

September 28, 1929

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AVIATION

The Oldest American Aeronautical Magazine

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Air Racing Lessons OF CLEVELAND
THE *Bellanca "Tandem"*

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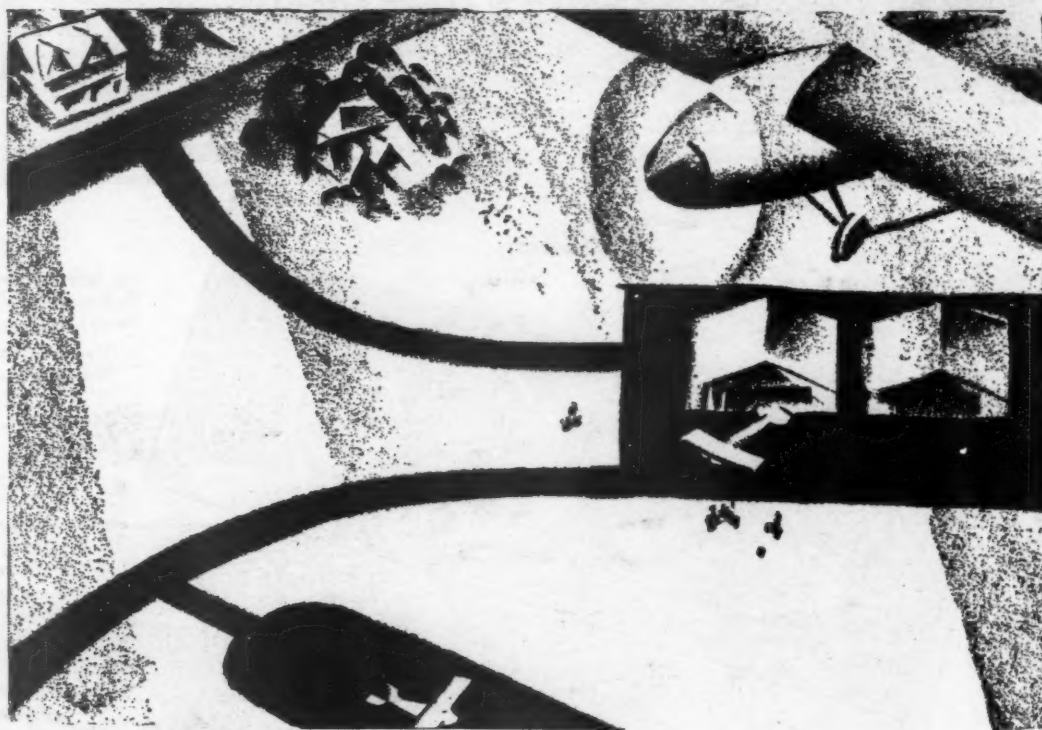
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TO what avail the arrow-like flight of the airplane if connecting highways, approach and service roads fail to link *ground-efficiency* with *air-efficiency*? Both are essential if we are to live out our dream of swift transportation.

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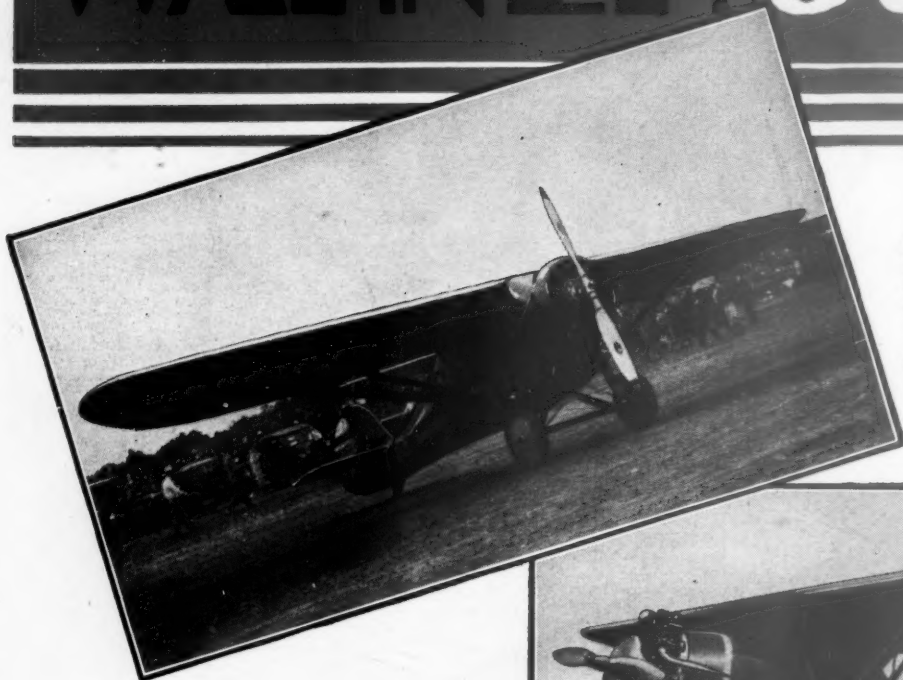
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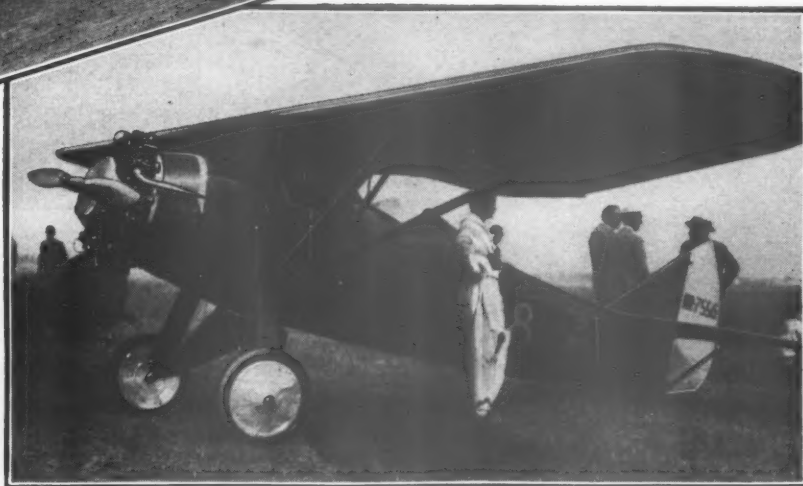
FOR ROAD CONSTRUCTION
REPAIR and MAINTENANCE

WARNER "Scarab"

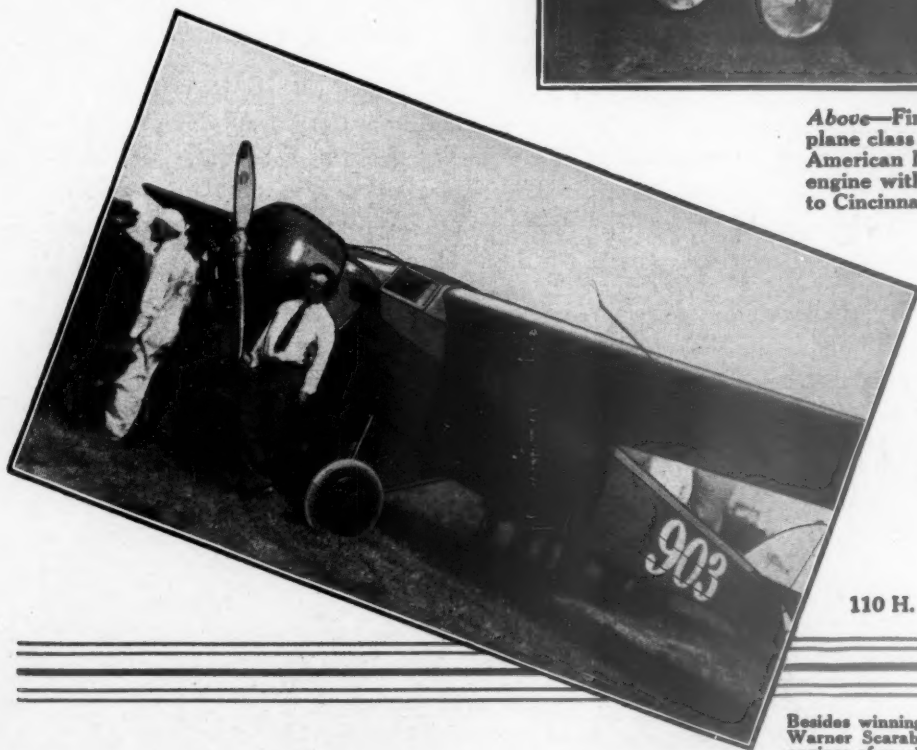


At left—First and Second in 50 mile National Air Race at Cleveland. (Event No. 9)

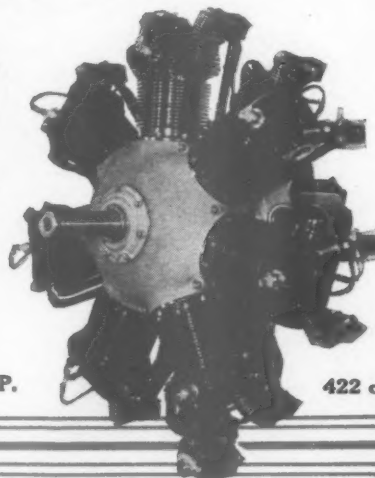
1. Vern Roberts in a Warner powered Monosport. (129 miles per hour)
2. R. T. Quinby in a Warner powered Monosport. (128 miles per hour)



Below—First in Miami to Cleveland Derby. Cabin plane class—Earl Rowland with the same Warner Engine and Cessna plane with which he won the 1928 National Air Derby. Completing 1483 miles in 12½ hours.



Above—First in Miami to Cleveland Derby. Open plane class (510 cubic inch)—Robert Duke in the American Moth monoplane, with same plane and engine with which he won the 1928 Los Angeles to Cincinnati Air Derby.



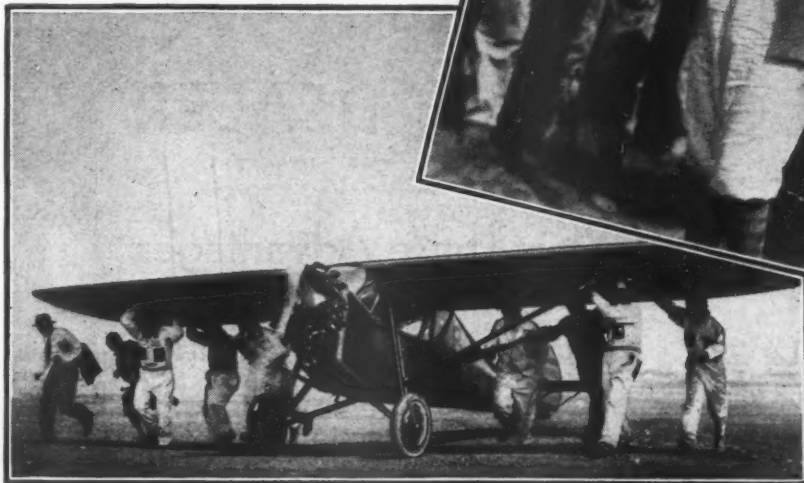
110 H. P.

422 cu. in.

Besides winning firsts in the events detailed on these pages, Warner Scarabs won firsts, seconds and thirds in races for engines of much greater power.

Wins every event in its class **at NATIONAL AIR RACES!**

Below—First in Women's Derby—Santa Monica to Cleveland. (510 cu. in. class)—Mrs. Phoebe Omlie in Monosport. Winning valued Aerol Trophy with score of 289.3 points. Average speed 108 miles per hour.



Above—Mrs. Omlie, first in Women's 50 mile National Air Race at Cleveland. (Event No. 1) Speed—112.38 miles per hour.

Conclusively demonstrating that planes powered with WARNER "Scarab" are the fastest and most dependable in their power Class --

WARNER AIRCRAFT CORPORATION, DETROIT, MICHIGAN



1 — A sales opportunity in the richest market for planes in the United States. . . . More than 931 planes are now licensed in New York State and New England, the area served by the Colonial System.

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For those who are unable to arrange a personal visit, we have prepared Bulletin A-11.



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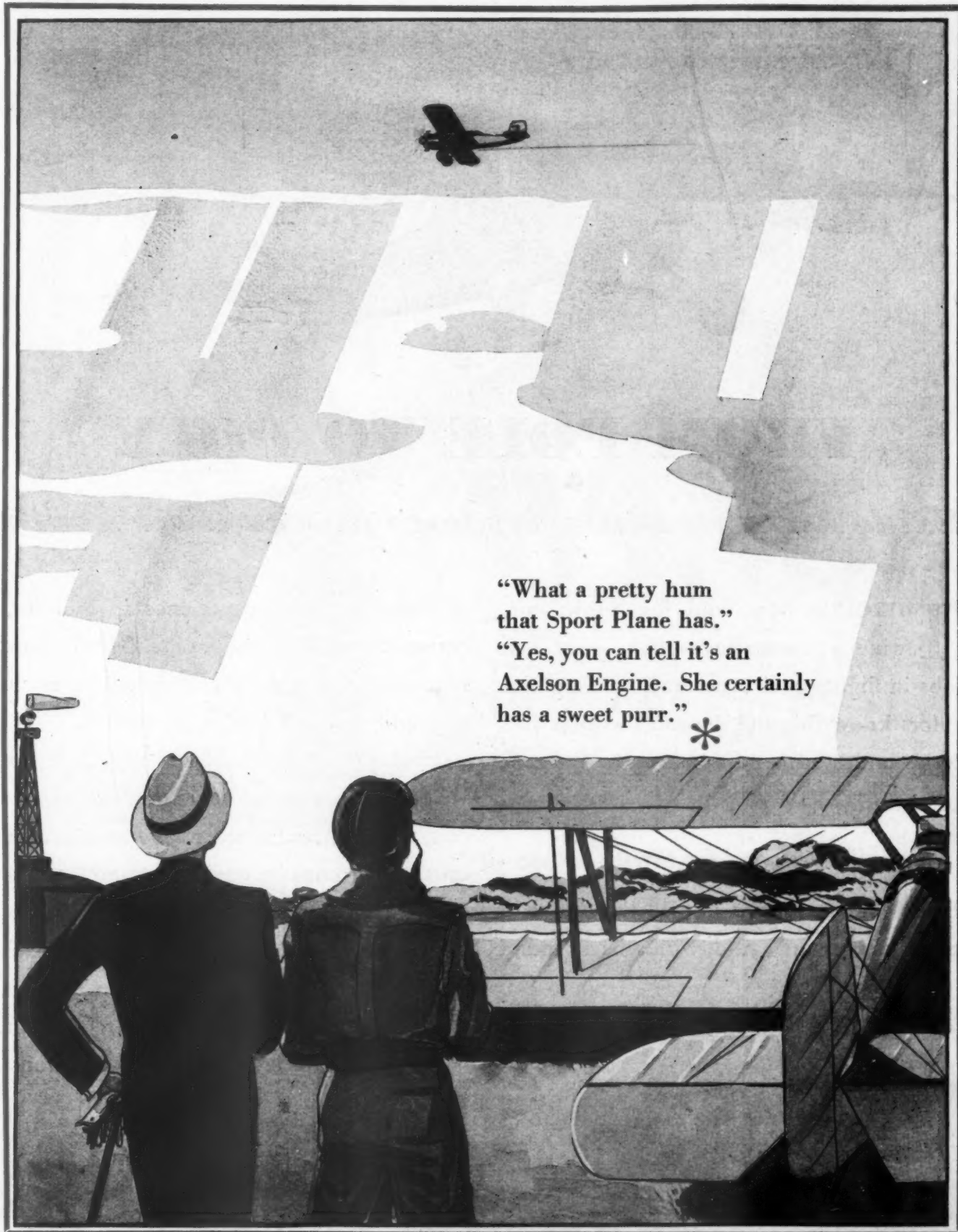


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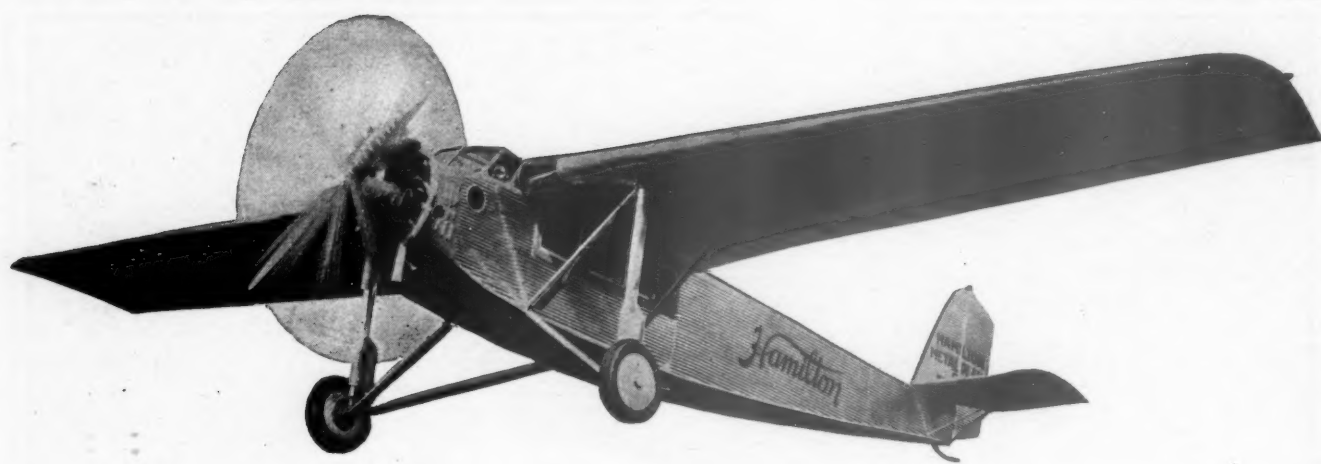
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"Yes, you can tell it's an
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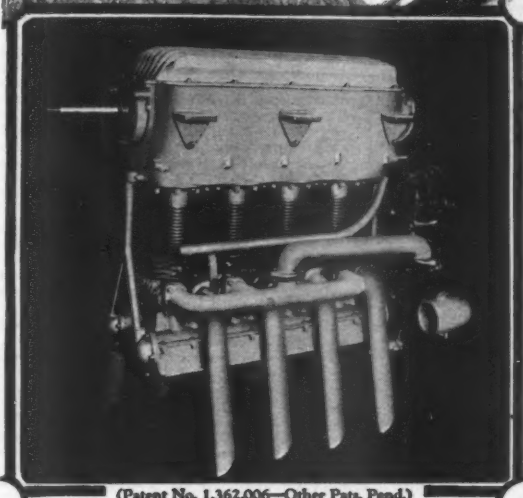


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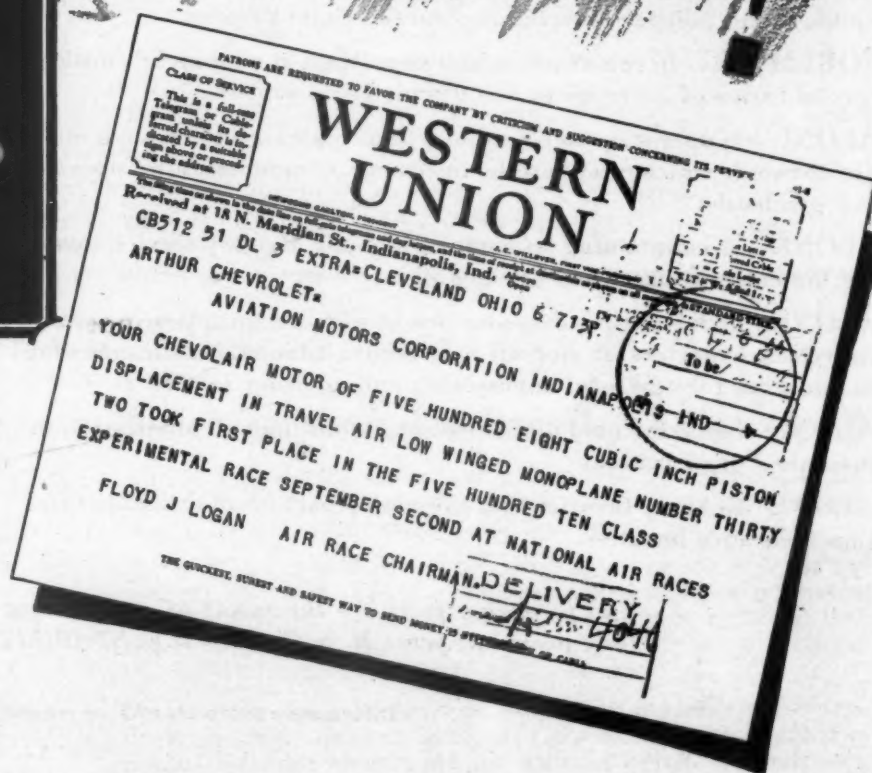
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In-line. Inverted. Air-cooled. Dual construction throughout.

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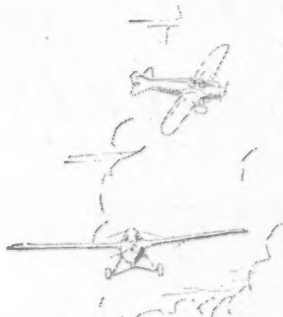
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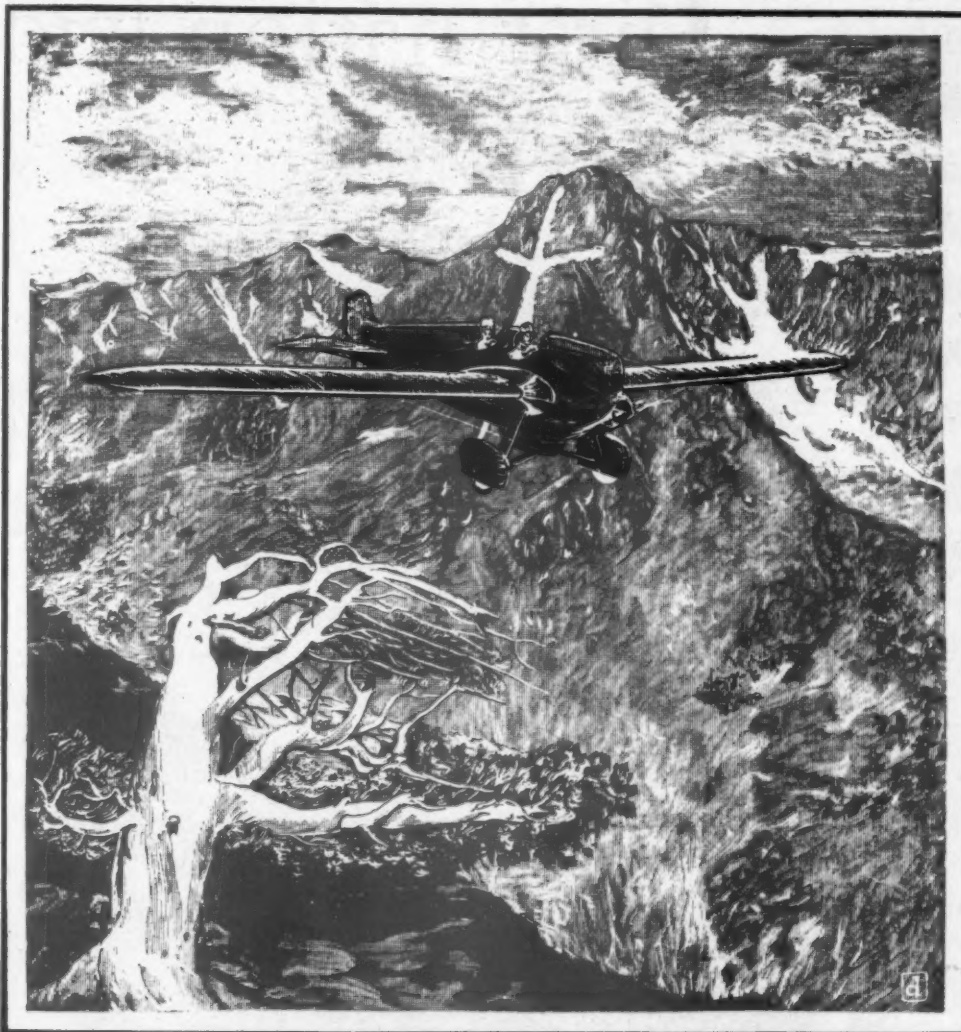
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For the
school or for
the sportsman...there is nothing to compare with the



Specifications	
Span	35 ft.
Chord	6 ft.
Length	22 ft.
Height	7 ft.
Weight empty	1,050 lbs.
Useful load	550 lbs.
Gross weight	1,640 lbs.
Motor (American Cirrus)	95 h. p.
Gasoline capacity	30 gals.
Oil	3 1/2 gals.
Performance	
High Speed	135 m. p. h.
Cruising Speed	100 m. p. h.
Landing Speed	38 m. p. h.
Equipment	
Bendix brakes, Aerol shock-absorbing struts, navigation lights, and streamlined wheels, tachometer, altimeter, air-speed indicator, oil pressure and temperature gauges.	

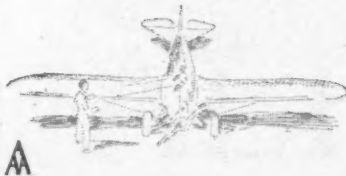
EMSCO mid-wing CIRRUS

IT'S a full fledged trainer...yet a thoroughbred sport ship--the first time in aviation history that these two widely different features have been successfully combined in one ship.

Just compare it with any other...thrill with the joy of a spirited take-off...with the incredible climbing speed...cruise at a hundred miles per hour...experience the remarkable ease of handling...land like a feather...then you'll know why we say that there's nothing in the world to compare with it!

Powered with the world famous Cirrus motor and built in one of the finest and best equipped factories in the industry, by a group of master craftsmen who are familiar with every phase of aeronautics, this sturdy little ship is destined to become one of the most popular of the two place sport training models.

There is some desirable territory open to reliable dealers. Complete information upon request.



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ARROW SPORT

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ARROW AIRCRAFT AND MOTORS CORPORATION
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One of a Series of Advertisements of The Cleveland Pneumatic Tool Co. featuring the 23 makes of Planes on which Aerol Landing Struts are Standard Equipment.

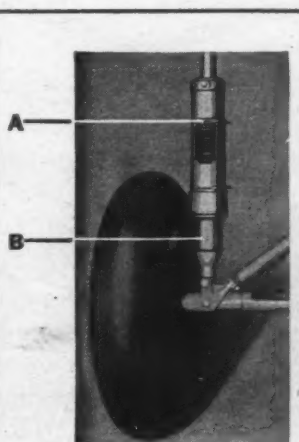


AEROL STRUTS ARE STANDARD EQUIPMENT ON HAMILTON METALPLANES

PROMINENT among the 23 manufacturers who have standardized on Aerol Landing Struts is the Hamilton Metalplane Division of The Boeing Airplane Company.

In selecting Aerol Struts, Hamilton engineers joined the fast-growing group which acknowledge the oleo-pneumatic principle as the ultimate and logical solution to the problem of absorbing landing shock.

The dominance of Aerol Struts was borne out at the



This view shows how Aerol Struts are installed between the fuselage and wheels. "A" is the stationary cylinder. "B" is the sliding piston attached to the axle, allowing perfect freedom of movement, yet effectively eliminating destructive shock before it reaches the fuselage.

recent National Aeronautical Exposition in Cleveland. On the 49 ships exhibited, Aerol Struts led all other makes of shock absorbers in number of ships equipped.

Aerol Strut Engineers are at the disposal of manufacturers in incorporating the units in the under-carriage designs. If your ships are not among the predominant number who offer Aerol Struts as standard or optional equipment, get in touch with our engineering department. The Cleveland Pneumatic Tool Company, Cleveland, Ohio.

Ask the Pilots Who Land on Them

AEROL shock absorbing **STRUT**

Vancouver to Mexico at 100 Miles an Hour!—Gas \$22.50



The landing at
Agua Caliente

Tex is con-
gratulated
by the
Mexican
chief of
police

1350 miles in 13 hours and 7 minutes—in a stock model Great Lakes Sport Trainer—Tex Rankin at the controls—take off at Vancouver—south over the United States—landing in Agua Caliente, Mexico the same day—no stops—only 75 gallons of gas—that's Performance!

Exact counterparts of this marvelous ship are now being produced in volume—engineered to the highest quality standards.

The Great Lakes Sport Trainer is the outstanding value in the light airplane field. Write for new illustrated booklet and complete details.



Tex as he
finished
his record-
breaking
flight



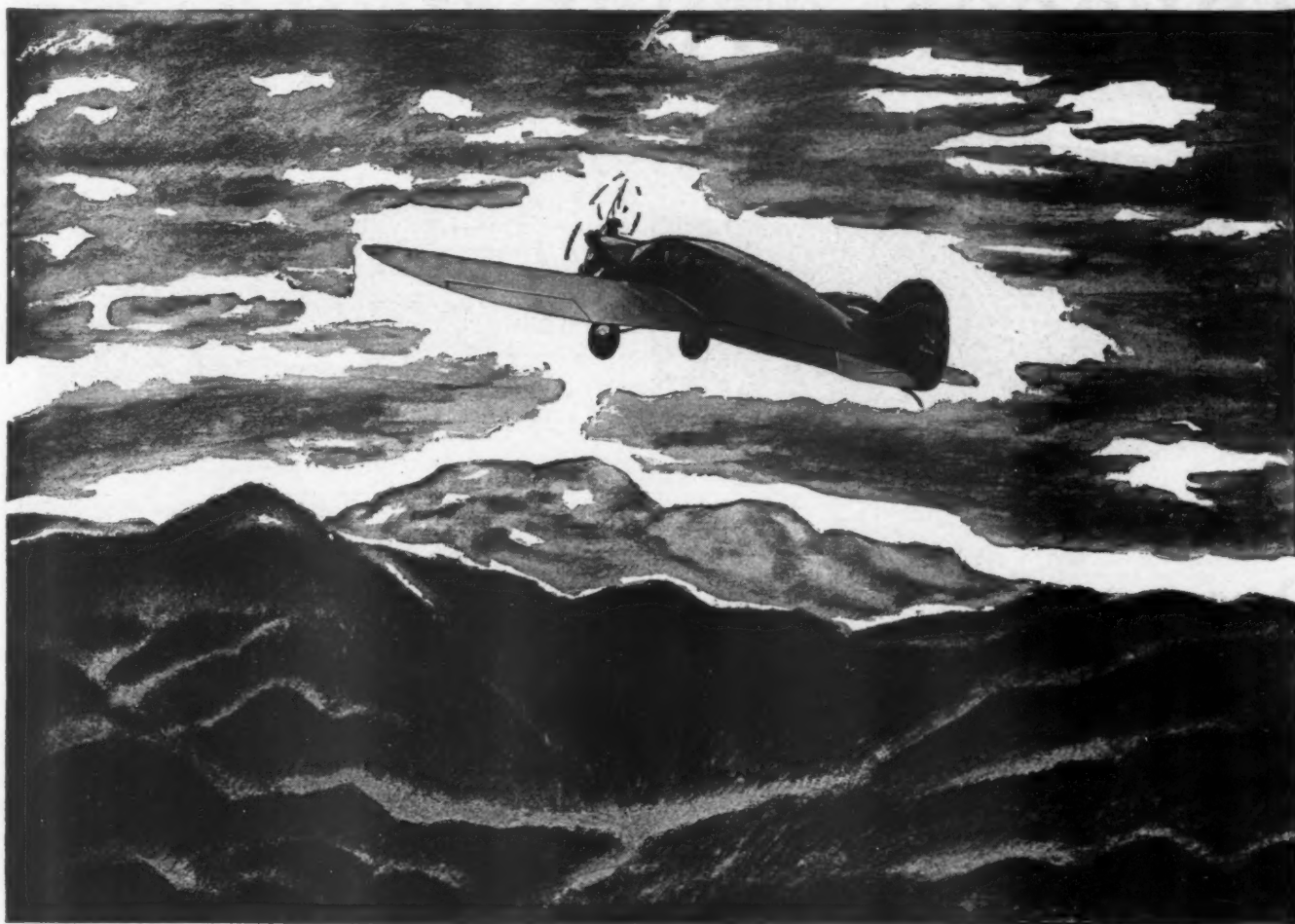
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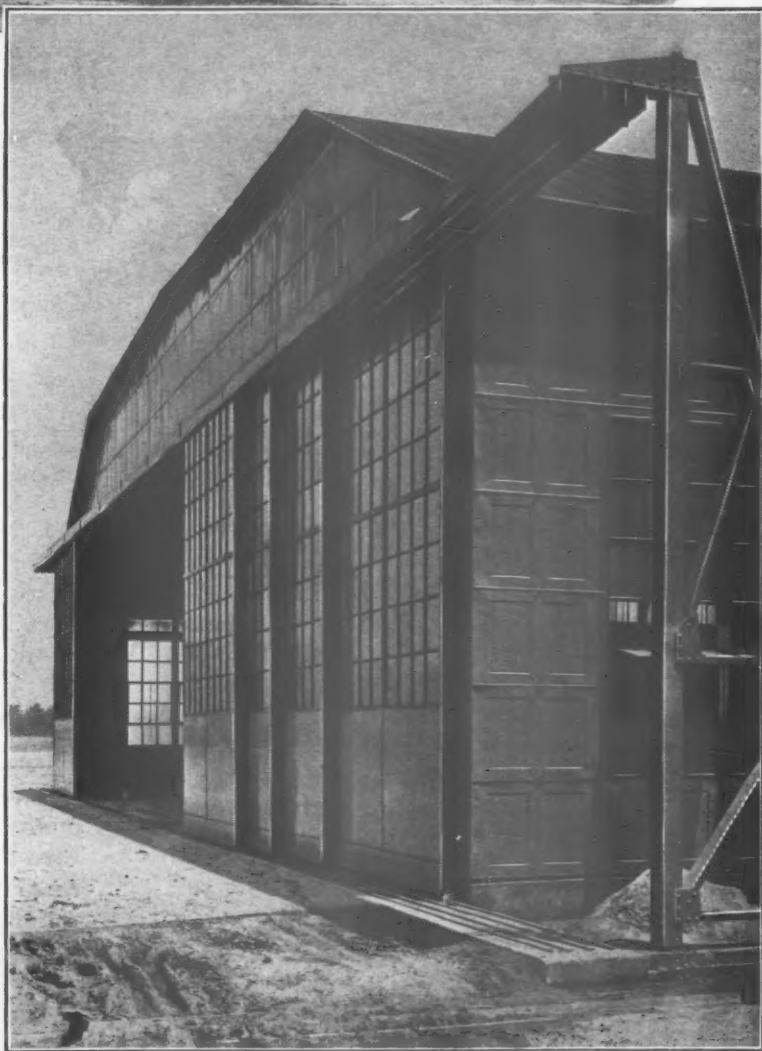


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DAYLIGHT
FIREPROOF
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FULL WIDTH STEEL DOORS**

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The Oldest American Aeronautical Magazine

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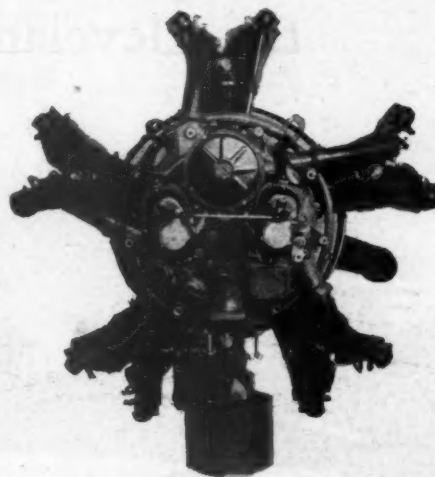
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*Scintilla Aircraft Magnets are Standard Equipment
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eighteen cylinders*



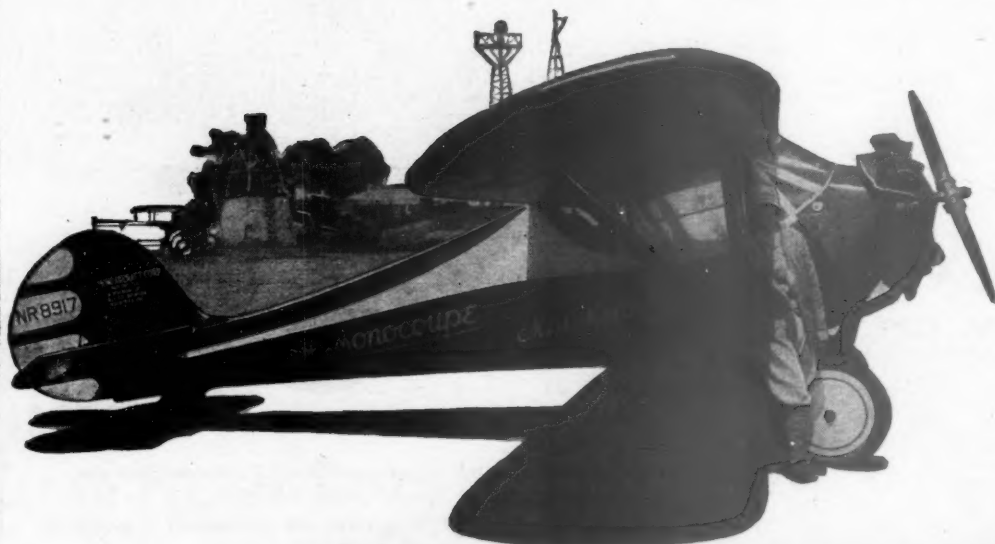
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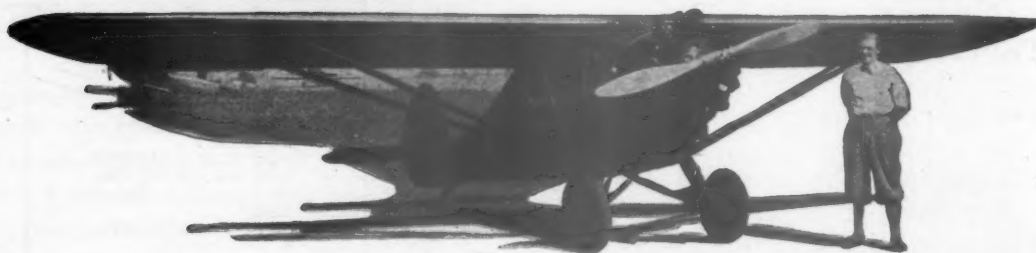
Again, MONO AIRCRAFT Triumphs

MONO AIRCRAFT Planes won more race prizes than any other make at the Cleveland National Air Races



Miss Phoebe Fairgrave Omlie with her prize-winning Monocoupe

Verne Roberts with his prize-winning Monocoupe "Little Sweetheart"



The Mono Aircraft career is conspicuous for its numerous victories. And now again—the inherent flying qualifications of Mono Aircraft planes have been proven beyond a doubt.

