KNOCKABOUT





THE KNOCKABOUT

By LOUIS GARAMI

Weight and troubles are concentrated in the "bathtub" construction of this peppy little gas model.

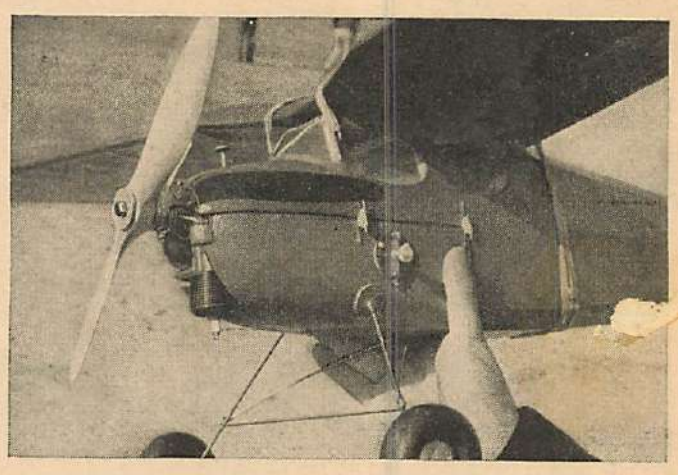
THANKS to a famous radio program we can describe the trend of gas model building in one short sentence: "Good evening, weight, let's concentrate."

While most of you have never even seen a model built according this new principle, it is the coming thing as sure as a bent crankshaft or double pneumonia after a model picnic.

But our model goes a little further than just weight concentration. We even concentrate our troubles. The lower half of the nose which contains the motor and all the other gimmicks is readily removable for inspection, repair or cleaning after a dust storm.

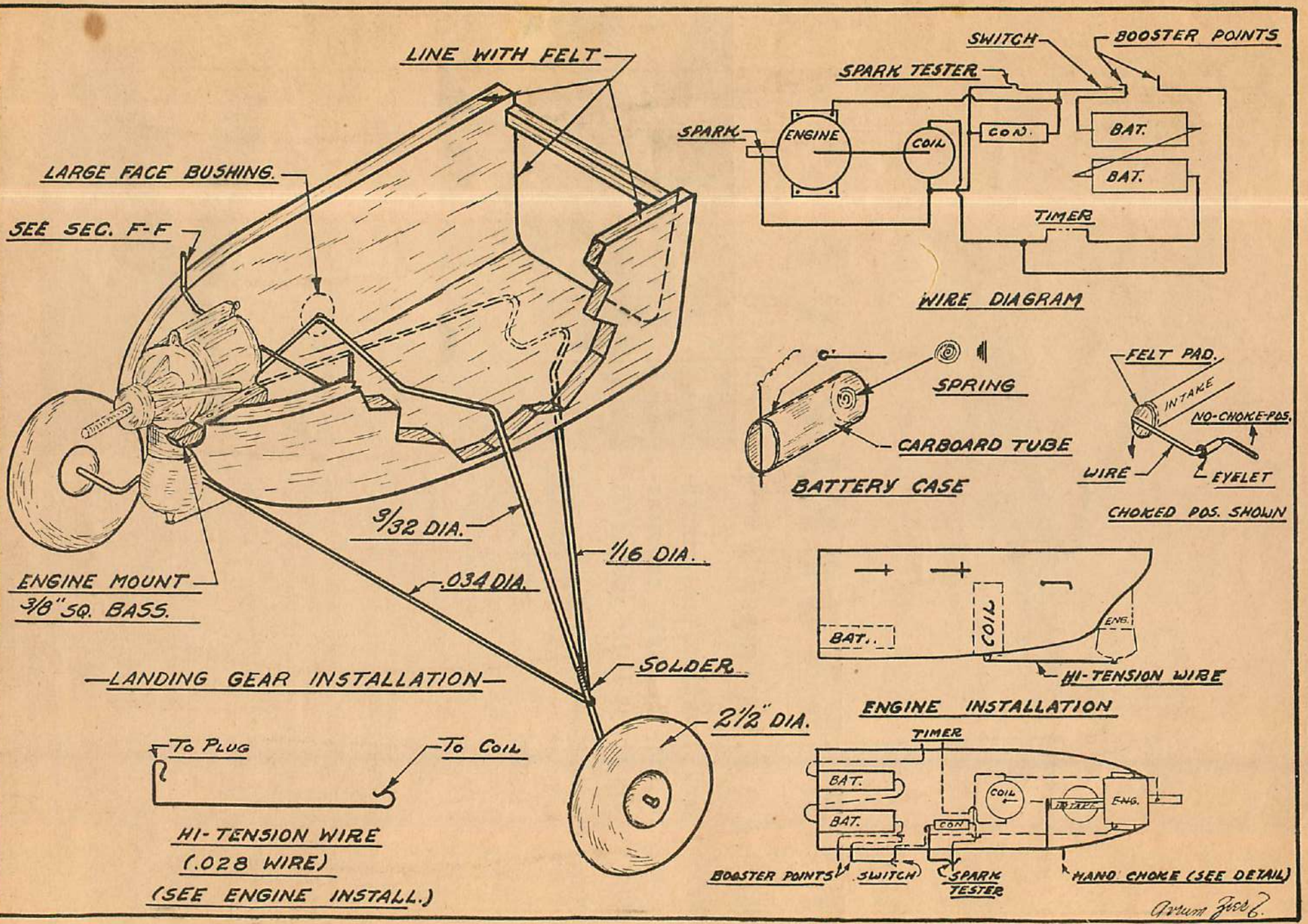
During the test flights this sawed-off bathtub construction proved to be very practical. Due to an overadjustment the ship produced a so-called bad landing, in reality a terrific spiral dive. Although neither prop blade was ever found, the damage did not extend beyond the bathtub, and even this was small.

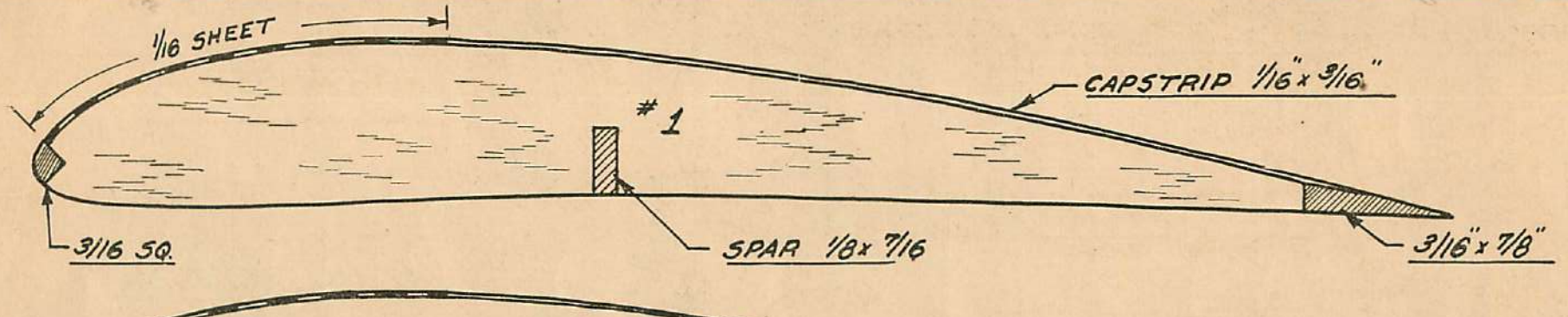
The thing we want to bring out is this: Employing the usual decentralized construction where the coil and batteries are secured far apart, in case of an impact the whole works are shaken up and possibly the body is damaged at the point where each is fastened. Then the extent of the damage cannot be revealed without removing the wing and probing into the body, which is not so easy, considering the narrowness of the fuselage. Our construction, on the other hand, allows super-short wires producing a better spark and all-around efficiency. The other smaller features, such as the remote-control choker, piano-wire high-tension lead and the *(Turn to page 63)*

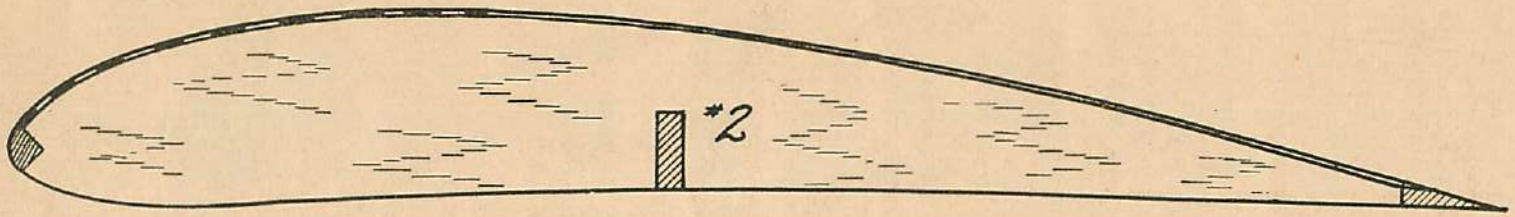


The installation of the Ohlsson 23 and the timer are shown in this close-up. Note attachment of "bathtub" and wing.

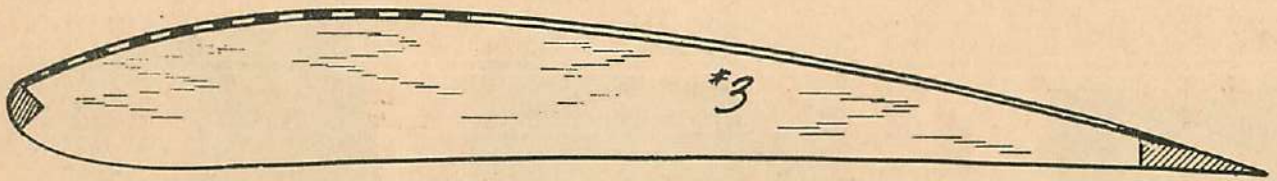
A smart-looking job with plenty on the ball when it comes to flying. And the Knockabout will take punishment, too.


LINE WITH FELT
LARGE FACE BUSHING.
SEE SEC. F-F
3/32 DIA.
1/16 DIA.
.034 DIA.
ENGINE MOUNT
3/8" SQ. BASS.
SOLDER
2½" DIA.
—LANDING GEAR INSTALLATION—
To Plug
To Coil
HI-TENSION WIRE
(.028 WIRE)
(SEE ENGINE INSTALL.)
SWITCH
BOOSTER POINTS
SPARK TESTER
SPARK
ENGINE
COIL
CON.
BAT.
BAT.
TIMER
WIRE DIAGRAM
SPRING
CARBOARD TUBE
BATTERY CASE
FELT PAD.
INTAKE
NO-CHOKE-POS.
WIRE
EYELET
CHOKED POS. SHOWN
BAT.
COIL
ENG.
HI-TENSION WIRE
ENGINE INSTALLATION
TIMER
BAT.
BAT.
COIL
CON
INTAKE
ENG.
BOOSTER POINTS
SWITCH
SPARK TESTER
HAND CHOKE (SEE DETAIL)

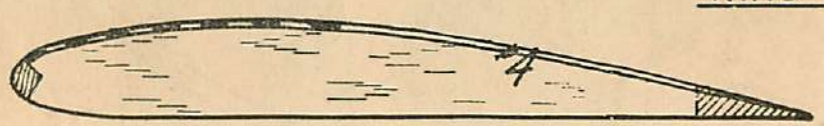


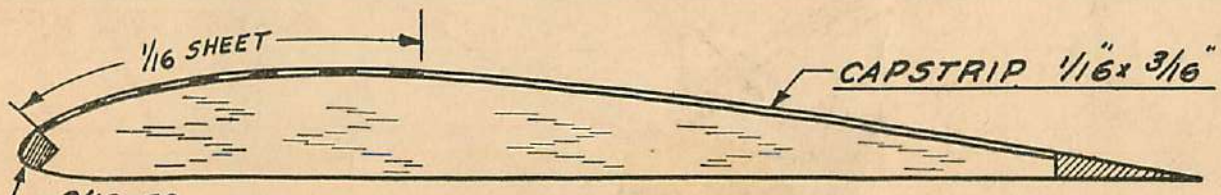


ALL RIBS 1/16 SHEET



—WING SECTIONS—





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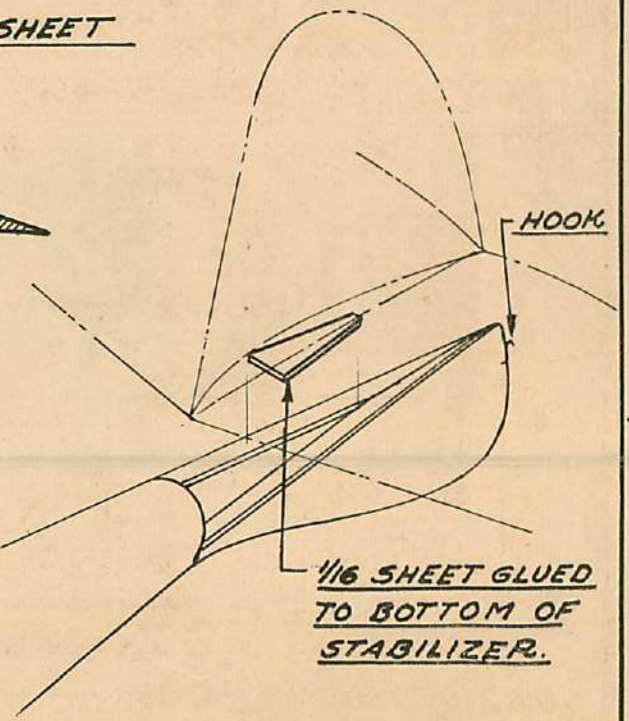


model matters

ALL modelers can settle back and relax—now that the Nationals are over. Where will the 1940 national contest be held? Hope it turns out to be Chicago. Many modelers feel Detroit has done more than its share for model aviation.

The young ticket agent at the Penn-Central Airline desk at Washington Airport told us he was a model builder. He confessed this weakness when we said our trip to Detroit was for the national meet. He said his last gas model hit a tree going downwind, which sort of cured him of the modeling habit. Jimmy Hayes is his name—works with Penn-Central during the summer and goes to the University of Virginia during the rest of the year—which seems like a mighty pleasant fate for anyone who takes his aviation seriously.

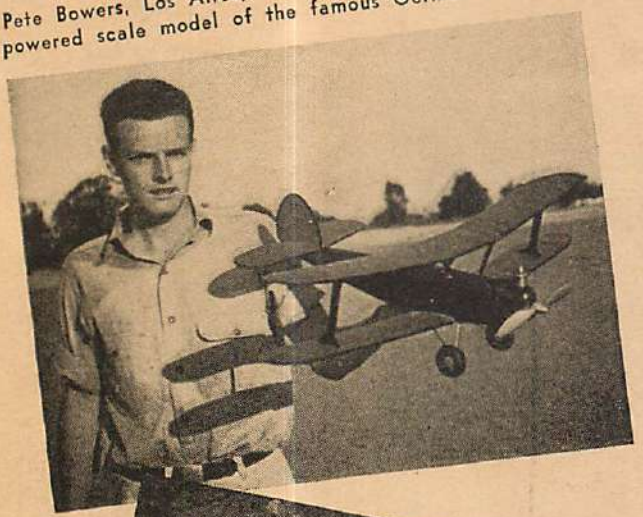
We've always tried to keep pace with the model industry by digesting magazine advertisements and company catalogues. But the hobby is bringing out trick model names too fast for us to digest. Here are some of the model kits and motor names offered by the dealers: Clipper, Zipper, Skipper, Tiny, Brat, Bantam, Senior, Junior, Cadet, Husky, Demon, Lancer, Thunderbolt, Bullet, Torpedo, Zephyr, Cyclone, Scorpion, Pee-Wee and Professor. And we always thought stamp collectors were the crazy ones.

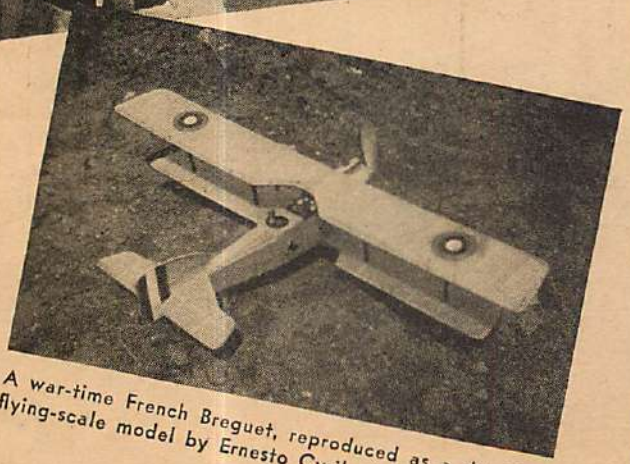
There are so many contests scheduled these days that Bob Allen's suggestion seems feasible: Start early in the spring with a trailer loaded with models and supplies and tour the country, planning the trip to take in a different contest every week. Such a schedule would take you to all parts of the country. But the question arises—which would give out first, you or the models? We'd bet on the models.

Harry Appoian of Philadelphia sent up his gas job from the Northeast Airport and without benefit of radio control it landed on the neighboring Boulevard Airport a half mile away. . . . Members of the Quaker City Gas Model Airplane Association (Philadelphia) went to the Delaware State Championships and took first, third, fifth, seventh and ninth places in the gas event. . . . The Berrys—younger and elder—promise a better-than-ever meet in Philadelphia in September. William Berry is the director of the Q. C. G. M. A. A. He and his father can be counted on to lead club members to all contests. We admire the elder Berry, who is seventy-five years old but still gets a big thrill out of the model hobby. . . . Cash awards for model contests seem to be becoming larger and more numerous. Sectional and local contest are raising the ante—fifty dollars or one hundred dollars is not uncommon. Prizes seem to be getting back to the 1929 level when prizes at a national *(Turn to page 76)*

Arto Monaco, Upper Jay, N. Y., and his gas buggy of original design. Arto, his brother Jimmie, and dad are all fans.

Pete Bowers, Los Altos, Calif., with his successful gas-powered scale model of the famous German Flamingo.





A war-time French Breguet, reproduced as a detailed flying-scale model by Ernesto Cyril of Jamaica, N. Y.

A California Chief, powered by a Baby Cyclone engine, constructed by Bob and Boyd Challinor, of Pittsburgh, Pa.

junior N.A.A. NEWS

Prepared by

William R. Enyart, Sec. N.A.A.

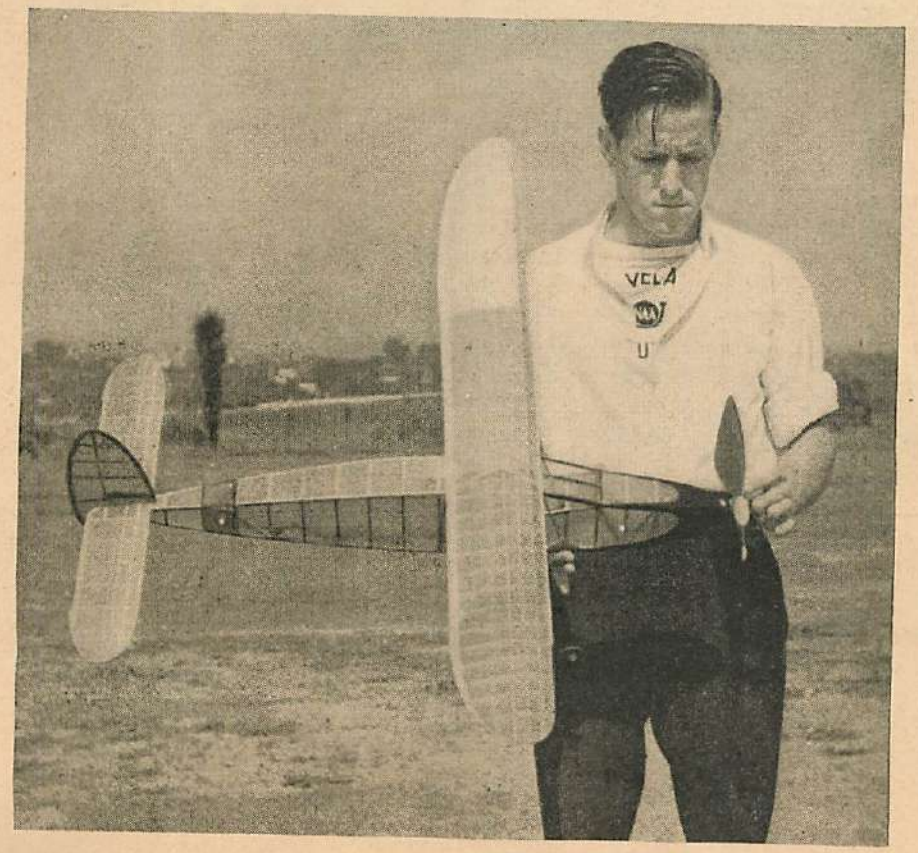
LOCAL MODELER MAKES GOOD

THIS bit might be entitled "Modelers Who Made Good." Many a member of the N. A. A.'s Model Division has gone on from aëro modeling to positions in the aircraft industry, or headed into commercial flying through a start with models—but not always do we all know of their progress. Here's a pair you'll be interested in:

Hewitt Phillips, of Belmont, Mass., and the 1938 winner of the indoor Stout hand-launched trophy, has for several years been an outstanding member of the N. A. A.'s Academy of Model Aëronautics. Phillips' experiments in the field of low-speed aërodynamics were largely responsible for the Junior Aviation League of Boston building a wind tunnel for model planes. Hew's reports on matters pertaining to scientific model aircraft have appeared in the academy's publications many times. To top matters off, Phillips was graduated with all kinds of honors from Massachusetts Institute of Technology last spring as an aëronautical engineer and immediately took a position for the summer with Pratt & Whitney (the prop people) at Hartford, Conn., working on one of the new hush-hush bombers supervising the installation of two-thousand-horsepower engines. Nice going for Phillips; a nice boost for the benefits of model-plane building.

Henry W. Stiglmeier, of Inglewood, Cal., traveled eastward to the 1938 Nationals to snare a position on the American Wakefield team—a position he was unable to fill because of the distance between Inglewood and Paris, scene of last year's Wakefield finals. Henry, however, an excellent aëro modelist, left a most favorable impression of his capabilities with those attending the '38 Nationals; his experimentations have been well known among expert model builders for some years. Well, Stiglmeier, has quit model planes. Now he's in gliding—a member of the Soaring Society of America and the Soaring Society of California. And as an indication that his building career is not completed, we learn that he's now constructing a sailplane. Best wishes to this "ex"-modeler; another example that model aviation has its instructive sides, too.

THE UNITED STATES RETAINS THE WAKEFIELD TROPHY!



Dick Korda and winning model. First man to fly, Korda got off a 43 min., 10 sec. flight. Second and third flights boosted his three-flight average to 950 2/5 seconds. Canada was second, France third, England fourth. Plans of winner will appear in November issue.