The first woman's National Air Derby was won by a *Monocoupe* piloted by Phoebe Fairgrave Omlie. Not only did she receive the "Standard Steel" trophy for first place in the light plane division but also the "Aerol Trophy" which was awarded for the most efficient performance of all planes in the flight. The course was from Santa Monica, Cal. to Cleveland, Ohio, a distance of 2723 miles, in 25 hours, 10 minutes and 36.5 seconds time elapsed. Miss Omlie also won the Women's 50 mile race.

The 50 mile closed course event for motors of 510 cubic inch displacement was won by Verne Roberts in his *Monocoupe* "Little Sweetheart". Second, fourth and fifth places were also won by *Monocoupes* in this race, conclusively proving the consistent superiority of Mono Aircraft. Competing against planes powered with engines of much greater horsepower, Verne Roberts' *Monocoupe* took second place and Stub Quinby's third in the 720 cubic inch class, and Verne Roberts placed third in the 800 cubic inch class.

On the flight from Philadelphia to Cleveland a *Monocoach* piloted by Ike Stewart took second place, as did the *Monosport* piloted by Leslie Bowman on the flight from Miami Beach to Cleveland.

Mono Aircraft planes are designed and engineered especially for the private flyer. Their popularity and approval in aeronautical circles is due to the superior advantages they offer in performance, safety, ease of control, comfort, speed and economy. They represent the highest performance and outstanding values in aviation today.

MONO AIRCRAFT CORP.
MOLINE ILLINOIS

AVIATION

THE OLDEST AMERICAN AERONAUTICAL MAGAZINE

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EDWARD P. WARNER, *Editor*

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The Railroads Take Alarm

THE COMBINED rail-air services so copiously advertised in all the great terminal stations are not the only evidence of the anxious care with which railroad officials are watching the development of air transport. Equally significant is the sudden attention given to the speeding up of schedules which had been good enough in their present form for many years, and the willingness displayed to increase the numbers of extra fare trains operated. If a balance were to be cast upon the services of the airplane a few months hence, it would have to be credited not only with its direct use by its own patrons, but with indirect benefit to all who travel upon the rails. It has done what the motor bus failed to do. It has brought at least a suggested threat of competition to the limited train de luxe.

Rail service between New York and Chicago is slower now than it was twenty years ago. The eighteen hour train is no more, but in the future the number of twenty hour services each way is to be nearly a dozen instead of only two as it was last week. Plans are reported to speed up twenty per cent in the trip between New York and Boston. In the West, where airmindedness was a flower of earlier bloom than in the Eastern states, the same tendency showed itself earlier, and the so-called transcontinental systems have been diligently engaged during the last three years in clipping hours from their running time with an intensity previously unknown since the days of Harriman.

Of course it would be absurd to take too literally the title that has been set upon this editorial. Air traffic is but an infinitesimal fraction of that going by rail. The present air traffic could be multiplied by twenty without reducing the total revenue of the railroads by more than a fiftieth part. Their officials need feel no uneasiness about the effect of direct competition in the immediate future.

The railroads' interest in the subject springs from

Next week's AVIATION, under date of October 5th, will be a Statistical Issue, and will be devoted primarily to a statistical and graphical survey of the present state of aeronautics and its historical development at home and abroad. It is suggested that readers wishing extra copies for preservation place orders in advance.

other causes. The coming of the airplane has fixed the attention of the traveling public upon speed as a desirable element in transportation. The passenger upon the Pullman car has looked upon air schedules, and he has become discontented. The speeding up of service is an effort to allay his discontent before it becomes too vocal.

In the long run, and not such a very long one at that, nothing better could happen for air transport. Both passenger service and air mail still suffer from an inadequately awakened public consciousness of their existence. Anything that leads the business man to think and talk and read about speed leads him also to think of air travel, and to have it in mind when the times comes to use it. The air line need not fear competition upon that head. Railroad running time can never be reduced to anywhere near what the airplane can show. The traveler who will forsake a 24-hour train for an eight-hour airplane will still make the switch in most cases even if the train schedule has been trimmed to twenty hours.

For twenty years speed of transportation had been honored in the abstract and almost neglected in practice. Both on the rails and on the Atlantic, the standing records have been those of 1910. The airplane has made speed once more a live issue. The more lively it becomes, the more the airplane, the unchallenged premier in that quality, will benefit.

Airport Specifications

THE TIME HAS COME to give thought to the airport of the future, and especially to the people by whom it is to be designed. Airport engineering has so far lain in an anomalous, not to say amphibious, state, poised midway between the civil and aeronautical branches of the engineering profession. Airport planning and construction combine problems peculiarly demanding aeronautical experience with others pertaining to straight civil engineering and having nothing to do with aviation.

That airport work will continue to be a specialty there is no doubt, but it is likely to be a subdivided one. The specialists will be either aeronautical engineers with a little knowledge of highway and building construction, grading and drainage, or civil engineers with a little knowledge of aeronautics. The two parts separate out nicely. Planning the general layout of an airport demands but little training upon the details of methods to be used in its construction. Leveling the surface and laying runways requires no acquaintance with the principles of flight. A runway is like any other road in principle. Draining an airport is essentially like draining a site for any other purpose. The aeronautical man ought to be exempt from worrying about the relative merits of various types of drain pipe and surfacing materials.

To bring the two parts of the work together there must be definite specifications, which have so far been hard to secure. The aeronautical expert must say in full detail what he wants, and leave it to the civil engineer to decide how it can best and most economically be provided. The length and the width of the runways; the maximum permissible slope of the runways or of any other part of the field; the rapidity and completeness of the drainage of the surface; the surface hardness; the freedom from more than a stated minimum of dust under definitely stated conditions; the permissible color of the runway, possibly affecting night landing; these and other similar points must be definitely settled, and then the civil engineer should be relied upon to do the rest.

We so far lack most of these specifications, except upon size and shape. We are completely lacking in the elementary data for some of them, but for others only the effort is wanting. The Department of Commerce, the airport section of the Aeronautical Chamber of Commerce, and such special conferences of airport executives and city engineers as are occasionally held should concern themselves energetically with this matter. Those who are best qualified to make the decision should look a few years into the future and decide what unit pressure a hard surface runway ought to be able to stand, how bad the drainage after a heavy rain may be without losing the field the right to a class A rating, and other matters of that nature. There should be standard specifications, far more definite than now exist, for

various classes of service. Not only will that simplify the planning of airports, but it will give the pilot an added means of assuring himself, when he approaches a new field for the first time and finds it marked on his map as complying with a certain set of requirements in its structural properties, of what kind of a landing surface it will afford.



Technical Note on the Schneider

THE RACE run at Calshot produced one important surprise. It showed that increase of engine size is still the road to travel in search of higher speed.

Three years ago many engineers were convinced that the end of the process of stepping up speed by stepping up engine size had been reached, and that to put in bigger engines beyond the point then reached would require increase of wing area and parasite resistance at least proportionate to the increase of power, so that the net gain would be nil. Recent events seem to prove them wrong.

As between the two British types developed for the Schneider Race, the winning machine was certainly less clean in apparent form, and showed less attention to minute details affecting parasite resistance, than its rival for place on the team. All observers agree on that. Even allowing for all the trouble experienced with carburetion on the Gloster Seaplane, there seems but little likelihood that it could have equalled the speed of the Supermarine under the best conditions, and the reason lies plainly in comparison of the engines. The winning machine had the larger engine, larger in every respect. Power triumphed over small fuselage section and cleanliness of aerodynamic detail.

Aerodynamic design of course remains important as a speed factor. It cannot be put lightly aside, but it would seem that any racing machine of reasonably clean form will be so close to the ultimate limits of possibility in the reduction of parasite resistance that the probable variations of engine between two types will generally remain the deciding factor. There is no indication as yet that any limit on the profit from increasing brute force by increasing engine dimensions is in sight. Engine power has been quadrupled in the last six years, with an increase in speed of approximately one-third, and racing machines, which used to be pursuit planes trimmed down in size and weight, have become big airplanes. The plane winning the Schneider trophy this year weighed nearly a thousand pounds more than the standard two-seater 400 hp. observation seaplane of the United States Navy. Projecting the curve of recent tendencies forward it appears that the Schneider Race of 1931, if one is held in that year, will be won by a plane using at least 2,500 hp. to carry the pilot around the course.

The President Picks an Envoy

IN NAMING Harry F. Guggenheim as the American Ambassador to Havana, the President confers a great honor upon a citizen who well deserves it. He insures that Cuban-American relations will continue harmonious, and that no opportunity of promoting co-operation will be overlooked. He sends to a country bound to us both by geographical proximity and by ties of sentiment, a country for whose very independent existence the United States was originally responsible, an Ambassador with extended experience in Latin-American lands, acquainted with their customs and attendant to the sensibilities of their peoples. Appointment to the embassy at the Cuban capital carries a special distinction just now when the waters are temporarily troubled and Washington talks of investigations.

If that were all, remark upon the appointment would have no place in an aeronautical journal. There is more. The aeronautical community can feel a vicarious pride in the selection. It is his aeronautical work that has brought Mr. Guggenheim's capacities before the public eye. His appointment can be considered as inspired at least in part by his enormous services to aeronautical development. He will take his place as American aviation's first contribution to the field of diplomacy.

The aircraft industry's congratulations to the new Ambassador will have the special fervor that comes of personal acquaintance, but they will be tintured by regret at losing him from his present activities. Even that cloud has its bright spot. American aviation needs a sympathetic and an understanding counselor in Havana. Now we shall have him.

The future of American aeronautics is not contained between the Great Lakes and Gulf of Mexico. The statesman who propounded the immortal query, "What have we to do with Abroad?" would get no sympathy among the builders and operators of aircraft. We must find markets beyond our own borders, and we must help our neighbors to avail themselves of the advantages of air transport, which some of the Latin-American countries need relatively far more than we do ourselves. We must help without trampling on native sentiment or prejudice. Our own industry will profit most by co-operating with local talent and capital to give the best possible service to the citizens of all the countries flown over.

The President has given repeated evidence of his own sense of the importance of our sharing in the development of air communications beyond the straits of Florida and the Rio Grande. He is sending to Cuba an envoy whose enthusiasm upon that point even exceeds his own. Ambassador Guggenheim can be counted on to encourage every responsible and honorable American initiative in the aeronautical field. In so doing he will be rendering service equally to his own people and to the subjects of the Government to which he is accredited.

Sucker Money

THERE ARE black sheep in every flock. The con man and the gold-brick vendor are always abroad in the land, and they are skilled to trim their sails to the shifting winds of industry. General prosperity, combined with a boom in a new and romantically appealing industry, spell the high tide of fortune for those gentry. The recent course of aeronautical development was made to order for their purposes. They have not overlooked their opportunities.

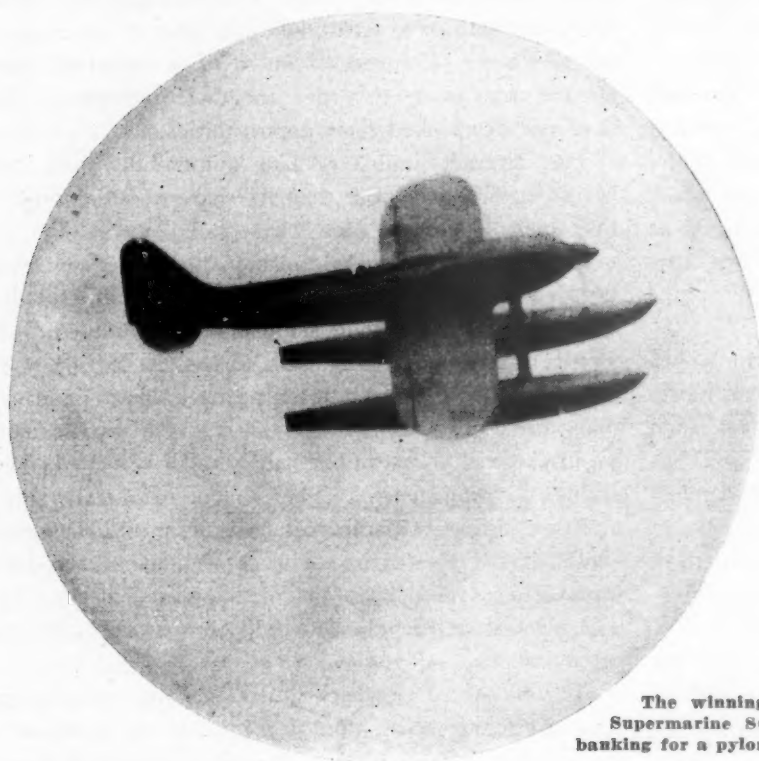
The aircraft industry, like automobiles and radio before it, has had more than its share of affliction from the financial quacks and sharpers. Within the past month there have come to the editorial office several prospectuses beautifully prepared and illustrated in colors, but blatantly and scandalously fraudulent. The Better Business Bureaus and the District Attorney deal with some of them, but the aircraft industry, and especially the reputable financial houses which stand to suffer from crooked competition, will have to help to keep the industry's name clean. The control of membership in the Aeronautical Chamber of Commerce and the assured exclusion of the fly-by-night as well as of the totally inexperienced and incompetent, suggested at the Chamber meeting at Cleveland, would be a move in the right direction.

The dodges of Get-Rich-Quick Wallingford's descendants are legion, and some of them stay nicely within the law. One of the commonest is the pirating of a justly famous name, either American or foreign, a bit of high-waymanship sometimes given the odor of sanctity by employing some obscure individual whose only merit is that he bears the name sought for. Where the authority of the State can find no opening for attack, only efforts of the industry can protect the innocently unwary. Aside from debarring the sharper from respectable associations, the most useful measures are those of public education.

The confidence man can always sing a siren song, but he is likely to be short on authenticated facts. To fail to give out full data upon the operations of reputable companies is to play into his hands. If the whole industry will make full and clear financial reports at brief intervals, as many companies make them now, the distinction between a record of accomplishment and a prospectus drawn on hot air should be easy, even for the unsophisticated. The virtue of full information upon present operations is that it makes evident the absurdity of promotions that propose an annual manufactured output of twice the entire invested capital or a net profit of 50 per cent on the retail price of the goods sold, as well as of plans for air transport lines that entirely neglect insurance costs. Against unreasonable optimism in the budget and in the prospectus, whether it be due to ignorance or guile, the investor must be on his guard.

AN American Designer's R

Schneider



The winning
Supermarine S6
banking for a pylon

THIS YEAR'S Schneider Trophy Contest was, without exception, the best conducted event of its kind in the history of aviation, and was done on such a grand scale that the British deserve every possible congratulation in not only having added to their own air-mindedness but for having helped air prestige all over the world.

The organization work was primarily in the hands of the Royal Aero Club committee headed by Comdr. Harold Perrin, and on the committee were several air experts, including Maj. R. H. Mayo, who is well-known in the States. With them, co-operated a detail of officers from the Air Ministry, and in addition a committee representing the principal railroad and steamship companies operating from London to the south of England. The Southern Railway made a great feature of the Race and other business interests joined in the tremendous propaganda with posters on bill boards all over the country, and a generous supply of notices by the British press, which for a week or two before the Race built up the event to the biggest spectacular feature possible. The subsequent successful running of the Race helped greatly by the good weather and the perfect functioning of the British machines made the entire effort one of conspicuous success. The spectacle of the Race itself was, of course, a memorable one. The Solent, a body of water not unlike Long Island Sound at its widest, was covered not only with yachts, but with a line of large ocean steamships that had made a special touring cruise of the event. In addition two British aircraft carriers, the

"Argus" and the "Furious," and several battleships lined the course, yet in such well concentrated areas that the broad sweep of the course itself was entirely clear of shipping, as well as several emergency landing lanes at right angles to the course.

Promptly at 2 o'clock, as scheduled for weeks, the new Supermarine Rolls Royce S6, piloted by Flying Officer Waghorn, took off after only a 28 sec. run in an ideal 10 mile wind which just gently ruffled the water. Immediately on the first round he broke the world's record and from then on the Race was an assured success. The details of the speeds of the various laps may be found in Table I.

The British pilots on the Supermarine S6 planes, Waghorn and Atcherley made their turns in about the same way, starting to bank gradually long before they approached the pylon, throttling down their engines very distinctly and keeping to a full 80 deg. bank, after which they gradually levelled off and opened up their throttle to again roar down the course. Dal Molin, the Italian, who finished second also made turns of about this character, although he skidded upwards considerably more and recovered the distance by diving immediately after the turn. Greig, on the old Supermarine S5, ran the most consistent race varying only 2 m.p.h. in the timing of his laps, and seemed to be able to whip round the pylons sharper.

THE MOST SENSATIONAL flying incident was when Cadrigher made his first racing turn on the new Macchi 67 at the Cowes pylon at which the writer was stationed near the take-off and landing area. Cadrigher approached it well over 300 m.p.h. and with bank up about 20 deg. when he very distinctly started to skid badly. He then, during the skid, seemed to be trying to tease a little more bank or rudder out of the plane with no success, and kept on sliding outward. We looked for him to start into a spin, but just then he stopped in the effort of turning, levelled out and headed straight inland for Cowes, actually passing over the Somerton Aerodrome, some 3 miles from the shore, after which he very slowly again negotiated a wide turn and proceeded in the direction of the course. Later it was learned that the control of the machine was difficult and that the exhaust

REVIEW OF THE Race

By GROVER LOENING



fumes were blowing right in his face, making it very hard for him to see any reference points. He subsequently landed before completing his second round, due to this.

At one time there were three machines going round the course, and an excellent close brush in which Wag-horn in the S6 passed Dal Molin in the M52.

The impression of speed of all these planes is of course tremendous and gives a real racing interest because they literally hurtle through the air and are round the course so soon after starting that the public's interest is constantly main-tained.

The most sur-prising thing about the new Super-marine Rolls was the greatly lessened noise over previous racing planes. There was, of course, a fine, loud roar of the 1800 hp. Rolls Royce engine, but the screeching of racing planes that we have become ac-customed to was distinctly absent for two reasons. First, the propeller was geared down very slow to about 1500 r.p.m. with a pitch of about 19 ft. and there was absolutely no pro-peller flutter noise on this plane. In addition the usual double ended stream line wire section has been replaced on this

racer by new machined stream lined wires in which the section is perfectly rounded in the nose and tapered cor-rectly to the tailing edge. These wires run absolutely quiet in the air and only hum after they are out of line, which makes it very easy to get them in line and con-sequently achieve the minimum of resistance. One was informed by the engineers in charge that an estimated increase of speed of 8 to 10 m.p.h. was attributable to the use of these wires on the plane.

The technical details of the air planes have not as yet been completely disclosed, and only a few of the major data are available. The Supermarine S6 weighed fully loaded with 110 gallons of gas, about 5100 pounds, the wing loading was about 30 lb. per sq.ft. and the horse-power in the neighborhood of 1800. The high horsepower of this Rolls Royce engine was primarily achieved by an enor-mous supercharger which delivered air to the carburetter at about 11 or 12 lb. pres-sure, thus giving the equivalent of flight at a negative altitude below sea level of about 16,000 ft. The engine was geared 2 to 1 by spur gearing, which is a depar-ture for Rolls Royce. It is a new engine designed and built in only nine months and is essentially a larger version of the 600 hp. Condor and designed as a Condor replacement for the British Government. This engine will undoubtedly be used in high performance fighters and two seaters, as well as in bombing planes.

Another feature of the Supermarine S6 over the machines of previous years, was the inside cooling wing surfaces. In-stead of placing the skin radiator on top of the veneer the radiator shell itself was made strong enough to serve not only as the wing cover, but also to take up all the torsion and drag stresses. Out at the tips of the wings three vents of about 4 sq.in. area, each, drew air into the wing which was passed out at the trailing edge near the body and set up a very definite cir-culation which added to the cooling. Obvi-ously in these high powered racing planes with small wings there is very little room

Waghorn, 1st Supermarine S-6

First lap	324 m.p.h.
Second lap	329 m.p.h.
Third lap	331 m.p.h.
Fourth lap	328 m.p.h.
Fifth lap	329.93 m.p.h.
Sixth lap	327 m.p.h.
Seventh lap	330.9 m.p.h.
Total time for course	39 min. 42.4-5 sec.
Average speed	328.63 m.p.h.

Greig, 3rd Supermarine S-5

First lap	283.73 m.p.h.
Second lap	282.16 m.p.h.
Third lap	282.16 m.p.h.
Fourth lap	281.41 m.p.h.
Fifth lap	281.3 m.p.h.
Sixth lap	281.16 m.p.h.
Seventh lap	282.87 m.p.h.
Total time for course	46 min. 15.1-5 sec.
Average speed	282.11 m.p.h.

Atcherley Supermarine S-6

First lap	302.45 m.p.h.
Second lap	324.56 m.p.h.
Third lap	329.74 m.p.h.
Fourth lap	332.49 m.p.h.
Fifth lap	328.39 m.p.h.
Sixth lap	331 m.p.h.
Seventh lap	332.49 m.p.h.
Total time for course	40 min. 5 sec.
Average speed	325.54 m.p.h.

Atcherly was disqualified for failing to pass round one of the pylons.

Dal Molin, 2nd Macchi 52

First lap	286.2 m.p.h.
Second lap	287.78 m.p.h.
Third lap	285.47 m.p.h.
Fourth lap	282.71 m.p.h.
Fifth lap	283.16 m.p.h.
Sixth lap	283 m.p.h.
Seventh lap	282.44 m.p.h.
Total time for course	45 min. 54.2-5 sec.
Average speed	284.2 m.p.h.

Cadringher Macchi 67

First lap	283.88 m.p.h.
Second lap, forced landing near Cowes, re-turned to Caishot.	

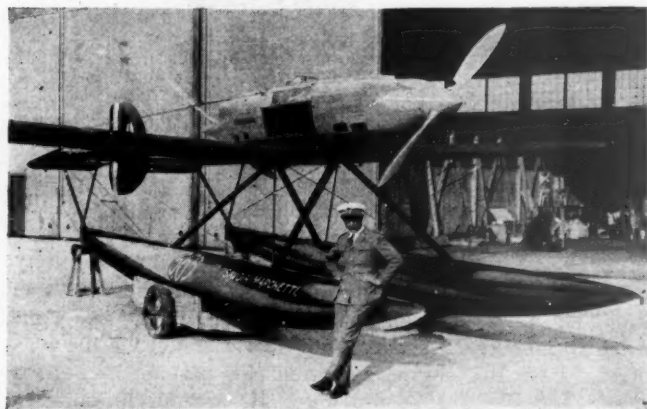
Monti Macchi 67

First lap	301.47 m.p.h.
Second lap, forced landing near Hayling Island.	

Table I

left for cooling surfaces and even the pontoons were used on most planes.

The Gloster-Napier plane was a beautiful piece of work and it was the more disappointing to everyone that it could not be ready to enter the Race. It looked very fast and from an airplane standpoint, was the cleanest of the British designs. One of its notable features was that its wing was thickest at the point of support of the bracing wires outboard and was tapered in section and in cord not only at the wing tip, but very noticeably at the body, undoubtedly reducing a bad parasite drag at the root of



Warrant Officer Dal Molin and the twin-engined (tandem) Savoia Marchetti which did not compete

the wing. This plane weighed about 3700 lb. loaded with a stepped-up Napier racing engine (3 banks of four cylinders) geared for a fairly high speed propeller and giving about 1100 hp. This plane in its test flights had a beautiful take off under all conditions and appeared to handle very well in the air, but on turns, due to a combination of troubles in the gas system and the location of the air intakes lost engine revolutions very badly. This difficulty was not overcome in time for the Gloster plane to be entered in the Race.

The Italian Macchi 52 plane with the 800 hp. Fiat engine is the familiar plane of two years ago and the one which last year broke the world's speed record. The new Macchi 67 is a very formidable looking plane, although it has practically had no testing, excepting in the flights just preceding and during the Race.

The Italians brought over two additional planes for exhibition. One, a tiny little Fiat racer with 1000 hp. Fiat engine, which, from a standpoint of workmanship was the most beautiful piece of work at Calshot, but which did not fly at all, as one understands the landing and take off speeds were pretty high even for this test. The other plane was the much discussed Savoia-Marchetti tandem monoplane. In this plane a very beautiful stream lined powered "egg" replaced the usual fuselage. At each end of it is a 1000 hp. Fiat engine extremely well cowled and in between sits the intrepid aviator, thus "completing the sandwich." On either side of the rear propeller tips are booms from the wings which join booms from the floats to hold a tail structure that was surprisingly rigid. There is no doubt this machine would fly although the pontoons looked very needlessly long and whether or no it is fast would largely depend upon the efficiency of the rear propeller which to develop reasonable thrust would have to throw back air in a slip stream of about 600 m.p.h.

In general the British planes and the M67 followed

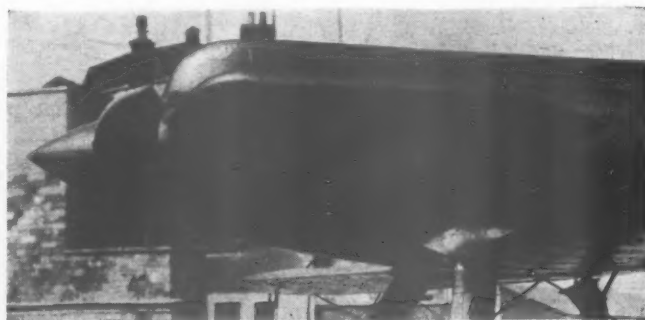
faithfully along the classical design of racing monoplanes with twin floats which was introduced in the original Macchi 39 which won the Schneider contest at Hampton Roads in 1926. The Italians have kept close to this design. The British have modified it slightly by great improvement on the body shape and particularly by a quite different fin and rudder which on the British planes is noticeably high and entirely above the thrust line. This, it is claimed, greatly eases the ability of the plane to make nice turns and certainly from the look of the way they handled, the British planes seem to take and hold their backs very nicely.

Torque effect on the off side pontoon on take off was very noticeable on the geared down Supermarine but instead of offsetting the pontoon there was merely more fuel carried in one than the other.

In all the planes in the Race the amount of "plumbing" in carrying the gas from the pontoons to the engine, and the water from wing radiators to headers, and also from pontoons to headers, and the oil from side radiators along the body to oil tanks in the fin and then back to the engine, and what not—made one dizzy, but it seemed to work.

The great question of flutter was, of course, the subject of much hangar gossip. The general conclusion of competent opinion, however, seems to be that rigidity is the only way to stop wing flutter and that the best thing to do with the controls is to make the hook-up of the control surfaces to the stick with an absolute minimum of play. Whether or not differential control movement is used does not seem to bother the pilots as much as an absolute absence of any play, and this was achieved by a perfect mechanical fit of lever controls with bell cranks and push and pull rods of perfect mechanical rigidity.

Pontoons on the British planes were of dural with all rivets countersunk. On the Macchi the pontoons were of



Showing the well stream lined nose of the Gloster-Napier 6

vener. All pontoons had very shallow steps of only $\frac{1}{2}$ -in. depth and no vent tubes. There was nothing novel in the lines.

In general, future developments for further increase in speed will mean not only added power but the advent of variable pitch propellers and possibly chemical cooling to reduce the size and weight of the radiating system. One is impressed from this race with the fact that water-cooled engines are by no means entirely replaceable by air-cooled engines, particularly in the class of really high horsepower, such as these.

The contest is a splendid proving ground for most valuable developments in the art, and should be encouraged and participated in to the utmost, despite the expense, as it is well worth it particularly for the winning country.

THE FIRST NATIONAL *Air Traffic Conference*

By JOHN T. NEVILL

THE FIRST National Air Traffic Conference of the Aeronautical Chamber of Commerce of America was called by F. B. Rentschler, president of the Chamber and Col. Paul Henderson, president of the American Air Transport Association, when it was deemed time that the operators get together and take stock of one another, each with a common view toward the betterment of their respective stock in trade. Their stock in trade being airplane travel, their common aim at the Kansas City meeting was to ascertain ways and means to improve it, polish it up, and sell it in wholesale quantities to the American public as an economic necessity.

There seems little doubt, to this writer at least, but that the Kansas City confab, which was held Sept. 16, 17 and 18, will prove of inestimable value to the operators participating in it. A number of able papers, covering almost every phase of air traffic business, were presented and the discussions of those papers were as intelligent and as sound as they were educational. Despite some rather startling and, in some respects, bitter trends predicted and advocated during certain parts of the proceedings, and despite the somewhat keen competition between some of the operators attending, the Conference was almost amazingly harmonious. Harmony and concerted effort, incidentally, seem to be one of the most fascinating characteristics of the aviation industry, and that characteristic is an industrial asset.

Imagine hearing a delegate move that the Conference pass a resolution asking for governmental regulatory powers over airline rates. Or picture a delegate or two advocating concentration on the development of air express, as being far more important and lucrative than either passengers or mail. The latter claim, perhaps, is true, but consider that falling upon the ears of men whose lines carry nothing but passengers. Yet, those things and others like them were discussed sanely and amiably, and with no scarring after-effects. In any other industry this probably would not have been so.

The First Annual Air Traffic Conference passed no resolutions, it being deemed out of its province to do so. However, many good thoughts, suggestions and recommendations were produced, to be directed toward possible beneficial accomplishment through the proper channels.

The gist of everything taking place at the Conference was contained in 11 reports handed in by 10 committees appointed by the arrangement committee early in the Conference, and read and discussed on the final day. These committees, each containing eight or more persons

picked as being versed in the respective problems to be discussed, were as follows:

1. Airports—C. C. Cole, superintendent of operations, Western Air Express, chairman.
2. Accounting—Damon R. Howard, assistant treasurer, Universal Aviation Corp., chairman.
3. Communications—Herbert Hoover, Jr., radio expert, Western Air Express, chairman.
4. Publicity and Advertising—R. A. Bishop, general traffic manager, Universal Airlines, chairman.
5. Facilities for Handling Passengers—W. A. Patterson, general traffic manager, The Boeing System, chairman.
6. Ticket Sales and Solicitation—Miss Amelia Earhart, assistant general traffic manager, T. A. T., Inc., chairman.
7. Standard Baggage Weights—King Young, general passenger agent, Southwest Air Fast Express, chairman.
8. Insurance—H. J. McNally, assistant general traffic manager, Universal Airlines, chairman.
9. Developing Air Mail and Express Traffic—J. W. Sabin, general passenger agent, Universal Airlines, chairman.
10. Handling Air Mail and Express—Clifford Ball, president, Clifford Ball, Inc., chairman.

THE CONFERENCE was formally opened Monday noon, Sept. 16, by a luncheon presided over by Luther K. Bell, assistant general manager of the Aeronautical Chamber, the principal speaker being Col. Halsey Dunwoody, executive vice-president of Universal Aviation Corporation. An address of welcome was tendered during the luncheon by Mayor Albert I. Beach, of Kansas City. Charles L. Lawrence, vice president of the Chamber, who was to have delivered the response, was unable to appear.

Colonel Dunwoody, for the most part, confined his remarks to a review of air transport in America, from pre-war days to the present time. However, following a statistical review of today's air transport status, he launched into his subject, a declaration of the meeting's purpose, by declaring that the Aeronautical Chamber and the American Air Transport Association had called the Conference in order that the operators attain certain needs, "which may be enumerated as public confidence, increased patronage, constantly improving service, and better practical organization."

Immediately following the luncheon's adjournment the delegates re-assembled in more spacious quarters to begin

the first day's afternoon session, a meeting meant to cover the general problem in air traffic. In the absence of Col. L. H. Brittin, vice-president and general manager of Northwest Airways, Inc., who was to have been Chairman of this session, Maj. Gen. John F. O'Ryan, president, Colonial Airways, Inc., presided. Although the discussion relative to the papers read during the afternoon session proved disappointing from the standpoint of quantity, what discussion there was was extremely interesting. It is regrettable that the session's



Left: Capt.
Ralph Higgins
of National Air
Transport, Inc.

Right: Col. Harry H. Blee,
Chief of Division of Airports,
Department of Commerce

three excellent papers—"Air Transportation, Its Inception, Development and Present Status," by Col. H. H. Blee, "Traffic—the Foundation of Air Transport," by C. W. H. Smith, and "The Problems That Confront Us and How the Conference Proposes to Study Them," by T. B. Clement,—did not evoke more willing discussion from among those present. It seemed that virtually all of the remarks made from the floor came from persons other than the air transport operators themselves, i.e., from the so-called accessory and co-operating delegates, rather than from the operators to whom the Conference held the most vital import.

THE PAPER read by Colonel Blee, chief of the Division of Airports and Aeronautics Information, United States Department of Commerce, was, as its title might promise, rife with figures as to the present condition and performance of air transport.

"In the United States today," he declared, "there are some 46 air transport companies flying 75,000 miles per day, and carrying, in addition to thousands of pounds of express and large numbers of passengers, over 6,000,000 lb. of air mail per year. Moreover, of this daily scheduled operation, about 25,000 miles are being flown during the hours of the night. In spite of this impressive figure, we have not yet scratched the surface of future possibilities.

Colonel Blee outlined the work of the Federal government in attempting to bring about four essential elements of physically successful air transport, the elements being (1) airworthy craft, (2) competent pilots, (3) suitably

equipped airways, and (4) conformity with standard air traffic rules.

Speaking of air mail, express and passenger service, Colonel Blee said our monthly air mail poundage had increased from 140,000 in January, 1928, to 698,062 in August, 1929. "During the first six months of 1929 air mail operators flew 5,664,373 miles on domestic routes and an additional 715,403 miles on foreign routes,—making a total of 6,379,776 miles. During this period the total weight of air mail dispatched amounted to 3,468,562 pounds." Some idea of the potentialities in the development of air mail, according to Colonel Blee, can be seen in the \$675,042,635.05 postal revenue collected by the United States government last year.

IN THE NEXT PAPER, C. W. H. Smith, general traffic manager of Western Air Express, stated that he believed that "the development of air express is the big thing for air transport operators in the future.

"I am convinced," he said in part, "that it will prove of more value to major air transport concerns than will the hauling of passengers. It will prove as important to us, and probably more so, than will our air mail contracts. But there is one essential requirement—bigger and better airplanes, and we all know that such airplanes are being built.

"Let me illustrate this point by citing the 32-passenger, four-engined airplane now being constructed by the Fokker Aircraft Corporation. As a passenger carrier that plane can carry 32 persons for daylight flying, or 16 when the berths are made up for night flying. But suppose we turn that airplane into an express carrier. It will have a useful pay load of between three and four tons. At nominal rates we could fill that airplane with express and make more out of the trip than if we carried a full load of passengers. By nominal rates I mean rates equalling those charged by surface transportation mediums.

"In other words, I believe that within the next two years aircraft development will have so advanced that we will be able to carry express at the same rates as now charged by railroads, and we will be able to make delivery three or four times as rapidly."

Early in his paper Mr. Smith stated that commercial aviation in the United States relies upon three elements for its support: First, air mail; second, passengers; third, express. Aside from his most interesting views as to the future importance of air express, the remainder of his paper was a discussion of mail and passenger elements.

The paper read by Mr. Clement, general traffic manager, Transcontinental Air Transport, Inc., was the last of the afternoon session. Because the subject matter of his paper contained the very essence of the First National Air Traffic Conference, in so far as passenger traffic is concerned, and because he was a member of the committee drafting the program, we take the liberty of quoting him at considerable length. The speaker explained that his paper related principally to the passenger because he believed "the program indicated that phase of air traffic was the major problem before the Conference."

"The answer to the question, How may we immediately increase air passenger traffic?" Mr. Clement asserted, "must be found in an analysis of the points of sales resistance and obstacles confronting us. I have seen fit to divide the subjects to be discussed at this meeting into three classes.

"First: Those matters upon which a perfectly frank discussion is always mutually helpful, but upon which

this Conference can take no definite action, except in so far as they are able to develop the combined ideas of those interested in the business for the benefit of the whole.

"Second: Those matters upon which it would be well at some time to have some uniformity of policy among the carriers, but matters which seem to be impossible of solution at this time due to our paucity of experience.

"Third: Those matters which should be immediately removed from the realm of competition and which it is to the interest of all of us to solve at this time.

"There are four general problems which, in our opinion, belong in the group of subjects upon which a general discussion should prove beneficial. The first item in this group is the problem, how can the operations end of our business contribute to the immediate growth of traffic? It has been only recently that our operating friends have begun to realize that they can do much to help traffic, and that there are many suggestions in regard to operations that those experienced in traffic can make to result in a greater volume of business. We of the traffic department are vitally interested in airports, in communications, in service to passengers, both aloft and aground, and so on through many of those problems which, heretofore, have been considered purely for those of the operating department. If this Conference results in nothing else but a closer relationship between the tech-

we all can afford to get together for an exchange of ideas. We shall be interested to hear, developed under this heading, the various opinions of our associations on such interesting matters as air-rail problems, consolidated ticket offices, consolidated time tables, creation and distribution of printed matter, the value of various so-called 'stunt' means of selling the service, whether this particular type of service needs a new type of selling, or whether we should apply the fundamental principles that govern the sale of other forms of transportation."

THE FIRST ITEM in his second classification—that of matters upon which it would be well to have a uniform policy, but upon which additional experience is required before solution is possible—was described by Mr. Clement as "that very touchy subject of rates."

Concerning this matter the speaker said: "We, who sell air transportation today, I think, realize that one of our chief points of sales resistance which must be overcome is the cost of air travel. Two different schools of thought have developed on this problem, one that low rates, and by that I mean rates that cannot possibly guarantee a profit, will have their effect in increasing volume, thus, by spreading the gospel of aviation, will bring about profitable operation more quickly than the ideas in that other school of thought, which believes that rates, from the start at least, should offer some close relationship with cost. There is another problem under this heading which many of us hesitate to approach, but which, sooner or later, will have to face, and that is whether it is to our advantage to operate as a private or a common carrier.

Another matter in this classification, Mr. Clement stated, should be the legal aspects involved in aviation, particularly, that very serious matter of liability, on which there has been very little law developed by our courts up to the present time. Still another problem, he said, is the matter of insurance both from the angle of the passenger and for the protection of the carrier, and lastly "the rather difficult problem of interchange of through line traffic."

"Now we come to class three, in which group, as I have said before, I have seen fit to include problems which not only confront but vex us all, and which, if left in the realm of competition and without uniformity of action, will do none of us good and all of us harm in the end. Furthermore, they are all problems which should be immediately solved.

"First in this group are the rules and regulations which the traffic departments of all airlines have drawn up and published in their memorandum tariffs under the heading 'General Conditions.' Certainly these so-called

general conditions should be the same for all lines. This would not only result in eliminating confusion in the minds of passengers, but would erase much dissatisfaction, and become one of the first steps toward making air passenger travel a normal and uniform thing like rail and ocean travel. We all say that we are striving for the day when air transportation will be accepted as a definite part of the general travel system of the world. Certainly this can never happen should each and every one of us have different and diverse petty rules and regulations. Specifically, there should be no difference as to the provisions for the handling of baggage, cost of excess, and amount carried free. We should all have the same regulations as to when and how refunds on cancelled tickets may be made. Certainly we should all have the



T. B. Clement, general traffic manager, T.A.T.

Harris M. Hanshue, president, Western Air Express, Inc.

nical side of our business and the selling organization, it will be productive of great good. We even believe that our friends of the accounting department may be of great assistance to us who are given the responsibility of selling.

"In this general class, also, we have included the interesting problem of publicity and advertising. I have placed this problem in this group because I know of no subject under the sun on which there are more absolutely diverse opinions.

The last and most important—methods of selling air transportation and an exchange of traffic building ideas—has been included in this group for the reason that it will never be removed from the realm of competition, nor should it be. But it will always be a matter upon which

same rule in regard to fares for children. In fact, we could take up the tariff of any one of us here today, go through it paragraph by paragraph, and develop a uniform set of general conditions to the injury of none and the advantage of all.

"I also believe the time has arrived when we should all get together and develop strict and uniform regulations for the granting of free transportation. There was a time when some of us felt that the carrying of free passengers was one of our best selling mediums. I believe now, however, there is a possibility of much abuse of that privilege. I do not wish to say what the policy of the lines should be on that subject, but I do declare we should determine a fixed policy. Another matter that we should consider and take action upon is the so-called 'party business.' Unless we do develop regulations to which we will all adhere on the handling of group or party business, the day is not far off when embarrassment will be suffered by all of us. We should have some definite regulations as to how many people are necessary in order that the business be considered a party, and what discount should be made."

MR. CLEMENT lastly took up the problem of commissions to agents and the problem of the agency itself. He urged the operators to set a commission rate "to which we all can adhere—a rate applicable to various types of business, satisfactory both to the agents and to the lines. Relative to the agency, the speaker said: "If we could agree on some standard form of appointment, some standard system of remittance, if we could get together on the agents and classes of agents that we wish to appoint, if we could have some central body that would have general supervision over the performance of agents, all of us will be relieved of much work that will profit us little, and we will have considerable more time to spend in the general advancement of the industry and the increase of air traffic."

By far the most important part of Tuesday's program was the meetings of the 10 committees, the membership of which had been announced by General O'Ryan as the last action on Monday. The meetings were held in the afternoon concurrently with a general session of approximately 50 chambers of commerce, the latter of which convened for the definite purpose of determining their work in the promotion of air transport. The morning program was comprised of a general session of the operators, at which a paper entitled "Rate Making and Operation Costs," by Erle P. Halliburton, president of Southwest Air Fast Express, was read by A. F. Winn, of the Halliburton organization.

Mr. Halliburton's paper definitely advocated governmental regulation of air line rates, suggesting the formation of a body similar to the Interstate Commerce Commission, which would have regulatory powers over all phases of commercial air transport. The paper charged that present air passenger rates discriminate against individual passengers, and that mail contracts discriminate between localities. It cited the harmony resulting from such regulatory powers vested in the government by railroad interests, and urged the Conference to go on record as either favoring or disfavoring such a move.

When Chairman O'Ryan asked for discussion on the Halliburton paper William P. MacCracken, retiring Assistant Secretary of Commerce for Aviation, expressed what appeared to be the unanimous opinion of those present (except for Mr. Winn) when he very

forcefully and emphatically disapproved the solicitation of any such "help" from the government. Mr. MacCracken pointed out that "it may be true that government regulation of railroad rates had eliminated some discord and throat-cutting among the railroads, but that it must be remembered that railroad rates were not regulated until the roads were about 75 years old." Such powers exercised over the air transport industry at this time, he said, would be "putting chains on the industry and seriously hampering its progress."

The second and concluding part of the morning program consisted of brief talks on effective traffic getting plans by 12 or more executives of as many air transport companies. These talks concerned largely the various selling methods now more or less generally employed by many of the operators. Especially interesting, however, was the talk of Ralph Westing, business manager, Pitcairn Aviation, Inc., who urged elimination of the word "safety" in selling air travel to the public, and the paper of Sumner Sewell, of Canadian Colonial Airways, which dealt with his company's newly inaugurated commutation ticket system.

"We all know," declared Mr. Westing, "that air transport is not safe as compared with other modes of travel, and to continually emphasize that it is safe has the psychological effect of creating suspicion in the minds of those we approach."

This belief was not shared by A. W. French, of Pan-American Airways, who declared that safety was the first real sales point, in his opinion, that traffic men should put over. Speed, scenery, fascination, comfort, or any other advantage air travel has to offer, he said, are worthless unless a passenger feels his security in the air.

"Fifty-trip commutation tickets are proving themselves an economic asset on our line," Mr. Sewell said. "When our first 50-trip ticket was announced, its pitfalls were immediately pointed out. We were told that it would undermine our regular rate, that it would soon get out of control, and that in time it would result in the commuter crowding out our full rate passengers."

"Instead, we have found that our commutation ticket holders are our best salesmen and have definitely sold many of their friends on a one-way trip. Approximately 11 per cent of our gross profits now come from commuters' tickets between New York and Boston. We have 570 such trips now standing on our books. On 99 per cent of these flights commuters are riding in the theoretical 30 per cent unfilled space on board the planes. So you can see the economic soundness of the commuter's ticket."

The commuter policy of Colonial, the speaker said, has been in operation for 3 months, and is competing against a 5½ hour day train ride. The plane trip is approximately 3 hours long, and its fare is approximately three times the rail fare.

THE MEETING of the chambers of commerce in the early afternoon was presided over by Lou E. Holland, executive manager, Kansas City Chamber of Commerce, and was addressed by W. G. Herron, Scenic Airways, Inc.; B. F. Myers, assistant superintendent of air mail service, Chicago; Allen J. Furlow, Curtiss-Wright Corp.; R. W. Ireland, National Air Transport; and Harvey J. Campbell, Detroit Board of Commerce.

Both the morning and afternoon sessions on Wednesday, the final day of the Conference, were taken up entirely by the reading of the committee reports and the discussion on them. Mr. Smith, of Western Air Ex-



Sumner Sewall, general traffic manager of the Colonial Lines



Herbert Hoover, Jr., radio engineer Western Air Express, Inc.



Lou E. Holland, executive manager, Kansas City Chamber of Commerce

press, presided over the forenoon meeting, the afternoon session being under the chairmanship of Stanley E. Knauss, vice-president and general manager of Stout Air Services, Inc.

THOUGH, for obvious reasons, the committee reports cannot be detailed here, it might be interesting to summarize them in their scheduled order. The airport committee recommended the speeding of ground operations at all landing fields to eliminate loss of time gained in the air, and agreed that cities hoping to retain and increase their air transport business must provide ports closer to their respective business centers. "This problem," the report stated, "may solve itself in some of our larger cities by the establishment of terminals in or near the heart of the city, with hangars, shops and servicing facilities at outlying fields." Although pointing out that the so-called "run-way" fields are the easiest to control, the committee recommended the use of taxi-ways to eliminate time lost, as well as hazard experienced, when one plane is taxiing over a run-way which another plane preparing to land is waiting to land upon.

It was also recommended that the uniform code of airport rules being drawn up by the Department of Commerce, be adopted nationally as soon as possible.

The committee on accounting reported that it "felt much thought should be given to the standardizing of inter-line accounting," and recommended a uniformity of practice among transport operators to simplify accounting methods. To limit the necessity of establishing credit departments "and at the same time waiving the requirement of a security of the so-called hotel porter and agents of like nature," the committee urged that credit be limited to a weekly basis.

In reporting on communications that committee staked its hopes upon the perfection of two-way radio communication between planes and the ground and pointed out that the Federal Radio Commission has decided to license any airport to use a low power transmitter with a range of 10 to 20 miles on a wave length of 1,060 meters. "The itinerant flier, therefore, needs only to have a long wave receiver to cover everything he needs to know. Such planes will be permitted to send on a

wave length of 98 meters, thereby making it possible for them to establish two-way contact when within range of an airport."

The committee deplored the misconception that the public will be permitted to use aircraft radio apparatus for making personal telephone calls, stressing that "such conversations would seriously jeopardize the use of the apparatus for its primary purpose, and should be permitted only at times of the gravest emergency."

Continuation of the "open-door" policy in giving out information about accidents was recommended by the committee on publicity and advertising. "It is the feeling of this committee," the report read, "that in cases of such accidents, the operators should deal openly and frankly with the press, telling the truth and the whole truth." The committee also commended the press of the country for its efforts to be fair and impartial in reporting aviation accidents, and stated that it felt the Aeronautical Chamber of Commerce has taken "an important step in urging the newspapers and press associations to specify in reports of accidents whether the plane and the pilot were licensed or unlicensed."

Elimination of publicity based upon the "heroics of flying" was urged, and, the committee reported, "it is not good policy, from the standpoint of publicity, to have passenger pilots perform stunts as a means of attracting attention to the airlines with which the pilot is connected."

THE COMMITTEE appointed to study the handling of passengers turned in the following recommendations which were amplified in the report: One fixed route from pickup point to airport. All baggage weighed and checked at downtown office when possible. Protection of baggage from damage while in transit. Encouragement of airport operators to provide adequate transportation facilities between ports and downtown, as well as suitable depot facilities at the airport. Strict adherence to schedule. All equipment inspected, cleaned and disinfected after every flight. Cold, fresh drinking water, strip maps, instruments, and literature be kept in the cabin, as well as writing material and postage stamps. All flying and ground personnel who come in contact with passengers be uniformed. All employees be in-

structed to refuse tips. Intoxicated persons kept off planes. Planes properly ventilated in summer and winter, with sufficient heating in winter. Pilots instructed to fly at altitudes conducive to the greatest comfort to passengers. Manufacturers encouraged to design more comfortable chairs and work toward elimination of noise. Hangars, providing they must be in sight of passengers, be kept as neat as possible.

A commission to agents, not exceeding 5 per cent was recommended by the ticket sales and solicitation committee, although that committee had no recommendation to make relative to an over-riding commission to general agents. The committee also recommended that "all companies be urged to circularize other companies advising them as to changes in operations, schedules or tariff," and that "some agency be established for periodical publication and distribution of information regarding the schedules and tariffs of all lines."

All lines should limit their baggage carried free to 30 lb., and above that weight, up to 50 lb., an excess rate of one-half of one per cent of the passenger fare should be charged, it was reported by the committee on baggage weights. For any baggage weighing above 50 lb., special arrangements should be made with the operating company, the committee believed. The committee asked the Conference to urge all operators to insist upon collection of excess rates. Failure to do so, it was said, would embarrass other companies.

The insurance committee of the Conference recommended that the main insurance committee of the Aeronautical Chamber secure from various insurance organizations complete information regarding restrictions or limitations as to time or to coverage in relation to the use of air travel. "Since a percentage of the general public is deterred from using air travel because of lack of knowledge concerning the effect upon their life insurance," the report stated, "this committee recommends that the main insurance committee prepare a memorandum on this subject and furnish same to member transport companies that they, in turn, might correct any misunderstanding on the part of the general public."

No attempt should be made to induce the use of air mail, except to points where there is a distinct saving of time, it was reported by the committee on development of air mail. The committee's paper, one of considerable length, but of exceeding interest, went into detail as to what it termed the three essential factors, "making toward the successful sale of air mail. First, making the service easy to use. Second, informing the public of the service and the proper method of using it. And third, delivery of satisfactory service." A second paper tendered by the same committee stated that the committee "felt that the subject of air express was the most important study of the entire Conference," and urged its development to the greatest possible degree.

THE COMMITTEE on the handling of air mail and express urged further experimentation with, and development of, a pick-up device that would eliminate the necessity of mail planes landing on many airports. "In the final analysis," it was said, "time saved is the deciding factor in the success or failure of transportation of cargo by air." The committee also advocated the proper routing of mail, both on the ground and in the air, as one means of improving the service.

"In an endeavor to enable many cities to dispatch their mail direct to the point of destination," the report pointed

out, "avoiding the unnecessary delay occasioned by 'working' it enroute, the Postoffice Department, by Oct. 1, this year, will place in use 3,000 small mail pouches having a capacity of 5 lb. each."

While the discussion from the floor on these reports was disappointing from a standpoint of volume, what discussion there was was well worth listening to. One delegate, for instance, took exception to a recommendation of the committee on the handling of passengers, by doubting the wisdom of placing instruments, particularly altimeters and air-speed indicators, in the cabin. The air-speed indicator, he argued, so often misrepresented the actual speed of the plane (reading much lower than the line's advertised speed) that its presence in the cabin created in the mind of an observant passenger the suspicion that he had been deceived. The altimeter, dropping for a reason not understood by the layman, was likely to cause some passengers to believe the plane is sinking despite an apparent effort by the pilot to maintain a uniform height.

ANOTHER INTERESTING QUESTION discussed was the policy of smoking aboard passenger transports. Opinion on that score was about evenly divided, each speaker giving his reasons, which were too obvious to mention here. Still another discussion related to carrying of intoxicated ticket purchasers. An amusing angle was brought up during this period when one of the delegates, whose line operates to and from one of our neighbor countries, famous, or infamous, as you please, for its liquor, stated that if his company refused to carry all persons who were, in some degree, intoxicated, they might as well go out of business.

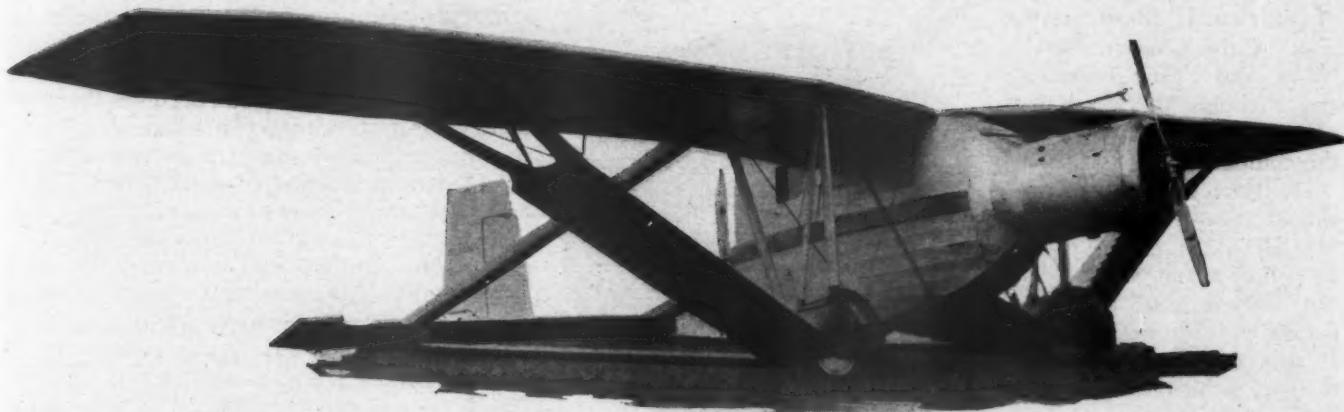
"One reason some of our passengers ride our airline," he explained, "is that they are not capable of driving their automobiles."

Seriously, though, the question proved one well worth debating. Another operator said his company, after advice from its legal department, had adopted a policy of putting boisterous and troublesome "drunks" off their planes. "Some time ago," he stated, "I issued an order instructing all of our pilots to land at the closest airport in an event of this kind, and eject the inebriate from the craft."

It was pointed out during this exchange of ideas that the Department of Commerce regulations forbade pilots to carry such passengers.

Another problem akin to this one that was aired, revealed that lines in certain sections of the United States already have in effect a theoretical "Jim Crow law of the air." Due to the total lack of experience on the part of a major portion of those operators present at the time the question as to the carrying of negroes, whether assigned rear seats or barred entirely, was short-lived on the floor. This lack of such experience, in the writer's humble opinion, is probably due to two factors—one being the relatively high cost of air travel, and the other being an apparent instinct among our dark-skinned brothers to "fly with at least one foot on the ground." The comparatively high cost of airplaning, let us hope at least, will not always be so high, and when that time arrives it may be that the negro race, as a class, will have become air-minded enough not to become a "Jim Crow" problem, after all. It is reasonable enough, in this connection, to assume that if, and when, negroes do take the air the problem will be a sectional one, such as it is in other modes of transportation today. At any rate, it's food for thought.

THE BELLANCA *"Tandem"*



ONE of the most original aircraft designs developed in several years is the recently completed Bellanca Tandem, which is intended to be used in a projected endurance flight sponsored by the Chicago Daily News. This airplane is now being test flown at the field adjacent to the plant of the Bellanca Aircraft Corporation, New Castle, Del. It is the most recent creation of Giuseppe M. Bellanca, president and chief engineer of the company.

Because of its high degree of originality, it is difficult to compare the Tandem with existing types. However there is an element of resemblance to the Bellanca Model

K plane "Roma", which was built more than a year ago and has been described in detail in the June 11, 1928 issue of AVIATION. This similarity is found in the wing bracing which represents in general an advanced form of the lifting struts developed by Mr. Bellanca. The attempt to derive lift from all major units of the airplane is definitely noticeable to even a greater extent than in other Bellanca designs.

Probably the most radical departure from conventional practice is the tandem engine installation in the nose where two Pratt & Whitney Wasp engines are installed back-to-back. The forward propeller is coupled to the

forward engine in the usual manner while the rear propeller, which is of the pusher type, is driven by a shaft passing through the fuselage or cabin structure. This structure, the length of which constitutes slightly more than one third of the overall length of the airplane, is streamlined to a sharp vertical edge at the rear. Tail surfaces are attached by means of outriggers to the wings. For this reason the cabin structure does not conform strictly with the definition of the word fuselage as contained in N.A.C.A. Technical Report, "Nomenclature for Aeronautics".

The purpose of this design is to provide a multi-engined airplane retaining the efficiency and maneuverability of a single engined craft. By mounting the engines in tandem, the frontal area is virtually the same as if but one engine were used, while the load carrying capacity is considerably increased. This arrangement has the additional advantage that if one engine fails, the dead engine does not offer additional resistance, nor does it have the same effect as a wing engine failure on the control of the aircraft.

The Bellanca tandem has an overall span of 83 ft. 2 in., an overall length of 44 ft. 2 in., and an overall height of 12 ft. 9 in. The chord of the upper wing is 9 ft. 6 in. The fuselage length is 25 ft. and the height 9 ft. while the span of the horizontal tail plane is



G. M. Bellanca, Shirley J. Short and J. L. Houghteling standing near the plane

30 ft. The span of the lower wing panel is 9 ft. A wing area of 912 sq.ft. is obtained. The weight empty of the plane is 7,000 lb., and it is expected that when fully loaded, the gross weight will be in the neighborhood of 18,000 to 21,000 lb.

In addition to Mr. G. M. Bellanca, credit for the work is partly due to the efforts of Shirley J. Short, staff pilot of the Chicago Daily News, and Frank Bellanca and Nicholas V. Balashoff, construction engineers for the company.

Design details are the result of an idea conceived by Mr. Bellanca several years ago, but actual work was not started until approximately eighteen months ago. It was necessary to resort to basic principles in many instances in the engineering work because of the originality of the design. After several months of investigation, and study, detailed work on the design was started and actual construction began a short time later.

THE FIRST MODEL being designed for a definite purpose, is somewhat different in internal arrangement than later airplanes of this type that are planned. Mr. Short has co-operated with the designers in laying out the general arrangement of the plane. Inasmuch as the aircraft is to be used in an endurance flight, much of the interior space is occupied by gasoline tanks. A double deck passenger plane is planned, using the same design.

Two oil tanks, each having a capacity of 60 gal., are placed at the forward end of the fuselage directly behind the engines and are fitted with an adjustable ventilation system to regulate the temperature of the engines. A fire wall separates these tanks from a 1,500 gal. gasoline

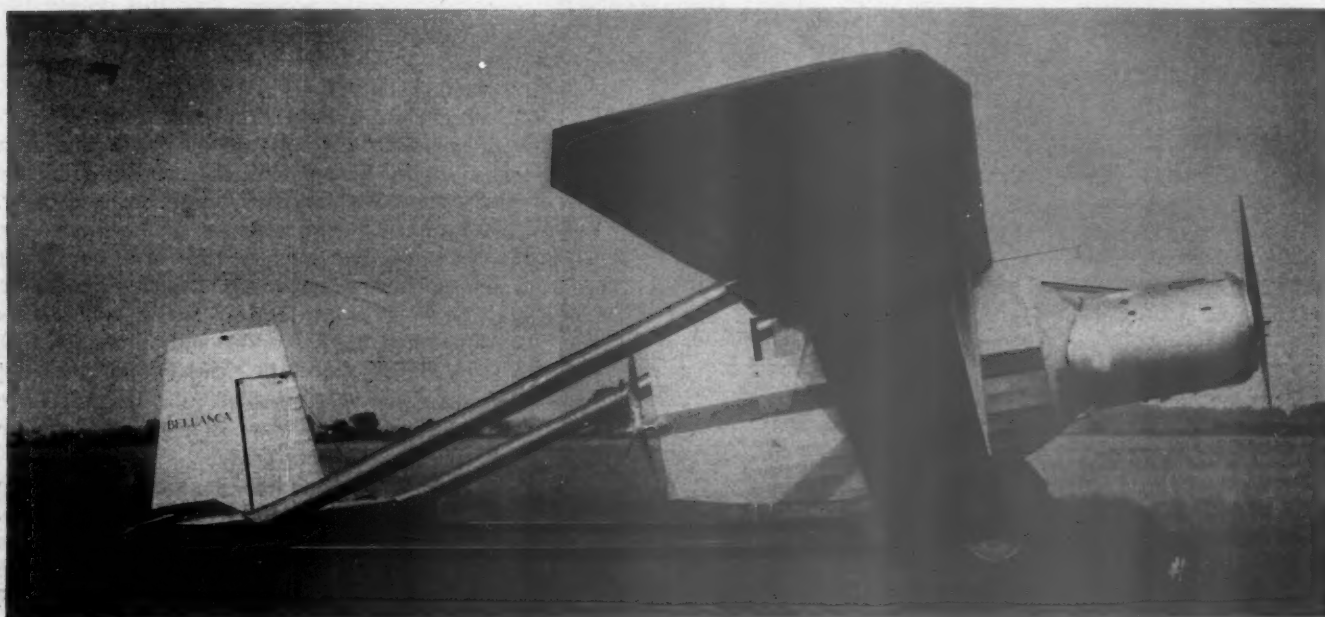
tank in the fuselage. This tank is of heavy aluminum sheets welded, with bulkheads to prevent gasoline from swashing. The tank is divided vertically into two parts, each feeding a different engine, with provision that the gasoline on either side may be pumped into the other side or that the sides may be dumped independently.

Provision also has been made to close the tanks easily to provide buoyancy in the event of a forced landing on the water. The 1,500-gal. gasoline tank extends backward to the pilot's instrument board and occupies the complete cross section of the fuselage. An aperture has been made through its center to accommodate the propeller drive shaft. Pilot and co-pilot are located behind the main gasoline tank and above the drive shaft level in the present installation. Below them is an auxiliary tank of 230 gal. capacity. Two wing tanks, also of large capacity, bringing the total to more than 1,800 gal., are installed.

The engines are mounted back to back as closely as possible and inclosed in cowlings of cylindrical shape which forms the nose of the airplane. The rear engine drive shaft has a diameter of approximately four inches and passes through the fuselage to a point at the rear where a three blade steel propeller is mounted. The drive shaft is mounted in self-aligning bearings which are lubricated by separate feeds in a Zerk System. The drive-shaft is housed in a duralumin casing and, being located along the center line of the fuselage, would not interfere with a double deck interior arrangement. The installation is the result of a long series of tests in which various forms of driving mechanism were tried and the present type finally adopted. The engine mount is a cantilever with a conventional type of mounting ring at the forward end to support the front engine. This mounting ring is braced to the fuselage by longitudinal members of heavy gage steel tube of large diameter. The mounting for the rear engine is also attached to these tubes. Tie rods are employed in the upper portion of the engine mount structure to in-



A close up of the right landing wheel showing the general construction



Side view of the Bellanca Tandem. Note the tall surface outriggers and tractor and pusher propellers



The Tandem in flight over the Bellanca Aircraft Corporation plant at New Castle, Del.

crease rigidity. The entire engine mount is readily detachable from the fuselage for repairs and substitution of engines.

The cylindrical cowling which incloses the engine except for openings in the front and rear end, is built in four sections. It is possible to remove the lower section completely or to swing either of the side sections on hinges located at their lower edges. This cowling is of single construction and, in this respect, is unlike that recently developed by the National Advisory Committee for Aeronautics which has both outer and inner portions, the inner cowling being intended as a deflector, and the combination of inner and outer cowling being similar in section to that of an air foil. Deflectors, somewhat similar to those used in N.A.C.A. cowling designs are provided for the individual cylinder of both the front and rear engines. The opening at the rear is of constant width and is not circular as in the case of the N.A.C.A. cowling. It is probable that some modification will be made in the cowling following preliminary test flights. The fuselage structure is streamlined and upper and lower surfaces have the characteristic curvature of all Bellanca fuselages. It is so shaped that a section through it at practically any point approaches a streamline. The fuselage structure is of six longeron construction and is built up of welded chrome molybdenum steel tubes. A considerable number of cross bulkheads brace it laterally. These bulkheads have been located and installed in such a position that they do not complicate the tank installation or encumber the pilot's cockpit. The structure is covered with fabric.

The pilot's fuselage compartment is situated in the upper half of the structure which has an overall height of nine feet, being much higher than it is wide. Entrance to the pilot's compartment is gained by means of a door high up in the structure on the right hand side. This door is reached by two steps built into the side of the structure. Dual control is provided by a single wheel which is hinged to the roof of the cabin in such a fashion that it can be swung before either seat. Rudder pedals are of the usual type with brake levers located only on the left hand set of pedals, the intention being that the

plane be flown from the left side. Engine controls are located between the pilot's seat and just above the main housing.

Ahrens controls are used for the engine because of the remoteness of the power plant from the cockpit. In the present model the rear engine is about 12 ft. from the pilot's instrument board.

Cables are used to actuate the controls and pass over ball bearing pulleys to duralumin horns of a special type. Elevator and rudder cables run through the upper outriggers from the upper wing through which they pass from the control cockpit. As the plane is intended to be flown from the left seat, fuel system controls are placed on that side of the cabin, while dump valve levers are located on each side of the instrument board.

A specially designed instrument board having a layout devised by Mr. Short, is mounted vertically in the control compartment. The instrument equipment was built especially for the installation by the Pioneer Instrument Company. It is complete and includes practically all devices required for blind flying. Two earth inductor compass indicators are mounted in parallel at the top of the board in order to preclude possibility of failure. The general position of the instruments is such that under normal conditions, indicators on all instruments will point toward the center of the board. By this means the eye is able to detect any departure from the ideal conditions.

IN THE LOWER PORTION of the fuselage, at the extreme rear, is the compartment intended for the radio operator. This compartment is entered through a door in the left side of the fuselage and, as the flooring through the center is not continued in this compartment, it is possible for the occupant to stand erect or to sit with his head against a specially provided headrest. It is also possible for this occupant to lie down on the lower tank in a space between the tank top and the floor of the pilot's compartment. The right hand seat in the pilot's compartment is furnished with an adjustable back which may be dropped to a horizontal position to provide a space for the co-pilot to rest. A window in the upper surface of the fuselage on the right hand side provides a possibility for the navi-

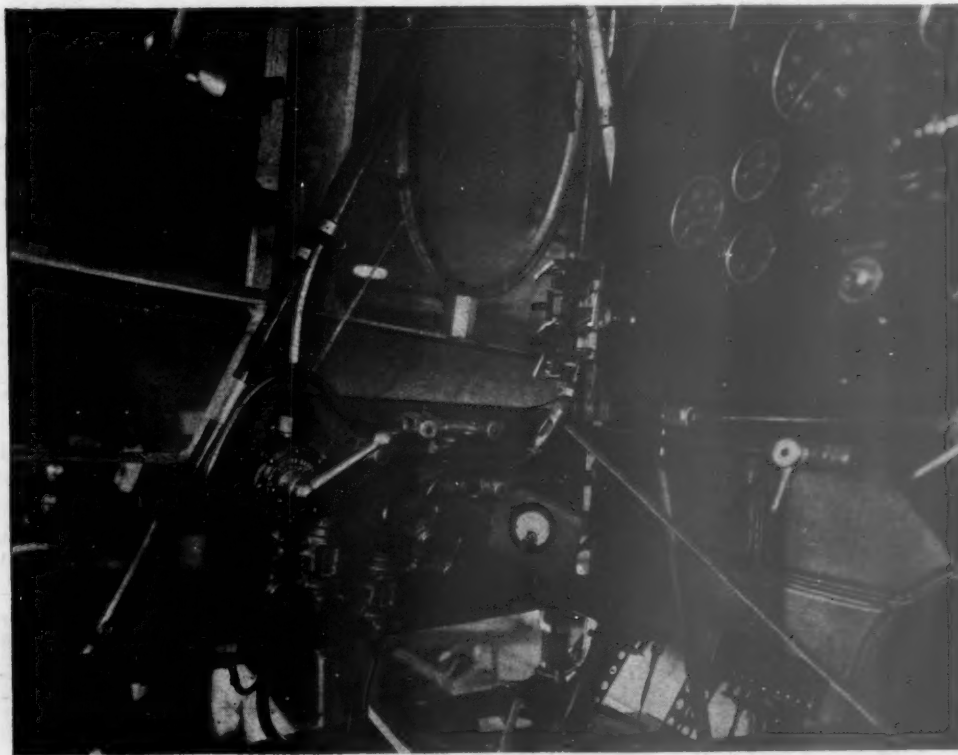
gator to make observations during the proposed flight.

Although somewhat modified, the wing bracing bears a strong resemblance to that of the "Roma," as previously mentioned. The bracing is of the two bay type with the inner bay somewhat similar to a conventional monoplane with negative dihedral in the lower wing setting and positive dihedral in that of the upper wing. The outer bay could be considered as a braced monoplane having a wing formed with the front and rear lift struts acting as its spars. In the tandem this wing, which is called the auxiliary wing, is of constant chord and thickness and in this respect the tandem is unlike the Roma. The outer portion of the upper panel is of conventional construction and the usual Bellanca airfoil section is employed. Routed wood spars, wood ribs and fabric covering finished in the usual manner are used. The wing is exceptionally deep, affording a deep drag truss and tending to produce a very rigid wing. Ailerons extend through the entire span of the outer, upper panels. Construction of the same type is used in the auxiliary

bay of the wing and the wheels are housed partly within the wing structure and faired into it. Each axle is mounted rigidly to the front spar of the lower wing of the inner bay. The front spar of the auxiliary wing is pinned to the other end of the axle. No shock absorbing device is provided excepting special 44x12 tires which are set almost 18 ft. apart. Direct landing loads are carried through the "N" strut to the upper wing and by heavy tie rods attached to the fuselage. The lower wing of this inner bay is tapered both in plan form and thickness ratio in such a manner that the spars are of constant depth and section throughout their span. The upper wing of the inner bay has the same airfoil section as the outer bay upper wing.

FOUR OUTRIGGERS are used to support the tail surfaces and are attached to the wings at the "N" type interplane struts. These outriggers are parallel in plan view. In side view the lower outriggers are parallel to the ground while the upper is joined to the lower at a point

below the stabilizer. The outriggers are of the hollow box type, the lower being faired with balsa wood and the upper streamlined with ribs similar to those of a wing with plywood cover. They are so shaped that, in flying position, a section parallel to the thrust is an efficient streamline form. Two heavy diagonal cables in the plane of the lower two outriggers are used for lateral bracing. Two tail skids, each fitted with an Oleo shock absorber, are attached to the rear end of the outriggers. Vertical and horizontal tail surfaces are of wood construction similar to that employed in the main wings. A single rudder is mounted at the center of the stabilizer and has an overhang balance similar to that of the elevator. The span of the horizontal tail surfaces is greater than that of the inner bay of the main wing producing a high aspect ratio. The area of this horizontal tail exceeds that of the



A portion of the pilots compartment showing overhead control column, fuel valve, rudder pedals and part of instrument board

wing, which does not extend the entire distance to the point of its attachment to the upper wing. The spars of this wing, however, are attached to the upper wing, acting as struts. They are streamlined with balsa wood and covered with fabric. One of the problems encountered in the building of this plane results from the fact that the spar spacing of upper and auxiliary wings is considerably different. It is, therefore, necessary for the spars of the auxiliary wing to diverge in order to reach the upper wing attachment points. The bent portions of these spars are made of ash, the bent laminations being obtained by means of a special process developed by the Bellanca company. The spars are continuous throughout the bend and have great rigidity against bending due to lift loads. The landing gear truss is formed by the inner

average light airplane. Streamline tie rods are used to support the fin to the stabilizer.

The specifications as furnished by the manufacturer are as follows:

Span overall	83 ft. 2 in.
Length overall	44 ft. 2 in.
Height overall	12 ft. 9 in.
Chord upper wing	9 ft. 6 in.
Landing gear tread	17 ft. 10 in.
Total wing area	912 sq. ft.
Weight empty	7,000 lb.
Gross weight	18,000 to 21,000 lb.