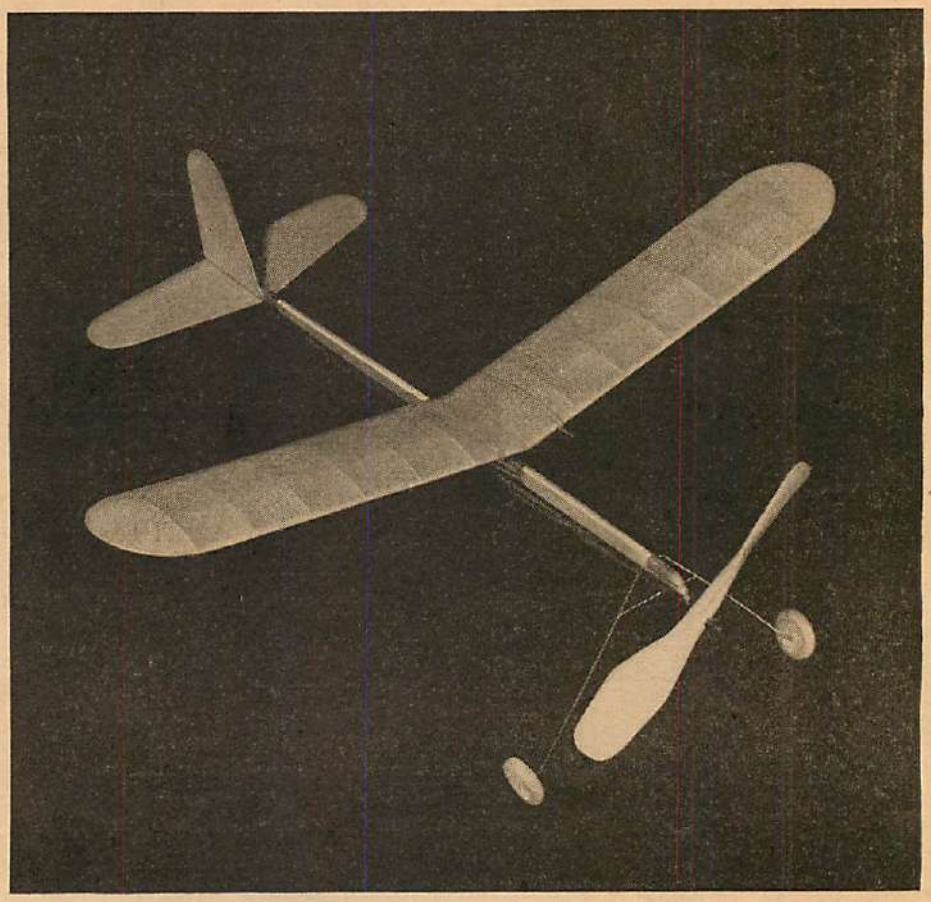
STATE MODEL AIRCRAFT RECORDS TO BE COMPILED SOON

This concerns the recognition by the Contest Board of the N. A. A. of State model records. For quite some time, officially appointed contest directors have been privileged to submit applications on behalf of modelers for State model aircraft duration records. Now, the Model Division of the N. A. A. announces that it soon will *(Turn to page 74)*

BECOME A MEMBER OF THE N.A.A.

WRITE THE NATIONAL AERONAUTIC ASSOCIATION, DUPONT CIRCLE, WASHINGTON, D. C., FOR APPLICATION BLANK.

THE UTILITY



It's simple to build and a pile of fun to fly. Use a winder and the duration will make you think of a B-17 out to break a distance record. The cost is negligible as well.

CONSTRUCTING and flying this model make a logical second step in the beginner's march toward better modeling. The design is slightly more advanced than the most elementary types. But it retains the easy-building and simple-flying characteristics so necessary to encourage the beginner's enthusiasm.

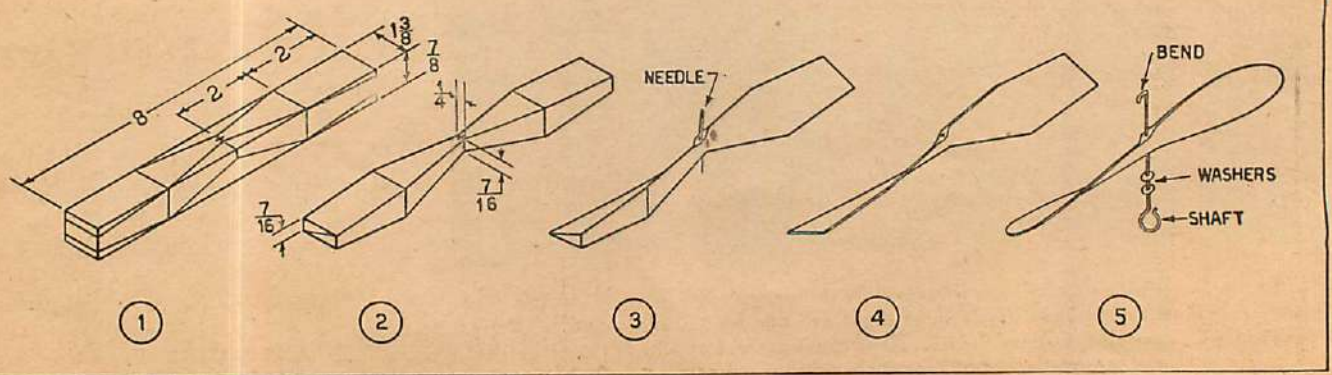
CONSTRUCTION

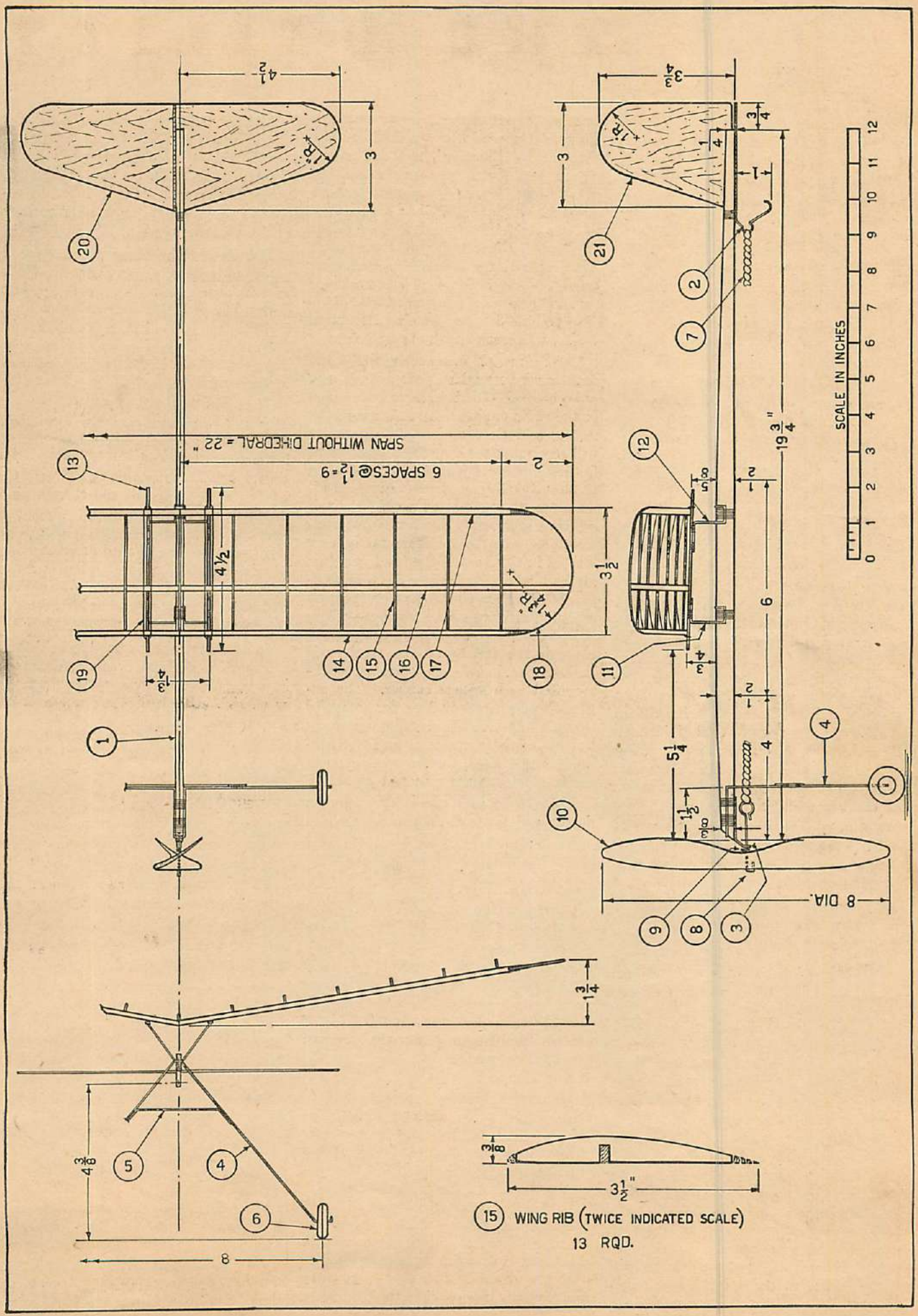
Each part used in the model has been numbered. The bill of materials at the end of the article lists the type and size of material from which the parts are made. Before buying additional material, look around your workshop for extra pieces of balsa or wire. The items which you buy should be grouped together for economy and convenience in ordering. All the wood and metal parts are common sizes and available from any model supply company.

Motor stick (#1) is tapered at the ends from a maximum depth of ½". The thrust bearing (#3) is cemented to the front tip. Strengthen the joint with a wrapping of silk thread. This precaution should be followed for all other joints. The rear hook (#2) serves both as attachment for the rubber motor and tail skid. The end of the rear hook is inserted into the motor stick 2¼" from the rear end. The hook should hold the rubber about ¼" away from the stick—to prevent the knots in the wound motor from catching the stick and not unwinding freely.

Landing gear is made from two pieces of wire (##4 and 5). Piece #4 extends around the front end of the motor stick and down each side. Before attaching to the stick, measure carefully to make sure each end of the landing gear is the same distance below the stick and the same distance outward from the center. Piece #5 is an auxiliary brace designed to prevent the landing gear from spreading more than the required 8". It should be attached about 1" below the stick. Cement and thread to piece #4. 1"-diameter hardwood wheels *(Turn to page 64)*

STEPS IN PROPELLER CARVING (SEE TEXT)




SCALE IN INCHES
0 1 2 3 4 5 6 7 8 9 10 11 12
SPAN WITHOUT DIHEDRAL = 22"
6 SPACES @ 1½ = 9
8 DIA.
19 3/4"
(15) WING RIB (TWICE INDICATED SCALE)
13 RQD.

THE NATIONALS 1939

(Continued from page 37)

Thomas of Pittsburgh was second with 6:43.3. Both these boys are newcomers to the ranks of national winners. But that didn't disturb them—they handled their models like veterans. The sixth member of the Wakefield team is Ralph Baker, Santa Ana, Cal., who won the West coast elimination held in Los Angeles on July 4th. This West coast elimination contest made it possible for builders to have a chance at the Wakefield even if they were unable to make the trip to the national contest.

Contest operations moved quietly for the first two days during the rubber-powered events. On, Friday, July 7th, the serenity of Wayne County Airport was shattered—the gas modelers had moved in. Steadily throughout the two days gas models kept winding skyward. (Some insisted on winding earthward.) Old-timers had to rub their eyes to reconcile the number of gas models with the fact that in 1932 Maxwell Bassett's model was the only one entered in the national meet.

Present gas-model designs make the most of the twenty-second motor run with a fast near-vertical climb. When heading into a brisk wind, the models actually seem to be climbing in a partially inverted attitude. A combination of less wind and better technique on the part of the entrants reduced the number of washouts—which had been the depressing feature of the 1938 meet when practically half the models figured in some sort of crack-up. Carl Goldberg's Zipper proved an outstanding design in performance and popularity. It seems to have what it takes for contest work. Its climb is really sensational.

Motor troubles apparently are out of style. Most modelers were ready to let their models go after a few seconds' warming up. Of course, there were a few who spent much of their time cranking. Model structures have improved. Even when the models wound in at high speed, they did not disintegrate as completely as in past contests. The most common form of crack-up was the tight spiral with the model hitting the ground in near-vertical bank attitude. The resulting cartwheel turns are more spectacular than damaging. Rubber mounting of wing and tail permit them to shake loose with less damage than with a rigid mount.

High-powered models with reduced wing area present ticklish problems of adjustments to get the maximum climb. Too tight a turn cuts down climb. Too little turn seems to lead to stalls and loops. The most efficient adjustment seemed to be a vertical climb with practically no turn. Many modelers seemed to use excessive negative thrust to get this result.

Much work remains to be done in the development of radio control. The Good twins—Walter and William from Kalamazoo—were the only radio-control entrants turning in truly successful flights. On Thursday they made three flights of fifteen to twenty minutes. The model was under control throughout the flight. They flew upwind about a mile and circled their destination (two destination points had been selected before the flight); came downwind, circled another point about two miles away and then back to the take-off point, landing about one hundred feet from the transmitter. The Goods threw in extra circles, eight-turns, spirals, and waggled their wings for good measure. They piled up eighty-nine points—Joe Raspante of Brooklyn, N. Y., was second with eleven points.

Good's model was substantially the same as he flew last year to win the radio control. Changes have been made in the radio equipment. It carried both rudder and elevator control. Modelers will remember the plans and description for the Good radio control presented in the last January issue. Rubber-powered escapements are located within the tail surfaces—connected by fine wires running aft from the receiver and battery located in the front of the fuselage. This method seems simpler and more foolproof than having the escapement mounted forward in the fuselage—where it is necessary to rig control cables back through the fuselage. The receiver is built into a balsa case which is shock-mounted with sponge rubber. The entire arrangement makes for ease of operation and servicing. All unnecessary weight has been removed and the five-pound total gives the Brown Jr. motor ample reserve for a nice fast climb.

The Goods had given many public demonstrations with their model early in 1938. But at the national meet that year the radio-control flying was scheduled for the last day of the meet. A brisk wind made flying treacherous. Walt Good was the only radio-control entrant who tried a flight. The elevator tab had inadvertently been raised and the model stalled immediately after launching before Walt could get to his transmitter-control. Nevertheless, he won the event last year on the basis of control demonstrated on the ground. This year's performance justified the judges' decision.

Many radio-control entrants fail to thoroughly test-fly their models. The ship should be adjusted to fly perfectly without using the control. This reduces the chances of crack-up should the control go bad. At the present stage it is impossible to exert any degree of sensitive control when "flying" from the ground. Another fault which seemed disastrous was beginning maneuvers too near the ground. One promising entry was climbing nicely out of the field when the operator gave it right rudder. The resulting slip into a downwind turn took too much altitude and the model spiraled in despite opposite control. Sufficient altitude before beginning maneuvers seems as important to radio pilots as it is for actual fliers.

Another weak point seems to be lack of testing and tuning of the receiver under the conditions encountered in actual flight, that is, with the motor running. Some of the control units failed to respond in actual flight apparently because of the motor vibration.

The Good twins are particularly well equipped to develop radio control. Both were awarded their master's degree last June—Walter at the University of Iowa and William at the University of Illinois. Both majored in physics—making the radio-control project an important part of their work.

The Meeting of the Academy of Model Aëronautics was held Sunday, July 9th, at the Fort Shelby. It resulted in constructive and worth-while criticism. Blackboards were suggested for posting contestants' official times immediately following their flights. Everyone at a meet is interested in the length of flights and the blackboard offers the way of giving out the information with a minimum of confusion. Frank Knapton of Los Angeles reported the idea successful at their West coast meets.

A. M. A. members agreed to hold their fall meeting at Langley Field, Hampton Roads, Virginia, during Thanksgiving week-end. Langley is the home base for the general headquarters staff of the United States army air corps. The National Advisory Committee for Aëronautics is also at Langley. Their laboratories and testing equipment are outstanding and should be interesting to all modelers.

Modelers living too far away to attend this A. M. A. meeting are urged to send their suggestions by mail. All resolutions will be voted on by a ballot mailed to all Academy members. New rules will be formulated and released January 2, 1940.

An interesting announcement was made by Al Lewis, N. A. A. representative, that civil-service examinations will be announced by the United States government in the near future to take model builders into the N. A. C. A. High-school education will be the only necessary schooling. Experience and ability as a modeler will rank high. In addition to building models for the N. A. C. A., duties will include recording of data during routine testing.

Discussion soon got under way early in the meeting regarding the three-flight-average time ruling. Sentiment seemed to favor it for gas contests but ruled it out for rubber-powered events, both indoors and outdoors. *(Turn to page 52)*

Symbol of PERFECT BALANCE IN MOTION is the gyroscope. When you read that Ohlsson 23 ran 400 consecutive hours—equivalent to **12 years** of normal flying—it means that Ohlsson 23's crankshaft, connecting rod, and piston are in as perfect dynamic balance as it is possible to achieve today. Any **off-balance** in these vital parts means loss of power, increased vibration, shortened motor life.

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(Continued from page 50)

Gas-model rules were subjected to close inspection with the following changes recommended: Class A maximum wing area limitation to be raised to 250 square inches and the wing loading to continue at 8 ounces per square foot; wing loading for Class B to be raised to 9 ounces and to 10 ounces for Class C; duration of motor run be lowered to 15 seconds with a maximum of 30 seconds for a delayed flight.

One-wheeled models were held to be eligible provided the model was able to stand on the ground unassisted and take off in a normal attitude. Regarding take-off carriages, it was suggested the rules be revised to read "no parts may be dropped during flight or during take-off."

Barney Snyder of Los Angeles suggested encouragement of new and original designs at national meets by offering a trophy and cash award.

NOT ON THE PROGRAM

We arrived in Detroit about four in the morning. The *put-put* of a model motor was the first indication of the contest we heard as we arrived at contest headquarters, Hotel Fort Shelby. That sound persisted practically unbroken day and night until the end of the meet.

Some of the Kalamazoo boys brought their own thermals for use in the contests. They were strong, healthy specimens. Early Saturday morning these thermals broke loose and escaped. The wind recorder at the Wayne County Airport registered gusts as strong as fifty miles per hour. They sure grow thermals plenty tough up Michigan way.

The thunder, rain and wind storm early Saturday morning was too much for the tent housing the younger Berry, the elder Berry, and the rest of the Quaker City delegation. The Philadelphia gang dusted off to the hangar when the tent pole began to buckle and a junior Lake Michigan began to form inside the tent.

It seems as though the gas model—just like the automobile—is here to stay. Every gas model in the country was at the contest with a few imported from Canada for good measure. If interest continues to grow, gas models are certain to form an all-important event at future contests. (Just listen to that die-hard rubber modeler talk!)

The first thing every conscientious modeler does upon getting back home is to unpack his models and fly them in a vain attempt to find out why they didn't perform at the contest after flying so well at home. This is not a scientific gesture as much as a means of salving wounded pride by blaming the weak-kneed Detroit thermals.

Are any readers old enough to remember when a national meet took only two days to run off and it was possible to tell who had won without waiting a full day for tabulation to be completed? Ah, the good old days—

Farmer Brown, the genial "host" to visiting modelers for the past three years, was out of luck. A friendly breeze saved the boys considerable expense by making it unnecessary to ransom their models when they landed on his farm. The contest management said they had made arrangements with Brown to return the models. We had heard this story before in '37 and '38, but Brown still operated on a cash-and-carry basis.

Carl Goldberg has forsaken his first model love—indoor flying. We thought he had gotten his events mixed when we saw him at Wayne County Airport on Friday while the boys were dusting off the rafters of the balloon hangar at Grosse Ile.

The bright spot of the meet was Walt (Radio-control) Good's sunburned nose.

Walt and William Good threatened to "hang one on" if one of the other radio-control entrants threatened their lead built up by the first two days of flying. They planned to garner the ten extra points awarded for a radio-controlled loop. Their job had elevator control and certainly would have looped.

Thursday, during the Moffett finals and the Wakefield eliminations, the boys really broke plenty of rubber motors. The rubber was snapping right and left as harassed modelers tried in vain to store in the usual number of turns. One poor modeler broke eight motors before he finally put in sufficient turns to even bother with an official flight. Then to make the boys feel even worse, sixty-five-year-old modeler William P. Dean of Detroit flew his 1916 twin pusher using the *original* rubber motor. It was rumored that some of the boys tried to buy his rubber for their contest jobs. Surely couldn't have been much worse than the rubber they were trying to use.

We like the enthusiasm of the rubber-powered stick-model fans who organized and carried out their own stick event. There were well over twenty-five entrants despite the fact this event was dropped from the schedule. We agree that this is ample proof in itself that the stick event should be included next year. The Mulvihill Trophy was one of the first national awards and has more tradition and background than the new trophies can gain in a score of years. Why retire it from competition?

One of the nonmodeling guests at the Fort Shelby remarked that the model builders were such nuisances that he'd miss them when they were gone. Sort of like hitting yourself on the head with a hammer because it feels so good when you stop. However, this same gentleman confided that he thought the modelers a really interesting lot and didn't see how they could go far wrong with such an excellent hobby to hold their attention.

Facility for take-off at the airport for the gas models was just like the ice water in the hotel rooms—wasn't any!

Chicago boys said they'd like to be host to the national meet in 1940. Here's hoping they do something about it before we wear Detroit's hospitality to a frazzle.

The West coast delegation said they'd like the national meet in their home diggings some time soon. That's fine. "Build models and see the country" will be our motto. Just give us a few years' warning to save a few extra nickels.

Who was the Wasp? Practically everyone was accused and yet no one was admitting he knew. The Wasp must have been a thwarted modeler whose gas job cracked up on its first flight, and he took revenge by torturing the rest of the modelers. He did such cute tricks as painting sleeping modelers with red dope in war-paint fashion, leaving calls to awaken exhausted modelers at 4:30 in the morning; or removing slats from a bed, causing it to collapse when the weary builder finally did turn in. All these antics could be identified as the work of the Wasp by the warning note he left.

Crash vultures were present at the meet and kept the field free of wreckage. Whenever a model crashed, these youngsters could be counted on to carry away the débris—after being discarded by the builder. One youngster had a complete fuselage from which the motor had been torn loose in a crack-up. He was carrying it as proudly as if it was a trophy winner. While the action of the "vultures" may seem a little gruesome at the time, many youngsters develop a healthy interest by examination of the pieces of wreckage, and in many cases patch them together into something flyable.

We'd much rather see a builder take his crack-up with a smile, salvage what he can, and pass the pieces on to the youngsters than the performance one builder put on. His model made a rather rough vertical landing and he gave it several well-aimed kicks and then proceeded to crush the wings and the fuselage into a tangle that would be of use to no one. The worst part of the temper display was that a little sense on

the builder's part in launching the model would have averted the crack-up. Some modelers certainly pick the hard way to learn model flying.