Performance data is not yet available as the airplane has not been sufficiently test flown for this purpose.

Lessons FROM THE RACES

Ideas for future years gleaned from observation at Cleveland

By EDWARD P. WARNER

THE NATIONAL AIR RACES are built upon the experience of past years. Improvement has come gradually in most of their features by repeated trial; by eliminating flaws, and by meeting such criticisms as have justly been made. That they have attained to a very high quality as a display admits of no doubt, but in order that progress may continue it continues to be necessary that each year's experience be carefully studied. If there be points in such an analysis that are critical, and if errors be pointed out, they carry no suggestion of rebuke. Perfection in so huge an undertaking is unattainable.

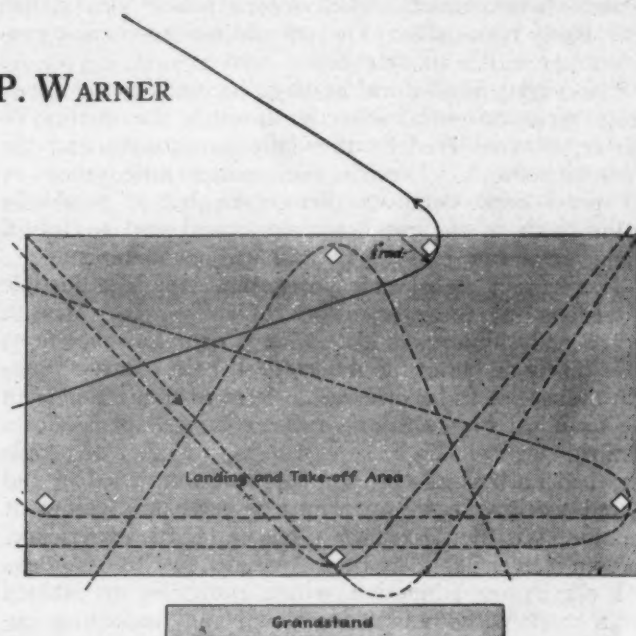
Broadly speaking, the organization of the Races divides into four parts: Relations with the public, relations with the press, relations with the airplane pilots attending, and the technical management of the races themselves.

Upon the score of public relations this year's management was, so far as this observer could detect, absolutely irreproachable. Upon each card of admission, whether it be the gold pass for the guest of honor or the humbler ticket obtained at the gate, appeared the slogan "Let courtesy be shown." The ticket-takers, the ushers, and all others who came in contact with the audience had been schooled to accept that phrase not merely as an expression of good will, but as a definite injunction laid upon themselves. There was a conscientious effort to keep everybody happy, and it attained conspicuous success.

Manager Cliff Henderson, to whom major credit is of course due for the detailed plans and their success, set out to make the Races an outstanding social event in Cleveland, and to surround the holding of a box with something of the prestige that attaches to a conspicuous place at a horse show or an international polo match. He was ably backed by the Air Race Association and the local committees. In that, too, so far as an outsider could judge, a substantial measure of success was obtained.

Traffic Management

AS THE AIR RACES have subsided into history each year, the difficulties experienced in getting to and from the scene of action have had a large share in determining the reactions of the average spectator. If traffic conditions are such that it takes two hours to get from the city to the airport and another two hours to get home for a late dinner, the unhappy victim will have no kindly recollections of the afternoon, however wonderful the



Some theoretically possible race-course layouts

display of flying may be. In that particular, Cleveland set a standard by which future events may be judged. Whether the major credit is due to the Cleveland city government, including especially the Police Department, or to the Air Race Association the writer has no idea, but there was enough distinction to go around. Taxis and buses progressed to the field with unexpected and at times with alarming speed. Thanks to the widening of certain roads as an emergency measure immediately before the Races, and to a carefully planned system of one-way streets changing their direction in mid-afternoon, tie-ups were unknown except on the evening of the Graf Zeppelin's arrival, when traffic unexpectedly moved in both directions at once and got badly snarled. The general rule was that 40 min. sufficed from hotel to grandstand, and if the traffic has run as smoothly on any previous occasion I was not there to see it.

The public responded to the attention given their convenience. The crowds were unfailingly large at the airport, though dismally small at the Show. A highly important part of the management of any race meet on so grand a scale is the financial side, and the attendance brought encouragement on that score from the first day. Although the casting up of accounts for so complex an organization necessarily takes some time, the indications were, and it was common report, that there should be a substantial credit balance. The air races have attained such popularity that if they are to continue to be run on the present lines the problem of the future will be not to collect from the underwriters for a deficit but to decide upon the proper distribution of a profit. It has

been suggested, and was hinted at in a resolution passed at the National Aeronautic Association convention, that the N.A.A. should receive some substantial remuneration for awarding and sanctioning the races and advising upon their conduct. The contest committee's work needs additional financial support if it is to be properly done, and the collection of a large sanction fee for important meets would be an obvious and a logical source of revenue. It has been suggested, too, that if the Army and Navy are to continue to contribute a very important part of the show their respective relief funds should be substantial beneficiaries. The writer thinks both claims thoroughly reasonable. They should receive earnest consideration within another year.

The aeronautical world at large becomes conscious of press relations only indirectly, through the quality of the reports rendered by the daily newspapers and the trade periodicals. Directly they matter little except to the press representatives themselves, but it would be unfair both to the present management and to future managements to pass them over without comment.

There was a signal endeavor to make the best possible provisions for the convenience of the press. Messrs. Bruno and Blythe and Mr. Adams, their liaison officer, were busily active in the reporters' behalf. Barring certain difficulties to be referred to later in connection with the technical organization of the contests, their efforts attained success. To be sure, a certain number of people who had no business in the press stand crowded in and forced working newspaper men to seek new points of vantage, but that seems to be universal experience. Seldom if ever has there been devised a system of badges and checks on admission which could be maintained for a week without breaking down and permitting extensive gate-crashing. Aside from that annoyance, both location and equipment were good, and they were appreciated.

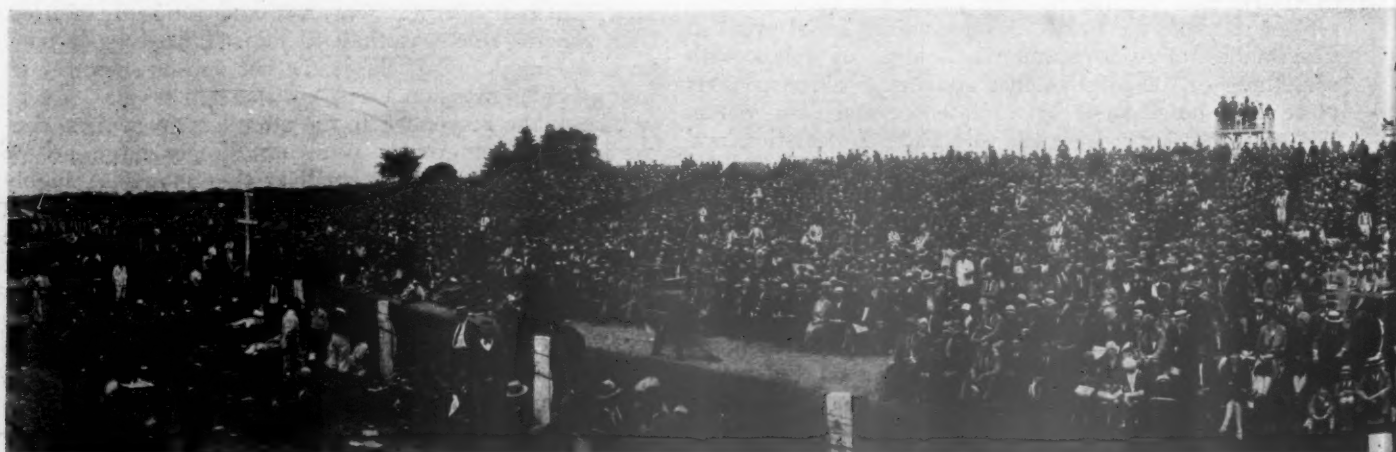
Flying Conditions

ALL THESE THINGS come under the head of showmanship and publicity work, and they are of secondary importance to people professionally interested in aeronautics. Their first concern is with the flying rules, with the conduct of the races, and with the general relations between the fliers and with the management.

In an impressionistic view of flying conditions through the week, the unhappiest recollection is of the dust. No one can be criticized for that, for no one has ever

found a wholly satisfactory way of quelling the nuisance, but it may be put on record, by way of a spur to do the utmost in the search for a solution, that the dust was appalling. It had been bad at Los Angeles in 1928. At Cleveland it seemed even worse, although recollection may be at fault on that point. When a section of naval or military machines took off together they promptly disappeared in a deep brown cloud, which at times totally obscured the audience's view of the home pylon and the machines turning it during a race. A single plane taking off laid a neat smoke screen behind it, whirls of dust rising continuously from the point where the slipstream was striking the ground until the machine was some ten or fifteen feet in the air. It is difficult to be optimistic enough to believe that even tail-wheels would have cured the trouble, or to see any real solution except in the use of hard-surfaced runways. Turf does nicely in the right climate, but only under exceptionally favorable conditions would turf have the strength and durability to stand the sort of abrasion that the Cleveland airport was receiving. A thorough treatment by oiling of course reduces the nuisance substantially, as has been shown at the Naval Station at San Diego. The only bright spot in the dust situation at Cleveland was the good judgment shown in placing the grandstand where the prevailing wind blew away from it and across the field. The audience could not see through the dust, but at least they did not have to eat it. Dust is not only an annoyance to spectators, but it greatly enhances the danger of collision. The essential factor in reducing collision hazard, however, is the rigorous enforcement of stringent traffic rules.

Flying rules for the Cleveland airport had been carefully worked out, and attempts had been made to keep all pilots informed of their requirements. Judged by performance the regulations were perfectly satisfactory, for there were no collisions. Judged by observation during the meet they were still not good enough, for there were several close escapes and apparent misunderstandings. They will need to be tightened up still more in the future. Planes taking the air will have to take off only on individual clearance, signaled from a traffic control tower. Machines coming in to land must follow a rigorously specified course, and they, too, must be subject to control by signal. No plane not participating in a competition or in some event for which the air is held entirely clear ought ever to cross or closely approach the field at less than a specified and very considerable altitude, except in a straight course for taking off or landing. Separate



A panorama photograph of the crowded grandstand

during

zones should be used for landing and taking off. Some of these things were done at Cleveland. All of them will become the object of increasing concern in the future. It may even be necessary to close the field to all commercial operations and to all flying not directly connected with the races.

Scoring and Timing the Races

PARADOXICALLY, the weak point of National Air Races, however successful they have been as a show, has very frequently been the conduct of the races themselves. The arrangement of the course, the timing, the announcement of the technical results, and the general planning of the events have on several occasions been disappointing in the extreme. While Cleveland showed a distinct improvement in most of these particulars over some of its predecessors, and especially over the races of 1928, there was still much to be desired.

Last year the actual races took so minor a place on the menu of attractions that many of the spectators never knew that they were going on at all. Machines flew around a pylon well out in the middle distance, the results were recorded upon a score-board placed high above the heads of the crowd and behind their backs, the announcing of results was sometimes completely lacking and at best it was sketchy. There was no possible way of finding out who was who and what he was flying, or what kind of progress he was making. The spectators had not come out to see races, but to gaze upon the Sea Hawks and the Musketeers.

At Cleveland the attempt to have a score board had been given up entirely. No visual record of any event was made for the crowd. Admittedly the spectators object to having a board cut off their view of the field, but at least, if no other location can be found, there ought to be one at the top of the grandstand. Visitors interested in the technical details ought to have some chance of learning them without catching them on the fly from an announcement frequently made in competition with the roar of an engine running at full throttle.

The announcing last month was as good as the availability of the results from the timers permitted, but next year if it is impossible to get prompt official reports of individual lap times there should be in the announcer's box a couple of assistants, armed with stop watches and skilled in mental arithmetic, who will be able to secure frankly unofficial and approximate times on each machine as rapidly as it passes the pylon and so broadcast a

running story of the race up to the minute. Only in a very close event should their results be in danger of differing from the official ones.

I come at last to the necessity of comment upon the two weakest points of the Cleveland meet, the inability to get out official times with reasonable promptness and the entire lack of score-cards. A week after the first races had been held it was still impossible to get official lap times and even the official results sent out a week after the meet did not include any individual lap figures, but only the totals. In several cases results were given out incorrectly and corrections made some hours or a day later. There was a disconcerting atmosphere of uneasiness and uncertainty, especially after there had been some protests from contestants.

For all this difficulty there is absolutely no occasion if the officials are properly chosen for their experience and ability and, equally important, if they are given proper equipment and surroundings. Whatever the difficulties of keeping the press stand sacred to the press, the judges, and timers, preserve must be absolutely sacrosanct if the results of the races are to have any meaning. There should be an inclosure limited to a dozen officials, and neither a newspaper correspondent, nor the best friend of the designer of one of the competing machines, nor the President of the United States should be able to get inside. Given more space to work in and freedom from curious visitors at their elbows a dozen experienced timers and scorers can get the time on every machine on every lap, correct within a fifth of a second and have a complete copy, including average speeds ready for the announcer and for distribution to the press within three minutes of the end of the race,—and do it with no mistakes and no necessity of subsequent retraction. That can be done with ordinary stop watches for timing. It has been done repeatedly at motor boat races. Nothing less than that performance can be rated as satisfactory. With a printing chronograph, such as is employed at the Indianapolis speedway and has been used at the Air Races in several past years, accuracy and speed can be still further improved.

Score-Cards

THE RESULTS from the timer's box are statistically interesting, but they are only of academic value to spectators who know nothing about the pilots and the machines to which the times are attached. A major problem for the management of the next year's races is the devis-



during the 1929 National Air Races at Cleveland, Ohio

ing of a system that will permit of the distribution of score cards not only to a select few in the press box or among the official guests but to every individual in the stands. That was done at Detroit in 1922. So far as I know, although I have not been perfect in my record of attendance at the Air Races, it has never been done since.

At Selfridge Field seven years ago there were on sale score-cards giving a complete list of the entries for each race, the make of machine and the type of engine used by each one, and with spaces left blank for the spectators to fill in with the speed or time on each lap for himself. The practice of issuing score-cards should never have been allowed to lapse. To the spectator really interested in aeronautics their lack cuts the value and interest of the races by more than a half. There is no adequate reason for permitting entries to come in at the last moment. Next year, and forever thereafter, the entry lists should be inflexibly closed at an early enough date to permit the over-night printing of score sheets for each day's racing, to be issued as supplements to the program. At Cleveland even the mimeographed lists circulated to the press at the last minute before the race were shockingly incomplete, and hardly ever were the type of plane and the type of engine both given correctly.

In actual conduct of the races the meet of three weeks ago included two innovations of great value. First was the shortening of the course for many of the events. It is the almost invariable rule that the pilot making the fastest time for the first lap of an air race is also the final winner. To string the affair out to ten or fifteen laps is tiresome both to the pilots and to the spectators. The program at Cleveland was overcrowded, but it would have been better to cut the length of most of the races than to eliminate any of them.

Handicap Races

THE OTHER NOVELTY was the inclusion of a number of handicap events disguised under the name of "Australian pursuit." They were too long, for the limit handicap in some cases ran to a couple of laps of the course and became impossibly confusing to the spectators, but the idea was perfectly sound, and the method of handicapping by having all machines flown by an official test pilot was probably the best that could have been used for so many planes coming from all quarters of the country. No handicapper could have been acquainted with their previous performances. The essential idea was the same as that of the handicap races so popular in Great Britain and described by Capt. R. J. Goodman-Crouch in the Aug. 24 issue of AVIATION, and it should be extensively imitated with minor improvements in future meets.

The layout of a course for a race is always perplexing. The spectators want to see the take-offs and landings, and to insure their safety and that of the pilots it becomes necessary to put the nearest pylon on the far side of the landing field. The layout used at Cleveland, with the pilot approaching the pylon on a course nearly parallel to the grandstand and then turning away from the audience is probably the best among a number of possible alternatives for most fields, and the turning point was not unsatisfactorily far away. The spectators had grounds for complaint only in the Mitchell Trophy race, as the pursuit machines had their racing numbers painted only on the side of the fuselage, and of rather small size there. Numbers on the lower surface of the lower wing should be rigorously exacted of every competitor in every race, and they should be large ones.

Some possible course arrangements, or at least some that have been suggested from time to time, are shown in a sketch herewith. In one case the path making an incorrect turn, such as was made by many of the pilots in competition, has been indicated. If all the turns were made along the ideal path, cutting the pylon closely and not drifting beyond it, the pylon could be placed directly in front of the grandstand on the near side of the landing area. Since some of the competitors overshoot the mark as much as two hundred yards before getting around, that location obviously becomes impossible, as their error would carry them directly over the grandstand. The same objection would hold against making the turns toward the crowd instead of away from it. Even if the turns toward the audience be more spectacular then the converse, the danger of overshooting the mark and so flying across the landing field and the grandstand is too great to allow the use of such a course. The pilots practically never fly too wide in approaching a pylon. All the important deviations from standard course are the result of flying too far past it before completing the turn.

One profoundly important subject, pertaining in a general way to public relations and to the attractions of the races as a spectacle, has been thus far passed over without comment. The management of future years will have a very serious problem in deciding on the distribution of effort between competitions and acrobatic exhibitions and other set shows.

It takes but little inquiry to develop violent differences of opinion upon that subject within the industry. There are those who believe that the program should be continued as at present, with stunting forming a principal feature. There are others who are opposed to any stunting under any conditions, whether by civilian or military pilots, and also to all military display. I personally hope that displays of stunting with civilian planes can be entirely eliminated in future years, and that the calls upon the Army and Navy for assistance in filling out the program can be diminished in extent and urgency, although some samples of the Army's and Navy's air work should certainly continue a feature at least for a few years to come. Admittedly the spectacular element in the race program is necessary to attract the crowd. The balance has been struck somewhere between so much hippodrome effect that there would be an unfavorable reaction upon aeronautical development, and so little display that audiences would not turn out well enough to make the show worth while and make it pay for itself. It seems probable that the amount of fixed display repeated daily can be very substantially reduced from the schedules of 1928 and 1929 without dangerously reducing the attendance. To reconcile great public interest with a reduction in the number of "thrillers", however, demands that the races themselves be given more popular appeal. There is nothing to attract the layman in a parade of unidentified airplanes.

That is the real heart of the problem. No effort must be spared to make the National Air Races more interesting as races. The search for improvement on that head should be constant.

Concluding these somewhat random observations, I am anxious to emphasize by reiteration what was said in opening, that the race management deserved high praise. It was inevitable that there would be flaws in any event of the sort, and they ought to be recorded, but the general average effect was unreservedly good.

THE SCHNEIDER CONTEST IN *Retrospect*

By *Aviation's*
BRITISH CORRESPONDENT

A FULL DESCRIPTION of the actual race incidents of the Schneider Trophy, flown over the Solent on Sept. 7, will not be needed now, but there were many incidents not referred to in the world newspapers which have a distinct technical interest, chief among which was a last minute change of a complete cylinder block of the Rolls Royce engine in the winning machine, Flying Officer Waghorn's Supermarine S6.

It will be as well to put on record that the winning speed made by Flying Officer H. R. D. Waghorn on the Supermarine-Rolls Royce seaplane was 328.63 m.p.h.; that his companion Flying Officer R. L. R. Atcherley returned a speed of 325.54 m.p.h. but was disqualified under circumstances which will be described later; and that the duel between the old Supermarine-Napier seaplane of 1927 flown by Flight Lieut. D'Arcy Greig, and Warrant Officer Dal Molin, flying the improved Macchi of 1927 now known as

Major De Bernardi's record breaking machine ended in the latter achieving an average speed of 284.2 m.p.h. as against the British figure of 282.11 m.p.h. Greig flew the 1927 seaplane at just a mile an hour faster than Flight Lieutenant Webster's time in 1927 in an identical machine, except that the engine gave possibly 20 hp. more and burned more fuel.

A remarkable feature of the Contest was the surprising uniformity of the lap times of Greig and Dal Molin, the steady way in which Waghorn, first off the mark, increased his lap speeds to a maximum of 331.1 m.p.h. and the brilliant piloting of Atcherley, who flying without goggles and therefore nearly blind, put the lap speed up to the astounding figure of 332.49 in the last

lap of the Contest. Every world record ever made went smash in Waghorn's first lap, and the technical readers of AVIATION will appreciate the thrill of pride which went through the British air world as that wonderful speed—or so it seemed in the first lap—of 324 m.p.h. went up, and also our anxiety as to whether the engine would stand the pace. We did not know then that Waghorn could not fly the Rolls Royce engine

full out for two very good and sufficient reasons. The fuel tankage in the floats was not sufficient for 220 miles at full throttle and the cooling area of the water radiators equally was only enough to enable the engine to be run at least 100 r.p.m. below the maximum. He kept his water temperature at 95 deg. C., but Atcherley, whose radiators were more efficient, kept up to 110 deg., and this just made the difference between the two speeds. He, of course, could take more risks for Waghorn had already retained the

Trophy for Great Britain, and actually there was a sufficient margin of fuel as Waghorn miscounted his laps and flew three quarters of another lap when his fuel gave out and he had to sit down on the water, thinking he had lost the race when he had in fact won it by an unbeatable margin as events quickly proved.

THE ITALIANS, as I suggested in my earlier article, never looked like winners for we knew that their engines, Isotta Fraschini 18 cylinder Broad Arrow type, were not supercharged; they could hardly develop more than 1,750, which we heard was the real figure, and we knew that the Rolls Royce could produce nearly 2,000 hp. if pushed, and in the race itself would give



The British team that competed in the 1929 Schneider Trophy Contest.
Left to right: Flight Lieut. D. D'Arcy Greig, Flying Officer H. R. D. Waghorn, who piloted the winning Supermarine S6, and Flight Lieut. R. L. R. Atcherley

anything from 1,800 hp. onwards. Even assuming equal horsepower, the Macchi 67 seaplanes were not so clean as ours, did not show such appreciation of the finer points of interference in relation to head resistance, and when they started our main concern was not that they would beat us but that now the secret of their true speed was to be revealed. They ought to be able to do better than 284 and 301 m.p.h., the only figures available, as each machine completed one lap only; but a generous allowance of another 20 m.p.h. gives only 321 m.p.h. and, as the faster machine retired with a burst water pipe and a scalded pilot, the inference is that the engine was becoming very much overheated in the effort to average 301 m.p.h. Lieutenant Cadringer, who reached 284 m.p.h. only, was reported to be running an engine which was down in horsepower, and as he flew in a cloud of thick black smoke it was evident that there was something out of tune in carburation or oil circulation or both.

He made a plucky effort but retired blinded by the smoke from the exhausts and half suffocated by the fumes simply because the Italians had left the exhaust ports on the centre cylinder block on the wrong side for the slipstream. Why they did so is a mystery, for the Napier Lion people, who would have been up against the same trouble in the Gloster-Napier, had re-designed their whole centre cylinder block, shifted the exhaust ports on the other side, and thus gave the pilot an entirely free vision unobstructed by any smoke or fumes.

It is not the British way to rejoice over a rival's misfortunes, and everywhere at Calshot the pluck, good sportmanship and skill in pilotage of the actual Italian team was freely commented upon and admired; but it is germane to point out that on the technical side Italy was thoroughly and handsomely beaten in every way. Not one of their new seaplanes lasted for much more than a lap, whereas the whole British team finished without any trouble whatever, and I think I am right in saying, established another and unofficial record—that of every seaplane entered finishing the course.

NOW TO REVERT to a more chronological order. The navigability trials call for no comment as every machine passed easily. The sea was smooth but with just enough "popple" to help unsticking and the visibility was good and the wind about 10 m.p.h. The Gloster-Napier made an eleventh hour effort to get rid of its unstable carburation system, and was brought out with projecting scoops on all the three air intakes designed presumably to force air into the intakes under all flying conditions. As usual the trouble on the ground seemed conquered, and, full of hope, Flight Lieut. G. H. Stainforth went for a flying test. The result was an improvement but still the trouble was not entirely cured, and as the subsequent effort to attain extreme speed over the three kilometre



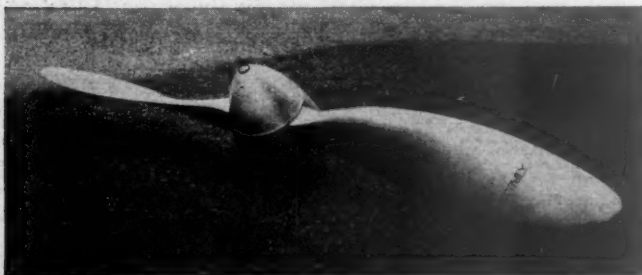
Flying Officer Waghorn taxiing his Supermarine S6

course proved, the Gloster-Napier is not as fast as the Supermarine. Flight Lieutenant Stainforth broke all existing records with an average speed of 336.3 m.p.h., but the Supermarine seaplane easily overtopped that at 355.9 m.p.h. and even that did not represent the true speed.

The mooring out test was more a formality, and then when all the machines came back to the hangar a remarkably fine piece of work was carried out by the Rolls Royce team. Flying Officer Waghorn had reported at the end of the navigability trials that the engine did not seem quite so sweet as usual, and mechanics at once began a careful overhaul. At midnight they found that part of one of the sparking plugs had disintegrated, had been churned around and had evidently scored the cylinder. Now, each set of six cylinders is cast as a monobloc so it meant dismantling one complete side of the Vee. But such is the skilful nature of the design that the operation is relatively simple. Long steel bolts hold a thin aluminum shell down on the crankcase, and, in effect, clamp steel cylinder barrels between the crankcase and the cylinder head.

Fifty Rolls Royce mechanics had come from the works at Derby to see the race the next day. They were hastily mobilized, and between 2 a.m. and 6:30 a.m., a dozen of them had had the block off, changed the defective liner, replaced the whole outfit, and had given the engine a completely satisfactory run up. The great public who saw the race on Saturday had no idea of how narrow had been the escape, for while Atcherley should have won the race, he passed inside one of the mark boats and was therefore disqualified. This was not what we had expected of this pilot, and only afterwards did we learn that just as he was passing over Ryde Pier, he pushed his goggles up for a moment to clean them, peered round his windshield and the terrific airblast tore the goggles off his head. He was then less than a minute and a half away from the Bembridge turn, and he told me afterwards that he realized that he was in danger of cutting inside it. He swerved to the right, but as he actually passed over it on a vertical bank was afraid he was still on the wrong side. This swerve had put him off his true course with the result he went miles wide of the next turn at Hayling Island and so added to his distance while he was also struggling, unsuccessfully as it proved, to get a spare pair of goggles over his eyes.

This fully explained his relatively poor first lap speed, and it speaks volumes for his skill as a pilot that he flew the rest of the race blind, that is, he never once dared look out sideways and ahead, but had to steer entirely by such marks as he could see obliquely through the windscreen. To have put up record laps under those circumstances was a fine effort, and the British spectators generally felt that it had been a very fitting

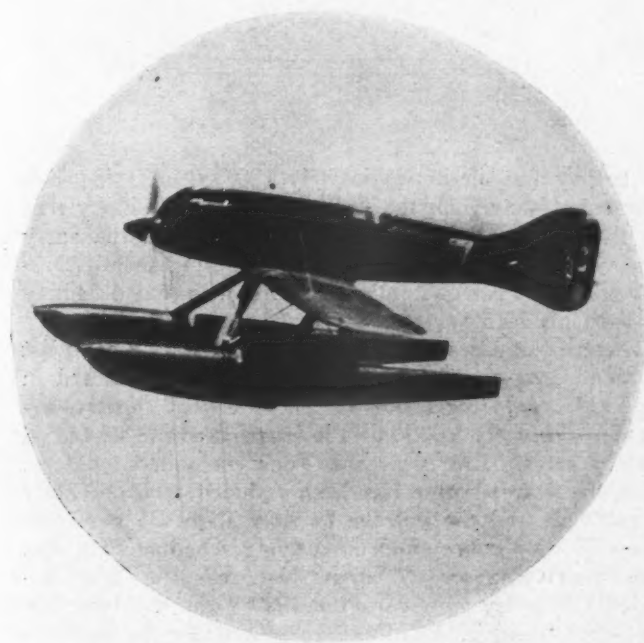


Falrey metal propeller of the Supermarine S6

and felicitous conclusion to the race that the honors should be shared between Waghorn and Atcherley, the one retaining the Trophy and the other making world records over 100 km. of 331.75 m.p.h.

Atcherley, it turned out, was able to fly his machine at slightly more power as his water radiators were more efficient. His Supermarine had the lozenge shaped radiators laid as flat plates along the sides of each float, whereas Waghorn had flat radiators placed on the upper surface of the nose of his floats. These it was expected would have been more efficient but this was not the case in fact, and whereas Waghorn ran his engine with a water temperature of 95 deg. Atcherley worked at 110 deg. Of course Waghorn being first away naturally had to fly a more cautious race than Atcherley, who could afford to go all out within the limits of his fuel and temperature capacities.

It is clear now, as I remarked before, that the prospect of securing greater speed leaving out any new concep-



Lieutenant Monti in the air in his Macchi 67

tion in design, is entirely bound up with water temperatures so that the radiator surface is the main limiting factor. The British team had their throttles set to give a certain maximum of revolutions, and practically all instruments were blanked off to eliminate possible sources of trouble, and they, in fact, flew entirely by the water thermometer using their throttle entirely in accordance with those temperatures.

Both pilots after the race stated that they had experienced no discomfort of any sort, either in the turns or from fumes or undue heat in the cockpit of the S-6, a marked improvement upon the conditions of the 1927 racers.

The propellers used were Fairey duralumin type made under Reed license, and the Fairey Aviation Company did some notably exact design, producing propellers to order which were within 25 r.p.m. of the figure asked for. There was a big gear reduction on the Rolls Royce engine, which, as I have already reported, was turning at 2,950 r.p.m. in the race, and this was so noticeable that the great blades of the propeller could

be seen with the eye even when the machine was traveling at its highest speed, whereas the Italian propellers were merely a slight haze. One of the Italian machines was fitted with a three bladed propeller in order to reduce the diameter of the propeller disk and so reduce the tip speed. A slight increase of efficiency was expected and apparently obtained, for this propeller was fitted to Monti's seaplane. The Italians undoubtedly suffered from lack of superchargers, and, also, all their engines were still of the direct drive type—rather an anachronism in these days of rapid advance.

ANOTHER NOTICEABLE FEATURE was the way in which the British pilots negotiated the turns in a fairly close circle but without climbing very much, whereas the Italians shot up on the turn and then dived down onto the straight again. Our policy had been decided after most exhaustive tests over a measured distance with Calshot Castle as the start of the turn. The point along the measure distance at which the pilot completed his turn was noted, the time taken, the degree of bank and the amount of acceleration imposed as registered by an accelerometer in the seaplane were all recorded. It was then a simple matter to decide which was the most profitable radius of turn to work to, and after that all the pilots consistently practised that type of turn. The British, you will agree, at least are thorough, and when we do set our minds upon a job nothing is left to chance.

The speed record speaks for itself, but it is puzzling at the moment to know why on the second attempt only 2 m.p.h. were added to the record, making it 357.7 m.p.h. Conditions of visibility were distinctly bad on the first attempt when 355.8 m.p.h. was reached and accurate course keeping was impossible while very little advantage could be taken of the run down to the measured three kilometres. On Thursday Sept. 12, visibility was excellent, but it was a very hot day and this may have affected temperatures, though it should not have made any difference as there is ample opportunity to cool the engine down between the runs. A different propeller was used and this may not have given quite the expected results, but in any case no further attempts will be made at present as the figure is sufficiently high to justify Great Britain waiting until another nation has exceeded it by 5 m.p.h.

Italy is reported as having declared that she can reach 400 m.p.h., but if she intends to use the little Fiat it would seem that substantial modification in controls must be made. And judging from its entry into the air, there may be yet a disappointment in store. There are angles around the nose, in which is the oil tank, which suggest that the air may splash off rather than flow past smoothly. Of course the high landing speed of 125 m.p.h. gives the little seaplane an advantage at once for our machines not only land around 100 m.p.m. but are thoroughly practical seaplanes as the rough usage in the practice and the race proved. The Italians never dared to fly the Fiat in or above our waters.

Still, the Supermarine S-6 can be improved in many ways when a pure speed run only is in question, and Great Britain is quietly confident that when the necessity arises much more speed can be secured by such modifications as smaller floats, more efficiently fitted radiators, and different propellers. The Rolls Royce racing engine, too is only at the beginning of its life, and undoubtedly it can be boosted to give much more than 2,000 hp. for short spells, whereas in the race the main considerations were power and reliability.

THE FIFTH ANNUAL

National Air To

Ray Collins, manager of the
1929 National Air Tour



By JOHN T. NEVILL

FOR THE FIFTH CONSECUTIVE YEAR, pilots representing manufacturers of America's commercial airplanes will assemble at Ford Airport, Detroit, just previous to Oct. 5 to vie with one another for supremacy in airplane reliability and efficiency.

However trite the expression may be, the briefest way to describe the fifth annual National Air Tour for the Edsel B. Ford Reliability Trophy is to say that it will very likely be "bigger and better" than it has been in any previous year. Immediately following last year's Tour there were a number of comments from varied sources to the effect that the Tour had served its purpose and that in all probability the last one had been held. These opinions arose despite the very obvious fact that the 1928 Tour had been, by far, the largest, longest, most hazard-out, and most successful event of its kind ever held. Sixty-six hundred miles were flown by the National Air Tour entrants last year—a distance that carried them across 16 states, stops being made in 14 of them. The commercial airplanes traversed almost every conceivable kind of terrain, with the terribly hot below-sea-level naked flats of the Mojave desert as one extreme and the biting temperatures over the lofty, snow-laden peaks in the Pacific Northwest as the other. Engines on that Tour ranged from the 47 hp. Velie M-5 in the Tour's two Monocoupes to the 220 hp. Wright J-5 used by the late John P. Wood, winner of the event, yet 24 of the 25 entrants who started from Detroit flew the entire route and landed again on Ford Airport on the scheduled day. The one plane failing to finish was equipped with an imported engine, for which no parts were immediately available.

Now comes the fifth National Air Tour, not as a refutation of any suggestion that the Tour has served its purpose, but as a demonstration that the National Air Tour will have a valuable purpose so long as commercial airplanes are manufactured in America. It was with this idea in mind that Henry and Edsel Ford personally took over the reins, and are "seeing the thing through."

Present indications are that a total of 43 airplanes, entered by 21 separate manufacturers, will compete for

the trophy and the approximately \$20,000 in cash prizes distributed among all the finishers. It is not likely that the list will exceed 44, as the "dead-line" of the entry time was passed on Sept. 5. One manufacturer has reserved a place for one entry in addition to that definitely made by his factory.

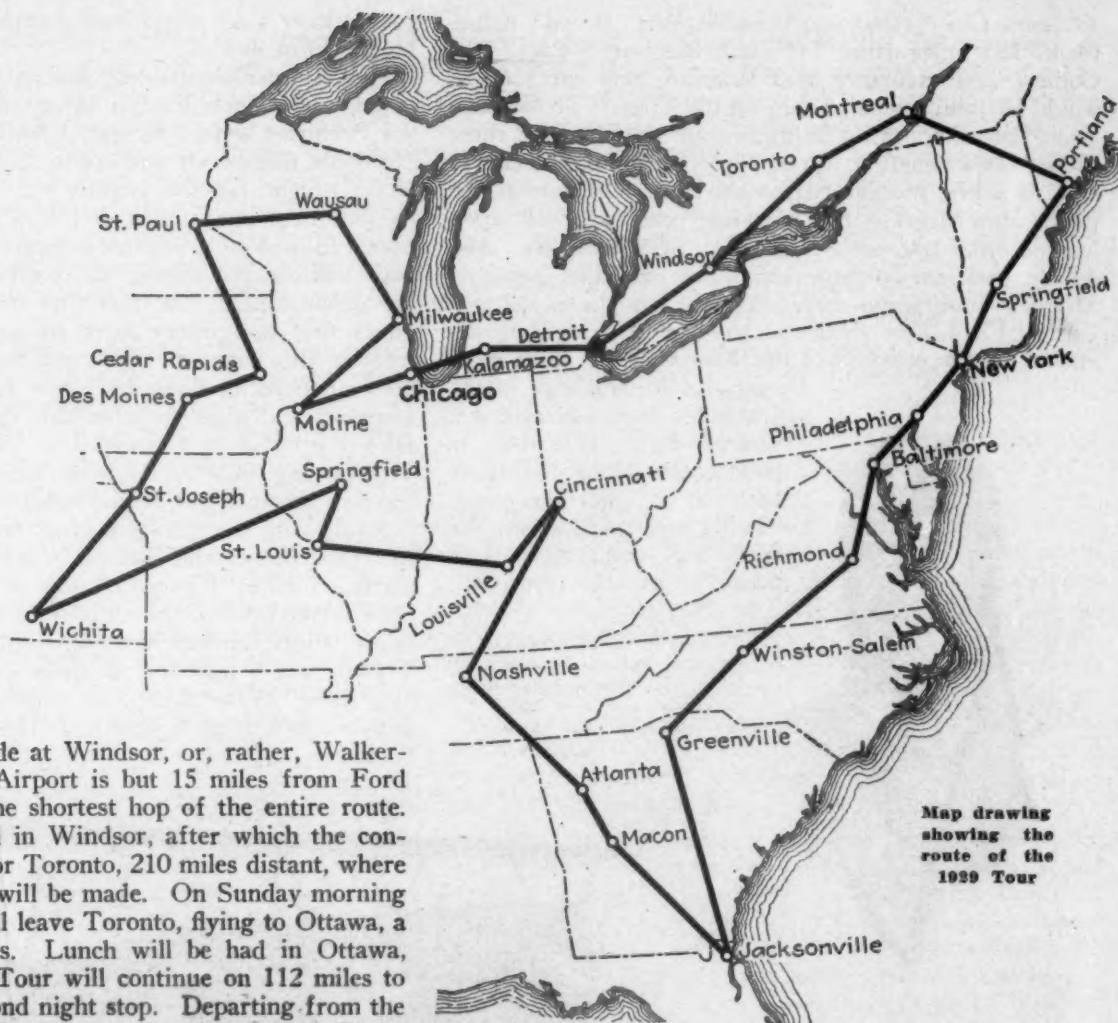
Though the entry list this year exceeds last year's list by about 14 planes (29 having been actually entered in the 1928 event) the route will be somewhat shorter, being approximately 5,000 miles in length, and the scheduled time 17 days. Last year the Tour consumed 29 days. Thus the elapsed time has been reduced approximately 40 per cent and the mileage by only about 25 per cent, necessitating a more condensed flying schedule than was necessary last year. Whereas last year the Tour included 7 two-day stopovers, the 1929 Tour will have but one—that being in Atlanta, Ga., practically the halfway point of the total mileage. Just as last year's total of 29 entries simmered down to 25 starters, this year's classic may see a similar drop before the 5,000 mile classic is started. However, that is less likely, because of the prominence, stability and reliability of concerns entering their products this year and because of the effects of an additional year's experience. That statement is no reflection on the entrants of last year, for many of them are competing again this year, but was made with an eye on the fact that a number of planes competing in the 1928 Tour were owned by firms and individuals who entered the craft for the manufacturer, rather than by the manufacturer himself. This year the so-called "bill-board planes" or "publicity ships" are taboo, and the responsibility for having their product on the starting line is solely up to the manufacturer.

ASIDE FROM its unprecedented number of contestants, the 1929 National Air Tour will have many characteristics to distinguish it from any Tour held thus far. Probably the foremost of these is that it will visit the Dominion of Canada, four stops being made in the Provinces of Ontario and Quebec.

Leaving Ford Airport at 10 a.m., Saturday, Oct. 5, the

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Tour



Map drawing
showing the
route of the
1929 Tour

first stop will be made at Windsor, or, rather, Walkerville, Ont. Walker Airport is but 15 miles from Ford Airport, this being the shortest hop of the entire route. Lunch will be served in Windsor, after which the contestants will depart for Toronto, 210 miles distant, where the initial night stop will be made. On Sunday morning the touring planes will leave Toronto, flying to Ottawa, a distance of 260 miles. Lunch will be had in Ottawa, following which the Tour will continue on 112 miles to Montreal for the second night stop. Departing from the Quebec metropolis Monday morning the planes will re-enter the United States, covering 220 miles before stopping at Portland, Me., for lunch. After lunch another flight of 180 miles will bring the tourists to Springfield, Mass., where the night will be passed. New York, 100 miles by air from Springfield, will be the lunch stop on Tuesday's flying program, Tuesday night finding the Tour at Philadelphia, 90 miles farther on. (Central airport at Camden, N. J., incidentally, will be the actual landing place for the Philadelphia stop.) On Wednesday, Baltimore, Md., 97 miles, and Richmond, Va., 130 miles from Baltimore, will be visited, Richmond being the night stop.

After taking off Thursday morning, and skirting the famous Blue Ridge Mountains southward and westward, the commercial armada of the air will visit Winston-Salem, N. C., 185 miles distant, for lunch, then continue its approximate direction to Greenville, S. C., 150 miles from Winston-Salem. Savannah had originally been listed as the Friday lunching place, but due to the inability of Savannah to guarantee the condition of its airport, Augusta, 125 miles from Greenville, has been chosen as the first Friday stop. Saturday morning, after one week's flying, the Tour planes will leave Jacksonville, heading northwest, and completing a long 205 mile jaunt to Macon, Ga., before lunch. A short 74-mile flight to Atlanta, Ga., will complete the day's work. In Atlanta, where the contestants and Tour personnel will be guests of Walter Candler, Coca Cola manufacturer, the Tour will remain until Monday morning.

The forenoon hop on Monday's program will take the

cavalcade to Murfreesboro, Tenn., 200 miles from Atlanta, and only 20 miles from Nashville. Nashville, in fact, is generally recognized as being the day's noon stop, although Murfreesboro is a wide-awake little city of 10,000 persons, and, according to Captain Collins, boasts of one of the finest airports throughout the Tour route. The Monday afternoon flight is one of 250 miles to Cincinnati, Ohio, where the night will be spent. A 97-mile hop to Louisville, Ky., followed by a long 258-mile journey to St. Louis is on the bill for Tuesday. The Louisville-St. Louis flight will be the longest of this year's Tour.

HAVING ARRIVED in the heart of the Middle West the National Air Tour pilots will be in very familiar territory, that region of the country, particularly Wichita, Kan., having been visited by the National Air Tours more often than any other locality. After remaining overnight in St. Louis the pilots will take off Wednesday morning and go to Wichita, making a lunch stop in Springfield, Mo. Springfield is 182 miles from St. Louis and Wichita is 218 miles from Springfield. Thursday will see the planes push northeast again, stopping at St. Joseph, Mo. (193 miles), for lunch, and at Des Moines, Ia. (144 miles), for the night. An eastward by northward jump to Cedar Rapids, Ia., 97 miles distant, and a lengthy 219-mile hop north by west to St. Paul, Minn., is on Friday's card.

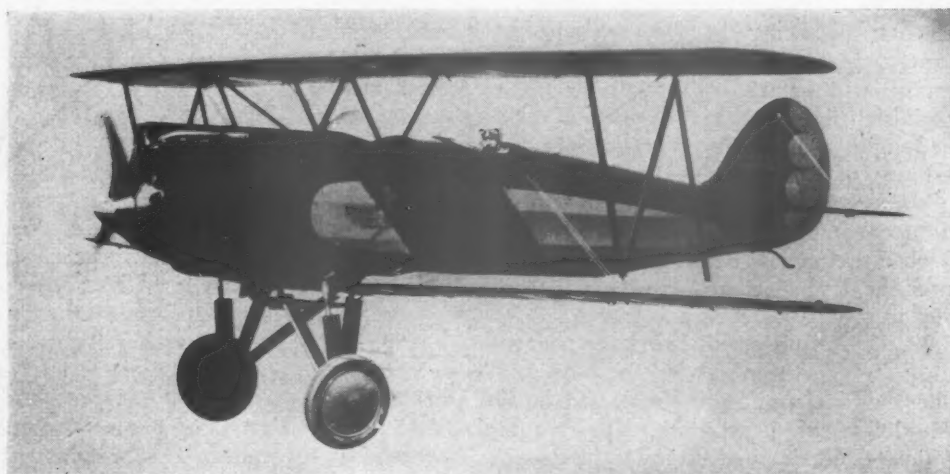
Because of the recent death of Maj. John P. Wood, last year's Tour victor, Saturday's itinerary was in doubt

for some time. However, Wausau, Wis., Wood's hometown, 185 miles from St. Paul, has wired Capt. Ray Collins, Tour manager, that Wausau "will carry on as would be John's wish. Bring on the Tour." So Wausau is on the itinerary for a lunch stop, the program there calling for a tribute to Wood before resuming the course to Milwaukee, the Saturday night stop. On Sunday the pilots, now nearing the finishing port, will call upon Moline, Ill., 180 miles southwest of Milwaukee, then double back to Chicago, 155 miles east and north of Moline. In Chicago the planes will land upon the new Curtiss Field, near Evanston, the airport being formally opened on the occasion of the Tour visit. A noon stop-

over in Kalamazoo, Mich., 150 miles from Chicago, and a final flight, 125 miles in length, will bring the party back to its starting point. The leg mileage figures in the foregoing paragraphs are taken, principally, from Cap-



Left: Frank Hawks, Tour Referee. Below: C. W. Meyers in a Great Lakes Trainer, the first Tour entry



tain Hawk's log during the path-finding trip and are not official.

The finish of the 1929 National Air Tour, it should be remembered, will land the competing planes and the rest of the flying entourage at Ford Airport on the afternoon of Monday, Oct. 21. On this date Henry Ford will be holding a resplendent celebration in honor of Thomas A. Edison, commemorating "Light's Golden Jubilee," the fiftieth anniversary of the invention of the incandescent lamp. It is planned to have the arrival of the Tour planes fit into the day's program. President Hoover has been invited to Detroit to take part in the Edison celebration, and there is a possibility that he may be on hand to greet the Tour pilots. The President may also greet the National Air Tour at Cincinnati on Oct. 15, as he is planning to be in that city then to make an address.

ONE IMPORTANT FACTOR in the 1929 Tour is that it will visit a section of the United States never before visited by the annual reliability classic. From Baltimore to Nashville, via Richmond, Winston-Salem, Greenville, Savannah or Augusta, Jacksonville, Macon, Atlanta, and Murfreesboro, is virgin territory insofar as the National Air Tour is concerned. However, after the coming Tour is completed there will have been but eight of the 48 states that the National Air Tour has not stopped in or

passed over since the annual institution was started by Henry Ford in 1925.

Still another outstanding feature may be the presence among the competitors of three auto-giros, entered by the Pitcairn-Cierva Auto-giro Company, of Philadelphia. No doubt these craft will arouse a great deal of interest, since, except for the vicinity of Philadelphia and the exhibition of one at the Cleveland air races, they have been confined to a limited audience. The interest perhaps will be even keener "in the trade" than among the lay public, due to the fact that it will mark the auto-giro's first appearance as a competitor in an aircraft meet in this country. It is understood that one of the auto-giros will be flown by Senor Juan de la Cierva, the inventor, and it is probable that the other two will be piloted by Harold Pitcairn and James G. Ray, of the Pitcairn organization, both of whom flew early model Pitcairn biplanes in the Tour of 1926.

Along with the auto-giro other entries that are certain to create considerable interest in the industry include the Curtiss Carrier Pigeon II, the performance of which little is yet known, the Curtiss Condor, giant transport never before entered in a competitive meet, the Curtiss Thrush, a J-6 powered six-place cabin monoplane, and "big sister" to the Robin, the Boeing commercial biplane powered by a Pratt & Whitney "Hornet" engine, and the

new "Hornet" powered Ford 8-AT, latest of the Ford line.

As we glance down the list of manufacturers entering planes in the coming Tour we find a majority of them are companies never having competed in the National Air Tour before. There are 12 such, among them being Great Lakes, Moth, Command-aire, Boeing, Consolidated, and Curtiss Aero and Motor. The latter three, it will be noted, have been devoting their primary attention in the past to military craft, while the former three are newcomers to the industry. Then we see two companies, Travel Air and Pitcairn, that are returning to the Tour after having absented themselves from it during 1927 and 1928. The other seven competitors, Waco, Bellanca, Lockheed, Ryan, Fairchild, Ford, and Alexander, are what might be termed "old standbys," although Bellanca and Lockheed competed for their initial time last year. Fairchild Airplane Mfg. Corp. has reserved places for at least two, and possibly three entries, but descriptions have not yet been received.

So far as is known now Miss Amelia Earhart is the

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only woman pilot who has signified her intention of competing in this year's Tour. It seems a certainty, however, in view of the skill and courage displayed by the ladies competing in the women's transcontinental derby to the Cleveland National Air Races, that more than one aviatrix will take part. Last year Mrs. Phoebe Fairgrave Omlie flew herself and her little Monocoupe onto many a front page, and it would seem to the writer that America's stock of airwomen as well as the manufacturers would regard this possibility as too valuable to overlook.

Speaking of publicity, Manager Ray Collins has adopted a new method of publicizing the Tour. Publicity being a valuable part of the return expected by each manufacturer for his investment in flying the Tour, Captain Collins has seen to this detail by employing the firm of H. A. Bruno-R. R. Blythe and Associates, of New York, specialists in aviation public relations work. Dick Blythe and Munson T. Adams, of his staff, are already functioning in that capacity. A total of six or more planes will accompany the Tour as non-contestants to carry the Tour officials, press representatives and service men. One of these will be a Douglas O-2 piloted by Lieut. Wendell Brookley, U. S. Army, which will carry Captain Collins. Another will be a Lockheed Air Express, flown by Capt. Frank M. Hawks, the Tour Referee. The third will be a Fairchild KR-3, carrying Blythe, who will precede the Tour by 48 hours in order to supply the daily papers with accurate information as to the Tour, planes and contestants. The fourth will be the Ford tri-engine, "Firestone," designated as the official press plane. A fifth and a sixth plane, a Ford tri-engine and an Army Fokker tri-engine respectively, will carry Tour officials. In addition, there may be two or more other planes to carry mechanics from the various engine factories.

Interesting changes in the rules this year were out-

lined in detail by this writer in the June 1 issue of AVIATION. However, a brief summary of them may be convenient and relevant here. The first change is that "letters of credit" are invalid and Approved Type Certificates issued not later than Oct. 1 are demanded on all entries. The second lies in the scoring formula, one-half stick being used instead of the full stick time. Thus, the new formula reads:

$$\frac{(\text{Max. Dept. of Com. Useful Load}) \times (\text{Max. Speed})}{(\text{One-Half Stick Time}) + (\text{Unstick Time})} \times \frac{50}{\text{Piston Displacement}} = \text{Figure of Merit}$$

Multi-engined planes able to fly without any one engine dead are given extra credit.

A THIRD CHANGE is that the start of the Tour from any control point along the route may be deferred at the discretion of the Tour Manager and Tour Referee, without consulting any of the pilots, "but only in the event of inclement weather, or other questionable conditions." A new and interesting addition to the rules is that competing planes will be refuelled and staked down upon completing any day's flying, and no mechanical work will be allowed to be done upon them until a time two hours previous to the scheduled starting time of the Tour for its next control point.

Beside having Captain Collins, who is manager of the aviation department of the Union Trust Company and director of the newly created Michigan State Board of Aeronautics, as manager, and Capt. Frank Hawks, holder of both transcontinental speed records, as referee, the 1929 National Air Tour is being sponsored by an imposing group of Detroit financiers, headed by William B. Mayo, chief engineer of the Ford company. It is sanctioned annually by the National Aeronautic Association.

ENTRY LIST FOR THE 1929 NATIONAL AIR TOUR

Entry No.	Entrant	Address	Pilot	Type Plane	Type Engine
1	Great Lakes Aircraft Corp.	Cleveland, O.	C. W. Meyers	2-T-1	Amer. Cirrus—Mark III
2	Great Lakes Aircraft Corp.	Cleveland, O.	Un-named	Un-named	Amer. Cirrus—Mark III
3	Moth Aircraft Corp.	Lowell, Mass.	Un-named	60 G. M.—Biplane	D. H. Gypsy
4	Travel Air Mfg. Co.	Wichita, Kan.	O. G. Harned	6000 B—Mono.	Wright J-6
5	Bellanca Aircraft Co.	New Castle, Del.	G. W. Haldeman	CH-300—Mono.	Wright J-6
6	Bellanca Aircraft Co.	New Castle, Del.	Un-named	CH-300—Mono.	Wright J-6
7	Bellanca Aircraft Co.	New Castle, Del.	Un-named	CH-300—Mono.	Wright J-6
8	Waco Aircraft Co.	Troy, Ohio	Un-named	Biplane	Un-named
9	Command-Aire, Inc.	Little Rock, Ark.	J. Carol Cone	5-C-3—Biplane	Challenger
10	Command-Aire, Inc.	Little Rock, Ark.	Un-named	5-C-3—Biplane	Wright J-6
11	Pitcairn Cierva	Philadelphia, Pa.	Un-named	Auto-giro	Wright J-6 300
12	Pitcairn Cierva	Philadelphia, Pa.	Un-named	Auto-giro	Wright J-6 220
13	Lockheed Aircraft Corp.	Burbank, Calif.	Thos. D. Park	Vega Mono.	Wasp
14	Boeing Airplane Co.	Seattle, Wash.	Ruben L. Wagner	95 Biplane	Hornet
15	Aeme Aircraft Corp.	Rockford, Ill.	Un-named	Biplane	DH Gypsy
16	Ford Motor Company	Dearborn, Mich.	Un-named	8-AT—Mono.	Hornet
17	Ford Motor Company	Dearborn, Mich.	Un-named	5-ATC—Mono.	Wasp
18	Consolidated Aircraft Corp.	Buffalo, N. Y.	Leigh Wade	Mono.	Hornet
19	Moth Aircraft Corp.	Lowell, Mass.	Un-named	60 G. M.—Biplane	DH Gypsy
20	Lockheed Aircraft Corp.	Burbank, Calif.	Un-named	Vega—Mono.	Un-named
21	Ryan Aircraft Corp.	St. Louis, Mo.	Un-named	Mono.	Wright J-6
22	Corman Aircraft, Inc.	Dayton, Ohio	J. C. Kelley	3000—Mono.	Wright J-6 (3)
23	Curtiss-Robertson Airplane Co.	St. Louis, Mo.	Dan Robertson	G-2—Cabin Mono.	J-6, 225
24	Curtiss-Robertson Airplane Co.	St. Louis, Mo.	Dale Jackson	C-1—Cabin Mono.	Challenge 190
25	Curtiss-Robertson Airplane Co.	St. Louis, Mo.	Forest O'Brien	J-1—Cabin Mono.	J-6, 165
26	Waco Airplane Co.	Troy, Ohio	John Livingston	Open biplane	J-6, 7 cyl.
27	Curtiss Aeroplane & Motor Co.	Garden City, L. I.	P. M. Boyd	Carrier Pigeon II	Geared or Conqueror, G. V., 1570
28	Curtiss Aeroplane & Motor Co.	Garden City, L. I.	K. E. Voelter	Thrush—Mono.	Wright R760
29	Curtiss Aeroplane & Motor Co.	Garden City, L. I.	J. W. Crosswell	Condor cabin	Geared Conqueror (2)
30	Pitcairn Cierva	Philadelphia, Pa.	Un-named	C-19—Auto-giro	Siddeley—Genet—Major
31	Spartan Aircraft Co.	Tulsa, Okla.	Un-named	Biplane	Un-named
32	Lockheed Aircraft Corp.	Burbank, Calif.	Herbert Fahy	Vega—Mono.	Wasp
33	Cessna Aircraft Co.	Wichita, Kan.	Stanley T. Stanton	A. W.—Mono.	Warner
34	Cessna Aircraft Co.	Wichita, Kan.	Earl Rowland	DC-6 B—Mono.	J-6 225
35	Cessna Aircraft Co.	Wichita, Kan.	Un-named	DC-6 B—Mono.	J-6 225
36	Alexander Aircraft Co.	Colorado Springs, Colo.	Un-named	Bullet—Mono.	Un-named
37	Alexander Aircraft Co.	Colorado Springs, Colo.	Un-named	Bullet—Mono.	Un-named
38	Alexander Aircraft Co.	Colorado Springs, Colo.	Un-named	Bullet—Mono.	Un-named
39	E. M. Laird Airplane Co.	Chicago, Ill.	Un-named	Open Biplane	J-6
40	Lincoln Aircraft Company, Inc.	Lincoln, Neb.	Un-named	Open Biplane	Un-named
41	Fairchild Airplane Mfg. Co.	Farmingdale, L. I.	Un-named	71	Wasp
42	Fairchild Airplane Mfg. Co.	Farmingdale, L. I.	Un-named	KR	J-6 five
43	Fairchild Airplane Mfg. Co.	Farmingdale, L. I.	Un-named	KR	J-6 five

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GENERAL NEWS



Open Kansas City Meet and Reunion

*Love Wins Circular Derby;
Goebel in Race From Mexico*

KANSAS CITY (MO.)—With a full program of events for the first afternoon, and a generous schedule of races and special features for the succeeding nine days, the International Air Circus and Pilots' Reunion was opened at Fairfax Airport Sept. 21. In addition to the air events, there was an exposition in the airport hangars, offering to visitors an opportunity for close-range inspection of planes, accessories and parts while the outdoor aerial activities were still fresh in their minds.

The first event was a dead stick landing contest, followed by aerobatics, balloon bursting contest, fire fighting display, parachute jumping and delayed parachute jumping contests. In the evening, among other features, Col. Arthur Goebel's flight to Hawaii was shown in fireworks.

Colonel Goebel himself was in Mexico City, preparing to start with the other contestants in the air derby from that point Sept. 23, to arrive here Sept. 26. Other entrants included Col. Roberto Fierro, Capt. Luis R. Verdeja, Col. Fernando Proal and Capt. Feliciano Flores Diaz, all of the Mexican Air Force.

Pat Love, Richmond, Ind., won the 500-mi. circular derby which started here Sept. 21, made a tour with stopping points at Topeka, Kan.; Shanandoah, Iowa; Kirksville, Columbia and Marshall, Mo., and returned here Sept. 22. Williams Ong, Kansas City, was second; F. M. Johnson, Kansas City, third; and Tex La Grone, Kansas City, fourth. A prize was offered by Grigsby-Grunow Company, maker of Majestic radios.

Luke Christopher, chairman of the contest committee of the National Aeronautical Association, is the official referee for the circus. A list of exhibitors and other details were given in AVIATION for Sept. 14.

Aluminum Industries Busy

CINCINNATI (OHIO)—Unfilled orders sufficient to keep the plant operating at capacity for the rest of the year are reported by officials of Aluminum Industries, Inc., following the return of Chief Engineer M. A. Beckmann from a trip to various plants allied with the automotive industry. At the Beekman Street plant, the company is executing contracts for Permite pistons for a new and larger engine being added to the line built by LeBlond Aircraft Engine Corporation.

Offers New Inductor Compass

NEW YORK (N. Y.)—A new earth inductor compass is announced by Consolidated Instrument Company of America. Aircraft Control Corporation, Philadelphia, a manufacturing and research division of Consolidated, has developed the new compass.

Navy Accepts ZMC-2; Was Insured for Tests

WASHINGTON (D.C.)—Following varied tests, the United States Navy Department has accepted the ZMC-2 all-metal dirigible, according to announcements here.

Word is also received from New York that Barber & Baldwin, Inc., underwriting agency, had insured the airship for the entire series of trial flights. The new aircraft, valued at \$300,000, was insured for this amount under a comprehensive policy protecting against fire, accidental damage to the craft itself, public liability, and property damage.

Barber & Baldwin was advised on the move by Aero Engineering and Advisory Service, which studied the risk carefully before recommending its insurability.

The policy was made in favor of the Detroit Aircraft Corporation and/or the Aircraft Development Company and/or the United States Navy, covering all test flights during two months, including delivery.

Cement Firm Acquires Kreutzer

LOS ANGELES (CALIF.)—Acquisition of a controlling interest in Joseph Kreutzer Corporation has been announced by Howard Throckmorton, president of the Valley Portland Cement Company. Mr. Throckmorton has stated that the group which developed the Kreutzer tri-engined Air Coach will be retained and that several nationally known executives will be added to the organization in a program for expansion of Kreutzer activities. Joseph Kreutzer, former president, will act as chairman of the new board of directors. Other officers include: E. Milton Jones, vice-president; C. W. Williamson, secretary; Nathan Newby and J. C. Howard, directors. Manufacture of the six-place Kreutzer Air Coach, powered with three 90 hp. LeBlond, or three Kinner K-5 engines, will be continued, with other models to be announced soon.

Barnes & Gorst Changes Name

SEATTLE (WASH.)—Barnes & Gorst Airlines, Inc., this city, has changed its name to Seattle-Victoria Air Mail, Inc.

To Produce F-32's In Los Angeles Plant

NEW YORK (N. Y.)—Los Angeles will be the location of a new \$300,000 factory to be built by Fokker Aircraft Corporation for the construction of Fokker F-32 transport planes, according to an announcement by Harris M. Hanshew, president, and J. A. Talbot, chairman of the board. Building of the new factory is part of a program of expansion which will be adopted in connection with the Fokker company's affiliation with General Motors Corporation.

The new factory will be constructed on a 33-acre tract adjoining Alhambra Airport of Western Air Express. When the factory is opened, it is planned to employ 500 men to make possible a production schedule of one of the big four-engined planes per week. It is probable that this schedule will be doubled within eighteen months.

Western Air Express, of which Mr. Hanshew is also president, has ordered six of the new planes, which will be placed on the routes between Los Angeles, San Francisco and Kansas City next spring. The new air liners have a capacity of 30 passengers and a crew of four in daytime flights, and will provide sleeping accommodations for sixteen passengers and a crew of five on night flights.

The Los Angeles factory site is separated from the Western Air Express field by the right of way of the Pacific Electric Railway. In order to connect the factory with the field, an overhead viaduct has been designed which will permit taxiing the giant planes over the poles and power wires of the trolley lines.

Cirrus Moving to Michigan

BELLEVILLE (N. J.)—American Cirrus Engines, Inc., has begun its removal from the local plant to the old Wills-St. Clair automobile factory at Marysville, Mich., which will be its future home. The Marysville plant provides 235,000 sq. ft. of floor space in two three-story brick structures. Production will be in full swing at the Michigan city within a few weeks, it is announced. The American Cirrus company is a subsidiary of Allied Motor Industries, Inc.

Chevolair Plant at Indianapolis

INDIANAPOLIS (IND.)—The new Chevrolair engine, it is announced, will shortly be put into production here by Arthur Chevrolet Aviation Motors Corporation. The new power plant was demonstrated in a new Travel Air low-wing plane at the National Air Races.

Fokker Firm Offers F-14 Parasol Mail Plane



TETERBORO AIRPORT (N. J.)—Newest of Anthony H. G. Fokker's single-engine crafts, the Fokker F-14 mail plane, is now offered to the market. Of parasol construction it is a high pay load plane, with an announced high speed of 140 m.p.h.

The parasol wing construction is a departure from recent Fokker designs. The full cantilever type wing of all wood veneer covered construction is

raised from the fuselage to give forward vision to the pilot, whose cockpit is aft of the cabin.

Orders for six of the new F-14's have been received from the Western Air Express and ten from Western Canada Airways, Ltd. The new F-14 is optionally powered with a Pratt and Whitney Hornet, or a Wright Cyclone. It has an adjustable pitch propeller, electric starter, and booster magneto.

Irvin Firm to Offer Two New Parachutes

BUFFALO (N. Y.)—Successful tests of two new models of Irvin Air Chutes have been made here, according to an announcement by George Waite, president of the Irving company. Production of the new parachutes will be started as soon as patent papers have been filed. In the meantime, details are being withheld.

Recently, orders for 300 Air Chutes have been received. Curtiss Flying Service ordered 200 and Colonial Flying Service and Luddington Philadelphia Flying Service, 50 each. Executive and sales offices of the Buffalo plant have been moved in order to make possible increased production. Leslie L. Irvin, vice-president and European manager, reports that production has been started at the Warsaw branch and will be increased gradually to ten parachutes weekly.

Autogiros Out of Tour

PHILADELPHIA (PA.)—The Pitcairn Cierva Autogiro Company announces withdrawal of the three rotor planes which were listed as entries in the National Air Tour scheduled to leave Detroit Oct. 5. One or two of the Autogiros, however, may participate in the various tests that the Tour craft must undergo prior to the start. The withdrawal has been made necessary, it is reported, by a slight delay in factory production which demands the firm's time.

Five Swallow TP's to Braley

WICHITA (KAN.)—Braley School of Flying, this city, has ordered five Swallow TP training planes. Two powered with Kinner engines have been delivered.

West American Firm Forming Coast Chain

SACRAMENTO (CALIF.)—West American Aviation Corporation has been formed here with a capitalization of \$2,000,000 to operate airlines and airports, taxi service, and to manufacture airplanes. The company has acquired Western Coast Airways, and is merging and purchasing operating units at Fresno, San Jose, Modesto and other cities.

Equipment on hand includes fifteen training planes and five taxi and transport planes. Further planes will be acquired, and the service will be extended to San Francisco in the near future. It is also planned to operate aviation schools at each of the terminals. H. Z. Peters, San Francisco banker, is backing the new corporation.

Dayton Bears to Germany

DAYTON (OHIO)—Two Dayton Bear engines have been shipped to Germany by the Dayton Airplane Company, this city. The purchaser is Bayerische Flugzeugwerke Company, which plans to use the power plants in two types of sport planes.

Balloonists Ready For Bennett Race

Additional \$500 Prize Offered by Alan R. Hawley

ST. LOUIS (MO.)—Final arrangements are being completed for the Gordon Bennett International Balloon Race, which is scheduled to start here this Saturday (Sept. 28). Three of the nine entries in this eighteenth contest are representing the United States.

Alan R. Hawley, referee of the race, announces a new \$500 prize to the pilot who succeeds in breaking the European distance record of 1,334 mi. established in 1912 by M. Bienaime of France in a flight from Stuttgart, Germany, to Moscow. This prize is in addition to that already posted by Hawley for a new American distance record bettering that of 1,173 mi. made by Augustus Post and himself in 1910 in a flight from St. Louis to Northern Quebec.

The Chamber of Commerce Air Board, under whose auspices the race is being conducted, is preparing to handle thousands of spectators at the field. Troops will handle the automobile parking problem and will police the area. Trained crews from Scott Field, Ill., will inflate the balloons. The official starter is Maj. Albert Bond Lambert.

In an effort to increase interest in lighter-than-air craft in St. Louis efforts are being made to bring a great array of this type of ship here during the event. The Navy department has been asked to send the "Los Angeles" and the new all-metal ZMC-2, while invitations also have been dispatched to the Goodyear-Zeppelin Company and to Scott Field, Ill., Army lighter-than-air base.

Export Bellanca Pacemakers

NEW CASTLE (DEL.)—A new six-place Bellanca Pacemaker monoplane is being delivered to Inter-Island Airways Ltd., of Honolulu, according to the Bellanca Aircraft Corporation here. Tela Railroad Company, subsidiary of United Fruit Company, has also purchased a Pacemaker, which will be used in Honduras and other Central American states. The Tela firm has been operating a Fokker Universal during the past year and has obtained the Pacemaker for additional equipment. A third Pacemaker has gone to Lloyd Campbell, Kansas City, having been sold through Tex LaGrone, distributor.

Open Russell Plant in Canada

ST. JOHNS (QUE.)—Russell Manufacturing Company, Middletown, Conn., has opened a Canadian plant at this city. Among the many items made by this firm are cotton cloth for airplane wings, aero rubber shock cord, parachute shroud lines, and pilots' safety belts. R. L. Conroy is in charge of the aero products department of the Russell company.

Nine New Entries In Safety Contest

Twenty-Five Planes Listed, More Pending

NEW YORK (N. Y.)—With the acceptance of nine new entries, the entry list for the Guggenheim Safe Airplane Competition has been closed, according to an announcement by Harry F. Guggenheim, president of the Guggenheim Fund for the Promotion of Aeronautics. The total number of planes entered is 25, and five additional applications may be accepted if specifications submitted are satisfactory.

A first prize of \$100,000 is offered for the plane showing the greatest advance in aerodynamic safety without loss of efficiency, and \$50,000 additional prizes are offered. A testing program under special rules laid down by the fund is being conducted at Mitchel Field, L. I., N. Y. The contest will end Oct. 31.

The new entries, all of whom are American manufacturers, are as follows:

Gates Aircraft Corporation, New York City, American manufacturers of R.S.V. planes. Submitting the Gates R.S.V. Mono-biplane, two place, open cockpit biplane, designed for training and sport purposes. Renard engine (manufactured in Belgium). Five-cylinder air-cooled radial.

Taylor Brothers Aircraft Corporation, Bradford, Pa. Submitting a high wing, cabin, two place, side-by-side monoplane with variable incidence device, Kinner K-5 engine.

Command-Aire, Inc., Little Rock, Ark. Submitting standard production model type 5-c-3, three place, open cockpit biplane. Curtiss Challenger engine.

Slot Designs Employed

Ford-Leigh Safety Wing, Inc., Jackson Heights, Long Island. Submitting a two place, open cockpit biplane, with Leigh safety wing device, Curtiss OX-5 engine with Kirkham valve gear.

Moth Aircraft Corporation, Lowell, Mass., American manufacturers of the DeHavilland Moth. Submitting a two-place, open cockpit biplane and fitted with Handley-Page automatic auxiliary airfoils. D. H. Gipsy engine.

John H. Wiggans Company, Inc., Tulsa, Okla. Submitting a two-four place, open cockpit biplane with special flaps and slot design. Wright J-6; five-cylinder radial engine.

V. J. Burnelli, Keyport, N. J. Submitting a two-seater, twin-engined monoplane with variable camber wing four-wheeled landing gear with special tires and brakes; two American Cirrus Mark III. engines.

Bourdon Aircraft Corporation, Hills-grove, R. I. Submitting a three-place, open cockpit biplane Model B-4. Kinner K-5B engine.

Whittelsey Manufacturing Company, Inc., Bridgeport, Conn. Submitting a modified Whittelsey Avian two-place, open cockpit biplane, fitted with Handley-Page slots. Cirrus Hermes engine.

Study Lightning's Effect on Aircraft

BARBERTON (OHIO)—An electrical laboratory here is to be the scene of a series of experiments to determine the effect of lightning on fabric-covered and all-metal airplanes. The experiments will be conducted by Stewart Aircraft Corporation. An ordinary fabric-covered plane will be suspended in the air with its engine running, and a bolt of electricity similar to lightning discharged at it from a special electrical apparatus. In other tests Stewart Aircraft will ascertain the effects of similar bolts on an all-metal multi-engined transport.

Simmons to Export Generals

BUFFALO (N. Y.)—Exclusive export sales rights of all planes built by General Airplanes Corporation, with the exception of Canada, have been contracted for by Simmons Aircraft Division of Steel, Inc. Included in the agreement are rights for the new General "Mailplane."

Boeing's Vancouver Factory in Production

VANCOUVER (B. C.)—Three standard model Boeing planes are in production in the new factory here, work on which was begun only a few months ago. The new plant, with 30,000 sq. ft. of floor space, will operate in connection with Hoffer-Beeching shipbuilding company, which has merged with Boeing. When full production is reached, the combined companies will have a pay-roll of about \$500,000 per year.

The three models to be produced are the 204 Flying Boat, the standard Boeing mail plane, and the model 100 sport plane. Canadian materials will be largely used in the manufacture, and the new company, Boeing Aircraft of Canada, Ltd., will operate under the supervision of Hoffer-Beeching Company. H. S. Hoffer, who has been associated with both airplane and shipbuilding manufacture for 22 years, is the president of the new concern.

Chanin Offices for Grace Firm

NEW YORK (N. Y.)—Pan American Grace Airways has leased space for general offices on the thirtieth floor of the new Chanin Building, this city, according to an announcement by the Chanin Construction Company. This is the eleventh air firm to locate in the building.

Aero Chamber Taking Reservations for Shows

NEW YORK (N. Y.)—For tentative reservations of space in the Western Aircraft Show, Los Angeles, Nov. 9-16, The National Class "A" Show, St. Louis, February, 1930, and the New York Aircraft Salon, May 3-10, 1930, exhibitors are asked to forward approximate requirements to the Show Department, Aeronautical Chamber of Commerce immediately. Reservations in the Third All-American Aircraft Show, Detroit, may be cared for by direct communication with the Detroit Board of Commerce, attention of Ray Cooper, manager. Headquarters will be set up both in Los Angeles and St. Louis prior to the shows in those cities, but in the meantime reservations will be taken at the Chamber's offices.

All four expositions named have been sanctioned by the Aeronautical Chamber. The Western show, under management of the Chamber in cooperation with the California Aircraft Exposition Corporation, will be held in a specially-constructed building on Wilshire Boulevard, the principal thoroughfare, in the heart of the residential district. The National show, definite dates for which will be announced in a few days, will be held in a permanent exposition building adjacent to the airport in St. Louis, thus enabling planes to be landed and taken into the building without dismantling. This is the Chamber's annual show in which all members are expected to participate.

The Detroit display, carrying a class "B" sanction, is being given in co-operation with the Chamber's Show Department. This exposition will occupy an exhibition structure near the Detroit City Airport, thus doing away with plane dismantling. The New York exhibition, under the management and direction of the Chamber, will be held in Madison Square Garden.