Walt Good tells about a new type of contest run by the boys in Iowa City. The rules don't call for limited engine run. The winner is determined by the highest ratio of glide time to motor run. It's up to the boys to limit their engine for the most favorable ratio. Good is attending the University of Iowa in Iowa City and has been giving Iowa boys the benefit of his experience.

Clodhopper (Cahill) and Korda designs predominated in the rubber-powered events. What aviation magazine first published the plans for these famous models? Send your guesses to the editor—the winner to get a second-hand thermal, slightly used, but otherwise in good condition.

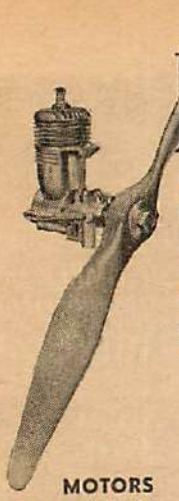
Famous comebacks—Roy Wriston and Alvie Dague of Tulsa. We sure missed seeing them in 1938.

The girl who came with the Syracuse delegation, proved to be a mighty capable person. Not only did she handle her models like a professional, but she made the sandwiches for the rest of the S. M. A. C. delegation. From the lean and hungry look on the faces of the Syracuse boys, this job could have been a permanent one. They were putting them away as fast as she made them. We thought she had the right idea when she firmly announced her model needed attention and the boys could prepare their own lunch.

Rubber-powered models seemed to have staged a comeback this year. Over one thousand flights were turned in during Wednesday's flying.

It was encouraging to see more of the West coast modelers at the Nationals. Barney Snyder of Los Angeles was back again. Frank Knapton, Irvin Ohlson, Elmer Rice, Pete Bowers, and several others made the trip from California. The Northwest was represented again along with modelers from most of the outlying regions of the country. Wish Hawaii could be persuaded to send a representative as they did to the Detroit meets back in '28, '29 and '30.

Tuesday night the radio-control entrants gathered to discuss the point system whereby different maneuvers would carry a certain number of points. Each entrant had a different idea as to the value of the various maneuvers. There was a good reason for this variety of viewpoints—each entrant wanted the greatest number of points for the particular maneuver that his ship performed the best. *(Turn to page 82)*



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(See list of advertisers on page 82)

DIRECT-LIFT

(Continued from page 24)

to the railroad because both, as a general rule, are operated from terminals and therefore, an additional method of transportation is required to reach the station or the airport. Contrary to this, only a direct-lift aircraft could be compared to the automobile, because it could be kept in one's garage and operated from a small space in the back yard.

Exceptionally interesting safety and service characteristics can be expected from an amphibian helicopter. As was mentioned, any airplane will always require for its operation a flying field with reasonably smooth and hard ground. A ditch or swampy spot may prevent the take-off or may cause the plane to crash after landing. Contrary to this, the amphibian helicopter could be operated safely from any spot of ground regardless of the condition of its surface.

It is not necessary to emphasize the value of these characteristics for rendering useful and valuable service.

In order to increase the feeling of security in flight, it is important to remove the greatest remaining source of trouble—namely, the difficulties caused by bad weather and fog.

Flying and landing in blind weather represents little or no hazard for the huge airliners on which an experienced professional crew using expensive radio and other navigation equipment can master such difficulties. However, the average owner cannot be expected to have the training and knowledge of the professional navigator, and it must be remembered that the blind flying, radio and other equipment will usually cost more than a complete small plane. Therefore, the basis of safety must reside on a more elementary foundation; namely, on the possibility to fly, if necessary, at a very slow speed with completely satisfactory control and to land safely on a very small space.

With the establishment of long-range transcontinental and transoceanic air lines, it was often mentioned that "our world was shrinking in size." Strange as it may appear at first, the development of the direct-lift aircraft would do the reverse—it would enlarge the size of our land considerably by placing at the disposal of man vast new territories, many of them lying virtually around the corner on the map, but inaccessible because of difficulty of reaching them.

The great importance of a military air force for the prestige and safety of the nation has been well established and needs no further comments. Private aviation was left behind for a time. I have no doubt, however, that as a result of progressive work in general and a progressive solution of the special problems connected with the creation of good, practical, direct-lift aircraft, a great expansion of the peaceful utilization of the small flying ship can be expected in the near future.

The immense influence of this development in all branches of the aircraft industry and flying, needs no emphasis. I believe, however, that a more ambitious prediction is justified; namely, that this vast expansion of flying by opening new territories and new fields of activity for man would have a great and beneficial influence, not only on the aircraft industry but on the whole economic structure of the nation as well.

GENTLEMAN WITH WHISKERS

(Continued from page 17)

not reporting your landing after PX-ing? Do you know you're liable right now to a thousand-dollar fine and two years in prison for not reporting?"

"We're awfully sorry," I said. "Only we were so excited"—I couldn't say we were celebrating!—"and trying so hard to get the motor start—"

I heard his deep breath of exasperation. "All right. I'll notify Atlanta and Greensboro.. Don't let it happen again."

Remembering another PX, I understood. A lost plane from Portland, Oregon, to Spokane, Washington. When overdue two hours, the first check point reported to Spokane. Spokane hadn't seen it. Checking back town by town, no one had seen it after take-off. Army and marine planes roared out. Telephone, radio hummed. In a few hours the region was interlaced with a searching network. When they found it—in fog-shrouded trees fifteen minutes from Portland Airport on a mountainside—the pilot, back broken, had excellent reason to bless the PX system.

The PX, or Flight Plan, is one of the more dramatic aids the C. A. A. holds out to the private flier, but they are many: Federal airways including emergency fields, beacons, and the communications section of which the PX is one service; maps and charting; regulation and licensing; publications including bulletins, reports on fields, accident analyses, directories, et cetera; development of private flying; medical science research.

The Federal airways were laid out for scheduled air lines—which makes them nonetheless valuable to the private flier. Fields are laid out approximately twenty minutes apart. Light beacons along the course lead like street lights from one city to another, slashing a path across the sky. Many flash their numbers in international Morse code. Where this is done, it is noted on the maps. The beacon just south of Alexandria, Va., is Number 55. From sunset till dawn, the code light flashes *dit—dah—dit* (5). Only the last number is flashed, so 5 signifies 5, 15, 25, et cetera. Beacons with identical signal are approximately one hundred miles apart and the pilot checks off lights to tell his location.

In the daytime these lights still serve as markers, since they are either on high towers, or have power sheds adjacent with the number on the roof.

The laying out of these airways is romance itself. In some places chosen by the department's pilots as strategic points for beacons, it was found that only back-packing could get the equipment to the summit of almost inaccessible peaks. Electric timers or sensitive metals that close and open switches with the slight temperature changes incident to daylight and dark, turn the lights on and off. Sometimes untended for months, they flash their silent guardianship along the highways of heaven for the pilot who, in private flying even more than in airliners with their automatic pilots and radio compasses, depends on these "street lights" to lead him over fanged mountains to happy landings.

Radio beams are another service of protection, but since following one takes a certain amount of special training often not had by the private pilots—most of whom today are light-plane fliers—it is one less used than the hourly weather reports. Small portable receivers are now available for the price of a suit of clothes and are sometimes more vital! Ceiling, visibility, winds, storms, rain, snow, icing conditions, and dewpoint are broadcast. Co-operating with the department of agriculture, the C. A. A. takes these observations at airports at regular times and the information is incorporated into the daily weather map mailed on subscription.

The traffic control of the communications section has two wave bands for the private flier. Not only can he receive the radio beam and weather reports, but he can call in, if he has a transmitter.

For example, let us say Johnny Smith is flying from Cincinnati to Newark at an altitude given in his flight plan. Weather becomes soupy, but Johnny has instruments and he knows that traffic control is checking his progress and any other ship on instruments will be routed to avoid collision. So Johnny Smith booms along happily conscious of a clear track. Suddenly his motor coughs, smooths out, sputters again—carburetor icing up! The wings feel saggy. Ice on their leading edge! He can't descend, he can't climb, and he may fly into another ship droning along through the soup.

He switches on his transmitter and calls Newark. The dispatcher rapidly checks traffic, checks Smith's position and speed, calls back. Smith is to fly two minutes due north, take a new heading which the operator gives him, then climb a thousand feet. The ice sloughs off, and he buzzes on into Newark. If the weather had closed in there, the traffic control man could have suggested an alternate airport.

For one pilot who sets a course by dead reckoning, fifty fly by landmarks. Many fly by a combination known as steering a range. For instance, if a certain valley and a town lie on the course, one may line his plane up with those two objects, note his compass reading and then hold that course, say 35°, without checking through the routine of true course, wind drift, magnetic course, and compass course.

For such pilotage, the maps made by the Coast and Geodetic Survey for the C. A. A. are godsends. There are six types: a magnetic chart (115 miles to the inch) showing the difference between true and magnetic north. The great circle chart of the United States (eighty miles to the inch) for use in drawing great circle courses, the shortest distance across the curved surface of the earth, where speed is essential such as in the Bendix.

The radio direction maps (32 miles to an inch) are used for plotting radio bearings. The aëronautical planning chart (80 miles to an inch) and the regional charts (16 miles to an inch) are used in laying out a long course, since only one of the planning chart and six of the regional charts cover the whole nation. Having found the course he wants, the pilot refers to the sectional charts on a large scale of eight miles to the inch.

It's the sectional chart that is dear to the pilot. Not only are cities shown, but relief including mountains, hills, and valleys; water such as streams, lakes, canals, and swamps; culture such as towns, cities, roads, railroads, gravel pits, prominent buildings, mines, dams.

Take, for instance, a trip from Lock Haven, Pa., to Chambersburg. A straight line drawn on the map from the airport to Chambersburg would mean climbing two thousand feet straight from take-off so we turn westerly and fly across the edge of town toward a pass through Bald Eagle Mountains. The next valley is twenty miles wide according to the fine vertical lines laid out across the map's face for a scale of miles. We should cross the valley in about twelve minutes. On the other side a small river comes out of a deep valley shown by contour lines, and the color and altitude notations tell us we need two thousand feet to clear the hills. We fly to the left of this valley. Next is a peak with a small blue line, indicating a river, on its other side. To the right of this peak, we pick up the river, fly over Milheim, passing a beacon light indicated on the map by a star. (If it were night we could watch the code flash out its *dit-dit-dit-dit-* (4) since the map says it is Beacon 54.) Then miles on, we'll pass a river and single-track railroad, the railroad shown by a black line with single crossbars. We find them and fly on, sighting a forest lookout tower shown on the map by a black circle and triangle.

Past the worst mountains, we see another green area indicating a valley where two mountains jut out and then there's the long slender range of Jacks Mountain, with a pass to our right. A railroad and a highway, shown by a purple line, go through the pass and a yellow square denotes a large town. We sight them, so we look for the next check point. Yeagertown, Burnham, and

Lewistown fill up the entire next valley so an irregular yellow form shows the shape of the large towns. A larger river shown by a wide blue line is beyond the town and two double-track railroads shown by double-barred black lines branch to right and left. We fly between, and find two power lines we have been looking for, shown on the map by little red telephone poles joined by curving red "wires." We cross them at their junction, look for the Juniata River entering the next mountains and fly to the left of it across three small noses of mountains poked into the next valley. We fly between Walnut and Nook (small circles on the map). Across the valley a smaller purple line indicates a less prominent highway. We cross it at Honey Grove, cross Kittatinny Mount at a prominent bottleneck valley and go southward into Chambersburg.

Most private flying is this sort. Water towers, labeled as to color, prominent buildings, tunnels, sand dunes, abandoned railroads if prominent, racetracks, mines, different types of airports are shown as picture symbols the way an Indian might make a map in picture writing. A pilot without training can still read them with good accuracy.

Night-flying charts show only towns, water, and light beacons: the features visible at night, uncomplicated by extraneous information.

The licensing and regulation by the C. A. A. seem more like the bogyman than Santa Claus to many pilots who chafe at restriction. In the light of accident reports, these rules seem more like safety precautions. Out of one hundred and fifty-three accidents occurring in private flying from February '38 to February '39, over twenty percent were *students carrying passengers*, with thirty-one accidents and thirty-seven passengers killed or injured. With a more heavily loaded ship and a student overanxious to show how good he is, the cards are stacked before take-off. Over eighty-two percent of the accidents were caused by stalls or acrobatics at low altitude—a goodly number occurring when the pilot was circling a house watching it, instead of his technique.

If the C. A. A. insists on pilots following rules, they make it easy for the pilot to know how. A book on Practical Air Navigation and Use of Charts, with a supplement on meteorology and books on civil air regulations and traffic rules are available. Monthly bulletins go out telling field conditions, new fields, new rules, and C. A. A. activities. Directories of fields, airport operators, and pilots are published regularly. Accident reports and special bulletins are yours on request, weather maps on subscription.

In the field of development, nine C. A. A. men make it their business to do nothing but tour the country, stopping at airports and getting the public's wishes at firsthand to relay to Washington.

Medical research goes on regularly, such as that being done at Kansas City on the effect of altitude flying by combination of controlled oxygen supply and simulated flight in a Link Trainer.

General research is such work as the development of the Metcalf-Civil Aeronautics Authority system of blind landing, now under way at Wright Field, Dayton, Ohio. Formerly blind landings necessitated use of all instruments normally used in instrument flying in addition to one or two others used only for such landings. The Metcalf-C. A. A. system has a single instrument on the panel on which three lighted dots indicate the pilot's position. With the three dots lined up horizontally and the middle dot centered, he is on the glide path and in line with the runway. It is possible to apply this instrument to any blind-landing system and use it in conjunction with radio-range beacons for ordinary flying.

So the third gentleman with whiskers, Uncle C. A. A. Sam, gets my vote. He makes Santa look like a piker!

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AVIATION FOR EVERYBODY

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AIR COPS

(Continued from page 13)

capable of transporting twenty-two fully armed troops or an equivalent load in bombs.

The other two air bases are located at Mosul in the north and at Shaibah in the south. Each accommodates a single squadron of two-seat general-purpose bombers similar to those at Hinaidi, and with this force law and order are maintained.

There is a fourth air base in the country situated at Basrah at the mouth of the Shatt-el-Arab, equipped with Supermarine flying boats. Basrah is the port of the country, at its southernmost extremity, and the terminus of the Iraq State Railways. These flying boats play no active part in the policing of the country. Their main job is the patroling of the Persian Gulf, where they lead a very active life keeping the slave trade between Arabia, Persia and Muscat in check.

The onus of keeping reasonably harmonious relations between the various tribes falls mainly on the four squadrons of two-seat bombers. The Arab is a nomad, drifting casually from area to area without any very clearly defined idea of what constitutes his neighbor's land or his property. They have always warred among themselves; indeed, it is one of their major industries. Whenever a tribe finds itself short on women or sheep, the two chief bones of contention, they raid the nearest tribe and help themselves to the comeliest women and the fattest sheep. Immediately a terrific yowl is set up by the tribe that lost out on the deal, the lamentations of the tribesmen who have lost their spouses being drowned out by the wails of those who have lost their dinner.

By a method which I will describe later, news of the raid is quickly sent in to the nearest air base. A machine immediately takes off, the thieves are located, and leaflets printed in Arabic are showered down on the tribesmen.

The leaflets express the horror of the airmen at the wanton attack on their innocent neighbors and exhort the raiders, under the pain of the direst penalties, to return the stolen property. It is virtually impossible for the raiders to escape, for at best they cannot hope to get more than forty miles away in a day's march. And on the following day, back comes the airplane with further threats and the added imposition of a fine of fifty rifles for disregarding the first warning. The Arab's love for his horse is proverbial; that must have been written before the rifle was invented, because he will certainly give his horse or camel up before he'll part with his weapon.

Sometimes the threats of action from the air are effective, sometimes they are not. After repeated warnings have been ignored, a flight of possibly five airplanes arrives on the scene and, with machine-gun fire, destroys about half of the tribe's flock of sheep. This usually has the desired effect. Experience has taught the Arabs that it is distinctly unhealthy for them to indulge in retaliatory fire against the airplanes, and in an ordinary tribal dispute the English are very reluctant to open fire on the miscreants.

Assuming that the destruction of part of their flocks does not induce them to make restitution, a company of armored cars, operated by airmen, arrives from the nearest air base. This may have meant a three-day drive in torrid heat through waterless desert, the crews almost baked alive in the iron-clad turrets of the cars. The plunder is then taken away forcibly from the tribe and the fine collected. The sheik of the tribe is usually arrested and hauled off to Bagdad, where he gets a six months' jail sentence.

Incidents like these are a monthly occurrence throughout the country. With a minimum of bloodshed and without the expense of a punitive military expedition, the air force is able to quell, at its inception, what might develop into a major tribal war.

One of the biggest headaches the British Foreign Office has to contend with is the possibility of a religious war in the Orient, where all Moslems would unite under the spur of some grievance, real or imaginary, against their Christian overlords. Moslems owe spiritual allegiance to two schools of thought—the Caliphs at Istanbul, formerly Constantinople, and the Shariffs at Mecca in Arabia. During the World War, the Germans dominated Turkey, and consequently pulled the Moslems in one direction, while Colonel Lawrence, with his genius and the inexhaustible British purse, backed the Shariffs at Mecca and pulled them in the other direction. King Faisal of Iraq, planted on the throne by Lawrence, was one of the three sons of the Shariff of Mecca, his enthronement being the price he demanded for his support.

At the present time there are other influences at work to kindle the torch of insurrection, and at least once a year some prophet will arise, backed by European capital inimical to British interests, who will rally to his banner all the malcontents of the country.

The methods adopted by the air force to combat these influences are unique and effective. Archaeologically, Iraq is one of the most interesting countries on earth. Babylon, Ur and what is supposed to be the Garden of Eden are all located within its borders. Special-service agents, as they are called, are scattered throughout the country in the guise of archaeologists—indeed, many of them really are. But they have a more

important assignment. Every week they are visited by one of the Virginia bombers, ostensibly visits of courtesy, but actually the occupants come to collect a weekly report of tribal activity in the area covered by the special-service agent. Mingling freely and in a friendly spirit with the tribesmen, these agents are in a position to keep abreast of any contemplated tribal movement. In themselves, these weekly reports are comparatively innocuous documents, but when they are co-ordinated at air headquarters a comprehensive picture of the activities of every tribe can be readily assessed.

The Virginia troop carriers are the modern ships of the desert. In addition to the routine work of attending the special agents, they transport every variety of merchandise all over the country, as far east as India and as far west as Egypt.

Should an airplane become weatherbound in any part of the country, food and tobacco, even beer are carried to the stricken craft, and if it be impossible to land, the supplies are dropped by parachute. In the event of a fatal accident, the bodies are collected and taken to Hinaidi for burial. If a new engine is needed as a result of a forced landing, a spare engine is tied to the center section, the necessary equipment is stowed in the capacious cabin, and within a few hours the stricken craft is winging its way home.

Some years ago when the King of Afghanistan was forced to abdicate, a flight of five Virginias was sent to India to evacuate him and his court from Kabul, the capital, to Peshawar in the northwest frontier province of India. When the captains and the kings had departed, it was discovered that the palace harem had been overlooked, and with enthusiastic fortitude the crews set about loading scores of heavily veiled, mysterious damsels aboard the planes. The trip takes about two or three hours, and the knights of the air were looking forward to a couple of pleasant hours in strictly feminine company. However, to their intense disgust, at the last moment before the take-off a eunuch climbed aboard each machine to safeguard the damsels. During the trip to Peshawar, one of the eunuchs lit a cigarette, one of the seven deadly sins, and the outraged airmen had an excuse to show him what they thought of him, with great satisfaction.

More recently the Virginias have been used to transport fully armed British infantry from Egypt to Palestine, where the Arabs and the Jews are at loggerheads.

Routine work for the two-seat bombers consists of ceaselessly patrolling the borders. Although it is frequently found necessary to chastise recalcitrant tribes within the boundaries of the State, they are definitely under the protection of the air force. One of the chief sports of the tribes of the bordering countries is to make a quick raid across the border and seize everything, men, women and herds, they can lay hands on, and get back over the border before vengeance overtakes them. The men are sold into slavery, and as for the women, they just exchange one form of drudgery for another.

Generally they are apprehended, and the airplanes hold them until the armored cars arrive on the spot. Sometimes there's a short and bloody battle; many an airplane has been shot down with disastrous consequences for the occupants.

Dumps of gasoline, bombs, ammunition and canned food are maintained at strategic points throughout the country to avoid the necessity of having to return to base for refueling. The heavy fines, always exacted in the form of weapons, restrain the Arabs from interfering with these dumps. On a few occasions, undue liberties have been taken with aircraft bombs, and the resultant explosions have instilled in the survivors a hearty respect for these particular stores.

Generally in the spring the Arab fancy lightly turns to thoughts of war, and a force numbering several thousands will invade the country from the north, assembling in the Kurdish foothills, and spreading fire and pillage among the peaceful tribes, at the same time attracting all those whose love of fighting overcomes their discretion, which is unfortunate.

During the writer's several years in the country, the chief thorn in the sides of the air authorities was a certain Sheik Mahmood whose genius for guerrilla warfare was only equaled by his elusiveness. For several years he defied capture, retiring to the fastnesses of the hills or taking a trip across the border when things got too hot for him. A bounty of five hundred dollars was placed on his head, and he promptly replied with a similar offer for the head of the King of England, at the same time inclosing a picture of himself, presumably to let the air force see what they were up against. The weapons displayed were quite formidable, including a number of machine guns.

By giving him a free hand for several months he was finally captured. Leaving the security of the hills, he advanced southward. Swiftly and suddenly the planes arrived and cut off his retreat. Day and night he and his followers were the target of continuous air bombardment. Nor was it a one-sided fight, as with the courage of desperation he fought off surrender for several weeks until, finally, he rode into the advance camp, astride a donkey and with a dozen or so wives as escort.

From there he was flown back to Bagdad, being violently airsick to the extreme satisfaction of all concerned. Mildly censured by the Arab administration, he was sentenced to exile. Other strong men have since arisen, and it is an even bet that he, too, will reappear in due course.

More peaceful pursuits have included the compilation of accurate photographic maps of the country which are at the disposal of Imperial Airways, K. L. M., Luft-Hansa, and other operators, not to mention the hordes of youthful Europeans, whose skill is usually in inverse ratio to their enthusiasm, intent on making a name for themselves by flying to Australia.

The intense heat makes flying conditions in the afternoons a mighty unpleasant business because of the bumpiness of the upper air, and unless it is vitally necessary, flying terminates at noon. The fear of sunstroke makes it imperative that solar helmets be worn both on the ground and in the air.

During the World War, when the British were advancing against the Turks, who then held the country, there was a sort of gentleman's agreement that an afternoon siesta would be a good thing for all concerned. Accordingly, both sides would cease firing promptly at eleven o'clock, and a hush would descend on the whole battlefront until four in the afternoon, when they would start banging away at each other all over again.

In preparation for the far-off day when Iraq will assume complete independence, the nucleus of a native air corps is being formed. The pilots receive a fairly rigorous training in England and are moderately competent.

Efforts are being made to train engineers on the spot, but the results are far from satisfactory. Arabs are probably the least technically-minded people on earth. There are no words in the language to cover even the most elementary engineering terms, and to crown it all the pupils speak no English. What it boils down to in the end is that the English mechanics do all the work and the Arabs just sit around, perfectly content.

There are whispers going around that this state of affairs is part of the British government's policy. As long as military forces of the country are incompetent to preserve peace, the English are fully justified, on their part, in staying there.

The probability is that they will be always there. For an investment of ten million dollars annually, which is what it costs Britain to keep her air forces there, they dominate the only oil fields in the Near East and hold the most strategic point, comparable to Gibraltar and Port Said, on the airways to the Orient.

PURSUIT AVIATION

(Continued from page 21)

passing. It has been stated that under these circumstances, if your first bullet just misses an opponent's nose, the second shot of your burst will clear his tail surfaces by several yards. Increasing the number of guns will, of course, multiply the number of bullets concentrated on the target during the critical moment. Hence the eight-gun batteries in England's Hurricanes and Spitfires.

A third objection to 400-miles-per-hour speeds lies in the limitations of the human body. Pilots of the 365-miles-per-hour Spitfires are said to black out during sharp turns and pull-outs. The picture presented by a covey of momentarily unconscious fighter pilots zooming around at such speeds in a crowded dogfight is a rather disturbing one. It brings up the obvious question of whether a maximum, practical fighting speed has not already been reached.

Increasing Complexity of the Modern Fighter. The modern medium-range pursuit ship is equipped with practically all the instruments and controls of a large airliner. The fighting pilot has not only to fly his ship, but also to perform the numerous functions relegated to the liner's copilot. He sits behind an easily damaged, high-power engine that must be constantly babied along. He has an adjustable-pitch propeller to set, flaps to operate and landing gear to retract.

Once in the air, he must turn to a bewildering array of flight instruments. Keeping one eye upon these, he is called upon simultaneously to operate a complicated radio apparatus. This consists not only of the usual two-way communications set, but also of a bank of blind flying, and, in tomorrow's plane, blind-landing instruments. Operating at high altitudes, our pilot has heating and ventilating systems to adjust between intervals of rationing out oxygen to revive his flagging faculties.

It's too much! There are too many operations to perform, adjustments to make and dials to check for one human being equipped by nature with but one pair of eyes, hands and feet. The conventional single-seater has become too fast, too complicated and, above all, too expensive.

Light-weight Fighters. Recognizing these shortcomings, the French have been quietly experimenting with low-powered, light-weight, simplified fighters adapted to cheap, quantity production. They have decided that in dealing with local defense and army-operations problems, super speed and long range are unnecessary. They believe that the answer lies in large numbers of inexpensive, easy-to-fly single-seaters. In the 450-horsepower Caudron Cyclone, the French air corps has a fighter which combines a maximum speed of nearly 300 miles per hour with excellent maneuverability, good landing characteristics, and low cost of maintenance. Ships of this type can develop enough speed in a diving attack to deal with the average medium or heavy bomber.

Ships of this weight and power, possibly in the form of rugged, highly maneuverable, fast-climbing biplanes, will undoubtedly be designed in increasing numbers. Recent developments in the technique of molding plywood and synthetic plastics would seem to point a way toward rapid, low-cost manufacture. A well-thought-out program built around such a type may hold a partial answer to the needs of America's aërial defense. Produced in reasonable numbers, these planes would assure local defense and provide intermediate training equipment from which exceptional pilots would graduate to the more complicated and difficult long-range ships. When obsolete, the lightweights could be retired to service with reserve units and flying clubs. Let's hope that some part of the increased research facilities recommended by the Lindbergh report will be devoted to the development of a light-weight fighter as well as to that of its heavier-fisted, longer-range big brother.

BE AN AIR-LINE STATION AGENT

(Continued from page 15)

or very tragic, and compromises with safety are never permitted or excused. The thought of *accuracy*—then speed—is always kept foremost in the minds of all air-line employees.

However, as soon as the junior agent proves that he can perform duties without direct supervision, he is promoted to the position of senior station agent. From station agent he has a very promising line of promotion. He may be advanced to assistant station manager, and later to station manager, who is the individual in charge of each air-line station. After attaining necessary experience as a station manager, he is qualified to become one of the air line's approved flight dispatchers, whose job it is to approve or disapprove a flight's departure.

From station agent he may also follow a different track of advancement, going into a supervisory capacity in the company's headquarters office.

The position of station agent also provides excellent general knowledge for employees who have a desire to enter into the sales department of an air line. The experience a station agent receives in passenger handling, reservations, ticketing and company operating practices proves to be invaluable to a well-qualified air-line sales representative. From sales representative there are many promising opportunities for advancement in the ever-important sales department.

In the way of activity, our station agent really has an extremely broad diversification of duties and responsibilities. At times he may have at least a dozen different irons in the fire. Snap judgments are common necessities, and he has to be right the first time.

Let me point out a few of his many responsibilities. One of the most important is that of passenger handling. The volume of passenger traffic depends a great deal upon the extensive development and approval of the passenger service among the large number of air-line patrons who prefer flying because of the splendid service rendered. There is not a transport system that can survive unless a substantial portion of its patronage is repeat business. Because of the fact that little is to be gained by carrying a passenger only once, the air line must depend upon the attainment of universal approval of its service, and in this respect efficient passenger handling is most important.

From the standpoint of the traveling public, satisfactory transportation service is interpreted to mean a convenient, dependable, fast, comfortable service, coupled with courteous and intelligent attention on the part of its station agents. Each station agent must bear in mind that the traveling public, to a very great extent, judges an air line by its employees, and it is more or less taken for granted that the attitude of the station agent who is in constant contact with the passengers will reflect the general attitude of his company. Therefore the alertness, interest and efficiency displayed by him will denote an alert, interested and efficient air line.

The majority of the air line's revenue is obtained from its passenger business. This being the case, it is vitally important that every station agent conduct his assigned duties in such a way that the passengers are pleased with the service and that each passenger is thoroughly convinced that he has been carried with the utmost safety and as quickly and pleasantly as possible.

In passenger handling the station agent is constantly confronted with many difficult but interesting problems. One minute he may be aiding Mrs. F. D. Roosevelt in locating her knitting bag, which she apparently left aboard an airplane after deplaning; the next minute filling out a trip itinerary for a prominent celebrity who wishes to travel incognito; and later, attempting to persuade an individual who has "been drinking" that it is against the company's policy to accept him for passage, doing this in a manner whereby the air line will not lose the good will of the passenger.

In addition to passenger handling, the station agent attends to various matters concerning flight control and dispatching, such as the completion of weather reports for the pilot's information, and in general seeing that everything is in order before the flight departs on its journey, thus insuring the safe operation of the trip's airplane and cargo. He sees that the fuel requirements for the flight have been properly met and that the ship is departing with a safe margin of gascline aboard to enable the ship to fly beyond its next scheduled stop, if necessary, taking all flight conditions into consideration.

Station agents are responsible for seeing that the maximum load allowable is not exceeded by the actual load that has been placed aboard. Every pound of cargo placed on an airplane is known by the station agent before the ship is permitted to depart from his station. This duty alone carries a great deal of responsibility, because overloading an airliner is considered a very serious offense.

In addition to these responsibilities the station agent must be fully conversant with all reservation procedures and ticketing practices and be capable of handling any problem that might arise concerning ticketing or reservations. He is responsibile for each piece

of cargo placed aboard the airplane, which includes the passengers' luggage, United States air mail and air express. It is the station agent's duty to make certain that every piece of cargo is loaded properly, as well as have an accurate record accounting for same.

If it is possible for you to conceive, station agents have many more routine duties other than the more important ones I have just mentioned. These might include anything from relieving the radio-telephone operator in carrying on ship-to-ground radio contacts to aiding the caterer in preparing full-course dinners that are placed aboard during mealtimes.

One of the most efficient and practical ways to become a station agent is to attend an aviation school having a course in air-line operations. It might be of interest to describe briefly the training given at the school where I am an instructor in this field. The purpose of the course is to qualify the student to enter the employ of an air-transport company, and with a minimum amount of "polishing" on the part of the air line, fit right into the speeding cogs of his department, thus proving himself to be a valuable employee immediately upon his reporting for duty. Therefore men who have received such specialized training are in great demand by the air-line companies.

In addition to his training in meteorology, radio, aviation mechanics, and business subjects, the student receives special instruction in subjects directly related to the operation of an air line. He is first given a three months' study of air transportation history and development which, as the name implies, is a discussion of the air-transport industry from the first flight made by the Wright brothers in 1903 up to and including present-day developments. The purpose of this course is to present the student with a picture of the entire industry as it exists today.

For the next six months he makes an extensive study of the air-line operations practices as used by the domestic air lines of this country; and during this same six months' period he is learning the various responsibilities of the air-line sales or traffic department.

In the way of explanation of these two different but closely related departments, here's a brief description of each.

"The operations department of an air line may well be defined as that group of air-line personnel who accept from the manufacturer flying and other equipment, then operate this equipment in daily transport service until such time as it may be necessary to return same to the overhaul base, or replace it with new equipment." However, the responsibilities of the operations department do not end here. They are also responsible to carry on their activities in such a manner as to insure fast and efficient service for both passengers and cargo from their point of origin to their final destination.

"The sales or traffic department of an air line is defined as that group of individuals who are responsible for attaining the load from which revenue is derived in the operation of the air line over its various routes." It is most important that each student, who is qualifying himself as a station agent, be thoroughly familiar with the activities of both departments, because complete coordination between these two departments is an absolute necessity for a smooth-running air line.

Our school, in carrying out the "learn by doing" method of instruction, climaxes the air-line operations course by the operation of its own student air line. During the next three months the students place in practice all the procedures previously learned in the operation of an air line between Parks Airport and Chicago, Kansas City and Memphis, Tennessee. In operating the practice air line, an actual established air line is duplicated as closely as possible. Upon completion of the student air-line operation, the student is well qualified to accept a position as station agent with any of the domestic lines operating in the huge network that covers our nation.

In closing, I think it well to point out that at the present time the demand for qualified station agents is greater than it ever has been.

THE KNOCKABOUT

(Continued from page 43)

handy spark tester, are all easy to make and very useful in their own right.

BODY

The two triangular body sides are made of ¼" square medium-hard balsa. The extension under the rear window to B is added on when the stringers are put in place. The side stringers start at A and continue unbroken to the very end of the plane. The top stringers are cracked at the first former, and from there on run parallel to each other to form the top of the cabin.

The sheet-balsa parts such as the cabin sides and the under part of the rudder are of $^1/_{16}$" sheet balsa. Over the half-ellipse windshield former a separate piece of sheet balsa should be used with the grain running opposite to the cabin sides to take care of the abrupt turn. The windows are cut after the sheet-balsa sides are in place.

The top part of the nose is carved and hollowed out of a soft solid-balsa block. After this piece is cemented on, the edge of the bottom opening is lined with felt. The same goes for the *(Turn to page 81)*

LADY BIRDS

(Continued from page 4)

spreading the gospel of genuine, unqualified airmindedness.

THIS IS JACKIE COCHRAN

By Tracy Richardson

She's flown across the United States, from coast to coast, more than one hundred and fifty times. She has won more trophies than any other woman in aviation, including the Bendix prize, for which she competed against America's outstanding speed demons, and still she says aviation is her avocation. She's had the great good fortune to combine her avocation with her vocation.

Jacqueline Cochran first of all is a business woman. She is the owner, president and general manager of a cosmetic company, has an office in New York, a cosmetic laboratory in Roselle, N. J., shops in Chicago, Lake Forest and Los Angeles. One hundred and forty people work for her in this business, and she acts as her own sales manager and covers all the territory by airplane.

She flies one of the fastest private single-motor planes in the country, a Beechcraft, powered with a Wasp six hundred horsepower motor that gives her a cruising speed of two hundred and twenty-six miles per hour. She has flown every type of commercial plane in the country, from the fastest racers to the DC-4.

Sounds like a job for a rather husky person, coveralls, grease on her hands and nose, hair windblown and a devil-may-care attitude toward life. Well, listen to the truth. The gal's a regular fellow if ever there was one, weighs one hundred and fifteen pounds, stands five feet five inches in high heels, and maybe it's because she uses her own beauty preparations—is as attractive a young lady as you'll meet on the avenue.

She flies as she conducts her business—with everything she's got. Flying, to Jacqueline Cochran, is a pleasure and a form of relaxation instead of a job, but always she insists on flying fast. Physically and mentally she has equipped herself to do the job in hand and do it the best way.

She was born near the naval aviation school in Pensacola, Florida, and must have absorbed something from the atmosphere that constantly resounded with the roar of motors. Orphaned at the age of four, she says that was also the time she determined to become a flier. She discovered, however, that even orphans had to eat and learn to take care of themselves.

At the age of eleven she was on her first job, and since that time she has been on her own. She became a trained nurse and worked at it in the South. Then she took up the beauty profession, specializing in cosmetics. Every inch of her way was a fight, and always in the back of her mind was the determination to fly.

In 1932 she made her start at Roosevelt Field, and in just two and a half weeks gained her private pilot's license. From that time on she was one hundred percent sold on aviation. She went to California and continued her training and then returned to New York to take the tests for her transport pilot's license. Following the granting of her transport license, she devoted several months to studying navigation and blind flying. Her first entry into competitive flying was her entry for the London to Melbourne race with Wesley Smith as her navigator. Bad luck dogged her flight, and after an exciting landing in Rumania they decided to withdraw from the race.

Next year saw her the first woman entry in the Bendix race, but again luck laughed at her, and she was forced down in Arizona. The next year her ship was again damaged enough to force her out of the Bendix race. The following year she placed third in the same race and proved that a woman could go through.

Few fliers would have had the nerve to continue under the trying circumstances that seemed to follow her, but from the first time she completed a race she stepped out and began to pile up records until today she holds more individual records in aviation than any woman pilot in the world, and a record equaled by few men.

Here are some of those records:

1937—third place in Bendix race, first place for women.

1937—national women's speed record, 203 miles per hour.

1937—new women's world speed record of 293 miles per hour.

1937—nonstop New York to Miami in four hours twelve minutes, 300 miles per hour, breaking all existing records.

1937—established new national women's record, 252.875 miles per hour, breaking her own record of 203 miles per hour.

1937—broke her record again, to 255.973 miles per hour.

1938—won first place in Bendix transcontinental race.

1938—set women's transcontinental record.

1939—won women's national altitude record.

1939—women's international speed record for light planes between 122-244 cubic-inch displacement for 100 kilometers.

Miss Cochran has twice won the Ligue Harmon Trophy for the year's outstanding performance of a woman flier. The last trophy was presented to her on June 16th at a luncheon given in her honor at the New York Advertising Club, at which time Mrs. Franklin Delano Roosevelt made the presentation along with the Belgium plaque for outstanding world's achievement by women fliers.

Aside from aviation, Jackie Cochran's hobbies are a ranch in Arizona and a date ranch in California, where she intends to take care of twenty-four orphans, and profits from her cosmetic business go toward this end. Man or woman, as an example of "it can be done," I give you Jacqueline Cochran.

THE UTILITY

(Continued from page 48)

are slipped on the ends of the landing gear and the ends bent to hold the wheels in place. Celluloid or balsa wheels can be substituted.

Tail surfaces can be dismissed with little trouble. The elevator is cut from a single piece of $1/16$" sheet balsa. Remove the rough spots and round the corners with sandpaper. The grain runs lengthwise in both the elevator and rudder. The rudder is cemented to the right-rear side of the stick—secured with liberal coatings of cement. The elevator is cemented to the bottom surface of the stick. Make sure the rudder is set straight and at right angles to the elevator.

Wing is built-up construction. Cutting the ribs is the first step. Use the material left over from the tail surfaces. The ribs have a maximum depth of $3/8$". The front and rear tips are cut short to fit the leading and trailing-edge pieces. First make a cardboard or metal pattern of a rib and use it to cut out the balsa. Finish cutting all thirteen ribs before sanding—to insure uniform shape. The leading edge is readily sanded to its shape from a piece of $1/8$" square balsa. The trailing edge can be bought as a triangular shape or can be sanded from a rectangular piece $1/8 \times 3/8$". Notch the ribs to accommodate the $1/8 \times 1/4$" spar. It should be set flush with the bottom of each rib.

Procedure in assembling the wing should start by cementing the ribs to the spar at $1\frac{1}{2}$" spacing. Next add the leading edge and then the trailing edge. Assemble on a flat surface to insure uniform shape throughout the span. Don't try to bend the balsa spars and edges when adding the dihedral angle. Cut them at the center and join with cement—blocking up each tip $1\frac{3}{4}$". Allow ample drying time before any further handling.

Tips are bamboo. Bend them both at the same time from one piece of bamboo. Split the piece after bending and cement each tip to the ends of the

wing. Pin the wing and the tip to a board while the cement is drying to prevent the bamboo from springing.

Wing mount consists of two wire supports fastened to the top of the stick. The front support (#11) should extend 1/8" higher above the stick than the rear. The supports are fastened to two pieces of bamboo (#13). The wing is attached to the mount by two rubber bands (#19) extending over the top of the wing and around the bamboo pieces.

Propeller carving is illustrated in five steps. First lay out the block as shown in 1. Cut away the excess as shown in 2. Punch the hole for the shaft through the center, using a needle or long pin. Cut the blades to the angle as shown. Thickness should taper to about 1/16" at the ends. Round off the ends of the propeller and carefully sand out all the rough spots. Balance the propeller by inserting the needle through the center hole and resting the ends on your fingertips. Sand the heavy blade until the propeller will rest in a horizontal position with neither blade showing any tendency to seek a lower position.

The shaft is attached to the propeller by bending the end as shown and cementing to the front hub. Use two small washers between the thrust bearing and the propeller. An occasional drop of fine oil will help make a smooth-running propeller. Make sure the propeller is lined up with the shaft and the rubber so there is no wabble when it revolves. Six strands of 1/8" flat rubber are looped between shaft and rear hook.

Covering is applied to both sides of the wing. The grain of the tissue should run spanwise. Cover the top surface first. Spray the covered wing with water and pin flat to a board while drying to prevent warping. This should pull the tissue tight. The tissue should be given a coat of light dope. The tail surfaces, propeller, and motor stick should also be given a coat of dope.

Flying should be done carefully and sensibly. What appears to be a hopeless model can ofttimes be cured by a few simple adjustments. A little patience will usually show you what they are. First determine the position of the wing by balancing the model on your fingertips—supporting it at the tips of the wing. Move the wing forward or backward until the motor stick balances in a level attitude. Slight additional movement of the wing will probably be necessary in actual flights, but this preliminary balancing will provide a working start.

The tail surfaces and the wing can be warped to aid the model in making turns. Breathe on the surface and gently work it into shape with your fingertips. Try a few turns in the rubber—adding a few more after each successful flight. Models become increasingly sensitive to increased power. So work up to maximum winding in easy stages—making careful adjustments as test flights prove them necessary.

BILL OF MATERIALS

(Balsa unless otherwise noted; refer to drawing for part numbers)

(#1) 1 motor stick, 3/16 x 1/2 x 19 3/4"
(#2) 1 rear hook, .034 dia. x 2" music wire
(#3) 1 thrust bearing (heavy duty) dural
(#4) 1 landing gear, .034 dia. x 18" music wire
(#5) 1 landing-gear brace, .034 dia. x 4" music wire
(#6) 2 wheels, 1" dia. x 1/4" (hardwood)
(#7) 6 ft. rubber motor, 1/8 x 1/30"
(#8) 1 propeller shaft, .034 dia. x 3" music wire
(#9) 2 washers, 1/8" O. D. (brass)
(#10) propeller, 7/8 x 13/8 x 8"
(#11) 1 wing mount (front) support, .034 dia. x 7"
(#12) 1 wing mount (rear) support, .034 dia. x 7"
(#13) 2 wing mounts, 1/16 x 1/16 x 4 1/2" (bamboo)
(#14) 2 leading edges, 1/8 x 1/8 x 10"
(#15) 3 ribs, 1/16 x 3/8 x 3"
(#16) 2 spars, 1/8 x 1/4 x 11"
(#17) 2 trailing edges, 1/8 x 3/8 x 10"
(#18) 2 tips, 1/16 x 1/16 x 6" (bamboo)
(#19) 2 rubber bands
(#20) 1 elevator, 1/16 x 3 x 9"
(#21) 1 rudder, 1/16 x 3 3/4 x 3"

Additional items:

1 sheet tissue, cement, dope, and thread

What Good Are Air Schools?

(Continued from page 16)

the other boys will kindly be allowed to slough around in the muck while they "prove themselves." One favorite proving method is peeling potatoes, another is digging ditches. In the last War, quite a few of the boys worked themselves up from the spuds to the Spads. But that is the hard way. It is much better to have a good aviation school record and be given the breaks.

"O. K.!" Jackie is pointing his finger at us. "But supposing you don't get a job in aviation. What does aviation school mean then, huh?"

It still means the respect of your boss.

Take Pat Mayhew, for instance. Pat works in a hat factory by day, and goes to aviation school at night. In school he has learned how to use tools, and how to draft. Those lessons have made him more valuable to his boss. So now the school gets him higher pay in the factory, and the higher pay lets him go faster into more advanced courses in the school. He will graduate with an excellent record, and the hat factory will always be there to catch him if he fails to support himself in the air. The high respect of his boss will not cease.

"Say, that's right!" Our pal Jack is excited. "And take my cousin Hack. Hack was getting nowhere in the paper box business, so he wrapped it up and started taking aviation courses. He got as far as the army school, passed flying O. K., but was washed out on math. Then he went back to the boxes, and has done so much better that the boss has shelled out three raises in eight months. Now he is studying nights to lick that math, an' he is goin' to be a reg'lar flier."

What it will do to help with earning a living is not the only benefit of a good aviation course, for there are worthwhile gains in what it will teach you about yourself.

Just getting into the school, and passing the required mental, moral, physical and manual tests, may be proof of very good points that you have.

The school will make you test yourself against definite, scientific standards.

Compare those standards to athletics. If you wanted to know whether you are a good runner or not, you would have yourself timed over a hundred yards, or one mile, or some other standard distance, wouldn't you? Well, the tests you will meet in school are standard like that, but there are more of them and they will teach you far more about yourself.

By these tests, you will learn what your best talents are, and what your poorest. All of us are likely to make bad guesses about ourselves, and to believe that we are strong where we really are weak, or that we are weak where we really are strong, until bitter experience teaches us the truth. But school will short-cut that experience, and save you many hard and expensive bumps.