Schwab Gets Air Firm Interest

NEW YORK (N. Y.)—Charles M. Schwab and his associates have made an entrance in the aviation field through the transfer of the Atlantic City Motor Speedway to General Aero Corporation and the investment of more than \$800,000 in the General company, according to Warren W. Lewis, vice-president. The speedway, he said, will be reconstructed into a passenger airport. Though Mr. Schwab is now the largest individual stockholder, he will not take active part in the affairs of the concern but will be represented on the board by an associate.

Boston Tax Map Job to Curtiss

BOSTON (MASS.)—Curtiss Flying Service was the low bidder for the aerial tax map to be made for the city of Boston, at a price somewhat under \$15,000. Joseph Barber will pilot a Fairchild cabin plane for Edward Ramsdell, Curtiss photographer.

Thompson to Erect Large Canadian Plant

CLEVELAND (OHIO).—Purchase of a ten-acre site at St. Catharines, Ont., is announced by Thompson Products, Inc., this city. A large factory is to be erected on the plot to constitute a base through which Canadian and British interests may better be served.

The complete line of Thompson products, valves, pistons, pins, bolts, drag links, tie rods and brake rod assemblies, will be manufactured at the new plant accommodating British jobbers. This is part of a new expansion movement of the company which started last January with the purchasing outright of the Cleveland Piston and Cox Tool companies. Half a million dollars has been spent in the last two years making additions to the Cleveland and Detroit plants.

By locating a factory in Canada, Thompson products can be exported to all British colonies and also to England under the preferential tariff. Original equipment and replacement fields both will be entered.

Because of excellent labor conditions, shipping facilities afforded and abundance of electric power available, St. Catharines was chosen for the new site. Branches of General Motors and Packard Electric are already located there.

The ground purchased is bounded by 396 ft. along the Canadian National Railway, 1,003 ft. on Louth Street and 546 ft. along St. Paul. The connecting side is 704 ft. long.

Allied Negotiating For Berliner-Joyce

BALTIMORE (MD.).—Negotiations are under way for the acquisition of Berliner-Joyce Aircraft Corporation, this city, by Allied Aviation Industries, Inc. No definite action has yet been taken, but it is understood that the project will be effected through an exchange of stock. Berliner-Joyce company has recently received five United States Government contracts, four from the Navy and one from the Army.

Allied Aviation Industries is a holding company which now controls Velie Motors Corporation, Lambert Aircraft Engine Corporation, Mono Aircraft Corporation, Aviation Accessories Corporation and Royal Airways, Inc. Gross sales for the period from May 1 to July 31 of this year totaled \$244,611 for airplanes and \$122,012 for engines.

Electric Fuel Gage Offered

SCHENECTADY (N. Y.).—General Electric Company has perfected and placed on the market an electrically operated gasoline gage stated to give accurate readings under practically every condition of normal flight. It depends for its operation on the pressure of gasoline to be measured. There are no moving parts except the needle of the indicating instrument and the switch.

Increase in United Income

PORTLAND (ORE.).—United Aircraft & Transport Corporation enjoyed a substantial increase in its net income for July, according to W. E. Boeing, chairman of the board. Income for the month amounted to \$1,356,021.11 bringing the total for the first seven months of the year to \$5,817,559.59. Unfilled orders, as of Aug. 1, were listed at \$14,000,000.

Third Ex-Cell-O Addition To Be Opened in October

DETROIT (MICH.).—Ex-Cell-O Aircraft and Tool Corporation, this city, announces that the third addition to its Oakman Boulevard plant in less than a year and half will be ready for occupancy before the end of October. The latest addition is a 112 ft. x 440 ft. annex representing a 175 per cent increase in manufacturing space. It is to be used exclusively for manufacturing purposes.

Increase in the manufacture of aviation parts, which accounts for 60 per cent of the corporation's business, has necessitated the additions, according to N. A. Woodworth, president of the company. In May, 1928, a new one-story plant 130 ft. x 200 ft. with two-story office section was built, while in January of this year a 74 ft. x 188 ft. addition was erected.

The Austin Company designed and constructed all three developments, which, minus equipment, cost in the neighborhood of \$275,000. All structures are of steel and brick construction with monitor roofs. The concern was incorporated in July, 1919, as Ex-Cell-O Tool and Manufacturing Company but because of the great increase in the aircraft parts business, the name was changed to Ex-Cell-O Aircraft and Tool Corporation.

Soviet Plane in Aleutians

BREMERTON (WASH.).—According to reports here, the Russian plane "Land of the Soviets" has been flown from Kamchatka across the Bering Strait to Attu, the most western of the Aleutians, and will shortly take off for Dutch Harbor, Unalaska, to continue its journey to Seward, Sitka, Seattle, and finally New York. The Soviet plane has been flown from Moscow. The crew consists of Pilot S. A. Shestakov, Second Pilot P. E. Bolotov, Navigator B. V. Sterlingov, and Mechanic D. V. Fufaeu.

Atlanta Firm Starts Production

ATLANTA (GA.).—First of five large tri-engined all-metal monoplanes now under construction at the Candler Field plant of Atlanta Aircraft Corporation probably will be completed in December or early January, it is announced. One plane per week is expected to be produced with production underway.

Detroit Aircraft Plans St. Louis Developments

ST. LOUIS (MO.).—The Detroit Aircraft Corporation, which recently purchased Parks Aircraft, Inc., following acquisition of Ryan Aircraft Corporation last summer, plans a wide development here according to Edward S. Evans, president of the holding company.

Mr. Evans, who was in St. Louis recently completing final arrangements attending the purchase of the Parks enterprises, indicated that within a year a plant probably will be built here for the manufacture of Lockheed planes, now made in Los Angeles, and Eastman planes, now produced in Detroit. But the erection of plants in St. Louis will not necessarily mean that operations will be suspended in other cities, he said.

The Detroit Aircraft Corporation has adopted a policy of reducing overhead by consolidation of facilities whenever possible, Mr. Evans said, and the manufacturing operations of Parks Aircraft, Inc., and the Ryan Aircraft Corporation will be consolidated. A \$100,000 factory to accommodate the increased production will be erected as soon as practicable after a site has been selected. It is possible that the Ryan plant will be moved from Lambert-St. Louis Field to Parks Airport, although this has not been definitely decided as yet. It is planned to retain the entire personnel of both plants.

New officers of the Parks corporation are: Mr. Evans, chairman of the board of directors; Harry P. Mammen, president; Oliver L. Parks, vice-president and general manager; and William Sprout, treasurer.

Approve Six More Planes

WASHINGTON (D. C.).—Approved type certificates have been issued to six more airplanes. According to certificate, make and designation, type, power plant, useful load, and gross weight, they are as follows: No. 228—Great Lakes Model 2T-1A, two-place open biplane, Cirrus Mark III, 578 lb., 1,580 lb.; No. 229—General Model 111-C, two-place open monoplane, Warner, 535 lb., 1,741 lb.; No. 230—Nicholas-Beazley, three-place open monoplane, Velie, 629 lb., 1,401 lb.; No. 231—Nicholas-Beazley, three-place open monoplane, Genet, 629 lb., 1,364 lb.; No. 232—Rearwin Model 2,000-C, three-place open biplane, Challenger, 885 lb., 2,380 lb., and No. 233—Command-Aire 5C-3C, three-place open biplane, 165 hp. J-6, 931 lb., 2,490 lb.

Curtiss Closes Dusting Season

HOUSTON (TEX.).—The Curtiss Flying Service of Texas ended its cotton dusting season for the year with the return of Phil Fairless, pilot, from Navasota, where he finished the last crop scheduled. More than 200,000 acres of Texas cotton has been dusted.

Form Two Firms For Service in Cuba

NEW YORK (N. Y.)—Organization of two companies for operation in Cuba has been announced here by the Curtiss-Keys and the Fairchild interests, which will have a substantial representation among the officials of each of the new enterprises. Both propose to develop a general flying service and aircraft sales system and both will have headquarters in Havana.

One company, designated as Compania Nacional Cubana de Aviacion Curtiss, S.A., is a \$1,000,000 concern organized by Intercontinent Aviation, Inc., of this city, one of the Curtiss-Keys group. Its general policies and organization will follow the experience of the Curtiss Flying Service. It will offer a complete aviation sales and service program, cross-country, taxi, photographic services, and ground and flying schools.

It was formed under the laws of Cuba and includes among its officers Dr. Baldomero Grau, member of the Cuban congress and chairman of the Corps of Notaries, who will be secretary, and on the board of directors will be Emerio Zorrilla, consultant of the Havana city administration, president of the National Industrial Association of Cuba and president of the Compania Cerveza Internacional, the leading brewery of the island; Capt. Jorge Vila, vice-president and general director of the Cuban National Paint Company; Jose Emilio Obregon, director of the affairs of the Chase National Bank in Havana and president of the Vedado Tennis Club; Rafael Jorge Sanchez, also a consultant of the Havana city administration.

Officers Named

W. D. Pawley, who has had long business experience in Latin America, is president; Dr. Pablo Carrera Justiz, Havana attorney, is executive vice-president; C. I. Morton, vice-president of North American Aviation, is vice-president; Thomas Doe, vice-president of Sperry Gyroscope Company, is vice-president; John Sanderson, treasurer of Aviation Exploration, Inc., is treasurer. Other directors include: C. M. Keys, Chester W. Cuthell, J. A. B. Smith, treasurer of the Curtiss Aeroplane and Motor Company; Leonard Kennedy, vice-president of that company; J. Cheever Cowdin, and James C. Willson.

Work is expected to start at once on two hangars at the company's airport at General Machado, a suburb of Havana, and contracts have been signed for the construction of an administration building to house the offices and classrooms for students.

Cuban Flying Service, Inc., or Servicio de Aviacion, S.A., is the name of the concern organized by Fairchild Aviation Corporation, unit of The Aviation Corporation. It will offer the same broad and complete service proposed by the Curtiss firm. Offices have been opened in Havana already and a con-

Air Corps Man Will Tour in Italy

WASHINGTON (D. C.) — That the Army Air Corps may avail itself of the latest information on foreign aeronautical matters, Maj. George E. Lovell, Air Corps, assistant military attaché at Rome, Italy, has been directed to make a tour of inspection of air fields and centers throughout Italy. Major Lovell's trip will take him to such airports and centers as Bologna, Ferrara, Padova, Aviano, Udine, Gorizia, Bolzano, Milan, Turin, Spezia, and Livorno.

tract has been let for the immediate construction of a large hangar at Camp Columbia Field.

Cuban and American business men are included on the board of directors as follows: Nestor G. Mendoza, Federico Fernandez Casas, Guillermo de Zaldo, Jose Emilio Obregon, Rafael Sanchez Aballi, Francisco Pla y Martin, Laureano Lopez, Miguel Suarez, W. A. Harriman, George R. Hann, Robert Lehman, Graham B. Grosvenor, Sherman M. Fairchild, William D. Loucks, Frederic C. Coburn, Robert Law, Thurman H. Bane, John McE. Bowman, Raymond Applegate and Lloyd B. Averill.

The complete list of officers has not been announced yet, but Roy Applegate will be vice-president and James P. Farnham will be technical adviser.

E-R Men to Europe for Survey

CINCINNATI (OHIO) — Announcement is made here by John Paul Riddle, vice-president and general manager of Embry-Riddle Company, that the firm believes deeply in the possibilities of gliders and light planes and is therefore sending Capt. Wright Vermilya, director of the Embry-Riddle school, and Ross A. Wiegand, public relations man, for a three-month European survey. The two plan to sail Oct. 4. The survey will include Germany, Holland, Belgium, Italy, France, and England, with special study of the progress made by Germany in gliding and soaring. Mr. Wiegand will make a study of European methods of glider promotion.

Martin Firm to Offer Stock

BALTIMORE (MD.)—The Glenn L. Martin Company, producers of military aircraft, will make an early public offering of stock, it is announced. The company has erected a new plant here, which is expected to be in operation in October. On completion of its financing, the company will have outstanding 675,000 shares of no par-value stock.

Gruss Firm Taking New Los Angeles Plant

SAN FRANCISCO (CAL.)—With increased calls for the firm's air strut, Gruss Air Spring Company of America, Ltd., announces that after Oct. 1 the organization will occupy new and larger quarters at 4536 District Boulevard, Central Manufacturing District, Los Angeles. The Gruss concern has made oleo-pneumatic automotive and aircraft shock absorbers since 1911.

The new plant is being equipped with modern high speed production machinery; and with the equipment now being installed, it will have a capacity of 100 air struts per 44-hr. week.

Personnel of the firm will be under the direction of Marion Newman, president and general manager; R. S. Waugh, manager, aeronautical division; W. King Jenkins, chief engineer, and Whiteman Reed, production manager.

Upon moving into the new location, production facilities will be concentrated on the new Series "B" Gruss Air Struts. The absorbers are stated to offer many refinements and improvements.

Prepare for Florida State Air Conference

JACKSONVILLE (FLA.) — Various communities in Florida have appointed members to the state-wide aviation organization that is being formed under the auspices of the State Chamber of Commerce, the aero committee of which is headed by Lieut. E. C. Neilson, Orlando.

Committeemen will attend the aviation conference at Miami Oct. 12 with the express purpose of discussing ways and means of airport development.

Among the appointments announced are the following: W. E. Currie, Lake Jovita; J. M. Stevens, Wauchula; W. G. Ruffy, Fort Pierce; P. A. Roll, Fort Myers; Karl Thompson, Key West; C. K. Dodd, Punta Gorda; W. E. Mann, president of the Palmetto Aviation Club, Palmetto; Hart McKillop, Winter Haven; G. W. Hutchinson, Lake Worth; J. E. Younge, Miami Beach; and T. Imeson, Jacksonville.

Plan Fort Worth Aviation Bldg.

FORT WORTH (TEX.)—Construction of a twenty-story building to house aviation companies in this city will be started about Feb. 1, 1930. It is to be known as the Aviation Building, and is believed to be the first large building in the country devoted primarily to aeronautical companies. The new structure, designed by Wyatt C. Hendrick, Inc., this city, will be strictly modern in plan, with set-backs beginning above the eleventh floor and continuing on successive floors until the last two stories are contained entirely in the tower 50 ft. square which is the core of the building. A decorative scheme in terra-cotta and bronze will picture aeronautical subjects.

To Test 32-Passenger Commodore Flying Boat

BUFFALO (N. Y.)—Assembling of the new 32-passenger Consolidated Commodore, largest flying boat developed in America, has been completed and tests of the craft are under way here.

Built for the New York, Rio and Buenos Aires Line to be used in their 8,500 mi. route between North and South America, the Commodore will be brought to New York as soon as test flights are completed, christened the "Buenos Aires," and used as the flag-plane of the line.

The plane is a commercial adaptation of the Admiral patrol plane delivered by Consolidated Aircraft Corporation to the U. S. Naval Air Service in December, 1928. It is powered with twin Pratt and Whitney 575-hp. Hornet engines giving it a high speed estimated at 130 m.p.h. and a cruising speed of 110 m.p.h.

Three passenger cabins are provided as well as a lavatory, buffet room and radio compartment. A crew of three will be carried. The plane is of all-metal construction with a wing span of 100 ft. and a total wing area of 1,110 sq. ft. Its length is 61 ft. 9 in.

Lengthen Air Corps Enlistment

WASHINGTON (D. C.)—Students of the Air Corps Advanced Flying School, Kelly Field, Tex., will be required to serve in the Army for a period of two years after graduation, in accordance with regulations recently issued by the War Department. The order was promulgated, according to the announcement, partly to insure filling the quota of 1,650 officers of the Regular Army Air Corps and 550 Reserve officers on extended active duty required by the terms of the Five-Year Program for Expansion of the Air Corps, and partly to avoid competition in the commercial field between Army-trained pilots and graduates of commercial flying schools. Under the new regulations, Flying Cadets will enlist for a term of three years, one of which will ordinarily be devoted to training and the other two years to a tour of active duty as Reserve or Regular officer in the grade of Second Lieutenant.

Will Not Move Hamilton Aero

MILWAUKEE (Wis.)—Hamilton Aero Manufacturing Company will remain in Milwaukee, it is announced by Arvid Nelson, superintendent, upon receipt of word from Thomas F. Hamilton, Seattle, president. The message denies reports that the firm, which recently was made a subsidiary of Standard Steel Propeller Company in the United Aircraft & Transport group, would be moved to Pittsburgh, location of the Standard concern. As announced a short time ago, Hamilton Metalplane Company, division of Boeing Aircraft Company, of the United organization, is being absorbed by Stearman.

Ask Support in Free Plane Move

NEW YORK (N. Y.)—Telegrams have been sent out by the American Society for Promotion of Aviation to leaders of industry, press, politics, and aviation throughout the United States asking support for the Society's effort to have Congress appropriate money to give airplanes gratis to civilian flying clubs as is now done in Canada and England.

Impromptu Air Meet Is Test of Instruction

VALLEY STREAM (L. I., N. Y.)—Advanced students of Curtiss Flying School here participated in an impromptu air meet at Curtiss Field Sept. 18. The competition, which included several events such as landing to a mark, acrobatics, and a 10-mi. race in fledgling planes, was won by Miss Frances Harrell. Prizes of 1 hr., 45 min. and 30 min. of free flying time were given for first, second and third place winners, respectively.

The meet was a feature of the inspection tour of Curtiss Schools now being conducted by William A. Winston, national director. Mr. Winston said, "The object of the contest was to determine from a scientific point of view that our methods of instruction actually produce safe, capable and finished pilots. In no sense was there any premium upon daring or spectacular acrobatics."

Air Race Modifications

A check of official results and data of the National Air Race events at Cleveland, Aug. 24-Sept. 2, brings announcement of several modifications, changes, and corrections in figures and statements. Among them are the following:

In Event No. 3, experimental plane race for civilians, first place, not second, went to Douglas Davis, who flew the Chevrolet D-6 powered Travel Air low-wing. The winning speed was 113.38 m.p.h.

A revised decision of the Air Race Committee gave first place in Event No. 17, Civilian Open Cockpit Plane Race, 800 cu. in. displacement, to Charles W. Holman, flying a J-5 Laird and averaging 150.61 m.p.h. At the time of the race, Holman was reported disqualified for cutting a pylon.

Though in the official results William Burns is named as pilot of the Heath Bullet in Event No. 15, Civilians Light Plane and Efficiency Contest, the Heath Airplane Company points out that "it would be impossible to get Burns in this ship, as it is with a good deal of difficulty that Mr. E. B. Heath can be squeezed in."

In Event No. 9, Civilian Race, 510 cu. in. displacement, W. G. Moore, flew a Warner-powered Inland "Super-Sport" and not an American Moth.

In the Oakland-Cleveland Derby, W. J. Barrows flew a Fairchild 71 and not "a Kreider-Reisner biplane." H. A. Speer, victor in the efficiency race, Event No. 15, and winner of second place in the civilian free-for-all, Event No. 5, flew a Fairchild Genet powered Barling NB-3 and not a LeBlond Barling as has been incorrectly stated.

Bellanca Aircraft Corporation announces a few corrections to the official result booklet issued by the race committee. In Event No. 10, H. P. Young's Bellanca CH was powered with a J-5 and not a J-6; and in the same event, J. W. Smith's Bellanca carried a J-6 9-cyl. rather than J-5. Under "Speed" in Event No. 18, J-5 should read J-6 9-cyl. in Haldeman's plane, as it should also do under "Efficiency" immediately below. Smith's Bellanca in the Efficiency Race was fitted with a J-6 9-cyl. rather than 7-cyl. engine, and J-5 should read J-6 in the listing of Smith in Event No. 19.

Announce Winners Of Eaglerock Awards

COLORADO SPRINGS (COLO.)—Winners of prizes consisting of an Eaglerock airplane, a \$1,000 scholarship to Guggenheim School of Aeronautics, N. Y. U., and sixteen 10-hr. flying courses are announced by Alexander Aircraft Company, this city, as the culmination of the Eaglerock Awards competition conducted among college students early this year.

Percy deF. Warner, a law student at New York University, was the winner of the airplane. He received a completely equipped Eaglerock priced at \$3,500 flyaway factory, flying it to his home at Nantucket, Mass. His four papers presented data on the organization, finance and operation of a college flying club. Warner is one of the organizers of the New York University Flying Club.

Paul C. Spiess, Denver, Colo., an honor engineering student at the University of Colorado, won the scholarship to Guggenheim School of Aeronautics. His papers were the result of research on a height-above-ground indicator. He is entering New York University this fall.

Judges in the scholarship award competition were: Prof. Alexander Klemm, head of the Guggenheim School of Aeronautics, New York University; Dean Jesse R. Morgan, Colorado School of Mines, and J. Don Alexander, president of Alexander Aircraft Company.

Ten hour flying courses were awarded the following college students by the Eaglerock distributors named:

Myrtle Workman, San Diego State College, Aero Corporation of California; Mott Hanna, University of Oklahoma, Wichita Falls Air Transport Company, Inc.; Charles W. Sharp, University of Nebraska, Bennett Airways, Inc.; Isabel S. Bouldin, Virginia State Teachers' College, Charles Flying Service, Richmond, Va.; W. D. Martin, Kysor Eaglerock Sales Company, Niles, Mich.; Stanton Brown, University of Illinois, Jack Oates, Inc., Chicago, Ill.; Carroll A. Boynton, Dartmouth College, Massachusetts Airways Corporation, Springfield, Mass.; Alice E. Hetzel, South Dakota State College, Halley Aviation Management, Inc., Rapid City, S. D.; J. A. Fuqua, Mississippi A. & M. College, Williams Flying Service, Greenville, S. C.; W. G. Benn, Temple University, Philadelphia, Mt. Vernon Airways, Inc., Alexandria, Va.; W. H. Peters, Pennsylvania State College, Morris Flying Service, Pittsburgh; Aubrey D. Gates, University of Arkansas, Von Hoffmann Aircraft Company, St. Louis; H. R. Beeble, University of Idaho, Billings Airways, Inc., Billings, Mont.; Royce P. Erickson, University of Colorado, Pikes Peak Air Commerce, Inc.; August Keto, Washington State College, Inland Eaglerock Co., Spokane; and Wesley A. Miller, University of Wisconsin, Weeks Aircraft Company, Milwaukee.

Representatives Named

WACO—McQueen & Moore, Stockton, Calif.

SPARTAN—A. E. Rohde, Tucumcari, N. M.; for New Mexico; B. J. Wickham, Council Bluffs, Ia.; F. C. Adams, Sapulpa, Okla.

BELLANCA—Inter-Island Airways, Ltd., Honolulu; for the Hawaiian Islands.

ARISTOCRAT—Silver Fox Airport, Muncie, Ind.

Glider Meet Held At San Diego, Calif.

Bowlus Takes Trophy For Scoring Most Points

SAN DIEGO (CALIF.)—Six glider pilots from Long Beach, Riverside, and San Diego entered craft in the first Pacific Coast Glider Meet, held in San Diego Sept. 1 and 2. The meet was sponsored by Pacific Beach Business men's Association and was official in every respect, being timed and judged by representatives of the N.A.A. While no records were broken, the interest of thousands of spectators was held throughout the two-day meet.

The take-offs were made from low hills, one having an elevation of 450 ft. and the other an elevation of 350 ft. above sea level. Thirty-seven flights were made during the two-day meet and while there were two minor crackups, no one was injured.

W. H. Bowlus, head of the technical training department of the Airtech School of Aviation, San Diego, received a silver trophy for scoring the highest number of points in the meet. This is a perpetual trophy that will be awarded each year to the entry who wins the greatest number of points in the annual Pacific Coast Glider Meet. Bowlus also won two silver cups for duration of flight and distance flown.

Smith Wins Altitude Contest

Apollo Smith, Long Beach, captured first place in the altitude contest for the soarer class, won first place in the endurance event for training or primary gliders, and won the distance mark for primary craft, while John R. Pierce, also of Long Beach, won the cup for landing nearest the mark in a special spot-landing event.

Bowlus provided the spectators with the most extended flight when, on Monday afternoon, he stayed in the air for more than one minute and forty-three seconds.

A summary of the various engineless events follows:

DURATION

Soarers of Secondary Gliders—W. H. Bowlus, Airtech School of Aviation, San Diego, 1 min. 43 4/5 sec. Apollo Smith, Long Beach Glider Club, 1 min. 16 3/5 sec.; John R. Pierce, Long Beach Glider Club, 1 min. 3 sec.

Primary or Training Class—Apollo Smith, 55 4/5 sec.; James Caruso, 50 1/5 sec.; Ray Chesley, 43 sec.; John R. Pierce, 42 4/5 sec.

ALTITUDE

Soarer Class—Apollo Smith, 72 ft.; W. H. Bowlus, 54 ft.; John R. Pierce, 42 ft. Primary Class—Ray Chesley, 45 ft.; John R. Pierce, 41 ft.; Apollo Smith, 40 ft.; James Caruso, 37 ft.

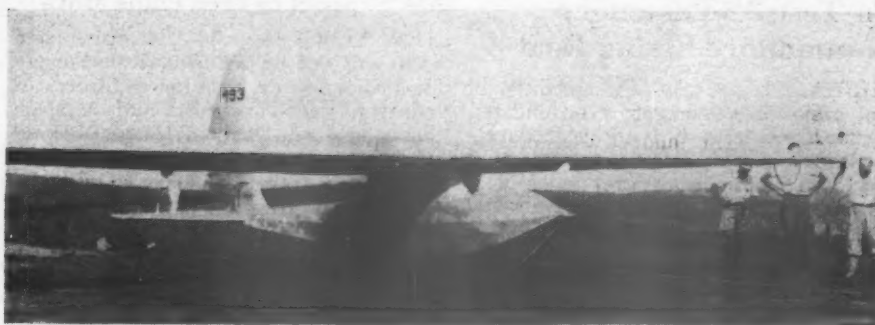
(The altitude given is the height above the starting point attained by the glider.)

DISTANCE

Soarer Class—W. H. Bowlus, 2,925 ft.; Apollo Smith, 2,175 ft.; John R. Pierce, 2,050 ft.
(Distances under 2,000 ft. not calculated.)

LANDING TO SPOT

John R. Pierce, 8 ft. 2 in.; Bill Atwood, Riverside Glider Club, 16 ft. 9 in.; Ray Chesley, 23 ft. 3 in.



W. H. Bowlus in the cockpit of his glider

Curtiss, Standard to Wisconsin

MADISON (WIS.)—Two out-of-state corporations have been granted corporation licenses, it is reported here. They are Standard Steel Propeller Corporation of Pennsylvania, which was given permission to dispose of 370,000 par-value shares of its capital in Wisconsin, and Curtiss Flying Service of the Middle West, Inc., Delaware.

Announce Aircraft Inspectors and Districts

WASHINGTON (D. C.)—Aeronautics Branch, Department of Commerce, has announced appointment of supervising inspectors for the nine aircraft inspection districts. Inspectors and their territory are as follows:

District 1—Maine, New Hampshire, Vermont, Connecticut, Massachusetts, Rhode Island, New York, New Jersey; W. O. Sargent, Roosevelt Field No. 2, Garden City.

District 2—Pennsylvania, Delaware, Maryland, District of Columbia, Virginia, West Virginia; George West, Colonial Trust Building, Philadelphia.

District 3—Tennessee, North Carolina, South Carolina, Georgia, Florida, Alabama, Mississippi, Southeast Louisiana; Leo C. Wilson, Municipal Airport, Atlanta.

District 4—Michigan, Ohio, Indiana, Kentucky; H. F. Rough, Free Press Building, Detroit, Mich.

District 5—Illinois, Wisconsin, Minnesota, Iowa, North Dakota, South Dakota; E. A. Cutrell, Municipal Airport, Chicago.

District 6—Missouri, Nebraska, Kansas, Colorado; R. H. Lees, Jr., Chamber of Commerce, Kansas City.

District 7—Texas, Oklahoma, Arkansas, Louisiana (except southeast section); H. B. Pentland, Army Airways, Love Field, Dallas.

District 8—Northern California, Nevada, Utah, Washington, Oregon, Montana, Idaho, Wyoming; E. E. Mouton, Oakland (Cal.) Airport.

District 9—Southern California, Arizona, New Mexico, City of El Paso, Texas; W. F. Parkin, Chamber of Commerce, Los Angeles.

Air Courses to Swallow Buyers

WICHITA (KAN.)—Under a plan just announced by Swallow Airplane Company, this city, a flying course will be given with every purchase of a Swallow plane. The company, according to W. C. Vail, firm sales manager, has completed the arrangements with more than one hundred air schools scattered over the country. At Wichita, the Braley, Mitchell, and Wichita schools will cooperate with Swallow.

Products Firm Offers Pontoons, Hulls, Skis

DETROIT, (MICH.)—With the addition to its engineering staff of A. Ralsten Stalb, Aircraft Products Corporation, this city, announces its entrance into the pontoon, hull, and ski business. Ralph S. Irwin, firm president, states that deliveries will be made on the initial pontoon order about the middle of October.

New and larger quarters, totalling 18,000 sq.ft., into which the company moved Sept. 1, permit of the new division and a further expansion of the wheel and strut business, made necessary by increasing demand during the firm's eleven months of existence.

Stalb, working with J. H. Mozni, chief engineer, will have complete charge of the pontoon division. He started work in aviation in the Navy in 1916, and was stationed at Hampton Roads during the war. He was with Loening for five years, then did hull work with Brewster & Company, and until his latest move was associated with the Fairchild firm in float and ski manufacture.

Mozni has been with the company since its organization last November. He is a product of the automobile engineering profession, having served with the American Car & Foundry company in the development of high speed and double deck buses, Hupp Motor Car Company, Chrysler, Maxwell-Chalmers, and General Motors. Mozni it is stated, engineered the first automobile equipped with hydraulic four-wheel brakes.

Federal-Mogul Adds to Plant

DETROIT (MICH.)—In order to consolidate all departments at one location, and to care for increased business, Federal-Mogul Corporation, manufacturers of bearings, bushings, bearing metals, die castings and allied products, has built a new \$300,000 foundry and added 26,400 sq.ft. of space to its factory. The total production area is now over 100,000 sq.ft. The new foundry is provided with up-to-date facilities for efficient handling of metals and castings, and makes possible a higher volume of production per man and per square foot of floor space. New chemical and physical laboratories have also been added for testing and research.

BRIEFLY

Johnson Airplane & Supply Company, Dayton, Ohio, has been acquired by a Cincinnati holding company whose name has not yet been announced.

Three Curtiss Fledgling training planes have been received by the aviation unit of the Minneapolis (Minn.) Naval Reserve, which has its headquarters at Wold-Chamberlain Field.

Goodyear Tire & Rubber Company, Akron, Ohio, has announced the purchase of a new Curtiss Robin.

Airport Engineering & Construction Company has opened offices in the Piedmont Building, Charlotte, N. C., and will make that city its headquarters.

Miami Airplane & Supply Company has moved into new quarters at 1162 S. W. First Street.

Axelsson Aircraft Engine Company will start production in its new plant about Oct. 15. The company is said to have tentative orders for approximately 700 of the new series Axelsson engines.

Hamilton Metalplane Company is reported considering production of a twin-engine plane.

The Chicago-Copenhagen flight planned by Bert Hassell, Rockford, Ill., has been postponed until next spring.

Utica (N. Y.) Chapter of the National Aeronautic Association has been chartered with Merwin K. Hart as president. Other officers include: Beirne Gordon, Jr., vice-president; Frank H. Wenner, secretary, and A. James Eckert, treasurer.

August sales from the parts and supply department of Universal Aviation Corporation showed an increase of 831 per cent over the same month last year, and an increase of 8 per cent over July of this year.

Temple Corporation, manufacturers of Temple radios, awarded a three-place cabin Aristocrat monoplane to the distributor attaining the highest percentage of campaign quotas. The award was made at the New York radio show this week.

A Curtiss Robin, "The New Yorker," sponsored by the Hotel New Yorker, left Roosevelt Field Sept. 23 on a 15,000-mi. tour of the country.

Lieuts. W. Jack Frye and Paul V. Richter, Jr., set an unofficial altitude record of 23,200 ft. for commercial aircraft carrying 2,200 lb. payload, on Sept. 15, in a Fokker F-10.

An American plane, equipped with pontoons and skis, will be used by a Norwegian whaling expedition in the Arctic, according to an announcement from the Department of Commerce.

The new \$50,000 factory of Monarch Aircraft Industries, Inc., North Second Street Road, Rockford, Ill., is nearing completion and machinery is being installed.

"Pernambuco," one of a fleet of eight-passenger Sikorsky amphibions which are to be put in service between New

York, Rio de Janeiro and Buenos Aires, has been started on a flight over the 8,500-mi. route to Buenos Aires.

Five model 204 Boeing flying boats, five-passenger planes powered with Wasps, are now in production.

Maj. R. Cordes has arrived in this country with a Handley Page plane which he expects to enter in the Gugenheim safe airplane contest.

During August 1,567 planes arrived and 1,571 took off from Oklahoma City Municipal Airport. The number of passengers landed was 2,143, while 2,161 enplaned at the airport.

United States Airways, Inc., will operate planes from Kansas City to Denver, in connection with the new schedule of Southern Railway System's "Kansas City Special."

Dare Metal Airplane Company, Detroit, is negotiating for concessions at Sandwich, Ont., to erect a \$200,000 plant.

It is understood in New York that Colonial Air Transport is negotiating for the extension of its twice daily New York-Boston passenger service to Washington, D. C.

AERONAUTICAL CALENDAR

Sept. 21-29	Class C Air Show and International Pilot's Reunion, Fairfax Airport, Kansas City, Mo.
Sept. 28	Gordon Bennett Balloon Trophy Race, St. Louis, Mo.
Sept. 30-Oct. 4	Annual Safety Congress, Chicago.
Oct. 5-21	National Air Tour, Starting from Ford Airport, Dearborn, Mich.
Oct. 7-12	Air mail observance, auspices Direct Mail Advertising Association Convention, Cleveland, Ohio.
Oct. 24-25	Conference on Municipal Airports at Washington, D. C., under auspices of the American Road Builders Association.
Oct. 31	Discussion of airport paving at Eighth Annual Asphalt Paving Conference, West Baden, Ind., Oct. 28-Nov. 1.
Nov. 8-10	Intercollegiate Aeronautic Conference, Columbus, Ohio.
Nov. 9-17	Western Aircraft Show, Los Angeles.
Nov. 18	Lehigh Airport Design Competition Closes. Lehigh Portland Cement Company.
Dec. 10-16	National Aviation Week, Mexico, including air show and air display at Mexico City.
1930 February	National Air Show, auspices Aeronautical Chamber of Commerce, St. Louis.
Feb. 5-12	New York Aviation Show, auspices Aviators' Post, American Legion.
April 5-13	All-American Aircraft Show, Detroit
May 3-10	New York Aircraft Salon, auspices Metropolitan New York Division, Distributor-Dealers Section, Aeronautical Chamber of Commerce, at Madison Square Garden, New York City.

AIR MEETS

Sept. 30-Oct. 4	At Louisville, Ky., under auspices of Jefferson Post, American Legion and in conjunction with the national American Legion Convention.
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Oct. 5-6	Walker Airport, Windsor, Ont.
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AIRPORT DEDICATIONS

Sept. 20-22	Athol, Mass.
Sept. 21	Central Airport, Camden, N. J.
Sept. 27-28	Utica Municipal Airport, Utica, N. Y.
Sept. 27-28	Pittsburgh-Butler Airport, Pittsburgh, Pa.
Sept. 28-29	Municipal Airport, Durango, Colo.
Oct. 12	Florence, Ariz.
Oct. 12	Conneaut Airport, Conneaut, Ohio.
Nov. 11	Duluth Municipal Airport, Duluth, Minn.

TRADE TIPS

It has been reported that

Surveys of emergency fields and beacon sites on the new Cleveland-Youngstown - Pittsburgh - Washington airway have been completed and bids for the construction work are to be advertised soon.

Thompson Aeronautical Corporation, Cleveland, Ohio, has asked for bids for the erection of a 210x164 ft. brick-steel hangar at Pontiac (Mich.) Municipal Airport, to cost about \$70,000.

Tampa, Fla., Junior Aero Club is considering plans for financing the purchase of a plane.

Wichita Falls Air Transport Company, Wichita Falls, Tex., will erect a 60x60 ft. hangar and an 18x34 ft. terminal building at Stanley Field.

City Engineer Frank Rossi, Modesto, Calif., is preparing plans for a new hangar at the municipal airport.

Palmetto Aero Club, Palmetto, Fla., is planning to build a landing field.

New Firms Announced

MACK FLYING SERVICE, INC., Brooklyn, New York; capital 200 shares no par-value stock; by Frederick J. Schulz, James J. Mackie and John Dean.

MAINE AIRPORT TRANSPORT COMPANY, Portland, Me.; by Harry Wishman, Jr., T. Y. Springer, and J. J. Biasi; to sell planes, teach aviation, take aerial photographs and carry passengers.

CANADIAN FLYING SERVICE, LTD., Toronto, Canada; capital 10,000 shares no par value stock, value not to exceed \$500,000.