Aviation, the newest sport, is sure to displace automobiling as the most popular one. You will be ahead of the world on it, and will get more fun out of it than others do.

Much of the important, dramatic news of the future will be air news. You will grasp this better after you finish your aviation course. The oncoming television newspaper will mean more to you.

You will learn little manual skills which will give you more fun out of living, owning a home or a car, and hobbies of all kinds.

Aviation men are tops. All sorts of industries want them. They are used to working where human life is at stake, and where every ounce of strength, weight and resistance is very important. Furthermore, they get more fun out of life. And a good aviation course is the quick way to become one of them, and to get yourself the best break in life.

"That's O. K. with me," says Jack Yoostercrabbin. "But I'll wait till they get them planes where they can roost on a limb if they fall in an orchard. Until then, I'll study on how to stay on the ground."

Poor old Jack!

C. A. V. U.

(Continued from page 6)

According to friends in T. W. A., there seems to be a shortage of copilots developing because of the expanding national defense program. The line does not form on the right, however, for unless you can fill the plentiful requirements, don't bother.

Do you have eight hundred hours of solo time and a valid instrument rating? Do you understand radio navigation and radio procedure? Have you at least two years' work in an accredited college or university, plenty of personality, to say nothing of a transport ticket plus an age between twenty-one and twenty-nine years? You do? Fine. Apply for a place in T. W. A.'s Copilot's School, and perhaps in three or four years you may be allowed to take the test for captain of a T. W. A. liner. It would seem that T. W. A. was a bit fussy. It's said that so rigid are the requirements that only one out of twelve are accepted for the training school.

★ ★ ★

Do you remember the "—and Those Who Fly" feature by R. DeWitt Miller, in the September Air Trails? It was a story about the famous Shrine in the Mission Inn in California, for fliers of the world, where they have a famous collection of insignia of aviation organizations from all parts of the globe. It will be of particular interest to Air Adventurers and Solo Club members to hear that we were invited to send one each of the insignia of these clubs to be added to this famous collection. They have been sent and should by now be among those on display.

★ ★ ★

Great Britain has just awarded the contracts for a big new aircraft carrier and is laying plans for more of the same. The name of the new ship is to be H. M. S. *Indefatigable*, which is certainly expressive of the British Lion's attitude in aviation development.

WHAT'S YOUR QUESTION?

(Continued from page 32)

Question: How large an air force has Poland? How are Poland's commercial ships rated with those of Europe? How are her gliders? Name some types of military planes, factories. Has she any light planes? T. W., Woonsocket, R. I.

Answer: Poland stands very high in aviation in Europe. She has about 2,000 military planes, all of which were built right in Poland. Among the best-known are the PZL P-24 fighter, the PZL P-43 bomber reconnaissance, the PZL P-27 medium bomber. There are four big factories: the State Aircraft Factory (PZL) and the Skoda Motor Factory near Warsaw, the L. W. S. at Lublin, and the P. W. S. at Biala Podalska. For transport air-line service Poland has been using mostly American Douglas DC-2s and Lockheed's Electras and 14s, but is now building its own commercial air-line ships, an example of which is the PZL Wicher, which rates on the par with most European transports. In gliding Poland stands second only to Germany; her distance record is better than Germany's, and her sailplanes and gliders are almost as good. Last year Poland had 10,000 glider pilots. Six types of light planes are built over there, all of excellent design, and some hold records in their class.

Question: Could you please give me the particulars of the German Arado Ar.96, and also of the Armstrong Whitworth FK.8? A. P., Toronto, Can.

Answer: The Arado Ar.96 is a low-wing full-cantilever monoplane with a retractable landing gear. The cockpits are in tandem. It is powered with a 240-horsepower Argus V-8 air-cooled motor. The span is 36 feet, length 28′ 8″; weight, empty, 2,244 pounds; fully loaded, 3,322 pounds; top speed, 183 miles per hour; cruising speed, 149 miles per hour; climb, 900 feet per minute; ceiling, 15,090 feet. The ship is used for training purposes. Sorry, but we have no information regarding the Armstrong Whitworth FK.8.

Question: I am interested in learning to fly, but I wear glasses. I would like to know if this would prevent me from flying for my enjoyment. D. E., Moline, Ill.

Answer: Not if your sight with glasses is normal. I suggest that you see an oculist and find out.

Correction: In answer to a question in the August issue of Air Trails, the price of a Ryan ST was given as between $4,500 and $5,300. The lowest price on a strictly commercial model is actually around $6,000.

Question: What is the difference between the Piper Cub, Taylor Cub, and Taylorcraft? Has the Piper concern bought out the Taylor Cub people and called the plane Cub, with the Taylor called Taylorcraft? J. P., Lebanon, Ind.

Answer: Mr. C. G. Taylor originally built the plane known as the Taylor Cub. Eventually he left this concern and founded another one which is known as the Taylor-Young, and is now building the Taylorcraft. The Cub outfit was bought by Piper, and the ship was renamed the Piper Cub, although most people still insist on calling this ship the Taylor Cub.

Mike's-Eye View of the Air Show

(Continued from page 19)

glider, stick, fuselage and gas models. You must know what each type of airplane looks like, either on the ground or in the air, be able to recognize all the important people in aviation, know who holds the various trophies and speed and distance records. My brief case is full of pictures and records of flights dating back to 1910. Also descriptive literature of every plane on the market and a collection of National Air Race programs dating back to 1930. You must also read all the aviation magazines published, to keep up on developments.

"Last, but not least, you must be able to chatter for from three to five hours at a time with no let-up whatsoever, out in the bright sunlight on a hot ramp that is trying to burn the soles off your shoes. You must never lose your temper or composure. You stand and watch men die in racing ships but you keep on describing the race. Men whom you were talking to only an hour before. You watch parachute jumpers get tangled up in the shroud lines and come 'burning in,' breaking their backs and legs, but you point out another jumper who is just about to land in the white circle and win the first prize in the spot-jumping contest. The air show goes on and nothing stops it. Anything can happen at an air show and you must be on the alert every second. I learn something new at every meet.

"Today, I announced a free balloon act for the first time. You saw it break loose fifteen minutes ahead of schedule right in the middle of my announcing the sponsors who paid to put the show on. You saw it drifting over toward the crowd. It broke loose from its moorings a good mile from the crowd and instead of turning mouth-up and belching out hot black smoke the way a well-behaved balloon should, it went up to about three thousand feet and a light northeast wind blew it toward us. You heard me call for ambulances, firemen and policemen and heard me yell to the people to get back from the fence. You saw it fall and land on the fence doing a good one hundred miles per hour, and just missing several hundred people. A dozen of them could have been killed. Not that I saved their lives by warning them to get back, but it proves my point. Anything can happen at an air show.

"You noticed that I went right back to reading off the names of the sponsors. Always remember, sonny, that the sponsors are the most important people at the show. You will have to introduce congressmen, senators, movie stars, dukes and duchesses, but the 'plug' for the sponsor comes first. He's the fellow that pays for the show. Never interrupt a sponsored act to introduce anyone. I did it once in Cleveland. He was a visiting congressman and instead of saying, 'Hello, folks, it's nice to be here,' he started off on a long speech and by the time he was through, the act which was sponsored by an oil company was nearly over. Incidentally, the oil companies help a lot in promoting air shows. The boys in the Miami Light Plane Cruise have a nickname for Major Alf Williams; they call him the 'Gratis Giver of Gulf.'

"I started in this racket by selling tickets for rides in 1928, getting ten percent on sales in flying time. Later I was airport radio operator at Akron several years for Shorty Fulton, and did the announcing for the air shows and model meets there. After I learned to fly, I went barnstorming with a Tin Goose as a ballyhoo man. Then I got a break on the National Air Races as assistant on the announcing staff to the great Jack Story. Jack taught me a lot of tricks on the mike and is still tops in my opinion, although he has quit the game, according to what he told me. For several years I tried to make a living as an air-show announcer, working the meets up North in summer and South in the winter, but most towns use local talent and won't pay any money. Cleveland, Columbus, Cincinnati, Detroit, Akron, Indianapolis and St. Louis in the 'North' and Birmingham, Louisville, Atlanta and Miami in the 'South,' are good pay, but the rest of the promoters will yell their heads off if you ask for more than $20 and expenses.

"After the Miami show last winter, I decided to get back in the flying operations of aviation. I'm station manager now in Daytona Beach for National Airlines and get a check regularly twice a month. My boss is a regular guy and lets me off when I get a chance to announce a big meet. I was here in Birmingham last year and they asked me back again this year. I'm through trying to make a living at it, though. Most of the old-time 'ballyhoo' boys have quit, I guess. Jack Story is with Montgomery, Ward & Co. on the West coast, I hear. Barney Capehart is with *Popular Aviation,* Swanee Taylor is selling Averill props and Ted Winters is working at a radio station up North. A good announcer can make or break a show, and C. A. A., N. A. A., W. P. A., or someone should train young fellows to carry on in this profession and guarantee them enough shows each year so that they could eat regular. There are at least four shows each week throughout the country during ten months of the year, and if the promoters would book an experienced man it would help the show a lot.

"Grove Webster of the C. A. A., could train some of his college boys to do this very nicely. There are at least two C. A. A. inspectors at every meet to see that things are handled in a safe and efficient manner. Why not a C. A. A. announcer who knows the score, instead of a half-wit from the local radio station who gives people the jitters by saying, 'Ooooooooooh, he's going to crash,' every time a pilot gets lower than a hundred feet off the ground?

"Another thing, son, the announcer is always wrong. You sort of get used to it, but as I said before, never lose your temper. In Miami, two years ago, I was announcing the speed race when Rudy Kling and Frank Haines spun in on the first turn. I kept on talking about who was leading at the end of each lap, never mentioning the crack-ups. When the race was over, one of the officials came running up to the mike screaming that both boys were killed, insisting that I make the announcement. I had a hard time convincing him that I knew it all the time but wouldn't say so, wishing that I could bend the microphone around his neck.

"In Cuba, last January, I was doing the English announcing of the Havana-Miami Cruise over a long- and short-wave radio hook-up when Captain Orta, Chief of the Cuban Air Corps, crashed directly in front of the grandstand before ten thousand people. Everyone rushed out on the field, the Army Guard went berserk and I couldn't say 'stop' in Spanish. The public address system and the radio were hooked together and it must have sounded awful to people listening in. When things quieted down a little, I had a Cuban who could understand English, tell the people in Spanish, to come back off the field. Thousands were swarming over the débris and if the gas tank had exploded, several would have been killed. I got hell for announcing the crash over the radio from the newspaper boys, for giving the radio a 'beat' over the press. Unlike the air shows in this country, though, the rest of the program for the entire Cruise was canceled, out of respect for Captain Orta.

"People who go to the air meets are funny, too. Take the parachute jumps for example. I actually believe that lots of folks go home sort of disappointed when the 'chute opens. You saw Earl Batman Stein and Buddy Batzell jump today. It looks easy, huh? Well, it's not. Both boys are tops in their class, Earl on batwing jumps and Buddy on delays and cutaways. Each has over five hundred jumps through years of experience. It's a pleasure to announce their acts as they always land right in front of the customers, which is sometimes a tough job. Most promoters book cheap jumpers who land back in the parking lot or out of sight back of a hill. It's hard to announce what you can't see. Every show must have a jumper, though, no matter how bad.

"Another thing, son. You must explain to the customers, in words of not

more than two syllables, that flying is safe, is here to stay, and is the greatest improvement in transportation since the invention of the coaster brake for bicycles. You must explain the angle of glide in a dead-motor landing. Lots of people think that a plane will drop like a rock when the engine stops, and few know that the pilot has to throttle back the engine on his ship before he can land. I doubt if anyone realizes that there is a white line five hundred feet out and parallel to the grandstands on the field that the performers dare not fly over during their acts. If you could just give each person a small model with movable controls, make him hold it in his hands and move the stick while Pete Peterson, Mike Murphy, Squeak Burnett, Tex Rankin, and the other acrobats go through their stunts, explaining all the while that in one trick, say for instance the slow barrel roll, to the left, a full three hundred and sixty degrees, that at ninety degrees the rudder becomes flipper and flipper becomes rudder, that at one hundred and eighty degrees when the ship is inverted the back stick becomes forward stick, and forward stick becomes back stick, and then on around the rolling axis at two hundred and seventy degrees you have that rudder-versus-flipper argument again; then, and only then, will they understand just how tough aërobatic flying really is. Add the fact that a plane has a yawing axis, a rolling axis and a tipping axis while it's in the air, making a total of one thousand and eighty different angles that it can assume, and maybe you won't want to be an announcer after all. Maybe you'd rather be a prof who teaches calculus, or astronomy.

"People will only believe what they want to believe. Through lack of flying knowledge, they think the hardest stunts are the easiest, and vice versa. Take Mike Murphy's act of landing a Cub on top of a car. That's the hardest and most dangerous trick in the business today, yet Mike has quit doing it because the local yokels think it's easy. He's building a ship now with two cockpits, vertical fins and landing gears, one on top and one on the bottom so that he can land and take off with either end up, if you get what I mean. I'll bet my last clean shirt that he'll do it, too, with the greatest of ease.

"An opposite case happened at the Miami show last winter during the Freddy Lund Eliminations for that trophy. Several darn good pilots were tearing up the sky with every known stunt in the book with the latest type ships, but along comes Squeak Burnett with a nine-year-old crate and wins the trophy by doing a square loop with smoke that's just about the easiest trick in the world. Understand, though, that the Freddy Lund Trophy for Aërobatics, was awarded by popular applause from the people in the grandstands. And a little smoke always makes an impressive showing.

"I repeat, people will only believe what they want to believe. Tell them that it's harder to land a racing plane than it is to take off and fly the same plane ten laps in a race and they laugh at you. Tell them not to climb up on the wings of a ship, and they're insulted. Tell them that throwing stones into a turning propeller will jerk the motor out and you're kidding, and tell them to open the water faucet wide when they get home to get an idea of how fast the gasoline burns up in Roscoe Turner's Pesco special (about one hundred and sixty gallons per hour), and they think the announcer is just plain nuts. For a girl, Bobbie Lupton of Detroit, last summer, did the best acrobatics I've seen since the days of Dorothy Hester, turning her Ryan S. J. upside down and holding it until the carburetor ran dry in some nice inverted flying. Having no inverted system, naturally the little Menasco engine would sputter and spit until she got back into normal flying position. A dozen people around the mike insisted that she was going to crash. I gave up trying to explain that gasoline just wouldn't run uphill. Oh, well, as I said a while ago, it's just one big headache. If you don't actually make a mistake, people will insist you have, anyway, so what's the difference?

"What's that, you say, you'd rather be a pilot than an announcer but have a stiff leg? Listen, son, one of the best stunt pilots in this country has a crippled foot. You saw him perform today. The designer and builder of the airplane that has won two Bendix Trophies Races and the fellow who made all the test flights of the new big four-engined transport, both have artificial limbs, and it hasn't held them back in the least. Those fellows are proud of their accomplishments and their handicaps, too. Besides, you'll be a lot further ahead flying than announcing. Not that announcing ain't fun. I get a big kick out of it even though the picture I painted is a bit dark. You think over what I said, and when I come back next year, if you still want to be an announcer, why, I'll give you my collection of Air Race Programs.

"I've got to get downtown to the hotel now. Got to be back in Daytona Beach on the job by Tuesday. We have a nice little airport there and an outo speedway that runs right by the edge of the ocean. If you ever get down my way, be sure to stop and see me. Yes, I'll be in Cleveland for the National Air Races whether I do any announcing or not. (If I can get a week's vacation about that time.) I frankly admit these here air shows fascinate me.

"Oh, yes, before I forget it—thanks for asking for my autograph."

GLIDING AND SOARING

(Continued from page 27)

many of the splendid results accomplished at the meet.

PROMINENT VISITORS

That the interest in the American soaring movement is steadily becoming more keen was evidenced by the fact that over fifty thousand attended this year's national contest. Cars bearing Kentucky, Florida, Iowa, Indiana, Utah, Pennsylvania, New Jersey and California license plates were spotted on the hill. Cadet John Francis Burton, of the army air corps, hitchhiked all the way from Santa Monica, Cal. A number of prominent visitors came by plane.

Among these were Mr and Mrs. Bruce Gimbel, who landed in their Beechcraft; Col. A. H. Stackpole, well-known Harrisburg, Pa., publisher; Prof. George B. Thorpe, head of aëronautics at the Carnegie Institute of Technology, flying in his Aeronca K, and C. G. Taylor, designer of the famous Taylorcraft light plane, and his son. Richard duPont came the last day of the meet in his cabin Waco, taking back with him Peter Riedel, Wally Setz, and Ken Findieson. Col. Bob Olds arrived in an A-17 army attack job. All in all, at least twenty ships landed at Harris Hill. The coast guard Grumman J-1, piloted by Lieut. Harris, and Wister Brown of Philadelphia in his F-3 Waco landed at the American Airline Airport in the valley.

Visitors using the more common methods of transportation included Georges Abrial and Marcel Piry, of France. M. Abrial, a Silver "C" pilot, is president of one of the biggest soaring groups in France, "l'Air," and at present is technical representative of the French Air Ministry at the Vought-Sikorsky factory in Bridgeport. M. Piry, a power-plane pilot, is inspector of French orders at the Pratt & Whitney plant at Hartford. Both gentlemen could be easily distinguished on Harris Hill by their berets. M. Abrial had a flight with Lewin Barringer in the Airhoppers' two-place sailplane and was highly enthusiastic over the ship's performance, as well as American hospitality. Wolfram (Wolf) Hirth, of Germany, who is undoubtedly the best-known soaring pilot in the world, visited Elmira for the first time in nine years, coming over especially to attend the meet. He participated in the first national contest held at Elmira and really showed us how to soar here. This time Wolf had a reunion with many of his American glider students, among whom were C. B. Colby, editor of Air Trails, and Emil Lehecka, last year's National Soaring champion. He also enjoyed a regular busman's holiday during his stay. Wolf flew Willy Placek's Aeronca, stunted Udo Fischer's Goeppingen Wolf—a ship of his own design —doing loops, wing-overs and whip-stalls, spoke at the meeting of the Institute of Aëronautical Science on trends of German sailplane design, meteorology, and the like, and autographed his recent book, "The Art of Soaring Flight."

Also present at the contest were Dr. Wolfgang Klemperer, the world's first "C" pilot and now engineer with the Douglas Co.; Dr. Eastman Jacobs, research engineer of the N. A. C. A. at Langley Field, Va.; Major Lester Gardner, president of the Institute of Aëronautical Science; Grove Webster, head of the private flying division of the C. A. A. Godfrey Lowel Cabot, N. A. A. governor and vice president of the International Federation of Aëronautics, who is the oldest power-plane pilot in the world, being eighty, enjoyed a flight in the S. S. A. two-place Schweizer piloted by Chet Decker. Zack Mosley, creator of the comic strip, "Smilin' Jack," had his first taste of soaring when he was taken aloft by Lewin Barringer in the Airhoppers' two-place. Lew also took up C. B. Colby for a forty-four-minute sail over the valley. The movies were represented by Harvey Stephens, who brought his *Thunder Bird* directly from the Texas meet and earned his Silver "C" at Elmira this year. Maurice Garbell, sailplane engineer and designer, was there taking notes and pictures for magazine purposes.

B. L. Wiggin of the United States weather bureau was in charge of meteorological station with Dr. Karl Lange, Vic Saudek and Glen Peterson in charge of barographs. Earl Southee did the description of flights and ships over the loud-speaker system. Milton Girton, C. A. A. inspector, earned his "C" license, as did Capt. R. M. Losey, who is in charge of the United States army weather bureau and was official observer for the army at the contest. The fair sex was represented by Lucretia Buxton, daughter of Jay Buxton, Mrs. Warren E. Eaton, Mrs. Hattie Junkin, and Marjorie Morgan of the S. S. A.

CONTEST LOG

June 24th. The contest opened with the usual ceremonies. First one to take off was Robert Stanley, the navy's blind-flying instructor at Pensacola, who landed at Scranton, eighty-one miles distant. Decker flew his Minimoa to Wilkes-Barre, eighty-one miles; Emil Lehecka to Falls, Pa., seventy-four miles. Bil Dolger, with Lon Charles Kappil of the Associated Press, reached an altitude of thirty-six hundred feet over Harris Hill in the Airhoppers' two-place Schweizer. Parker Leonard, of Osterville, Mass., flew thirty-five miles; Warren Merboth, thirty-seven miles, and Bob Auburn, thirty-five miles.

June 25th. Six pilots set their goal this day for Harrisburg, Pa., for the $1,000 National Sailplane Derby prize, awarded to the first, second and third pilots to reach that destination in the shortest time. Decker was the only one to succeed, covering the 130 miles in five hours, ten minutes. John Robinson landed his Robin sailplane at Palmyra, Pa., 122 miles distant; Stanley covered 104 miles to East Liverpool, Pa.;

(Turn to page 72)

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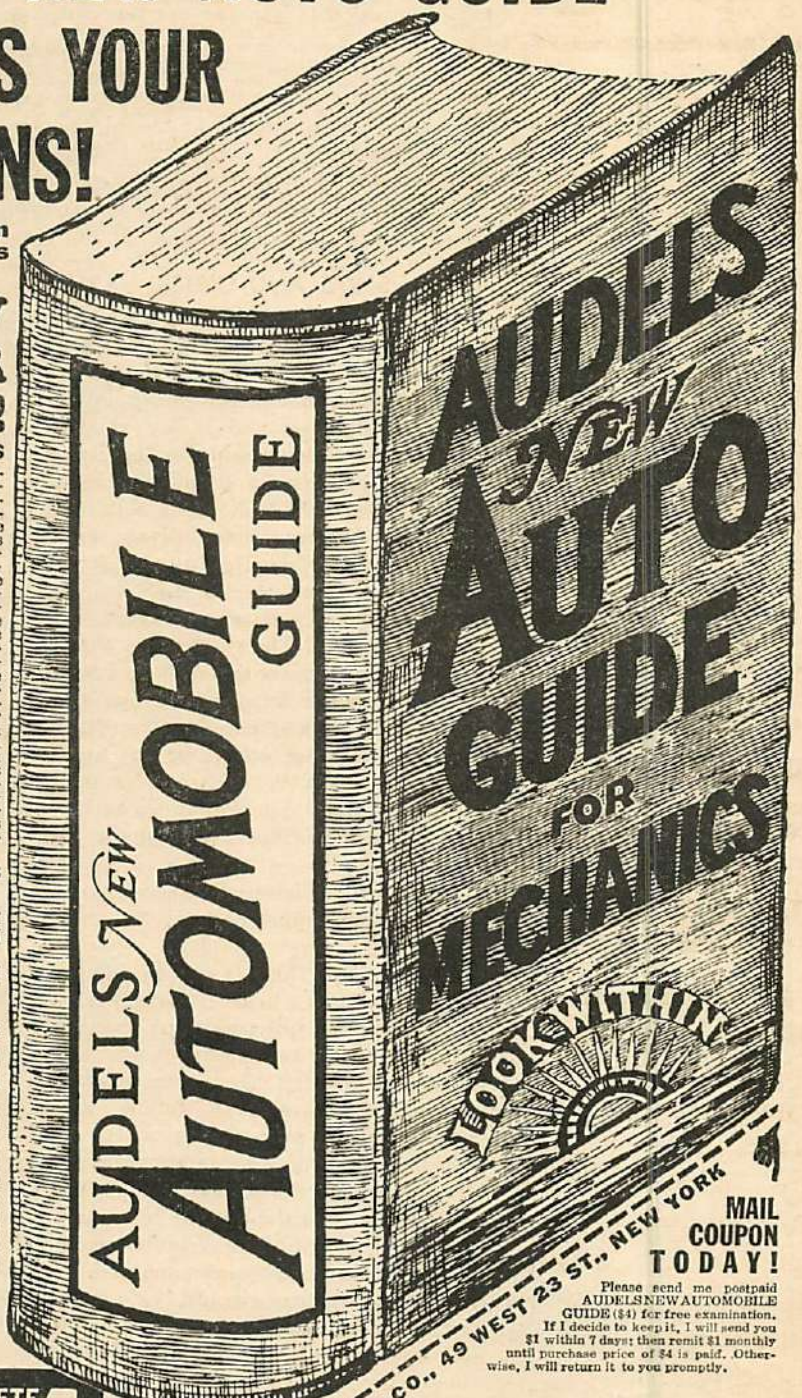

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(Continued from page 70)

Lehecka, sixty-five miles to Exchange, Pa.; Elmer Zook, twenty-two miles to Troy, Pa.; Bob Buell, twenty-eight miles to Towanda, Pa.; Udo Fischer, thirty-three miles to Sheshoquin, Pa.

June 26th. Warren Merboth made his goal to Harrisburg, Pa., 130 miles; Robert Stanley a goal flight to Bradford, Pa., eighty-five miles; Emil Lehecka, seventy-five miles to Allegheny, N. Y.; Lyle Maxey, fifty-one miles to Cowley, Pa. The most sensational flight of the day was made by Chet Decker, who flew from Hammondsport and back, thus establishing a new American distance-and-return record. Upon returning to Harris Hill he took off again and made a goal flight to Williamsport, Pa., fifty-eight miles away. Bob Buell, flying a Grunau Baby, made a goal flight to Tri-Cities Airport, forty-five miles.

June 27th. Decker, Stanley and Lehecka all made goal flights to Norwich, N. Y., eighty-one miles. Floyd Sweet flew his Rhonbuzzard sixty-five miles to Tully, N. Y.; Bob Buell, forty-five miles to Endicott, N. Y.; Art Schultz, forty-two miles to Appalachian, N. Y.; Harland McHenry, twenty-six miles.

June 28th. Bob Stanley broke the American altitude record with a flight of 14,000 feet. Parker Leonard reached 6,110 feet in his Wolf. Lehecka went 104 miles to Texas, N. Y.; Decker, 111 miles to Utica, N. Y.; Merboth, fifty-five miles to Seneca Falls, N. Y.

June 29th. Overcast weather did not permit any distance flights. Those clubs and individuals who had two-place sailplanes hopped friends and swapped ships. Bill Dolger took up Ivan Dmitri, the photographer, for a ride in the Schweizer.

June 30th. Decker flew 105 miles to Burlington, N. Y.; Merboth, fifty-one miles to Cortland, N. Y.; Parker Leonard a goal flight to Tri-Cities, N. Y., forty-five miles.

July 1st. Robert Stanley made a goal flight of 190 miles to North Beach Airport, N. Y. C.; Lehecka, 179 miles to Closter Airport, Closter, N. J.; Barringer, with Jack Brookhart as passenger, 104 miles to Obernburg, N. Y.; Floyd Sweet, 110 miles to Canadensis, Pa.; Decker, eighty-five miles to Nanticoke, Pa.; Merboth, seventy miles to Windsor, N. Y.; Zook, fifty-three miles to Rush, Pa.

July 2nd. Chester Decker flew his Minimoa 233 miles to Atlantic City; Warren Merboth a goal flight of 202 miles to Roosevelt Field, N. Y.; Robert Stanley, 153 miles to Biglersville, Pa.; Emil Lehecka, 127 miles to Harrisburg, Pa.; John Robinson, 130 miles to Harrisburg, Pa., in five hours, forty-five minutes; Bob Buell a goal flight to Scranton, Pa., seventy-seven miles; Don Lawrence in the Lawrence sailplane, twenty-eight miles to Athens, Pa.; Dana Darling in his Cadet II, forty-five miles to New Albany, Pa.

July 3rd. Robert Stanley, fifty-one miles to Cortland, N. Y.; Warren Merboth, twenty miles to Sullivanville, N. Y.

July 4th. Stanley established his final American altitude record of 17,600 feet and landed at Worcester, N. Y., 120 miles distant. The day was perfect for altitude flights, with masses of cumulus clouds towering over the valley. J. Robinson rose in them to 11,000 feet, and Lewin Barringer, with Bill Rodenberg of the Airhoppers, established an American altitude record of 6,560 feet for two-place sailplanes. The same clouds which helped the pilots in rising to new altitudes caused Udo Fischer, of Ithaca, N. Y., to use his parachute when his Goeppingen Wolf sailplane started to vibrate dangerously in the turbulent air and literally tossed him out of the cockpit. Decker landed in Schenectady, N. Y., 166 miles away; during this flight he gained his highest altitude, 10,670 feet, which assured him his Golden "C." Lehecka flew ninety-four miles to Palermo, N. Y.; Merboth, eighty-seven miles to Cicero, N. Y.; Parker Leonard, thirty-five miles to Ithaca, N. Y.

July 5th. Weather overcast, flying conditions poor. Stanley landed in Newark, N. Y., a distance of seventy-two miles, during which flight he reached an altitude of 10,300 feet. Lehecka flew his Sperber fifty-five miles to Geneva, N. Y.; Jack O'Meara, in Harvey Stephens' Baby Albatross, twenty-one miles to Bradford, N. Y.

July 6th. Chester Decker flew ninety-eight miles to Oriskany Falls, N. Y.; Emil Lehecka, fifty-one miles to Moravia, N. Y.; Lyle Maxey, thirty-six miles to Lodi, N. Y.; Merboth, thirty-four miles to Trumanburg, N. Y.

July 7th. Robert Stanley had to take to his 'chute when his famous sailplane Nomad broke its left wing during a stunting exhibition over Harris Hill. Chester Decker flew eighty-one miles to Norwich, N. Y.; Merboth, 110 miles to Utica, N. Y.; Arthur Schultz, sixty-five miles to Windsor, N. Y. Donald Hamilton soared for three hours and fifty-four minutes in the S. S. A.'s two-place Schweizer over Harris Hill with A. Rathbone as passenger.

July 8th. Showers and thunderstorms. Lewin Barringer with Hans Groenhof tried to take off on a storm front in an attempt to better Lew's previous altitude record, but a broken rope and the winch crew's desire to stay dry prevented it.

July 9th. Only distance flight of the day was made by Robert Stanley, who borrowed from R. C. Platt his Ross Ibis and flew it to Harrisburg in four hours, thirty-nine-minutes, thus winning the National sailplane Derby prize of $500. In order that Stanley could attend the banquet, Lieut. Harris, of the coast guard, flew out in his Grumman J-1 and brought Stanley back to Elmira. Other flights around the hill were made by Stan Smith, who carried passengers in his two-place side-by-side glider; Emil Lehecka, with Hans Groenhof, in the Airhoppers' Schweizer, Don Hamilton in the S. S. A. Schweizer. Lewin Barringer soared for one hour with Mrs. Warren Eaton as passenger. Peter Riedel, who arrived three days before the closing of the contest, soared his Kranic.

SHIPS AND CLUBS

Approximately thirty-five ships were entered and flown in this year's contest, eleven of which were high-performance sailplanes, the rest representing intermediary sailplanes and utility gliders. The most sensational ship was the Stanley *Nomad*, designed and built by Lieut. Robert Stanley, U. S. N. This ship had an all-metal monococque fuselage with full-cantilever, straight, tapered, semi-elliptical wings of wooden construction. The sensational part of the design was the empennage. The rudder was eliminated; the horizontal tail surfaces had a dihedral angle of forty-five degrees and were differentially actuated to give either rudder or elevator action, or any combination of the two. This novel system seemed to work out very well, as evidenced by the brilliant performance of the ship.

Another new high-performance ship to make its first appearance at the meet was the Lawrence sailplane, designed and built by Don Lawrence of the Eclipse Aviation Corp. of Orange, N. J. It's a shoulder gull-wing type specially designed for cross-country flights and has a high cruising speed. The fuselage is constructed of steel tubing with wooden fairing strips. The wings are full cantilever, of wooden construction. To our mind it was the best-looking and the best-finished ship on the hill, and a type with which long-distance record flights should be easily accomplished. As the ship was finished just before the contest, Don, wisely, did not attempt to do any distance flying, preferring to get thoroughly familiar with it before attempting anything sensational. Other interesting ships on Harris Hill were the two two-place Schweizer all-metal sailplanes, one owned by the S. S. A. and skillfully flown by Don Hamilton, the other belonging to the Airhoppers Gliding and Soaring Club. Lew Barringer established the American altitude record for two-place sailplanes in the latter ship. Another Schweizer all-metal utility, the *Pterodactyl*, built for the Harvard Glider Club, was flown by Herb Sargent. Other ships present were the *City of Utica*, Stan Smith's two-place side-by-side glider; Chet Decker's Minimoa; Warren Merboth's Bowlus Albatross I; Emil Lehecka's Rhoensperber; Art Schultz's A. B. C.; the Rhonbuzzard, flown by Floyd Sweet; John Robinson's Robin; a Bowlus Baby Albatross, owned by Harvey Stephens and flown by him and Speed Westphal; four Goeppingen Wolfs; a Grunau Baby; the Volmer sailplane owned by Jim Martin, of Greenwich, Conn., and flown by Don Stevens; the Y Club's Kestrel; Dana Darling's Cadet II, formerly owned by Emil Lehecka; Bob Auburn's Sun Spot; the Ross Ibis, which was bought by R. C. Platt of the N. A. C. A. and flown the last day of the contest by Bob Stanley to Harrisburg; Harlan McHenry's gull-wing Franklin; Peter Riedel's Kranich; and also an assortment of Franklins owned by Gus Scheurer of the S. S. A., University of Michigan, and others.

Clubs represented at the contest were the A. B. C. Glider Club, of Detroit, Mich.; the Airhoppers Gliding and Soaring Club, of New York; Aëro Club Albatross; Hudson Valley Gliding and Soaring Club, of which Paul and Ernest Schweizer, builders of the famous two-place sailplanes, are officers; Harvard Glider Club, of Boston, Mass.; Elmira Glider Club; Purdue Glider Club, whose members came to Elmira from the Texas contest; University of Michigan Glider Club; and the X. Y. Z. Glider Club, of Plymouth, Mich., whose president is Elmer Zook, the Midwestern Soaring Champion.

NEWS AND PICTURE COVERAGE

The camera shutters were clicking merrily on the hill during the two weeks of the contest, amateurs as well as professionals recording events from all angles. Such famous photographers as Ivan Dmitri and Hans Groenhoff took scores of photographs from both ground and air. The Associated Press sent one of its representatives, Lon Charles Kappil, to write his experiences during a soaring flight, and Bill Dolger of the Airhoppers obligingly took him up in the club's two-seater. Glen Williams, star announcer of the WSGE broadcasting station, every afternoon interviewed over the radio pilots and famous personages. On one such occasion it was our fate to be very informally interviewed, along with C. B. Colby and Lewin Barringer. The informality came to an end when one of us three, in emphasizing a point, used a naughty word and greatly dismayed the announcer. Unfortunately, we are forced to say the general news coverage was very poor and did not go much beyond Elmira. The American public knew very little of the contest, learning mainly that two pilots bailed out—and in the rehashing even these accounts suffered inaccuracy.

Iszard's department store in Elmira displayed in its windows all trophies to

be presented to the winners, together with photographs of Harris Hill activities, models of sailplanes, and beautiful color photographs by Ivan Dmitri. The display was very attractively arranged and drew quite a crowd each day.

HIGHLIGHTS AND LOWDOWNS

By way of a few personals . . .

Jay Buxton, veteran of American gliding and one of its best-liked exponents, drove all the way from California in his venerable 1925 Rolls-Royce town car. Parked on the hill, the Rolls attracted quite a lot of attention from the spectators. All day long the curious would gather around it, some attempting to lift the hood, others trying out the seats. Jay sensibly decided to cash in on such interest. He fastened a sign on the radiator with a penny bank beneath it, the sign reading:

Just looking around, 2c. Opening the hood, 10c. Tooting horn (first time), 10c. Tooting horn (second time), 15c. Tooting horn (third time), kick in the pants. Trying out front seat, 15c. Trying out rear seat (alone), 25c. Trying out rear seat (two, daytime), 50c. Trying out rear seat (two, at night), $1. Rides (blondes), 15c. Brunettes, 25c. Widows, free.

When Emil Lehecka landed in Moravia, his crew, thinking that he was much farther off, went gayly on its way without calling in to find out where he was. Emil landed at 2:35 p. m., and as darkness fell there was still no sign of his crew. Slowly giving up hope of getting back the same day, he sent us a card: "Dear Alex—have landed at Moravia today. It's now 9 p. m. Remember me to the boys." However, Emil wasn't always so unfortunate. It's a standing rule with him to select a nice, big prosperous farm to land on, because he inevitably gets a meal at a farmhouse, and Emil is very fond of food, especially home-baked bread. Not seeing a likely-looking farm during one of his flights, Emil spotted a picnic ground where a picnic was in progress. The Sperber's nose went down and Emil landed just in time for dinner.

Harvey Stephens, the movie actor, learned to become a director during the meet—and a special kind of long-distance director, at that. Speed Westphal was flying Harvey's Baby Albatross one day. Conditions were perfect, and all other sailplanes were circling around in thermals, but Speed kept flying straight back and forth without gaining or losing any altitude. Harvey, watching from the ground, got considerably excited and started admonishing Speed, who was hundreds of feet in the air: "Come on, Speed, circle, for goodness sakes! What's the matter with you, Speed? Look, you went through a beautiful thermal and lost it by not circling in it!" Perhaps it was mental telepathy, but his remarks got results, for Speed started circling in the uplift and soon disappeared. He made Scranton that day.

On one occasion, while we were all standing around on the take-off site, we suddenly heard a mighty and curious sound overhead. Looking up, we saw Parker Leonard's Wolf sailing by, with Parker *yodeling* at us from the cockpit.

You could buy ladies' handkerchiefs with gliders embroidered on them at a farmhouse halfway down the hill. A sure sign that gliding is coming into its own!

PRIZES AND AWARDS

The annual banquet, featured by the naming of the National Soaring Champion and the awarding of prizes, was held, as usual, at the Mark Twain Hotel. Principal speakers were William McGrath, president of the Elmira Area Soaring Association; Mayor Maxwell Beers of Elmira, Congressman Sterling Cole, Mrs. Warren E. Eaton, Richard duPont, Godfrey L. Cabot, Gen. Boetticher of the German embassy, Peter Riedel, Grove Webster of the C. A. A., B. L. Wiggin, Capt. R. M. Losey of the army air corps, and others. The prize winners were announced by Arthur Lawrence, director of the contest committee.

Prizes were awarded as follows:

The Warren E. Eaton Memorial Trophy, for the most outstanding contribution to the art, sport or science of motorless flight: Richard C. duPont.

Edward S. Evans National Soaring Championship Trophy: Chester J. Decker.

A. Felix duPont Altitude Award—gold trophy and $1,000 cash Robert Stanley; silver trophy: John Robinson; bronze trophy: Chester Decker.

Vincent Bendix Distance Award—gold trophy and $1,000 cash: Chester Decker; silver trophy: Warren Merboth; bronze trophy: Robert Stanley.

Goal-flight Prizes—Norwich, N. Y., $100: Robert Stanley; Norwich, N. Y., $100: Chester J. Decker; Bradford, Pa., $50: Robert Stanley; Troy, N. Y., $25: Chester J. Decker; Hammondsport, N. Y., $50: Floyd Sweet; Tri-Cities Airport, Endicott, N. Y., $50: Robert Buell; Tri-Cities Airport, Endicott, N. Y., $30: Parker Leonard.

Air Trails Trophy (winter variometer): X. Y. Z. Glider Club of Detroit.

Mr. and Mrs. Gordon Wightman Award and Trophy, $50 cash and silver trophy: Dana Darling.

Powell Crossley, Jr., Award, $25: Robert Stanley.

Parker & Co. Award, $25 and trophy: Parker Leonard.

James L. Martin Award, $100: Speed Westphal.

Lear Development, Inc., Award, portable radio receiver: Speed Westphal.

Aviation Magazine Sailplane Design Trophy: Robert Stanley.

Edward S. Evans Barograph Trophy: Robert Buell and Elmer Zook.

Point Award Prizes: 1st, Chester Decker;

2nd, Robert Stanley; 3rd, Warren Merboth; 4th, Emil A. Lehecka.

Silver "C" 's earned at the contest: Parker Leonard, Elmer Zook, Udo Fischer, Harland McHenry, Harvey Stephens, Don Stevens.

STATISTICS

As far as achievements were concerned, the Tenth National Soaring Contest broke all previous records. Total mileage of official flights was 6,808, total take-offs, 687; total distance flights, 117. Thirty-six gliders and eighty-eight pilots entered the meet. As already stated, the former altitude record was broken seven times, the final being almost three times greater than the previous official one. The longest distance flight was 233 miles, made by Chet Decker, who became the National Soaring Champion for the second time.

Good though the showing was this year, we would like to compare it with the meet some months ago at Wichita Falls, Texas, during which Woody Brown, flying an intermediary sailplane, a Baby Albatross, broke the American distance record by traveling 285 miles from Wichita Falls, Tex., to Wichita, Kan. The meet lasted only a week, but during that time flights of 280, 200, 195, 182, 150 and three flights of over 100 miles were made. Of all the ships entered, only one, the Ross R. S. 1, was a high-performance sailplane, the rest being of the intermediary type. In our opinion, Texas is the part of the country where all records will be broken in the future. Because of its remarkable thermal conditions, due to well-defined cold fronts and high base of cumulus clouds, we feel that flights of well over four hundred miles could be made there. It would be extremely interesting to see the national contest held in Texas at least every other year. Since this section is the geographical center of the United States, it would also be more fair to our California soaring brothers by relieving them of some of the strain in traveling all the way East, which they have been doing heroically every year.

JUNIOR N.A.A. NEWS

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have a set-up for State high times so that certificates will be issued for such record-breaking flights.

In making this announcement, the Model Division states that it will, henceforth, give no recognition to citywide records. Such listings must be compiled and kept by clubs themselves operating in a city. Now, though, Washington will soon be recognizing State records as well as national marks.

In conjunction with records, the association points out that application for such recognition must be made on behalf of the fliers by the contest director for the competition. Therefore, if you know of someone who feels he or she has set a new national or State record, advise the modeler to make certain the contest director has made application on behalf of the individual contestant.

UNUSUAL MEET PREPARATIONS

Many a fine competition was run off this past summer, and one worth recalling was the Midwest Gas Model Airplane Contest held on July 23rd. Talk about a well-prepared meet! This one rivaled the Nationals as far as the advance publicity in the newspapers was concerned. The battle was sponsored by the Omaha *World-Herald* and the Benson Commercial Club. T. W. Summers was the general chairman and L. B. Bush the contest director. Instead of just supplying entrants with a badge or similar identifying ticket, the sponsors gave each entrant a fine silk ribbon with the word "Pilot" printed in big black letters; and to every entrant's helper, an equally fine ribbon with the word "Mechanic." In the event contestants misplaced or left their badges at home, a unique heavy-paper badge with provisions for punching out the date were available. These paper "badges" punched like railroad tickets, and with the date clearly indicated would be of no use at future meets.

SECOND NATIONAL MODEL AIRCRAFT FORUM

Indications point to this year's technical meeting of the model airplane fraternity as being held at Langley Field, Va., home of the National Advisory Committee for Aëronautics, and the home of much aëronautical advancement that has taken place in the United States. The sessions, open to all model-plane builders, will probably be cosponsored by the Hampton Roads Chapter of the Virginia Model Association, the Academy of Model Aëronautics and the National Aëronautics Association.

In addition to the regular meetings, it is expected that delegates to the gathering will be taken on a tour of the N. A. C. A.'s laboratories and will inspect the giant bombers and latest fighting craft of the air which are stationed at Langley Field in the army hangars. Probable date for all this will be Thanksgiving Day week-end in November. And to top it all off, plans are now under way to have sanctioned record trials run off in one of the large blimp hangars nearby. What a week-end for an aëromodeler!

ACADEMY ACTIVE ON NEXT YEAR'S RULES

Already the N. A. A. Academy of Model Aëronautics is arranging for a

About the SOLO CLUB and how to become a member

Feeling that there is a definite need for a means of recognizing those pilots who have experienced the supreme thrill of their first adventure alone into the blue on man-made wings, Air Trails has formulated and founded the SOLO CLUB.

This club is open only to those who have actually made a solo flight in heavier-than-air craft, either motorless or powered. It does not matter when or where such flight was made. Applicants must furnish the membership committee with satisfactory proof of their qualification for acceptance. There are no dues. Once a member, always a member.

To obtain your sterling silver SOLO CLUB lapel wings and life membership identification card, comply with any of the following requirements and sign. Send with fifty cents to the SOLO CLUB, Membership Committee, Air Trails, 79 7th Ave., New York City.

Proof of Qualification as a SOLO CLUB Member

1. Dept. of Commerce license and number if held
2. F. A. I. license and number if held_____

   Or attach any of the following:
3. Evidence of military or naval air corps service.
4. A letter from your instructor testifying to your solo flight, giving his rating and license number.
5. A notarized statement, preferably with witnesses, giving all details and data of solo flight and plane used.

In submitting the above for membership in the SOLO CLUB, I certify my willingness for the Membership Committee to investigate my application.

Applicant_____ **Age**_____

(please print)

Street_____ **City or Town**_____ **State**_____

nationwide survey of the model airplane builders' wants and desires as far as regulations and sanctioned activity are concerned for 1940. By the time you read this, a confidential report will be out to all academy members requesting their views of local model-building activities and soliciting their suggestions for rule refinements or event changes. These returns will be compiled by academy officers, the points brought up voted upon by mail by members, and the final decisions announced at the November meeting of the academy which will be held in conjunction with the Second Model Aircraft Forum.