AERO EXPORT CORPORATION, Pittsburgh, Pa. (Delaware incorporation), by B. E. Winrow, H. R. Blickle, John J. Dauer, William Ganley, Claude B. Sharp, Jr., E. Arthur Kerschbaumer, and John F. Edmonds; to sell planes in South America.

AIRWAY BEACONS, INC., Long Island City, N. Y.; capital 2,000 shares of no par value stock; by H. D. Chadwick, Robert Nelson and M. K. Nelson; to deal in electrical equipment.

OKEFENOKEE FLYING SERVICE, Folkston, Ga.; capital stock \$25,000; by M. Dewey, and E. W. Hightower; to operate sightseeing planes over Okefenokee Swamp.

JAYHAWK AIRCRAFT CORPORATION, Wichita, Kan.; capital 100,000 shares of no par value stock, by W. D. Egolf, D. W. Eaton, E. D. Fitzpatrick, M. L. Molitor, R. B. Darlington, Mark Adams and W. E. Holmes; to manufacture airplanes.

THE DALLES AIRPORT, INC., Dalles, Wash.; capital \$10,000; by H. L. Edkins, W. S. Nelson and Sam E. Van Vactor.

LIBBY-HALSEY MOTOR COMPANY, Yakima, Wash.; capital \$20,000; by V. M. Libby, W. C. L. Halsey, and others.

PERSONNEL

JOSEPH LEOPOLD, HUGH W. GALLAHER and EDWARD O. McDONNELL have been re-elected Class A directors of Consolidated Instrument Company of America, Inc. At the meeting of stockholders held recently in New York City, JOHN MEAGHER, ROBERT E. JENNINGS and COMDR. F. K. GUNDLACH were elected Class B directors. LUCIEN L. FRIEZ, CEDRIC FAUNTLEROY and GEN. T. EDWARD HAMBLETON continue as Class C directors.

R. S. COOPER has been elected president of Independent Pneumatic Tool Company, Chicago. NEIL C. HURLEY was elected a member of the executive committee, and RAYMOND J. HURLEY was elected director.

G. L. BUCK, city manager of Long Beach, Calif., is to be given full control of the municipal airport of that city.

JACK CLARK, recently engineer for Travel Air, has been appointed chief engineer of Okay Aircraft Company, Okay, Okla.

PAUL G. CLARK has been appointed assistant sales manager of Alexander Aircraft Company.

L. M. MEANS has been appointed district sales manager for American Eagle Aircraft Corporation with headquarters in Kansas City.

W. D. ALLEN, formerly with Maddux Airlines, has been appointed local representative of Pitcairn Aviation, Inc., at Jacksonville, Fla.

ARTHUR T. DANAHY has been made chairman of the Airport Advisory Board, Buffalo, N. Y., to succeed Kenneth A. Wood.

ALBERT E. HASTINGS has been appointed sales manager of San Diego Air Service Corporation.

F. H. JENKINS has been appointed chief pilot and instructor for Head of the Lakes Airways, Inc., Duluth, Minn.

"AL" SHERMAN has been appointed service manager for Curtiss Flying Service of New England.

EDWARD L. CHALMERS has been elected chairman of the New Jersey State Aviation Commission.

MAJ. REED LANDIS has been commissioned a Deputy Coroner of Cook County, Ill., in charge of aviation investigations.

L. E. RAMPTON has been appointed superintendent of division five of Western Air Express.

FRED A. MARSHALL, formerly of *Slipstream* and *Airway Age*, has been appointed director of public relations for Aeronautical Supply Manufacturing Company with offices in New York City.

LUCIUS LOBDELL, formerly with Southwest Air Fast Express, has been made Chicago traffic manager for Northwest Airways.

TOM HARDIN, recently connected with Southern Air Transport, has been made

operations head of all the subsidiary companies controlled by The Aviation Corporation. ROBERT J. SMITH, C. A. ROGERS and C. L. DUNCAN will also transfer from Southern Air Transport to The Aviation Corporation. Hardin will be replaced as vice-president and general manager of Southern Air Transport by C. R. SMITH, treasurer.

LIEUT. HARRY A. SUTTON has resigned as pilot at Wright Field, Dayton, Ohio, to accept an executive position with United Aircraft.

MATT NIEMENEN, formerly chief pilot and instructor at Head of the Lakes Airways, has accepted a position as transport pilot with Aviation Corporation at Anchorage, Alaska.

CAPT. LLOYD JUELSON has been made chief flying instructor of Universal Flying School, Cleveland, Ohio; and A. D. NIEMEYER will replace Captain Juelson as manager of the Universal school at Memphis, Tenn.

ROY E. PEMBERTON, formerly manager of Imperial Valley Airport, Imperial, Calif., has been added to the staff of flying instructors at Airtech School of Aviation, San Diego, Calif.

I. R. LANG has been appointed sales representative for Yellow Cab Airways, Inc., for Des Moines and Mason City, Ia.

RALPH N. SHANNON, former president of Springs & Shannon, Columbia, S. C., has joined the general traffic department of the Universal Aviation Corporation at St. Louis.

DR. JOHN LAVAN has been made assistant flight surgeon for the Universal Aviation Corporation.

EYER L. SLONIGER, pilot on the St. Louis-Chicago run, has been transferred to Kansas City, Mo., as operations manager of Universal Air Lines.

CARL and LEROY GILLUM, Bowling Green, Mo., have joined the sales department of the St. Louis-Universal Flying School.

CAREY T. PRIDHAM has been appointed night mail pilot for Colonial Air Transport on the New York-Boston route.

H. PETRI, formerly with Universal Aviation Schools, St. Louis, is now on the sales force of the Universal school at Minneapolis, with territory including northern Minnesota, North Dakota, South Dakota and Wisconsin.

WILLIAM NELSON BUMP has been appointed manager of the Boston office of Universal Aviation Corporation.

S. J. IRVINE, formerly with Standard Automatic Products Corporation, has been appointed general manager of National Steel Products Company, Dayton, Ohio. CHARLES A. SCOTT has been elected vice-president.

VICTOR GRIMA has been appointed manager of Southern Air Transport.

CHESTER A. CHARLES has been made Aeronautics Branch inspector in the Detroit district, to replace GEORGE W. VEST, who will take charge of the Chicago territory.

Schools and Colleges

UNIVERSAL AVIATION SCHOOL, Rochester, Minn., is moving into the new \$50,000 hangar constructed by the city on the municipal airport.

OZARKS FLYING SCHOOL has been established at Siloan Springs, Ark., with F. D. Henderson as instructor.

FEDERAL AIR SERVICE, operating at its own flying field near Williamstown, N. J., reports 30 students taking a 30-week ground course at its Philadelphia school in addition to those taking instruction at the field.

NATIONAL AIRCRAFT SERVICE operates a new school in Toronto, Ont. Earl Troxell is general manager. To date, 30 students have enrolled.

TEMPLE UNIVERSITY, Philadelphia, is offering a four-night a week course in aviation this year under the direction of Lt. Comdr. Robert S. Hedtler.

LUDINGTON PHILADELPHIA FLYING SERVICE, Philadelphia, now requires all students and pilots to wear parachutes during instruction flights.

JOLIET (ILL.) TOWNSHIP HIGH SCHOOL offers a course in aeronautics.

OMAHA FLIERS, INC., Omaha, Neb., has been organized as a flying school of the club type, with Hans Glissmann as president.

MIAMI AIR COLLEGE, with A. L. Plagee in charge of instruction, has been started by Miami Airplane & Supply Company.

BOEING SCHOOL OF AERONAUTICS opened at Oakland Municipal Airport Sept. 16 with an enrollment of more than 100 students.

AUTOMOTIVE TRADES SCHOOL, maintained by the city of Cincinnati, Ohio, will have an aeronautical department under the direction of Prof. H. R. Filson. A four-year day course and a five-year night course will be given.

CURTIS FLYING SERVICE OF NEW ENGLAND has started a ground school with classes in one of the buildings of Massachusetts Institute of Technology, Boston. The company's school on Martha's Vineyard reported 420 hr. of flying during the summer.

DENNISON AIRPORT SCHOOL, Quincy, Mass., expects to turn out more than fifteen private pilots during the next two months.

UNIVERSITY OF CALIFORNIA, Berkeley, Calif., has instituted a course in aeronautical subjects, sponsored by the Navy Department.

AERO CORPORATION SCHOOL, Los Angeles, Calif., celebrated its sixth anniversary Sept. 12. Over 1,500 students have completed training and graduated from this school during its operation. Its present equipment includes eighteen planes, including a tri-engined transport. A ground school is operated in connection with the flying school.

AIRPORTS AND AIRLINES



Aero Chamber Holds N. E. Airport Meeting

BOSTON (MASS.)—Aviation experts discussed the development of private and municipal airports and their relation to the community at the New England regional airport conference staged here Sept. 23 by the Aeronautical Chamber of Commerce, members of the Boston Chamber of Commerce and others. This was the first of a series arranged by the Aeronautical Chamber, to be held in different cities throughout the country. At the close of the meeting it was voted to hold the next New England conference on Dec. 16 at Bridgeport, Conn.

Robert L. O'Brien, supervisor of aviation, State of Massachusetts, presided. John Nolen, a well-known city planning engineer, gave an illustrated talk on "The Airport in a City Planning Program," and Theodore G. Holcombe, manager of the aviation bureau of the Boston Chamber of Commerce spoke on "The Civic Organization and Its Function in an Airport Planning Program." Capt. Albert L. Edson, director of the Boston Municipal Airport, spoke on "Development and Management of a Municipal Airport."

He gave an historical background of the development of the Boston airport and the plans for its future development. Maj. Robert G. Ervin, vice-president and general manager, Curtiss Flying Service of New England, spoke on "Development and Management of a Privately Owned Airport," advocating that New England business men survey their industries to determine how planes could be used for transportation of products or personnel. F. W. Dalrymple, consulting base engineer, New York City, spoke on "The Planning and Development of Seaplane Bases," and William H. Mallon, executive staff, Aeronautical Chamber of Commerce, made an address on "Airport Economics and Administration." The afternoon session was given up to a round table question and answer forum, conducted informally.

Inspecting Mid-West Airport Sites

OMAHA (NEB.)—Requests from many cities in the Middle West that the Aeronautics Branch send airport experts there to assist local authorities in selecting sites for airports will be complied with shortly, the Aeronautics Branch of the department has announced. William J. McKenzie, airport specialist of the department, will leave at once for a short trip to Colorado, after which he plans to visit towns in Iowa, Nebraska, Kansas, Missouri and possibly a few other states in this section, it was stated.

Standard Line Report Increases

LOS ANGELES (CALIF.)—Substantial increases in traffic over the Los Angeles-El Paso route are reported by J. T. Whitlaw, traffic manager for Standard Airlines, Inc. With a total of 3,142 passengers for August, the traffic report for that month shows an increase of 92.3 per cent over July, and the freight and express revenue for August shows a gain of 78 per cent over the preceding month. The rapid increase of traffic is laid to the installation of tri-engined Fokker transports on Aug. 4, supplanting the single engined planes formerly used.

Alaska-Washington Firm Opens Services

SEATTLE (WASH.)—Leaving the base on Lake Union at 9 a.m., Sept. 8, the Juneau, flagship of the Alaska-Washington Airways, inaugurated air service between Seattle and Tacoma, which later in the week was extended to Olympia. The new service includes six daily round trips, leaving Seattle at 9 and 11 a.m. and at noon, 1:30, 2:30, and 3:30 p.m. The flying time between Seattle and Tacoma is only 20 min.

A six-passenger Fairchild seaplane, is used on the Seattle-Victoria route, recently resumed. The service to Olympia will consist of three daily trips, the planes going from Seattle to Tacoma at 9 a.m. and at 1 and 3:30 p.m., continuing on to Olympia. Time between Seattle and Olympia is 50 min., including a 10-min. stop at Tacoma.

Alaska-Washington-British Columbia Airways, Ltd., a subsidiary, will operate soon a Fairchild between Vancouver and Victoria, B. C., with the former city as headquarters. The initial schedule allows for two trips daily.

Airmarking Activities Reported

NEW YORK (N. Y.)—Considerable airmarking is being carried out in various parts of the country under private and public auspices, according to reports being made here. Prominent among these is the campaign of the New England Council, of Boston, Mass., to secure liberal marking of communities throughout the New England States and the announcement of the Standard Oil Company of Kentucky that it will undertake the airmarking of roofs of its plants in Florida, Georgia, Alabama, Kentucky and Mississippi—most attention being paid to marking along the regularly used airways. Ohio is still in the midst of a drive to have practically every community identified from the air, also.

Permanent Radio Plan Announced

Commission's Order Series of Conferences

WASHINGTON (D. C.)—The establishment of a chain of aircraft radio communication facilities, each chain or group being designated by a color, is one of the features of the latest pronouncement of the Federal Radio Commission in the field of aviation radio. The several parts of the order, as issued here, effective at once, follow in part:

1. To coordinate the use of radio facilities for the purpose of aviation and to secure a maximum of flexibility in the use of the same, the Commission will, and it hereby does, reserve the frequencies now set aside for use in aviation service and, in addition, reserves the frequencies 3136, 3142, and 3148 solely for this use.

2. Aeronautical stations licensed pursuant to this plan will provide adequate service, without discrimination, for all and any aircraft of whatever nature. Where the service provided by a chain is regularly used, as distinguished from casual, incidental, or emergency use, the owners of the aircraft which use such chain or chains, shall cooperate among themselves as to the operation, maintenance, operation and liability of the stations.

Classify Frequencies

3. All frequencies reserved for aviation purposes shall be designated in three classes as follows:

(a) Frequencies used by aeronautical or aircraft stations on a chain or chains for communication purposes.

(b) Frequencies used for distress, calling and navigational service.

(c) Experimental frequencies which will include all communication frequencies other than those in use on a chain or chains, and all such experimental frequencies shall be subject to change by the Commission during the term of the license without advance notice or hearing.

4. Frequencies designated for use by aeronautical stations shall not be used for point-to-point service. Provided, however, that point-to-point service may be carried on only where wire lines are not available or where the delay in the transmission of wire messages is such as to create a hazard to life or property and then solely for emergency messages and for meteorological service. Any licenses of point-to-point service shall be required to transmit emergency messages for the general public relating to the safety of life or property.

5. The airways division of the De-
(Concluded on page 685)

P.A.A. Makes First Trip on New Route

MIAMI (FLA.)—The latest addition to the foreign air mail system being developed under American auspices has been opened by Pan American Airways between San Juan, Porto Rico, and Paramaribo, Dutch Guiana. The new route was inaugurated Sept. 22-23 by Colonel Lindbergh, technical advisor for the Pan American company, using a Sikorsky amphibion. The route lies south from San Juan along the Leeward and Windward Islands to Trinidad, off the coast of South America, and thence along the coast to the Paramaribo terminal.

This new service is an extension of the present tri-weekly service between this city and San Juan. The latter carries passengers as well as mail and freight but the new line will be operated but once a week for a while and the cargo will be confined to mail and freight. The distance between Miami and Paramaribo is about 2,716 mi. and planes will be operated so that letters mailed in New York before 6 p.m. Wednesday will reach Paramaribo at noon the following Monday.

Stops on the new routes will be St. Thomas, Virgin Islands; St. Johns, Antigua, Leeward Islands; Castries, St. Lucia, Windward Islands; Port of Spain, Trinidad; Georgetown, British Guiana, and Paramaribo. The rate for the first ½ oz. is \$.40 from any point in the United States.

A thorough test of the radio apparatus installed on the plane was carried out during the inaugural flight. An almost continuous contact was maintained with round control stations at all times.

Pan American is now operating a daily service between Miami and Havana; a tri-weekly Miami-San Juan service; tri-weekly Miami-Cristobal line; weekly Cristobal-Santiago-Chile service; and, through the Mexican Aviation Company, a daily service between Brownsville, Tex., and Mexico City; a tri-weekly service between Vera Cruz and Guatemala City; and a tri-weekly service between Tampico and Merida, Yucatan.

Tulsa Port Nets \$4,012.87

TULSA (OKLA.)—Despite necessary increases in operating expenses during August, the Tulsa Municipal airport showed a net profit of more than \$4,012.87 for the month, according to the monthly financial report. Total sales from gas and oil amounted to \$12,327.90 of which \$3,374.66 was profit.

Seagull Lines Opens Service

SALT LAKE CITY (UTAH)—Regular flying service between this city and Ely, Nev., was inaugurated on Sept. 4 by the Seagull Air Lines, Inc. Flights will be made on regular schedules Mondays, Wednesdays and Saturdays. The company has applied for a mail carrying contract between these two points.

Universal Pilots Training at Night

ST. LOUIS (MO.)—Pilots of the St. Louis division of the Universal Aviation Corporation are making practice flights at night here in order to be fully prepared for the winter season. The men are pilots on the St. Louis-Chicago and St. Louis-Kansas City-Omaha routes. The practice flights are made in cabin planes over a course extending several miles around Lambert-St. Louis Field.

Curtiss-Reid Airways Busy

MONTREAL (QUE.)—Curtiss-Reid Airways, with its base at St. Felicien, Que., is running a regular service to Chibougamau, in the northern mining district, carrying between 6,000 and 8,000 lb. of supplies daily. Service to other points in the territory are being provided and this has necessitated another base being established.

Plan Winter Mail Schedules

WASHINGTON (D. C.)—With the approach of winter it has been announced by the Post Office Department that a reassured revision of air mail schedules will be effected on certain lines. The changes are to conform to shorter daylight hours.

To Extend Mail Line Across Andes

WASHINGTON (D. C.)—Oct. 12 has been set as the date for the opening of the American air mail service between Santiago, Chile, and Buenos Aires, according to the Post Office Department. This will be a continuation of the weekly service now operated between Miami and Santiago by way of Cristobal by Pan American Airways and associates and the same interests will operate the new service. The first flight westward over the Andes will be from Buenos Aires on Oct. 12 while the first flight eastward will be Oct. 14.

Argentina, Uruguay and Paraguay will be served by this new line. The rate per half ounce for air mail to any of these three countries will be \$.50 from Cristobal and \$.75 from Miami. Mail should be marked plainly Par Avion—by Air Mail. The main air mail line to Buenos Aires ultimately will be along the east coast of South America, according to the department. The latest segment in this route has just been inaugurated Sept. 22-23 by the extension of the Pan American line from San Juan, Porto Rico, to Paramaribo Dutch Guiana.

A passenger service is being operated between Santiago and Buenos Aires by American International Airways.

Dance While Waiting Flight

KANSAS CITY (KAN.)—While waiting their turn for night flights from the Fairfax Airport here, prospective passengers while away the time by dancing on the smooth cement floor of one of the hangars. The dance area is illuminated by the landing lights.

Air Mail Statistical Report for July, 1929

ROUTE	Length of Route (Mi.)	Frequency (Rd. Trips per Month scheduled)	Miles of Service Scheduled	Miles of Service Actually Flown	Total Weight of Mails Dispatched (Lb.)	Amount Paid to Contractor
Number and Termini						
1. Boston-New York.....	192	26	12,480	12,188	11,954	\$35,862.94
2. Chicago-St. Louis.....	278	62	34,472	34,472	7,611	19,266.05
3. Chicago-Dallas.....	1,059	62	126,618	125,876	36,882	110,644.69
4. Salt Lake City-Los Angeles.....	600	57	69,000	69,000	65,069	195,206.81
5. Salt Lake City-Pasco.....	530	31	32,860	32,860	18,146	54,437.44
8. Seattle-Los Angeles..... (a)	1,141	31	65,789	65,789	23,878	67,704.38
9. Chicago-Minneapolis.....	503	62	55,342	55,005	20,124	55,340.57
11. Cleveland-Pittsburgh.....	123	62	15,252	14,544	5,687	17,060.06
12. Cheyenne-Pueblo.....	199	31	13,609	13,609	9,479	7,867.78
16. Cleveland-Louisville.....	345	62	44,392	43,716	10,622	12,958.69
17. New York-Chicago.....	718	62	124,435	123,404	154,179	123,100.84
18. Chicago-San Francisco.....	1,932	57	225,388	225,388	157,497	325,529.33
19. New York-Atlanta.....	763	31	58,607	57,881	32,045	96,153.87
20. Albany-Cleveland.....	446	27	33,911	33,727	8,641	9,584.75
21. Dallas-Galveston.....	320	31	20,320	20,320	3,541	10,233.85
22. Dallas-Brownsville.....	529	31	32,798	31,728	6,823	19,718.65
23. Atlanta-New Orleans.....	483	31	30,912	30,912	7,750	13,562.61
24. Chicago-Cincinnati.....	270	79	43,200	43,098	6,920	10,171.94
25. Atlanta-Miami.....	736	25	37,536	37,536	8,624	12,591.22
26. Great Falls-Salt Lake City.....	489	31	39,432	39,432	7,297	18,059.61
27. Bay City-Chicago.....	773	31	58,847	57,854	19,855	17,671.00
28. St. Louis-Omaha.....	403	31	24,986	24,986	5,219	4,096.57
29. New Orleans-Houston.....	319	31	19,778	19,778	3,748	3,747.87
30. Chicago-Atlanta.....	768	31	47,616	47,616	8,224	6,414.43
31. Chicago Municipal Airport Grant Park Ramp, Chicago.....	9	31	279	261	5,838	435.00
Totals.....	13,928	1,046	1,267,859	1,260,980	645,653	\$1,247,400.95

Correction—June report—Miles Scheduled—Miles Flown
Rt. 9 — 53,160 — 52,613
Rt. 21 — 20,220 — 20,014

(a) Southbound trip not operated between Seattle and Portland.

[NOTE—Close comparisons between the various air mail reports issued from time to time will reveal slight discrepancies in various figures. These are not errors, strictly speaking, but are due to various readjustments which have to be made from month to month after the figures have been released.—EDITOR.]

Announce Radio Allocations

(Continued from page 683)

partment of Commerce has established a master map showing (1) the location of all aeronautical stations, (2) all navigational aids, and (3) the frequencies which have been designated by the Commission for use on particular chains.

6. The initial chains will be established as indicated upon this map in colored lines, the colors having the following designations and frequency designations.

Brown: Universal Air Lines; Aviation Corporation; Braniff Air Lines; Central Air Lines; Continental Air Lines, 5,600, day aircraft and aeronautical station; Northern Air Lines, 3,484, night aircraft and aeronautical station; Southern Air Transport; Texas Air Transport; Gulf Air Lines; Interstate Air Lines; Clifford Ball, Colonial Air Transport.

Blue: Western Air Express, 3,070, point-to-point, aeronautical; Standard Air Lines, 5,690, point-to-point, aeronautical and aircraft and aeronautical; Mid-Continent, 3,460, aircraft and aeronautical station; West Coast Air Transport, 8,015, point-to-point, aeronautical, day only.

Green: Transcontinental Air Transport; National Air Transport; Northwest Airways, 2,344, day, aircraft and aeronautical station; Pitcairn Aviation, 1,624, night, aircraft and aeronautical station; Maddux Air Lines.

Red: Boeing Air Transport; Pacific Air Transport, 5,660, day, aircraft and aeronautical station; Stout Air Services, 3,142, night, aircraft and aeronautical station; Varney Air Lines; National Parks Airways. Pan-American Grace Airways, 8,015, point-to-point, aeronautical, day only.

Pan-American Airways, 5,690, aircraft and aeronautical station, day only—also point-to-point, aeronautical, night only; 2,662 navigation; 3,070 night, aircraft and aeronautical station.

The distress, calling and navigational frequencies shall be assigned as follows:

278 kc., calling and working frequency from all ground stations to itinerant airplanes. Power not to exceed 10 w. 333 kc., international air calling frequency. 375 kc., radio compass, 500 kc., international calling and distress frequency for ships and aircraft over the seas. 3,106 kc., national calling frequency for all transport and itinerant airplanes, 5,525, 11,050, 16,580 kc., primarily for coastal stations and ships. 393, 400, 414, 420, 457 kc., for stations on chains, providing no interference is caused with other services. 333 kc., 500 kc. calling; 414 kc., 457 kc., working; 375 kc., compass. (For planes on sea flights desiring intermediate frequencies. Those desiring high frequencies will use those for maritime calling and working.)

7. No aeronautical station will be licensed to use more than 1 kw. power on frequencies of 1,000 kc. and above.

8. All aeronautical stations will maintain a watch on such frequencies and for such periods as the airways division of the Department of Commerce may designate.

Whittredge Making Port Buildings

BOSTON (MASS.)—The Whittredge Portable Buildings Company has gone into the hangar business on a large scale as a branch of its portable buildings service, and has erected several new hangars at the various airports recently, including a 60x60x12 hangar at Muller Field, Revere; a 60x70x10 hangar at the Dennison Airport, Quincy; a 60x80x12 hangar at the Parlin Airport, Newport, N. H.; a 60x60x12 hangar at the Fitchburg-Leominster Airport and a 40x40x12 hangar at Thayer Field, Grafton, Mass.



Showing hangars and approaches at New Central (N. J.) airport

Advertisers to Boost Air Mail

CLEVELAND (OHIO)—An air mail week which is hoped to be national in scope is to be sponsored October 7-12 during the period of the Direct Mail Advertising Association's convention here. The movement was started by the Cleveland Advertising Club and advertising clubs throughout the country have promised to co-operate by sponsoring the movement in their localities. The National Exchange Club and 75 Gyro clubs will assist.

Curtiss to Undertake Hunting Grounds Trips

NEW YORK (N. Y.)—Charter service between this city and any hunting resort in the eastern part of the United States is being undertaken seriously this fall by the Curtiss Flying Service. New Brunswick, Quebec, the Carolinas, Maine and other popular hunting grounds are within about 5 hr. flying of 42d St., New York, the company announces.

By the use of aircraft, isolated points may be reached, much time saved in transit and more time may be devoted to hunting on account of the time saved. The presence of a large number of lakes in hunting regions makes operation of the Sikorsky, Keystone-Loening and Ireland amphibians a comparatively simple matter.

Inasmuch as the trips are arranged on a charter basis and the fares are governed by individual circumstances of the flight, there is no fixed schedule of fares. For a fully loaded plane, however, the rate averages in the neighborhood of \$20 per mile. Similar operations by other companies for the service of hunters have been and still are carried out in various parts of the country with considerable success. Curtiss itself has done much of this previously but is featuring it for the fall season.

Dedicate New Central Airport at Camden, N. J.

The largest of the recent airport dedications was that staged at the 180-acre Central Airport, Camden, N. J., near Philadelphia, September 21. This field is expected to serve principally Philadelphia and already has been designated as the official air mail stop for the city, replacing the Philadelphia Municipal Airport. One of the features of the event was the first public showing of the Fokker F-32. Army and civilian pilots participated in an air show and competitions.

Development of the airport to its present state has cost about \$2,000,000. There are two paved take-off strips, several 2,500 ft. runways and one runway 3,600 ft. long. About 100 additional acres are available for expansion. There are two concrete and steel hangars each having a capacity of about twenty planes. One is occupied by Curtiss Flying Service and the other by the Ludington Philadelphia Flying Service, which operates the airport.

Work is expected to start this month on a two-story administration building which will house airport offices, weather bureau, restaurant, etc. Ewing W. Day, Jr., of Philadelphia, is the Ludington operations manager and George R. Smith is in charge of the Curtiss station. Nicholas S. Ludington is president of Central Airport; W. Sanger Green, general manager; and Paul Thomas is field office manager.

Among the other airports recently dedicated were the following: Sept. 2, Sky Harbor, Scenic Airways, Phoenix, Ariz.; Sept. 8, Danville (Ill.) Airport; Sept. 8, Chanute (Ill.) Municipal Airport; Sept. 10, Ames Field, the Philipsburg (Pa.) Municipal Airport; Sept. 10, Butler (Mo.) Airport; Sept. 11-12, Big Springs (Tex.) 230-acre airport; Sept. 11, York (Nebr.) Airport; Sept. 12, Carroll (Ia.) Airport; Sept. 13-14, McCook (Nebr.) Airport; Sept. 13-15, Niagara District Airport at Homer, Ont., near the Welland ship canal, under the auspices of the St. Catharines Flying Club; Sept. 12, Winder (Ga.) Airport; Sept. 19, Tamworth (N. H.) Airport; Sept. 20, Pittsburgh-Greensburg Airport at Greensburg, Pa.

P.A.T. Completes Third Year

LOS ANGELES (CALIF.)—Pacific Air Transport celebrated the third anniversary of the inauguration of service over the Los Angeles-Seattle route, on Sept. 15. During the three years a total of more than 2,500,000 mi. have been flown in scheduled operation with mail and passengers. Pilots fly 2,300 mi. daily on this line and in 1928 carried 1,484 passengers, 3,292 lb. of express, and 147,988 lb. of mail in 7,556 hr. of flying. The line is now operated as a unit of the Boeing System, equipment being the Boeing single engined mail and passenger planes. Large tri-engined equipment is soon to be installed, providing regular one day passenger service between Los Angeles and Seattle.

AIRPORT CONSTRUCTION PROJECTS

LAATEST reports from the field indicate that construction has not lowered its pace with the advent of the fall season. Contracts are being awarded for ground preparation and for new buildings, while work is maturing rapidly on many projects previously started. As is shown by the calendar, a large number of airports are reaching the stage where they may be opened officially for flying operations.

It has been decided to change the name of Port of Portland (Ore.) airports, sometimes called Swan Island airport, to the simpler designation of Portland Airport. Along with this change goes the awarding of contract to the Waale-Shattuck Construction Company for the building of two hangars and an administration building on the low bid of \$110,075. Construction is to start at once, and to be completed within 120 days.

The Portland authorities also accepted the bid of A. G. Rushlight & Company of \$13,683 for plumbing and heating. Electrical bids were rejected because of confusion on the part of bidders as to certain specifications. The architects for the building were DeYoung & Raold.

Grade Ann Arbor Runway

Taking advantage of excavation work on the University of Michigan campus, the Ann Arbor Common Council has appropriated another \$1,000 for the improvement of runways at the municipal airport. The gravel will be applied to the second runway at the airport, which is operated by Flo Flying Services, Inc.

The general contract for the construction of the Pitcairn hangar at Candler Field, now under way, is held by Gilbert Beers, of Atlanta. The roofing contract has been let to the Birmingham Construction Company, of Birmingham, Ala., while the structural steel contract has gone to the Virginia Bridge and Iron Works. The hangar will be 120 ft. square, and will cost about \$58,000.

Boeing and Stout plan to erect two large hangars at the Chicago Municipal Airport this fall. This construction is believed to be part of the plan to open the combined Stout-Boeing transcontinental line in the near future.

Push Granville, Wis., Work

Work is being pushed on the Curtiss Flying Service project in Granville, Wis., about 12 mi. from Milwaukee. The large amount of leveling and grading is about completed, and when this is done, flying will start and construction will begin on the hangar and administration building, which will cost more than \$150,000. The whole project is costing about \$500,000.

Burley, Ida., voted on Sept. 12 in favor of a bond issue of \$10,000 for the purchase of a 235-acre field now being used as an airport by private interests, but due to be operated as a municipal project. Boundary lights will be installed. Floyd G. Sickler has completed a 40 ft. square hangar at his private

airport in Whitesboro, N. Y. Most of the work on this 26-acre tract will be completed this fall.

The central heating plant chimney at the Buffalo, (N. Y.) Airport, the center of much controversy in recent months, has been illuminated by a string of red lights. Installation was done by the Modern Electric Company, of Buffalo, under the direction of E. D. O'Dea. The Erie County Airport at Erie, Pa., has been enlarged by the addition of an adjoining field. The combined area is 2,400 x 300 ft. in size.

Announce Lansing (Mich.) Project

The airport at Lansing, Mich., which has been operated jointly by the state and city, is to be taken over by the state and developed in a \$300,000 program. Plans approved by the State Aeronautical Board, which is headed by William B. Mayo, call for four concrete runways, one of which is 3,200 ft. long and the others 2,500 ft. long, and all of them 500 ft. wide. The port already has a municipal hangar, three large private hangars, and a lighting system.

Contracts for boundary lights and obstacle lights for the Spokane (Wash.) Airport have been awarded. The cost will be \$3,855.98. The city is to remove rocks and grade a triangle at the southwest corner of the field to make it more suitable for the operations of the Varney mail planes which recently began operation over the new air mail contract route. Work is progressing on the Western Air Express port at Albuquerque. The field comprises 1,000 acres and has eight runways. The project will cost about \$85,000.

Report Progress in South

The Charlotte (N. C.) Airport Corporation is to proceed as soon as practicable in developing an airport suitable for proposed mail operations by Pitcairn Aviation, Inc. No date has been set for the start of work. An airport is being built at Flagler Beach, Fla., and it is expected that it will be completed some time in October. The Aeronautics Branch will install a beacon there.

Purchase of the Duluth (Minn.) Boat Club property, located on Duluth-Superior harbor, for the development as a port for seaplanes for the city of Duluth, is receiving serious consideration by members of the city council. In the meantime, a change has been made in plans for the construction of the Duluth Municipal Airport, now under way, to provide for grading the land where the two triangular 2,600 ft. runways meet. This will provide a practically all-way surface. Installation of 800 ft. of tile drain pipe and leveling and grading of runways has been approved for the municipal Superior, (Wis.) Airport, in Billings Park.

By this time, construction of hangars, taxi strips and oiled runways should be completed in the Tulsa Municipal Airport. It is claimed that the three new hangars of steel and stucco construction

will house 75 additional planes. A 4,000-ft. concrete taxi strip will join these hangars, and eight concrete warming aprons are expected to minimize the dust nuisance. Imbedded along the taxi strip are mooring rings.

Tulsa Installs Smudge Pot

One of the features of the Tulsa improvement is a smudge pot of the type used by fruit growers to prevent damage from frost. This is buried in the center of the field with a small fuel tank and covered with a grating level with the ground. The smoke rising in spirals through the grading and ascending for some distance before dispersing is expected to indicate the wind direction on the calmest days.

After numerous experiments with various types of runway surfacing, it has been decided to oil the landing areas at the Alameda (Calif.) Airport, according to R. R. Nickerson, field superintendent.

State Airport Subjects For Paving Conference

NEW YORK (N. Y.)—Airport paving problems will be discussed by the delegates at the eighth annual Asphalt Paving Conference to be held at West Baden Springs Hotel, West Baden, Ind., October 28-November 1, inclusive, under the auspices of the Asphalt Association, 441 Lexington Ave., New York City. Airport paving discussion is scheduled for the morning session October 31.

The following subjects will be discussed: Standard Paving for Airports, by R. H. Simpson, chief engineer, Department of Public Service, Columbus, Ohio. Experimental Runway Construction at the Lambert-St. Louis Municipal Airport, by Mark I. Thompson, engineer in charge of bituminous pavement for the Public Service, St. Louis, Mo. Oiled Runways for Airports, by John A. Herlihy, chief engineer of Transcontinental Air Transport, St. Louis, Mo.

Road Builders Name Speakers on Airports

WASHINGTON (D. C.)—The following subjects and speakers have been announced for the municipal airport conference to be held here Oct. 24-25 under joint auspices of the American Road Builders' Association and the Aeronautics Branch. The conference is being arranged by Maj. Donald A. Davison.

Airport Drainage will be discussed by C. A. Hogentogler, senior engineer, Bureau of Public Roads. Airport Layout and Planning by B. Russell Shaw, of St. Louis. Airport Surfaces by C. N. Conner, executive of the American Road Builders' Association. Airport Management by A. P. Taliaferro, Jr., of the Aeronautics Branch. Airports and Public Parks by Lt. Col. U. S. Grant, III., director of the District of Columbia system of public buildings and parks.

FOREIGN ACTIVITIES



Short Bros. Designs Big Passenger Seaplane

LONDON (ENGLAND)—An interesting 17-passenger seaplane is being built by Short Bros., Ltd. It is the largest machine of the seaplane type and in several ways departs from the usual British practice of large plane construction. While built primarily as a seaplane it may be readily changed into a land plane by substitution of a different undercarriage and wheels for the twin floats.

It has been generally accepted here that machines of this size built for marine work should be exclusively flying boats. This machine also is a monoplane, another distinct diversion from the trend in British transport plane construction practice, the biplane being almost universally favored.

The plane will be powered by three Bristol Jupiters, Series IX, delivering 485 hp. at 2,000 r.p.m. and 525 hp. at 2,200 r.p.m. One engine is mounted in the nose and the other two are housed in nacelles under the wing on either side of the fuselage. It is interesting to note that the weight of the wing engines is cared for entirely by the wing, there being no strut from the nacelle to the undercarriage, as in the case of the Fokker and Ford types in the United States. The support usually extending from the nacelle to the undercarriage on the Ford and Fokker types in this case is extended diagonally outward from the undercarriage to a point midway between the wing tip and the engine.

The pilot's cockpit will be in the nose, back of this will be a baggage compartment and radio room, and behind this the cabin accommodating seventeen passengers, or sixteen passengers and a steward. The seats are arranged three abreast. The main plane has an area of 1,000 sq.ft. and the ailerons an area of 179 sq.ft. It is estimated that the machine will have a maximum speed at sea level of 136.5 m.p.h. and a landing speed of about 67 m.p.h. The passenger cabin measures 17 ft. in length, 6 ft. high, 6 ft. 2 in. wide.