Academy membership, as undoubtedly each reader knows, is open to all experienced and active leaders, contestants and experimenters. Full information on membership requirements and application forms for membership may be obtained from the Academy of Model Aëronautics, care of National Aëronautic Association, Washington, D. C.

GAS MODEL INSURANCE NEAR!

So many "promises-to-insure" signed by licensed N. A. A. Gas Model Division members are arriving daily at Washington headquarters, officials expect that the insurance desired by modelers for their gas activities will soon be available.

If you desire such insurance coverage ($1,000 for but $1 a year), application forms ("promises-to-insure" when the coverage is available, which will be as soon as five hundred gasoleers agree to take out the insurance) may be obtained from the N. A. A.'s Washington, D. C. headquarters. Write to the Model Division at Dupont Circle—inclosing a three-cent stamp.

N. A. A. MODEL DIVISION MEMBERSHIPS IN CHART FORM

If you're one of those scientifically minded persons who best visualizes things when they're in graph, chart or three-view-plan form, you'll welcome a new chart which the Model Division has prepared explaining its various individual and group memberships. All the information you desire is here in a manner quickly read and always available. With your request for a membership chart, please include a stamp for postage.

NATIONAL RECORDS

		Three-Flight Average Duration
INDOORS		
Fuselage Model, R. O. G., Class B		
Senior:	William Hayes, Syracuse, N. Y.	8:29.2
OUTDOORS		
HL Stick, Class C		
Senior:	Edward J. Swenton, Syracuse, N. Y.	11:37.3
HL Stick, Class C		
Open:	Ira J. Fralick, Syracuse, N. Y.	4:27.5
Tow-line Gliders, Class D		
Junior:	Paul Blackman, Philadelphia, Pa.	:21
Junior:	Oscar Boyajian, Hartford, Conn.	1:30.9
Fuselage, R. O. G., Class D		
Senior:	George Kesel, Liverpool, N. Y.	10:38.7
Open:	Alfred Towle, Syracuse, N. Y.	5:08.8
Cabin Fuselage, R. O. G., Class E, Gas, Unlimited Event		
Senior:	Robert Jacobsen, Philadelphia, Pa.	6:51.3
Senior:	Daniel J. Veronica, Buffalo, N. Y.	17:32.9
Open:	Martin Nemirofsky, Philadelphia, Pa.	1:16.5
Open:	Clarence Quillin, Buffalo, N. Y.	8:20.8
Cabin Fuselage, R. O. G., Class E, Gas, Power Class "C"		
Open:	Henry Struck, Jackson Heights, L. I., N.Y.	5:38
Cabin Fuselage, R. O. W., Class E, Gas, Unlimited Event		
Open:	G. E. Sherhod, Chicago, Ill.	:36

The foregoing records are the only ones accepted to date by the Contest Board of the N. A. A. under the new three-flight-average-duration ruling. More are pending.

BIG SHOW-OFF

(Continued from page 41)

members can construct and fly models in the exhibition hall. Indoor planes of rugged construction can be flown in tight circles, or anchor them by a guy thread to a central pylon, letting them take off from the floor and circling the pylon.

Using some suitable arrangement to carry off the fumes, run a gas engine "on the hour, every hour." Have some youthful enthusiast explain the principle of two-cycle engines; what makes 'em tick and how builders coax the last bit of power out of the little motors—a short, snappy blackboard talk.

Arrange for the appearance of distinguished guests—the local airport operator (who may give flying time or a "hop" as a door prize, or a sightseeing trip over the city for the most popular display in the exhibit); stewardesses from the air line's local office (now there's a swell publicity picture the papers will "eat up"); the mayor, commissioner of education—any number of individuals whose presence will lend importance to your show.

The theater manager may "come through" with passes for the exhibitors in return for a small display of models in his lobby—and what grand advertising that is for the club!

Do you have an official mimeographed or printed club paper? Issue special editions during the show; make certain that every visitor receives a copy. You might even want to sell advertising space in the club newssheet or in a special program prepared for the show.

Include in your plans provisions for signing new members at the exhibit; run off the official club movies every hour; climax the show with a Model Picnic, or a Model Luncheon or a Model Banquet (depending upon the state of the club's treasury).

It'll be work, yes; but fun, too. And really worth it.

And don't forget to send a report on your show to the news section of Air Trails' model department!

MODEL MATTERS

(Continued from page 46)

meet included several thousand dollars in cash with trips to Europe, scholarships, trophies and medals. Contest prizes seem to be a good index to our national prosperity.

Frank Zaic was winding a rubber motor at the New Jersey State Championships when suddenly *bang!*—the old story of too many turns. This was especially embarrassing for Frank; not only was the rubber sold by his company but it belonged to Mary Walker and Frank was playing the part of the gallant gentleman by winding it for her. (Frank was too busy extolling the virtue of "Jasco" rubber to count the turns.) Mary is a member of the Linden Club (New Jersey) and was the only girl entered in the Jersey Championships. Too bad you had to miss the Nationals this year, Mary. . . . As a confirmed old rubber modeler we can't help but resent the gas-model supplies which are given as prizes for rubber-powered events. Why not substitute a winder with a counter attached or several skeins of rubber? They're something the rubber expert needs more than a gas motor or model kit. . . . One of the aviation schools' current advertisement urges readers to get into aviation—don't just *play* at aviation. Between the words "play" and "at" is a sketch of a modeler launching a gas job. Since when is building and flying models "playing"? But the advice to get into aviation is good—it's not nearly as strenuous work.

What's the oldest gas model still flying? We know of several two-year-olds that are still turning in flights. Certainly there must be older models than those. Send us word about your gas-powered veterans. . . . "Small Fly," the article in *Collier's* on model building, was well written and well illustrated with full-color photos. Gurney Williams was the author. . . . Bill Brown, who developed the famous motor of the same name, hasn't lost his touch. We saw him watch a modeler trying to start a motor. After a few minutes Bill tried it, made a few adjustments, and the motor buzzed into life. Bill is no longer associated with Junior Motors Corporation but has brought out a new midget motor of his own design. . . . The two nurses at headquarters tent at the national meet were kept busy treating bruised, burned, and cut fingers. Some of the boys were a little slow on the draw. Reminds us of the fellow who had trouble operating his motor. He worked a long time getting the proper adjustments and then proudly announced everything was under control—the motor "was eating out of his hand."

A welcome visitor at Wayne County Airport was William E. Stout. He never fails to take time out from his work to inspect the models entered in a national meet. Stout is a famous automotive and aëronautical designer. But model builders remember him better as a model builder and donor of the famous Stout trophies for the outdoor fuselage and indoor stick events. . . . Balsa Butchers —name adopted by model clubs in Cleveland and Brooklyn—seems as appropriate a name as we've ever heard. . . . Heard of a good idea for winning contests: Paint a miniature picture of a model on each lens of a pair of sun glasses and give them to your timer to keep the sun out of his eyes. . . . There seems to be some dissatisfaction with the three-flight-average ruling which has gone into effect this year. Majority of contestants agree that for outdoor flying it goes a long way to reduce the element of luck. Why not reduce luck even further and use a six-flight average? Increase the number of timers to handle the extra flights.

NORTHWEST NEWS AND VIEWS. (By Glen Chambers.) Now that the Nationals are over, we relax for a while until it comes time to start building up a new bunch of hopes and plans for next year's contest. There is, however, one point in particular that the boys from this territory who attended the Nationals this year would like to comment on. That is that original-design models, particularly gas jobs, be classified separately, with regard to commercially designed models and semifinished kits. Building kits and approved, tested designs are a fine way to encourage the sport and to arouse interest and get new enthusiasts. This will not, however, produce those looked-for improvements and new ideas in full-sized aircraft that the model field is so often credited with fostering. Original design puts individuality into a plane, sometimes even personality. A sense of self pride in an original-design model comes not only from the workmanship, but from the conception of a new, or partially new, idea or thought. We feel that this is to be encouraged, particularly at the Nationals, and that kits remain a method of showing tyros the ropes in a manner that will make them wish to continue.

Gas modeling got its start here in 1936, when clubs were started in Yakima, Seattle, and Portland, as well as several other cities which later grouped together with us until we gradually built up the present big Northwest Gas Model Association, which includes clubs in Washington, Oregon, Montana, and British Columbia.

The association conceived the idea of sending the best model builders from this section to the national contest each summer. Expenses were obtained by a series of contests, which also determined the winners to go to the Nationals.

Latest development in the advancement of model aëronautics in the Northwest is the publication *Evergreen Gas Model News*. This is edited by Dick Megorden.

Dick Megorden, who is also president of our association, has been struggling for years to develop a group of strong and co-operating clubs in this part of the country, and every gas-model builder is deeply appreciative of his efforts.

Last but not least, we make a plea for material for future columns of this type from all points near our operating section of the Northwest. Send all contributions to Glen Chambers, Aircraft Adviser, Y. M. C. A., Yakima, Washington.

CANADIAN ITEMS. (By John Dilly.) Do you remember when anyone making a trip to the American National Model Championships was good for a half column and probably a picture or two on the front page of the local newspaper and maybe even a mention in one of the Metropolitan rags? Doesn't seem so long ago, but now the novelty of the model-airplane game must be beginning to wear a little thin, for anything less than a twenty-minute flight these days seems to get about three lines way back on page 17, below the classified ads. And for once we don't hear any Canadian builders kicking about this, for after this year's dismal showing at Detroit the less publicity they get the better they're going to like it. We believe it's the poorest showing made by the Canucks since back in '31 or '32.

But the licking didn't seem to discourage the gang, for July 16th found the gas bugs at Toronto for a contest sponsored by the Canadian Gas Model Club. It turned out to be one of those informal meets that are so much fun to fly in. Everyone flew when and as often as he pleased, and the average of each contestant's three longest flights was taken to determine the prize winners. Prizes consisted of trophies and cash (a three-way split of the entry fees). Contestants were present from Toronto, Hamilton, Galt, and Kitchener; and to add an international touch, a group from St. Louis, Mo. Another attraction (a brunette this time) prevented us from having a talk with the American group, so we never did find out how they managed to get so far from home. A nice northeast wind helped to prevent any outstanding flights, but nobody seemed to bother much about it. The wind always blows on Sunday here, and we're getting used to it. Among the outstanding contestants was Mrs. Marion Kennedy, Canada's most active gas-model builder, who ran a close second to Ray Hunter as the busiest flier of the day. The results:

1.	Warren Hall, Toronto	141 secs.
2.	Ray Hunter, Weston	75 "
3.	George Myers, St. Louis	65 "
4.	Bill Law, Toronto	62 "
5.	Marion Kennedy, Toronto	61 "
6.	Vern Anthony, Toronto	40 "

The good news was received this week that the Grand Champion at this year's Canadian National Championships will again receive as a special prize a forty-seven-hour flying course. The prize will be known as the Sir James MacBrien Memorial Award, in memory of the founder of the Model Aircraft League of Canada.

And while on the subject of papers, the Galt Model Aircrafters have chosen Bill Holden as editor of their monthly publication the *Aircrafter*. Any clubs wishing to be placed on the *Aircrafter* mailing list should contact the club secretary, Ernest Barrie.

METROPOLITAN NEW YORK AREA. (By Carroll Moon.) At a recent meet of the Silk City Gas Model Club, these builders for the first time ran across the decidedly "lousy" group of culprits who make a practice of stealing models. Scotty Murray, who lost his "Topper" ship at the Kresge-Air Trails meet, found that the motor from his plane (an Ohlsson "23" that was *plenty* hot) was being offered for sale for three dollars. However, despite many hours of sleuthing, he was unable to find the present holder of the motor. This practice of stealing ships and motors has reached the proportions of a business. A green Model A Ford with a New Jersey license has been seen at several meets, parking downwind, and fliers have noted the operator picking up planes and stowing them aboard. Also a Chevrolet fruit truck has been seen at the same sort of work.

One of the latest stunts of this band of "gas-model racketeers" came to light during the Silk City meet. One of the fliers sent up a Class B ship, and after a fine flight the job disappeared downwind. Two or three youngsters went out, found the ship, and brought it back to the field. As they entered the ropes an unidentified man took the plane from them, explaining that he would deliver it to the owner. Whereupon he placed the ship in his car and departed at a goodly rate of speed. Moral: Retrieve your own ship or use only "union" stooges.

In re rubber contests: Some time ago the Parks Department of New York held a meet at Prospect Park in Brooklyn. At first we learned that there was to be a gas-model event, but when we learned that the only requirement was a "45-second engine run," we tore down to the proper authorities and had the gas-model part called off. We learned that hand-launched glider entrants were allowed but *one* flight, and no preliminary flights for adjustments. The same restrictions applied to all classes, and as one may imagine the times were *very* low.

The New Jersey State Gas Meet, sponsored by the Linden Model Aircraft Club, of Linden, N. J., was held Saturday, July 29th, at Hadley Airport, and was attended by some one hundred of the best gas modelers in the surrounding area.

The day dawned cloudy and the relatively high humidity made thermals very prevalent. All classes of planes were grouped into one free-for-all class, and some fine performances were recorded before the contest closed. First place was won by Arthur Scheid, of the Linden Club, who did a total of 19:09 minutes on two flights, his longest being 13:18.

Russell Simmons, of the Queen City Model Club, took second place, with 6:46 total and a best flight of 2:51. Howard Simmons of the same club was second with a total of 6:30, his best flight being 4:27.

Robert Weston, of Fairlawn, N. J., was awarded a special prize by Irwin Polk, of Polk's Modelcraft Hobbies, for a tailless plane which provided the most sensational flights of the afternoon. Weston's plane did 1:01, 1:20, and 1:14 on three flights, and had an unusually stable climb and a flat, slow glide. Model experts stated that it was one of the first tailless planes ever to turn in a really good performance, to their knowledge.

The meet was directed by Frank M. Krysiak, senior director of the sponsoring club, who was assisted by William Scheid, Sr., Russell Hilts, Silveo Colletti and Elmer Granitzki, the contest committee.

CONTEST CALENDAR

Regular Monthly Contests. Philadelphia Gas Model Association, sponsor. Open to all N. A. A. members. Information from Jack Schwartz, 1742 N. Peach Street, Philadelphia, Pa.

Tri-State Area Contests. (Eastern Ohio, Pennsylvania, West Virginia). Sponsored by the Aëro Club of Pittsburgh, Post 531, American Legion, and the Boys Club of Pittsburgh. Attractive awards have been pledged for all meets. Outdoor contests include gas-powered events in all three classes, rubber-powered, fuselage and stick; glider, hand-launched, tow-launched and catapult. Remaining contest schedule is as follows: September 16th, Tri-State Championships (outdoor), Butler Airport; October, Tri-State Championships (indoor), Hunt Armory, November 18th, Scale Model Competition, Boys Club of Pittsburgh.

Information about these contests or about model work in the Pittsburgh area may be obtained from Harry Vogler, Jr., 4412 Butler Street, Pittsburgh, Pa.

Model Meet, Gas and Rubber, sponsored by the Saint Paul Junior Association of Commerce, September 17th. Contest will be held at the Saint Paul airport. Prizes. Builders around Saint Paul who would like to keep posted on future contests in that city should address John J. Sweeney, Saint Paul Junior Chamber of Commerce, 215 Pioneer Building, Saint Paul, Minn.

Fourth Northwest Model Air Meet. Approximately September 17th, Cedar Airport, Minneapolis, Minn. Sponsored by Minneapolis Model Aëro Club. Stick, fuselage and novice. N. A. A. rules and sanction. Write Malcolm Smith, 5700 Twenty-eighth Avenue South, Minneapolis, Minn.

Colorado State Gas Model Meet. September 17th, Pueblo, Colo. Sponsored by Pueblo Model Airplane Club. Open to modelers in Colorado and neighboring States. Entry fee of 50 cents. Motor run of 20 seconds. Contest starts 9 a. m.

Kiwanis Model Airplane Contests. Monroe County, Pa. Rubber-powered elimination contests open to students of grades 4-12 inclusive, in Monroe County. Local eliminations to close by September 30, 1939; final county meet October 16th-21st. Rules are same as those determined by the N. A. A. for the 1939 Wakefield Contest. Complete information from Elmer Kiefer, Chairman, Kiwanis Model Airplane Club, 108 N. Sixth, Stroudsburg, Pa.

Model Exhibition, 2nd Annual Wisconsin Hobby Exposition. Milwaukee Auditorium, November 30th, December 1st, 2nd, 3rd. Exposition office, 500 West Kilbourn Avenue, Milwaukee, Wis.

A CORRECTION

In the August issue the cost of insurance for third-party protection in England was erroneously given as six shillings per annum for rubber models and two pounds six shillings for gas. The correct amounts are 6d for rubber and 2/6d for gas. The National Guild of Aëromodelists issues the insurance.

SOUTHERN CALIFORNIA. (By Elbert J. Weathers.) The San Diego Aëroneers lease and operate their own gas-model flying field, located just ten miles from San Diego. The field comprises eighty-eight acres and is leased on the terms of the club paying only for the annual taxes on the property, which, due to the location and sparse habitation, are very reasonable. The club charges an admission of five cents per person at its monthly contests, and ten cents per person at each annual gas-model contest, the last of which was held June 25th, attracting more than two hundred and fifty entries from all over southern California.

A concession company is present at every contest, large or small, and the San Diego Aëroneers receive a generous percentage of all gross business done, which further strengthens the treasury. Admission to the San Diego Aëroneers' field is charged only for purposes of field maintenance. The club hopes to have an asphalt runway laid very shortly, which will greatly facilitate the starting of ships and eliminate the dust conditions. A private airport, the owner of which is very friendly to the club, is located near the field, and the club members, needless to say, find either the Piper Cub or the Luscombe Sport very handy in chasing lost *(Turn to page 80)*

MISS MECHANIC

(Continued from page 25)

on your hands, you're liable to get lead poisoning."

Scratches! I looked at the cut between my thumb and forefinger. That metal had been sharp. "What's the antidote in a case like that?" I tried to make my voice sound casual.

He looked at me with a professional smugness that only a new transport pilot can acquire. "Waal, you might try drinking a quart of arsenic."

I sauntered out of the shop, but when I reached the corridor leading to the washroom, I never ran faster. Scraping my hand with sand soap and painting it with iodine must have done some good, for although I spent my afternoon worrying, nothing happened.

Always in hot water, would be a succinct description of my stay at the field. I tried to keep most of my predicaments to myself, for obvious reasons, but only in one instance was I successful.

It happened that during a thunderstorm in the early summer, a large group of pilots and field attendants was crowded in the hangar for refuge. In a search for privacy, I discovered that the trap door which opened onto the catwalk was unlocked, and had proceeded to eat lunch there. Seclusion was welcome because not being seen meant not being subjected to such remarks as: "What's that in coveralls?" and "It's a dame, I tell you. It's got long hair."

Here on the catwalk was a place where I could survey all that was going on while enjoying the luxury of being invisible. It was forbidden to be there since the catwalk was a narrow steel framework, fifty feet above the concrete floor, but this knowledge only served to make the excursion twice as enjoyable. I reclined, Roman fashion, on the planking which covered the walk, alternately munching on a sandwich or leaning over to catch fragments of conversation below me. Gusty, the chief mechanics assistant, was discussing the extermination of the starlings who had made their homes on the girders. Their noisy antics were often amusing, but their untidy habits made them veritable nuisances. "It's harmful to the fabric," I heard Gusty say.

At this point, a particularly loud clap of thunder startled me so that I squeezed the somewhat soggy sandwich I was holding. My hands were dangling over the side and a bit of mayonnaise fell on a sparely covered portion of Gusty's head. I ducked as his voice rose above the laughter that followed. "Those birds are the most uninhibited things around here," he roared yanking out a handkerchief.

I peered between the planks at the consternation I had caused. Time to beat it, I thought, timing my footsteps to peals of thunder. The storm abated, but Gusty didn't. He was an odd fellow. I shall never forget the portrait he presented, squinting through the sights of a small rifle. His was a face that was all nose—a magnificent nose at that, with features clustered around it in haphazard fashion, as if nature, exhausted from the effort of creating such a colossal structure, impatiently slapped on the rest of his face. A few lone sprigs of red hair and a V-shaped scar that divided his forehead, completed what was the most picturesque head at the airport.

I felt sorry for the birds, but disclosing my part in the affair would not stop the execution. They had their revenge, nevertheless. Some of the bullets ricocheted from the wall and plunked through the fabric of a plane on the far side of the hangar. Whether this happened because the rifle had more power than estimated or that the fabric was pretty far gone, I don't know. Any damage that the birds had done was negligible compared to this, for now the cloth had to be patched. Gusty could not be pacified for days. Another inducement to keep me quiet!

Poor Gusty! His troubles were only beginning. The next week he was fined by the fire inspector. It was inevitable that someone should be fined for breaking the fire regulations. The disrespect for those rules, which was so flagrantly exhibited, awed me. Cigarettes were ignited with welding torches and extinguished in cans of gasoline. In the shop, especially around the "No Smoking" sign, there abounded prodigious numbers of burned matches and cigarette stubs. This was a source of constant irritation to me. I can recall spending hours trying to remove them from the floor cracks in which some became wedged, always anticipating another unexpected arrival of the fire inspector.

"Why should a competent mechanic, who is licensed to operate a welding torch, be a fire hazard just because he smoked?" Gusty had argued in vain.

It was then I learned that they were not so lackadaisical as they seemed. It was all a matter of *savoir faire.*

"I must be jinxed," he had declared, when his arguments did not convince the fire inspector. Some people believed that that was it, for within a fortnight he was killed. The propeller he was turning started full blast. The ignition switch had been broken.

The work I enjoyed most at this time

was connected with recovering. Most light planes are covered with a fabric that is stretched over the skeleton of the ship. When its edges have been sewn together, this cloth is treated with a substance, usually containing nitrate, known as dope. This stiffens the fabric and makes it waterproof.

My first encounter with dope occurred during an epidemic when the hangar was shorthanded. Given a few curt directions and a brush, my services were enlisted. The most impressive thing about dope, as far as I was concerned, was that it had many of the properties, including the smell, of nail polish. It was fun at first, but after two long hours of applying dope to a wing, the fumes began to make me dizzy and nauseous. I kept my brush in one spot too long, making a large puddle of dope. Hastily I smoothed it over with my hand, lest it attract someone's attention. In a few seconds the heavy viscous liquid caked on my palm. I was miserable. Brittle razorlike chunks cut into my skin when I bent my hand. Thinner had to be used to remove the dope and it burned like vitriol. As I staggered back to my section of the wing, someone gingerly took my arm and led me outside. His voice seemed muffled and toneless.

"You're dope drunk," he said with a grin.

Never again would I be favored with anything except cleaning, I thought ruefully. But I was, gradually.

In addition to helpful fundamentals concerning the airplane and its servicing, I learned that although the airport has more factions than a small town and more cliques than a girls' school, it is still a business place. Nonscheduled flying stands out from other enterprises because of its informality and lack of tension. Perhaps this ability to relax which sets most fliers apart from the average layman, explains why jokes and pranks are part of the routine.

Aviation, like all rapidly growing businesses, is becoming more and more specialized. Many people will resent the loss of color, but it is progress. I hope, as these great changes occur, and they will, that a woman's presence in a shop will no longer be considered an intrusion.

AIR ADVENTURERS

(Continued from page 31)

will happen if war starts. The United States must not get into another war unless in some way it affects its possessions or can prevent the dictators' victory, but we must be prepared for anything. I think Air Trails should be a more technical magazine and then we should learn more by reading it."

These are the words of a man who saw Francisco Sarabia, the noted Mexican pilot, off on his ill-fated flight to this country. There is very little that can be said in answer. You might read it over again and do a little thinking.

James Long, of Chicago, has sent in several interesting photographs taken at the Chicago airport. One in particular interests us, since it shows a Beechcraft which has just had to land with its undercarriage retracted. The picture shows that the plane appears to have landed fairly well with only little damage to the prop tips. What we would like to point out is that too many planes have to land with their undercarriages jammed. Week after week we see items in the papers on this subject, and one of these days we are going to read of something serious happening. We don't like to crab, but there is too much of this faulty undercarriage business, and it is about time that someone designed a landing gear that really works. It seems to us that it happens all too often on military types as well as commercial planes. If you want to make your million quick, design a retractable landing gear that will positively come down after it has been retracted.

Edward J. Graham, of Brampton, Ontario, is a Canadian Air Adventurer who is much interested in Diesel engines. "I am quite interested in the possibilities and future of the Diesel, particularly in the field of aviation," he writes. "I wish you could put me in touch with other Air Adventurers who may be interested in the same subject." We presume the above address is adequate, since that is all Graham included in his letter.

Bossel Orr, of British Columbia, sends in a pretty ghastly picture of a Hawker Hurricane crash which appears to have

taken place near Mission, B. C., on June 8th. According to Orr, the pilot jumped too late for his parachute to open. We continue to hear of these Hurricane crashes up there and wonder whether the Canadians have been getting sufficient training on high-speed single-seaters to justify their attempting to fly such fast planes. The Hurricane does three hundred and thirty-five, you know, and a jump from one of them seems to be too much. The accident was very unfortunate, but shows what must be faced if we rush training or expect limited-training pilots to take over high-speed military planes in an emergency. It just demonstrates how much real training means.

Harry Spots, of New York City, is the first Air Adventurer to come through with some real shots of the Aviation Building at the New York World's Fair. Harry, who is a new member, too, is delighted with what he finds in Air Trails Magazine.

Graham Bell, another Canadian from Vancouver, B. C., writes in and sends us a few snapshots of his models and some of the commercial craft up there. He also tells us that the Royal Canadian Air Force in British Columbia is expecting thirty more Hurricanes, and we wish them all the luck with them. Bell has been doing some flying in a Bird and a Fleet trainer with the noted Leonard Foggin. He sends in a long letter about aviation in that section, and it is quite obvious that the Canadians are going to town with their aviation services. We have given him his Photographer's award for his photographs.

Other photography awards this month have been sent out to Walter Dinteman of Martinsburg, W. Va., who sent in a shot of the new Fairchild light military trainer. He claims to have used a ninety-eight-cent Baby Brownie, too, which is good going, since the pictures are excellent. We also have a fine shot from Paul Glasser, of New York, taken down at Miami. It shows a Pan American seaplane on the bay there, and includes some beautiful cloud effects. Paul uses a 620 Bull's Eye camera. Edward McLoughlin, of New York, is awarded his Photographer's ticket for a neat picture of a Waco taken at the Floyd Bennett field. He uses a Kodak Model C and gets a very sharp negative. George Micari, of Sag Harbor, Long Island, seems to have access to the Hampton Airport, for he sends in two good shots taken out there which give us some idea of the smaller field. He has been awarded his ticket on them, too.

Gordon A. Aulis, of Wilder, Vermont, says he comes from a one-horsepower town, but they seem to have a neat little airport up there. Gordon sends in two fair shots of a Waco and a Taylorcraft ship which he says he has flown in. He's been with us for about a year now and likes the magazine very much. Carl Haines, of Fort Erie, Ontario, sends in for his award two fair shots of the famous two-engined Fleet Freighter which is becoming very popular in his section. Jack Liggett, of California, Pa., scores well with his two pictures taken while he was working at the Akron Airport. One is a very gaudy Bellanca Pacemaker belonging to the Pure Oil Co., and the other a neat shot of the Fairchild 24.

Laurin S. Knight, of Belhaven, N. C., gets his ticket for a photo of his model Curtiss Hawk P6E taken with a Baby Brownie. The Hawk appears to be very well made, too.

George F. M. Crady, Jr., sends in a shot of a Douglas Mainliner from East Braintree, Mass. More Mainliner shots come from Ronald Lilley, of Edmonton, Alberta, as well as a very fine description of the interior of this popular ship.

Robert Eberling, of Sparrows Point, Md., sends in films of an Eastern Air Line plane and promises to send us something soon on the Logan Airport for his Topography award. George Sheltzer, of Hummeltown, Pa., gets his Photographer's award for a neat print of a T. W. A. Douglas taken with a Brownie No. 2A camera. The picture was snapped at the Harrisburg Airport.

Dick Rountree, of Birmingham, Ala., sends in a swell description of the Ninth National Air Carnival at Birmingham—a far better description, in fact, than the newspaper clipping accompanying it. In the newspaper clipping an "expert" wrote: "Another speed stunt was put on by the 106th Observation Squadron, Alabama National Guard, when five pursuit planes took the air for a race around a triangular course." Now what would pursuit planes be doing in an observation squadron?

And to close this, we should offer sincere congratulations to J. Ralph Leister, of Kittanning, Pa., for his grand picture of his even grander model of a Seversky pursuit. Leister is a portrait and commercial photographer who combines his art with model-making and gets some fine results. He plans to get some instruction soon and possibly a private flying license in the near future, if the photography business holds up. He also adds another swell shot taken from the air over his native Kittanning which is very good.

That's all there is this month, boys. We'll hope for more and better letters next month.

MODEL MATTERS

(Continued from page 78)

ships, which are invariably found with little difficulty. Oh, yes, it costs the owner of the gas job being hunted a slight fee, amounting to seventy-five cents per fifteen minutes, but what's six bits compared to a thirty-dollar gas model?

Southern California gas-model clubs will, in the very near future, hold a small convention composed of several representatives from each organization in an attempt to operate the contests of the coming year on a set basis as far as weight rule is concerned. As Eastern builders may have gathered, the Pacific coast gas-model builders have always favored a twelve-ounce wing loading, which, as a matter of fact, was standard practice at all gas-model meets held here up to a few months ago, when the experimenters again became restless and began the use of a displacement-weight rule, since used here and there at major contests and also subject to much pro-and-con argument. It is that of 1 oz./ $^1/_{100}$ cu. in. engine displacement, which does, it must be admitted, work a hardship on the users of some makes of engines having quite a displacement in comparison to rival makes of same power but less displacement. Southern California gas-model builders do not favor the eight-ounce minimum wing loading, as in effect in the east under N. A. A. rules, but rather desire to stay around 12 oz./sq. ft., which may, as a possibility, be dropped to 10 oz./sq. ft. as a compromise among all the southern California gas-model clubs. The Western builders, while under the N. A. A. for the most part, are fully complying with the eight-ounce-minimum-weight-rule, as set forth in N. A. A. rules, in desiring to erect much higher minimum-weight requirements.

The flights turned in here in southern California with gas models having at least a loading of 12 oz./sq. ft. are just as long as any that have ever been made in flying planes "just over" 8 oz./sq. ft., which brings us down to the fact that it is *design* as much as any other factor which accounts for these long flights of ships loaded at twelve to eighteen ounces, as well as the element of a poorly constructed model of this same heavy range of loadings, catching the "lucky thermal." The fuselage cross-section rule is not enforced in southern California gas-model activities, due to the fact that we see no value in having it in existence except to cause added confusion. The writer, for one, stands ready to fly any of his ships against a "stick" type gas model, which does not perform nearly as well as a streamlined fuselage job. Your correspondent predicts that eventually the Academy for Model Aëronautics may realize the needlessness of this cross-section ruling, and rule it out of the present N. A. A. rules, substituting to the effect that a plane to be entered in an N. A. A. meet must be of the "fuselage type," which is the way entry blanks read in California.

THE KNOCKABOUT

(Continued from page 63)

bathtub, so it's really a felt-to-felt hook-up. For the bottom part use a slightly harder balsa block and leave the walls about ¼" thick all around.

MOTOR INSTALLATION

Although in our plane an Ohlsson 23 engine was used, any other make with similar displacement can be used successfully. First reverse the gas tank and screw the engine to two short basswood mounts. Now carefully cut the grooves in the bathtub to make room for the mounts and a half circle in the bottom to receive the engine cylinder.

After the engine is installed make the choke arrangement, which is of 1/16" wire pivoting in a similar-size brass bushing. Now the needle valve has to be lengthened somewhat so that it reaches through the top of the nose. The location of the hole depends on the make of engine used. Another hole is provided so that gas may be put in the tank with an eyedropper without removing the nose. The coil is also inverted, so that its high-tension terminal sticks through a small hole in the bottom.

The two separate battery boxes are right under the center of gravity, which makes it possible to use only a single battery without any change in the balance of the ship in case the plane is overweight.

The switch, spark tester and booster outlet are all made of .028 wire and cemented firmly on the inside of the bathtub.

Use regular hook-up wire for making the connections and solder each into a firm joint. Most failures are the result of careless wiring and using wires with poor insulation.

Test the motor and get used to running it inverted. Also get acquainted with the various gadgets in actual operation.

WING AND TAIL

The wing is made in two halves. There is no center section, which makes the wing more stable on top of the cabin.

Cut all the ribs out of soft 1/16" sheet balsa. For leading and trailing edges also use light stock, so that the weight of the wing may be the same as the original—two and a half ounces. A heavy wing makes recovery too slow when the ship banks sharply.

The bottom spar ends at the marking rib #2. The sheet balsa covering is in two sections. A separate piece should be joined on at the marking rib #1.

The 4½" dihedral is produced by the slightly tilted center ribs, but in case more or less dihedral results at joining the two halves, an extra wedge-shaped rib cemented in between the two will set them at the required angle.

The stabilizer is constructed in much the same way as the wing except for the lack of spars. The trailing edge is cut to shape out of ⅛" sheet balsa. While trimming this, do not forget that the cap strips here do not continue over the trailing edge.

The rudder is of 3/16" sheet balsa, including the tab. The two lead hinges cemented in allow the tab to be adjusted to a fine degree.

To secure the tail assembly firmly, a small balsa plug which fits the body opening perfectly is glued to the bottom of the elevator. This allows the removal of the assembly and at the same time prevents the assembly from shifting out of position. Use rubber bands right across the top of the elevator to the small hook in the back.

Cover with double tissue or silk. Each has some pros and cons. Silk is light, tough and easy to put on when moistened. But it is white, and paint makes it heavy. Double tissue is tougher than bamboo paper, but it is a lot of work to cover a plane twice. So there you are.

FLYING

Tie the wing on with rubber bands and balance 3¾" back from the leading edge. We know it never will be tail-heavy, but the other way around. A small amount of clay (a quarter to half an ounce) under the elevator will shift the center of gravity plenty on account of the long moment arm.

Glide the ship several times and make sure that it does not fall off on one wing at the end of the glide. If it does, consider it as a stall or look for a badly warped wing.

Under power, fly the model to the left in large circles. Do not hand-launch unless you are an expert at it.

WEIGHTS

Bathtub complete	14½ oz.
Body	3 "
Wing	2½ "
Tail	1 "
Total	21 oz.
Wing area	380 sq. in.

The Scoop of the Season!

Plans and Details of

KORDA'S 1939 WAKEFIELD WINNER

in November Air Trails

THE NATIONALS 1939

(Continued from page 53)

Talk of the meet was Ohlsson's clean sweep of Class B and Class B Open gas events. No less than ten firsts were garnered by ships powered by the "23"s. This certainly is an outstanding achievement and a tribute to the pep of this swell little engine.

Speaking of engines, Ben Shereshaw's Bantams didn't do bad, either First two places in Class A fell to the Bantams. Ben has been making mighty efforts to get into real production, so let's hope this fine record won't be wasted.

Zippers zipped to new heights to just about sew up the meet. There were hundreds of Zippers, true, but, as with Ohlsson, the choice of so many builders points out an outstanding product. Right now the Zippers are tops.

Henry Thomas staged a one-man show of his own to win the National Championship and the Air Trails solo course award. Henry is already hard at work —if you can call it work—taking his flying time with Akron Airways.

Editor's Note: All photographs accompanying this article were taken by Al Daraghy.

NATIONAL CONTEST WINNERS

OUTDOOR FUSELAGE MOFFETT ELIMINATIONS

Junior-Senior Age Division

Robert Toft, Minneapolis, Minn.	765.33
George Reich, Cleveland, O.	515.53
Edward Naudzius, Detroit, Mich.	444.73
Walter Dickinson, Newark, N. J.	440.46
Robert Lichten, Philadelphia, Pa.	439.53

Open-Age Division

V. C. Davis, Houston, Tex.	527.13
Kenwood Carter, Nashville, Tenn.	503.73
Kenneth Carpenter, Akron, O.	294.46

WAKEFIELD ELIMINATIONS

Junior-Senior Age Division

R. Gene Chaille, Miami, Fla.	489.20
Jack Thames, Pittsburgh, Pa.	394.33
James Bohash, Detroit, Mich.	275.66
Arthur Beckington, Rockford, Ill.	213.46
Earl Stahl, Johnston, Pa.	190.60

Open-Age Division

Dick Korda, Cleveland, O.	263.66
James Cahill, Indianapolis, Ind.	180.66
Fred Mees, Columbus, O.	156.46

MOFFETT TEAM

Robert Toft, V. C. Davis, George Reich, Kenwood Carter, Edward Naudzius, Walter Dickinson, Robert Lichten.

WAKEFIELD TEAM

(Actual team that competed in finals)

Richard Korda; Jack Thames; Earl Stahl, flown by proxy Ted Just; James Bohash; R. Gene Chaille; Ralph Baker.

BERRYLOID EVENT

C. H. Siegfried, Wichita, Kan., 1st; Mike Roll, Detroit, Mich., 2nd: Joe Raspante, Brooklyn, N. Y., 3rd.

POWER MODEL CONTEST

Class A—Junior-Senior Age Division

John Findra, New Brunswick, N. J.	66.86
Leon Schulman, Brooklyn, N. Y.	28.83
Arthur Block, New York, N. Y.	23.53

Class A—Open-Age Division

Frank Young, Lansing, Mich., 1st; Charles Guarnieri, New York, N. Y.

Class C—Junior-Senior Age Division

Roy Roush, Ferndale	465.
E. Barron, Jr., Grayslake	241.06
F. J. Lorenz, St. Louis, Mo.	208.93

Class C—Open-Age Division

Dick Everett, Elm Grove	295.3
Wm. J. Alsopp, Detroit, Mich.	231.
Frank Draper, Charlestown	200.66

Class B—Junior-Senior Age Division

Max Wassem, New Philadelphia	535.33
Herbert Friedlander, Brooklyn, N. Y.	377.4
Robert Hoffmeyer, Akron, O.	103.4

Class B—Open-Age Division

Robert Besse, Cleveland, O.	219.13
Henry Thomas, Jr., Akron, O.	113.
Dick Korda, Cleveland, O.	101.07

Unlimited Category—Junior-Senior Division

Bob Wright, Topeda, Kan.	234.
Vernon E. Krehbiel, Williamsville	222.33
Henry Velkoff, Fort Wayne, Ind.	221.06

Unlimited Category—Open-Age Division

Bud McClellan, Detroit, Mich.	767.7
Edwin Schunke, Milwaukee, Wis.	329.33
Norman A. Cross, Detroit, Mich.	227.33

RADIO-CONTROL EVENT

Walter Good, Kalamazoo, Mich.	89 points
Joe Raspante, Brooklyn, N. Y.	11 "

INDOOR EVENTS

Stick—Junior-Senior Age Division

Ed Naudzius, Detroit, Mich.	17:51.6
Alvie Dague, Tulsa, Okla.	17:29.3
John Stokes, Huntington Valley, Pa.	17:7.3

Cabin—Open-Age Division

Joseph Matulis, Chicago, Ill.	10:55
Andrew Peterson, Los Angeles, Cal.	10:24

Stick—Open-Age Division

Ed Fulmer, McKees Rocks	14:34.6
H. S. Andrews, Philadelphia, Pa.	14:32.4

Cabin—Junior-Senior Age Division

John Stokes, Huntington Valley, Pa.	14:12
Stanley Stanwick, Boston, Mass.	12:17
Harry Lerman, Boston, Mass.	11:25

FLYING SCALE EVENTS

Junior-Senior Age Division

Roger Hammer, Newark, N. J.	60.38 points
Anthony Kaslouskas, Akron, O.	60.28 "
Rancel Hill, Akron, O.	54.50 "

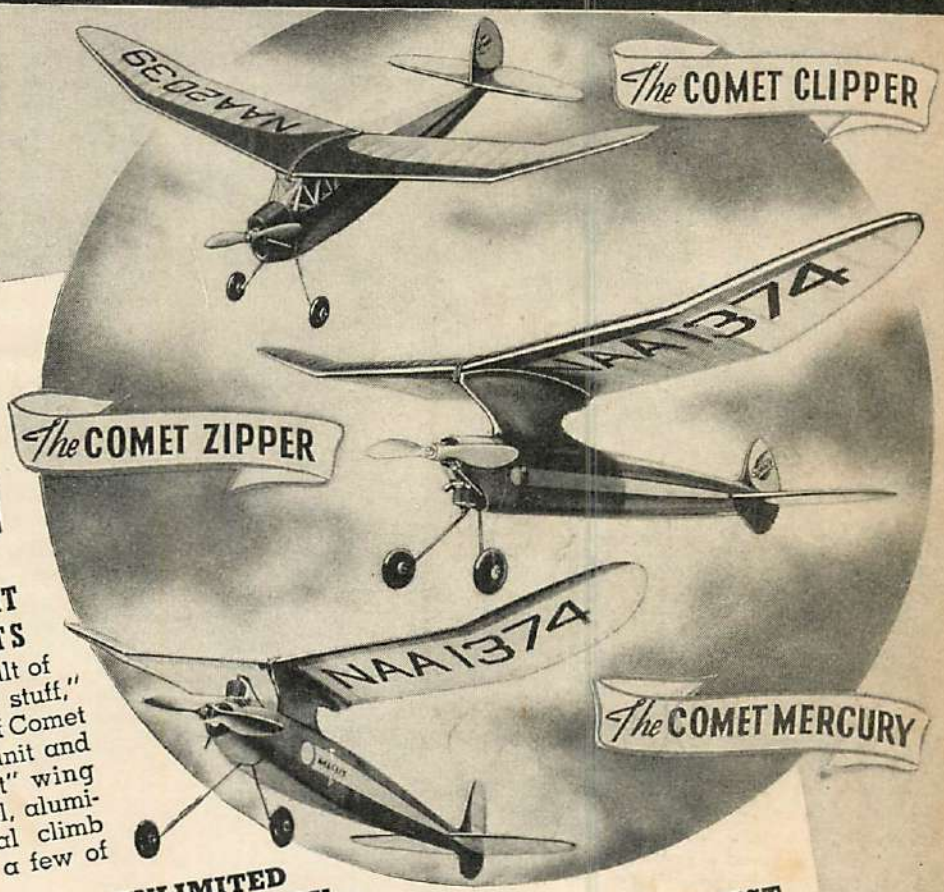
Open-Age Division

Henry Thomas, Akron, O.	69.25 "
Henry Struck, New York, N.Y.	68.60 "
John Ogilvie, New York, N.Y.	67.69 "

AIR TRAILS ADVERTISERS—OCTOBER, 1939

VICTORY!

CARL GOLDBERG
Gas model wizard whose genius made the triumph of these Comet models possible.



COMET MODELS sweep the NATIONALS at DETROIT!

RESULTS OF THE 1939 DETROIT NATIONALS . . . GAS EVENTS

It's an impressive record—the result of model-builders who "know their stuff," and the many exclusive features of Comet Gas Models! Detachable motor unit and battery track, "automatic pilot" wing mount, shock-proof wing and tail, aluminum motor mounts, sensational climb and flat glide—these are only a few of Comet's outstanding features!

CLASS B—OPEN

1st—Mercury—Robt. Besse, Cleveland, Ohio.
6th—Mercury—W. H. Gowan, Jr., New Philadelphia, Ohio.

UNLIMITED CATEGORY JR.—SR.

Bob Wright

1st—Zipper—Bob Wright, Topeka, Kans.
2nd—Zipper—Vernon E. Krehbiel, Williamsville, N. Y.
3rd—Zipper—Henry Velkoff, Fort Wayne, Indiana.
4th—Zipper—Harry Lorenzen, Detroit, Mich.
5th—Zipper—A. Gordon Wheler, Jr., Syracuse, N. Y.
6th—Zipper—Bill Redeker, Cincinnati.
7th—Zipper—Dean Allen, Detroit.
9th—Zipper—Jack Dietz, Cincinnati.
10th—Clipper—Bob Grams, Wyandotte, Mich.

Bud McClellan

UNLIMITED CATEGORY—OPEN

1st—Zipper—Bud McClellan, Detroit, Mich.
3rd—Zipper—Chas. C. Hinkle, Janesville, Wis.
5th—Zipper—Louis B. Mander, Swissvale, Pa.

POWER MODEL CONTEST CLASS C—SR.—JR.

1st—Clipper—Roy Roush, Ferndale, Michigan
4th—Zipper—M. Spector, Cincinnati.
7th—Zipper—F. D. Page, Jr., Williamsport, Pennsylvania.
9th—Zipper—Oliver Pfeil, San Antonio, Texas.
10th—Zipper—Frank Vollrath, Indianapolis, Indiana.

FIVE FIRSTS out of a POSSIBLE SIX—and many other places!

POWER MODEL CONTEST CLASS C—OPEN

Dick Everett

1st—Zipper—Dick Everett, Elm Grove, West Virginia.
3rd—Zipper—Frank Draper, Charleston, West Virginia.
6th—Zipper—W. R. Cruthirds, Little Rock, Arkansas.
7th—Clipper—Henry Gebbard, Milwaukee, Wis.

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☐ Undecided. Please send more information.

Years of High School: ☐ None; ☐ 1; ☐ 2; ☐ 3; ☐ 4.

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