Italy to Boost Art in Aviation

ROME (ITALY)—The Aero Club of Italy is planning an International Exhibition of Arts and Propaganda for the purpose of emphasizing the artistic needs of modern aviation. The exhibition will be held in Rome, either in December, 1929, or in April, 1930, and will be divided into various groups such as architecture, sculpture, decoration, photography and cinematography, and airplane body construction.

Australia Reports Increases

MELBOURNE (AUSTRALIA)—During the six months ended June 30 this year, there has been an increase of 45 civilian aircraft in this Commonwealth. The number of machines now totals 181. The number of pilots has increased from 306, as of December 31, 1928, to 336 on June 30. Of these, 104 are private pilots and 132 commercial pilots. There are now 197 ground engineers as compared with 183 at the end of December.

Albatros Makes New Light Sport Machine

BERLIN (GERMANY)—The Albatros Aeroplane Works here has built a new plane, Albatros L 82, for sport flying. It is a two-place biplane with dual controls. The wing is built in conventional manner with two wooden box-spars and ribs, but without internal bracing. By loosening four bolts the wings can easily be folded backwards. The fuselage is built up as steel tubular frame.

The plane is powered with a British-made DH Gipsy engine. Other engines of similar weights and power can be fitted, such as Cirrus Mark III, Siemens Sh 13, etc. General specifications (with Gipsy engine) are: Span 29 ft. 6½ in.; length 25 ft. 5 in.; wing area 215 sq.ft.; weight empty 858 lb.; weight loaded 1,625 lb.; maximum speed 102 m.p.h.; service ceiling 10,800 ft.; range 335 mi.

Contact Device for Bremen

BREMEN (GERMANY)—Following the recent successful trials with the Kiwull Try Contact Device on board the steamer Lützow, it is intended to install the device on the liner Bremen of the North German Lloyd. As is known the Bremen is fitted with a catapult plane, which brings express mail from the sea to land. When the Kiwull Try Contact Device is installed on the steamer, mail may be dispatched from land after the ship is well out on the ocean. The plane may contact with ship, with help of the device, without the steamer having to slow down appreciably. Through this a saving of at least 24 hr. is expected to be effected between Cherbourg and New York, so that mail between America and Europe will only take four days.

[This device, consisting of a canvas and boom landing stage which is lowered to the water and trails at the stern of the steamship when a contact is desired, was described and illustrated on page 284 of the issue of August 3. —Ed.]

Mexican Air Week Plans Announced

MEXICO CITY (MEXICO)—Elaborate preparations are being made for the celebration here Dec. 10-16 of Aviation Week, the first celebration of its kind to be staged in Mexico. The affair will be conducted under the auspices of the Mexican Association of Aeronautics. The Bank of Mexico, the Republic's only institution of issue, has been designated treasury for funds for the celebration and the Post Office Department announces that there will be a special issue of postage stamps to commemorate the event.

Under the direction of the Association a contest is now being conducted among artists and illustrators throughout Mexico for a design for a poster to advertise the Week. A prize of \$100 will be awarded for the design which best symbolizes the spirit of the celebration in the opinion of the committee on arrangements. This contest closes Oct. 14. These posters will be distributed throughout Mexico and will be sent to the United States and Europe.

Special Transportation Rates

A 10 per cent discount in passenger rates for visitors to the celebration and 22½ lb. of baggage free is being offered by The Air Transport Corporation, the Mexican company which operates a mail and passenger service from Matamoros on the Gulf of Mexico coast to Mazatlan on the Pacific seaboard.

The Huasteca Petroleum Company has offered to supply free all the gasoline and oil which will be used by the civil and military planes taking part in the demonstrations and in the derbies from Mexico City to nearby towns, which will be features of the celebration. The Ministries of War and Marine and Communications and Public Works are speeding up work on a large field near Valbuena Flying Field here which will be used especially for the outdoor phases of the celebration. A grand stand which will accommodate 6,000 spectators is being built and a parking field for 2,000 automobiles of all kinds is being prepared adjacent to the field.

The committee announces that applications to take part in the show have been received from two civil pilots in England. It is expected that French army flyers will also come here for the derbies and other phases of the celebration.

The following program, subject to changes and additions, has been arranged: Tuesday, Dec. 10, reception at the aviation field and banquet in the

(Concluded on the next page)

Germans Developing South American Line

BERLIN (GERMANY)—Development of Luft Hansa's service between this city and Rio de Janeiro is reported to be progressing. The project is being pushed to completion step by step, as rapidly as problems of operational and political nature permit. Some of the most difficult problems are the latter, notably the matter of an arrangement with French authorities for landing rights in the Cape Verde Islands. Such an arrangement is essential to successful consummation of the German line, but the French hold an exclusive contract with the Portuguese Government, so that at the present time only planes of the Compagnie Generale Aeropostale may land at Cape Verde in a South American service.

Negotiations to remove this obstruction or provide a working agreement of some sort are now in progress. In the meantime the Luft Hansa is carrying out extensive tests with the Rohrbach Roma, 12-passenger flying boat, for use on the water stretches of the South American route. The three Romas already owned by the company are being fitted out for the transportation of mail and freight, rather than passengers.

These machines are powered by three B.M.W. engines of about 500 hp. These are to be changed, however, and fitted with engines having a new reduction gear. The range without refueling is expected to be between 1,800 and 2,000 mi. One of the boats recently was considerably damaged when an engine failed in a test flight and the machine was stalled from an altitude of about 100 ft. It is being repaired.

The tentative route for the South American Service is as follows: The present line operated by Luft Hansa in Berlin and Madrid will be utilized and the flying boats will take off for Cape Verde, from either Cadiz or Seville in Spain. From Cape Verde the machines will fly to across the South Atlantic to South America and connect with the lines now operated by the Kondor Syndicate, which has a northern terminus at Pernambuco.

It may be recalled that one of the Roma machines recently completed a flight of almost 1,100 mi. from Lubeck to Stockholm and return at an average speed of about 93 m.p.h. In August it made a flight from Germany over Holland, England, Norway, Sweden, Denmark and return—a distance of about 1,600 mi. at the average speed of 97 m.p.h.

Dornier Building Two Do. X

ALTENRHEIN (SWITZERLAND)—The Dornier plant is constructing two more flying boats of the Do. X type. As it took over 600,000 man hours to build the Do. X, its sister planes are not expected to be ready for another two years it is reported.

Makes Inverted Flight Record

BERLIN (GERMANY)—On Sept. 4 the German pilot, Gerd Achgilles, flew 37 min. continuously in the inverted position, using a Focke-Wulf "Kiebitz" with Siemens Sh 13 engine. Till now this record was held by the stunt pilot Gerhard Fieseler, with a record of 16 min.

Junkers Combat Plane Produced in Sweden

MALMO (SWEDEN)—L.A.B. Flygin-dustri, Swedish airplane manufacturing concern, has built here under license from the Junkers firm, of Dessau, Germany, a Junkers S37 type of combat plane. The machine has a distinctly international aspect since in addition to being a German machine built in Sweden, it has two British Jupiter 480 hp. engines.

Designed at Dessau last year as a mail or aerial photography machine, it has been adapted by the installation of machine guns in strategically located cockpits into a veritable flying fortress. The armament consists of two fixed machine guns firing forward and two pairs of machine guns in the forward cockpit, and another in the extreme rear cockpit. Still another fixed machine gun is placed to fire toward the rear.

A 2 cm. gun is substituted for the pair of fixed machine guns when the plane is used for bombardment. The machine has a span of 65 ft. and length of 36 ft., a maximum speed of 148 m.p.h. and a cruising speed of 118 m.p.h. Its absolute ceiling is about 23,000 ft.

Employ Mexican Co-Pilots

MEXICO CITY (MEXICO)—The Mexican Aviation Company, which operates mail and passenger services between Mexico City-Tampico-Brownsville; Vera Cruz-Merida and Vera Cruz-Tapachula, has made arrangements with the Mexican government for native commercial pilots to fly as co-pilots on its routes.

Mexican Air Week Plans Stated

(Continued from page 687)

Hotel Regis under auspices of the Mexico City Rotary Club. Wednesday, Dec. 11, exhibition of visiting planes. Thursday, Dec. 12, taxi flights, demonstrations and exhibitions, "Mexican Night" in the National Theatre. Friday, Dec. 13, air derbies from Mexico City to Pueblo City, Toluca and Pachuca (distances of from 50 to 125 mi.) for civilian planes, and dinner at Xochimilco, the "Venice of Mexico." Saturday, Dec. 14, demonstrations by the Mexican army air service flyers, cabaret entertainment and banquet at night. Sunday, Dec. 15, races and demonstrations for civil and military planes, and bull fight in the afternoon. Monday, Dec. 16, farewell exercises.

Foreign News Briefs

It is reported in England that a British company has acquired the airship shed at Cramlington Airport, Northumberland, and will operate small airships of 60,000 cu.ft. capacity and 140 ft. long fitted with a 75 hp. A.B.C. Hornet engine for surveying, photography, passenger carrying and advertising. Banners 76x24-ft. will be placed on the side of the blimp for advertising and it is planned also to have illuminated advertisements.

Lloyd Aereo Boliviano now is operating six regular airplanes and up to May 31 carried 6,661 passengers flying a total of 218,300 mi.

Members of Belgian Flying Clubs are assisted in buying their own personal planes by a government contribution of about one half of the cost, the type of plane being stipulated as a 2-passenger, 100 hp., machine of Belgian make. About twenty have been sold under this agreement.

Carranza Field is the name of the new airport dedicated at Ciudad Juarez, Mexico, on August 11.

Establishment of an aircraft factory in Mexico City is said to be planned by J. D. Downey of the United States. He is said to be in the United States now arranging for the project.

A movement is on foot in Mexico to reduce the air mail rate from the present \$.17½ per ounce to \$.10 per ounce.

A monument has been erected at Santander, Spain, to commemorate the trans-Atlantic flight of the French Yellow Bird from Old Orchard to that point last summer.

A military plane recently flew the 1,100 mi. between Bucharest, Roumania, and Paris non-stop in 9 hr. 29 min.

Flight Lieut. R. R. Bentley has completed his second round trip between London and Cape Town.

Real gas was used in military airplane maneuvers over the Carelian Isthmus, in Finland recently, with extensive precautions taken to prevent injury to the inhabitants.

Luft Hansa finds that package freight is more profitable to handle than passenger traffic, particular for night flying, and is accordingly putting more freight planes into service.

The Munich municipal airplane hangar has 7,800 sq.yd. of floor space unbroken by a single post or pillar. The hangar can be opened completely on three sides.

The R-100 and R-101, Great Britain's new giant dirigibles, will be ready for flight tests about Oct. 1, according to latest reports.

The A. W. Gregory Aircraft Company, Ltd., has been formed in Sydney, Australia, to acquire the rights to manufacture Koolhoven aeroplanes in Australia, and to acquire the sole agency for the Desoutter Aircraft Company, Ltd., of England.

THE BUYER'S LOG BOOK

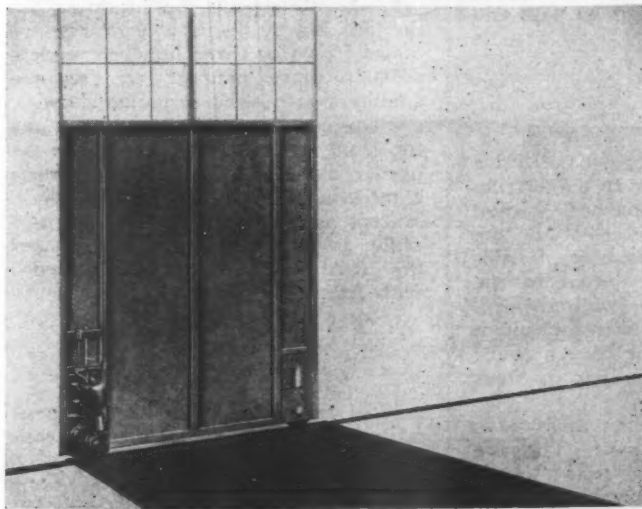


A & D Hangar Door Drives

IN ORDER to save time in the process of opening and closing hangar doors, an electric power unit for this purpose has been developed by the Allen & Drew, Inc., 43-45 Brookford St., Cambridge, Mass. This device is easily installed and requires no modification of the door system of the hangar.

The A & D "Monowheel Drive" is made in units each of which is capable of serving an area of 1,000 sq. ft. The device consists of a double flanged roller machined to fit a 12 or 16 lb. rail operated by worm gear in a leak-proof housing. The worm is keyed to the shaft in a leak-proof housing. The worm is keyed to the shaft connecting with motor through a special clutch and brake mechanism. The complete unit is mounted on a plate designed to occupy a swivel opening in a standard hangar door. For round-the-corner doors it is provided with a swivel on ball thrust bearings and for straight line installation it is bolted securely to the door framework.

The A & D "Duplex Drive" unit is capable of serving an area of 2,500 sq. ft. This consists of two double-



A photograph showing the A & D "Monowheel Drive" installed on a unit of a hangar door system

flanged rollers machined to fit 12 or 16 lb. rail, each operated by a worm gear in a leak-proof housing. Worms are keyed on a single shaft connected with the motor through a special clutch brake mechanism. This unit is solidly mounted on a plate replacing the lower corner of the door. For round-the-corner installation it is mounted in the same manner as the Monowheel drive.

Power is conveyed to these units through insulated flexible cables from swivel connections at central points. These cables are kept taut by means of take-up sheaves on the wall or ceiling. Simple button control can be mounted on the door or placed at any convenient point in hangar or office. If desired a motorized door can be

equipped with a small platform enabling the operator to ride with the door. In the event of power interruption, driving wheels can be released immediately and the door operated by hand.

Hinged doors at each end can also be opened and closed automatically, their operation being synchronized with that of the sliding panel.

These hangar door drives not only effect a saving in time but help to conserve the heat in the hangars during the winter months.

"Eonite" Fire Proofing Liquid

KNOWN by the trade name "Eonite," a fire proofing liquid which is applicable to aircraft woods and fabrics is being marketed by the Eonic Chemical Corporation, Ltd., Los Angeles, Cal.

Eonite is made from a formula of Dr. O. T. Hodnefield and Dr. W. W. Shartel, Los Angeles chemists. It embodies a sealer which fixes the chemical into the wood or cloth treated, so that water or the action of other elements only tends to improve the fire resistant qualities of the material.

Wood may be treated at a cost of approximately seven dollars per 1,000 board ft. while fabrics cost about five cents per square yard to treat. Materials so treated have been found improved in structural characteristics, with no greater electrical conductivity, and with the power of effectively resisting fire, fungi, and dry rot. Fabrics so treated are as easily doped and painted as though not fireproofed. Experiments are being conducted in an effort to apply the fireproofing process directly to paints and dopes and it is believed that such a product may be placed on the market in the near future.

Stangbye Wire Vise

AN improved vise for holding cables during splicing operations has been invented by Idar O. Stangbye of Los Angeles, and is being marketed through W. Buff, 205 South Broadway, Los Angeles, Calif. Patents have been granted covering this invention and several of the vises have been placed in service by commercial aircraft manufacturers and by the U. S. Government Air Service with a labor saving on cable splicing reported to be 65 per cent.

The Stangbye cable splicing device is manufactured in three sizes; the No. 0 is a 1½ lb. instrument handling wire cable from 1/8 to 1/4 in.; No. 1 weighs 6 lb., handles cables from 1/4 to 3/8 in. and is especially adapted for use in the aircraft industry; No. 2 weighs 136 lb., handles cables of 1/2 to 1 1/8 in. and is in use in saw mills, mines, quarries, ship yards, etc.

These vises are special steel instruments built to fasten to a work bench. They incorporate hardened steel jaws and a single lever for operation of the vise, making it possible to quickly handle the splice and to work in the proper position.



SIDE SLIPS

By
Robert R. Osborn

HAVING BEEN AWAY from the office for ten days or so, the following communication from T. G., of Anglum, St. Louis Co., Missouri, is getting delayed attention:

"Apropos to your comments on the 'St. Louis Robin' in Side Slips of August 17th, in the rush to install a full set of wings, wheels, motor controls and so forth, we neglected to put in an electric stove. We realize now that this is even more serious than neglecting to use a second hand motor or a rebuilt ship in making our endurance record. However, I really don't know what we can do about it now and will leave it to you to make the suggestions. Perhaps we might make it up in some future test by having the pilot wear fur earmuffs or carry a Dawes' pipe."

After careful consideration of all sides of the question we have decided to let the "St. Louis Robin" endurance record stand, even though an electric stove was not carried. Judging by the full page newspaper advertisements which always appear after an endurance flight it is necessary to carry an amazing quantity of items, such as ginger ale, cigarettes, chocolates, fountain pens and so on, each item absolutely essential to the success of the flight, and an extra electric stove might well be the last straw. As it is an endurance ship seems to need more furniture than came over on the Mayflower.

An anonymous contributor sends along a clipping of an airplane accident which occurred because "the motor stalled and failed to glide." Somehow, we didn't expect that a motor would be much good for gliding, but Fred Becker tells us that a motor which isn't good for anything else makes an excellent mooring for a seaplane if dropped in about ten feet of water.

A note and clipping from B.H.S. of Boston, reveals one of the strangest cases ever left unsolved by Scotland Yard, and discloses still another aviation "center" in the United States:

"Special Dispatch to the *Globe*, Rockland, Me. The first serious airship accident since this city became an aviation center some months ago, took place near Rockland Breakwater Light this afternoon, when a pontoon, piloted by Lieut. William Blaufuss, crashed into the water."

POSSIBLY SOME TICKER TAPE MIGHT HELP TOO

"Circulars urging the residents of Queens County to keep the streets clean will be dropped from an airplane on September 7th."—*New York newspaper item.*

As further proof of our contention that the successful, high-class pilot has developed both forehand and backhand strokes with the fire extinguisher, and never uses blackjacks, lead pipe or pocket flasks in subduing stubborn students, we have before us an item about a Chicago pilot who landed recently with two badly battered passengers. They had tried to take control away from him in the air, in order to get some stunts on their ride, and the fire extinguisher proved to have just the right resiliency and weight to enable him to dispatch both of them with one neat carom shot.

The following comes from J.F.R., of Chicago: "Allow me to quote from a recent issue of the esteemed Chicago Trib, front page, no less—'While the machine was in a ground loop it suddenly sideslipped and darted to the ground from about a hundred feet.' How about sponsoring a movement to pave these landing field craters over? Can't have the boys falling in holes that way."

We think the reporter must have made a mistake in this case. The ship must have been taxiing down to the ground when the accident happened.

We never were any good at figures, that is, we mean we never were any good at figuring, and we wouldn't have the ambition to check all of the statistics below presented by R.A.S., even if we could, so we'll have to take his word for them and let them go:

"Managed to locate something for 'Side Slips' right in AVIATION. You will note from the attached clipping that Pilot Kornfeld flew 93 miles in a glider, and that a few days later some other chap set an endurance glider record of 24 minutes, which means that Pilot Kornfeld flew his 93 miles in less than 24 minutes, which is slightly

under 4 miles a minute or 240 miles per hour.

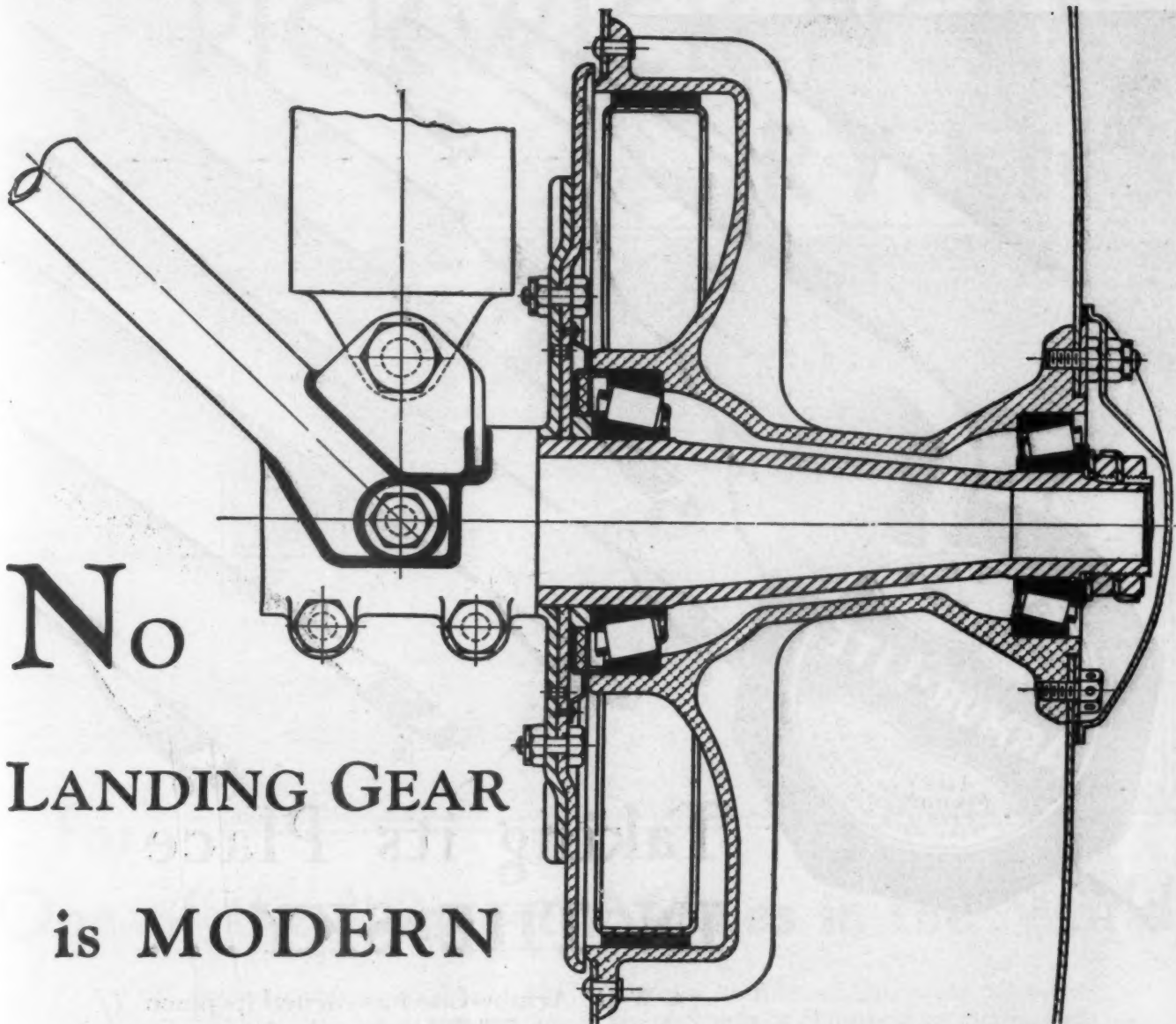
"This is obviously a much cheaper and quicker way to travel without any of the noises, and those Kornfelds must sure have slipped by on that flight. This ship ought to go good here for commuters, and think of the speed you could make with an engine in it!"

We agree with R.A.S. that this ship should certainly be popular with the so-called flying fraternity, but in the eastern portions of the country only. The California fliers aren't the least bit interested in flying if they haven't a motor to overhaul or a landing gear to repair to pass the time away while they're in the air.

The Society For The Aeronautical Education of Artists and Newspaper Reporters has unanimously awarded this week's booby prize of a barbed wire knitted sweater to the artist who drew the recent cigarette advertisement bearing the heading: "In the air it's skill—in a cigarette it's taste." Two or three hundred readers seem to have pounced on this one simultaneously—the drawing showing a chap nonchalantly standing on the top wing of what appears to be an open cockpit biplane, while he directs a refueling hose into the rear cockpit. Except for the fact that the two ships really do look something like airplanes the prize would have been awarded with palms.

"Los Angeles—One of the most unique religious services ever conducted took place in the cabin of a Western Air Express cabine plane while it flew between Los Angeles and San Francisco, recently. The service was conducted by Minister ———, famous Japanese religious leader, who is making a tour of the world. While other passengers, who were for the most part business men commuting between the two Pacific coast cities, smoked and chatted, Minister ——— sat quietly in his chair and prayed for 'a suffering world.' The little Oriental priest's prayerful attitude finally exerted itself on the other passengers and during the last minutes of the journey the cabin of the ship was wrapped in silence."

—Item sent in by "A New Yorker" with the comment that here at last we apparently have the solution of the problem of effectively silencing airplane engines.



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Timken efficiency and overwhelming dominance in automobiles, trucks and

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"A-W-G" Armor-Lite scatter-proof glass is a laminated glass of exceptionally high quality. It provides positive protection against the hazard of flying glass.

For all aircraft, specify "A-W-G" Armor-Lite, Scatter-Proof, Laminated Glass. It is available in a wide range of sizes, thicknesses and weights, from heavy Bullet-Proof for banks to Featherweight designed especially for the aviation industry . . . Write for booklet . . . Address . . .

ARMOR-LITE
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The lettering shown above is etched in the corner of all genuine "A-W-G" Armor-Lite. Look for it. It is your protection against substitution.

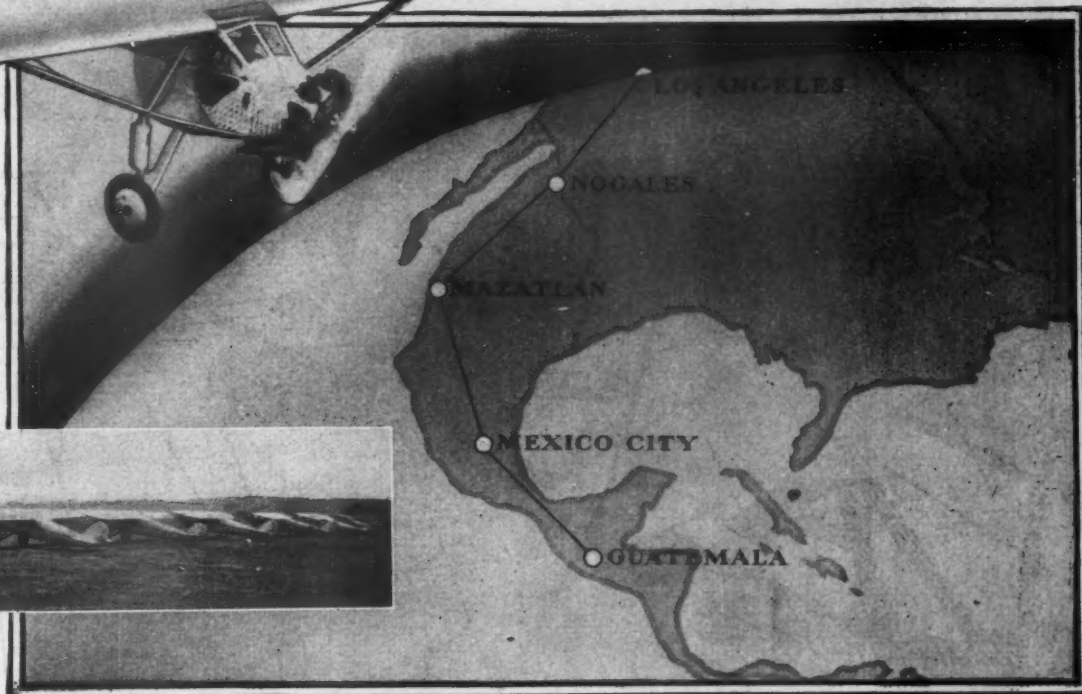
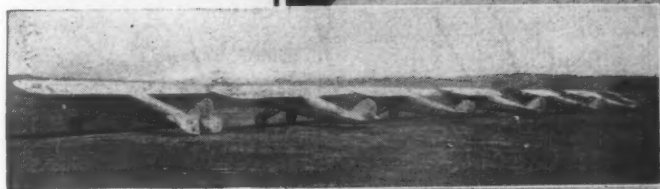
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for One of the Longest Airlines in the World

WHEN Pickwick Airways, Inc., bought ships for their new 2700-mile air transport line from Los Angeles via Mexico City to Guatemala, they chose Ryan Broughams. A fleet of seven B-5 Ryans is now carrying mail, express and passengers on regular runs over the first airline to operate on the west coast of Mexico and Central America.

Landing fields along this Latin-American line are small, sometimes muddy and often mountain-guarded. The route leads over high mountains, across swamps and deserts. Yet Ryans, fully loaded, take-off quickly, climb swiftly to flying altitude, and wing surely on their way, with the brilliant performance and staunch reliability that have made Ryans outstanding the world around.

The new Ryan Brougham, with its 300 horsepower Wright J6 Whirlwind motor, installed with proper relation to the ship's design, is making new performance and reliability records in the hands of owners everywhere. It takes-off in 275 feet and in 8 seconds' time, climbs 1200 feet per minute—and lands in a 200-foot circle. It has a cruising speed of 120 miles per hour—and a cruising range of 700 miles.

To operators of commercial lines, or to business organizations contemplating the use of private planes, we will gladly demonstrate the many Ryan advantages. Write for our handsome catalog.

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Lambert—St. Louis Airport, Anglum, Missouri

Division of

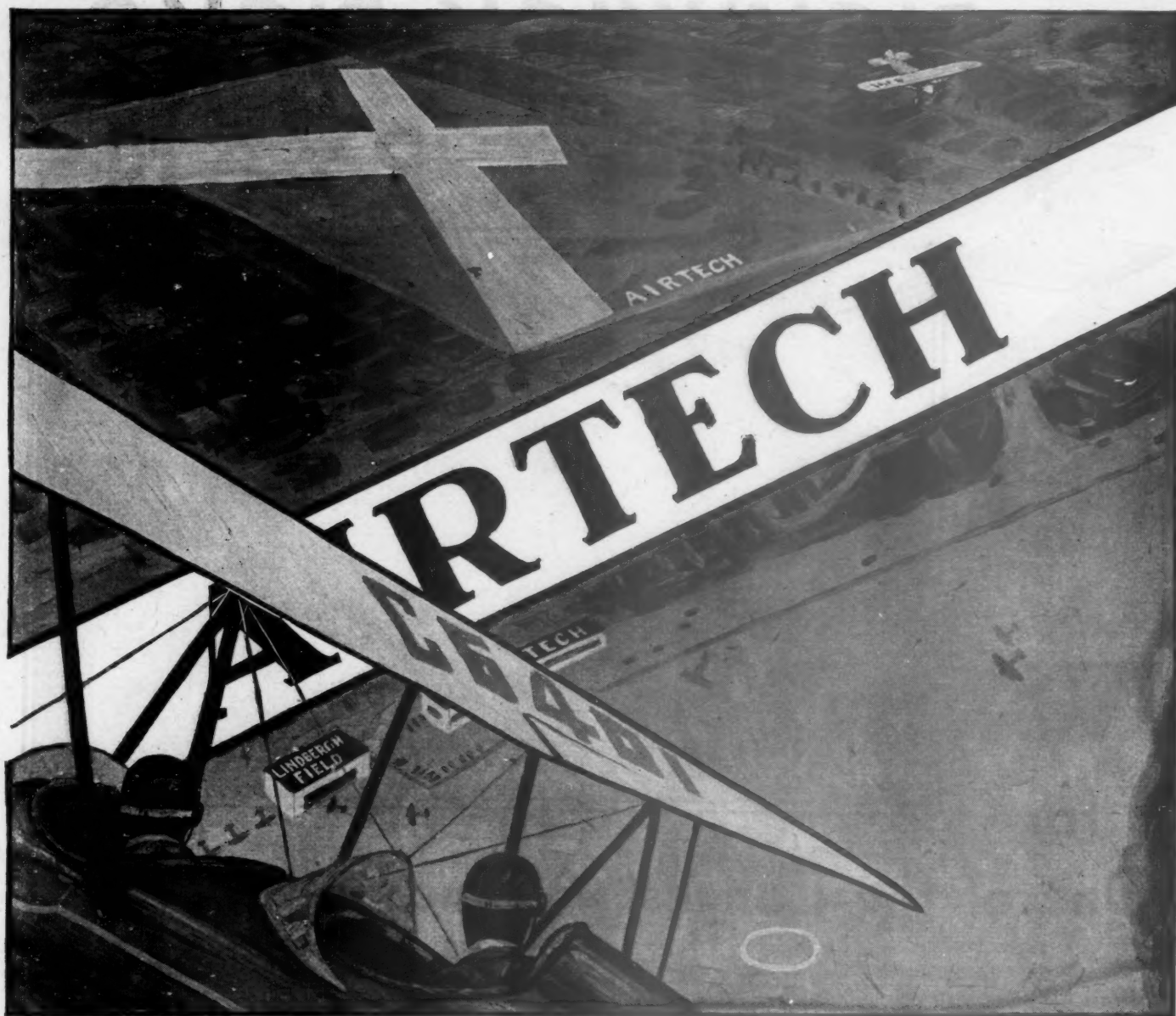
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Advanced Training at Lindbergh Field, headquarters of Airtech School of Aviation, provides intimate contact with the multiple activities on San Diego's Mu-

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This careful segregation of student activities at two major airports is but one of the factors contributing to the supremacy of the Airtech System of Aviation Training.

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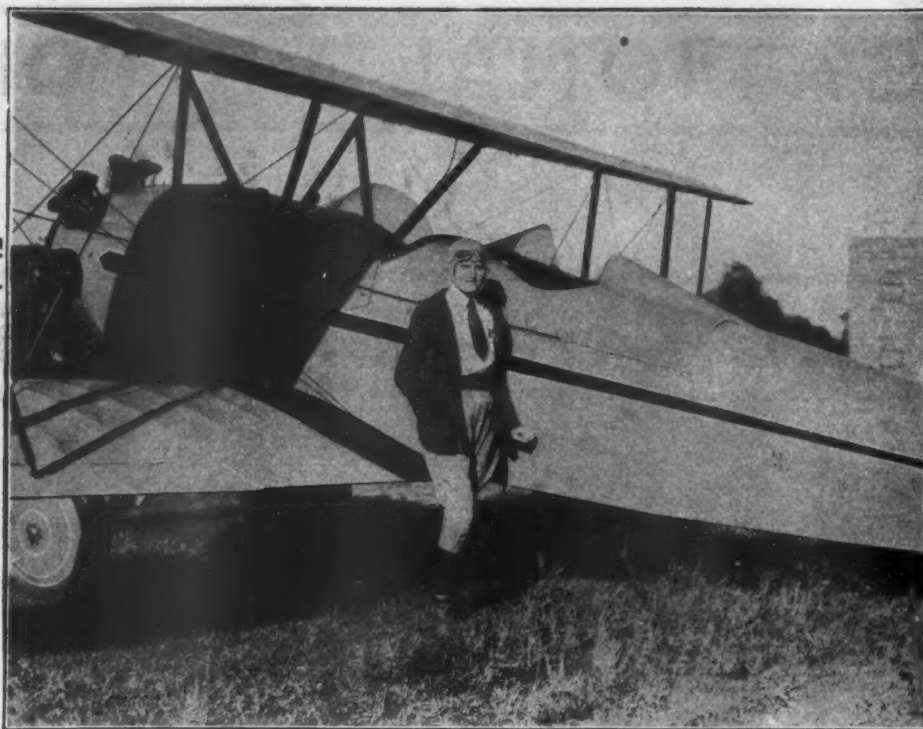
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LINDBERGH FIELD

SAN DIEGO, CALIFORNIA





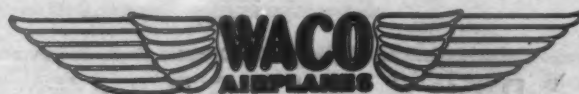
WACO wins again

In her first season as a pilot, and with only a scant half-hour behind the controls of this particular ship preliminary to the event, Gladys O'Donnell borrowed a WACO and placed second in the Santa Monica-Cleveland Derby.

Then, at Cleveland, in a WACO Taper-Wing, she stepped out and had a walk-away in the closed course race for women, actually lapping every competitor. She also won the Australian pursuit race and finished up by winning the race to Pittsburgh.

WACO built no special "race" jobs for the Cleveland events. The evidence is the more conclusive of the WACO Taper-Wing's masterly performance. Full details at your request.

THE WACO AIRCRAFT COMPANY
TROY, OHIO



"Ask any pilot"

SENSATIONAL VICTORIES

PROVE

TRAVEL AIR LEADERSHIP

1929 National Air Races

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(Travel Air .. First Place)
- The Rim of Ohio Derby
(Travel Air .. First Place)
- The Portland to Cleveland Race
(Travel Air .. First Place)
- The Toronto to Cleveland Race
(Travel Air ... First Place)
- The All OX-5 Race
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- The OX-5 Relay Race
(Travel Air .. First Place)
- The Fifty-Mile Free-For-All
(Travel Air .. World's Record)

Most of the above winners carry the Approved Type Certificates issued by the Department of Commerce.

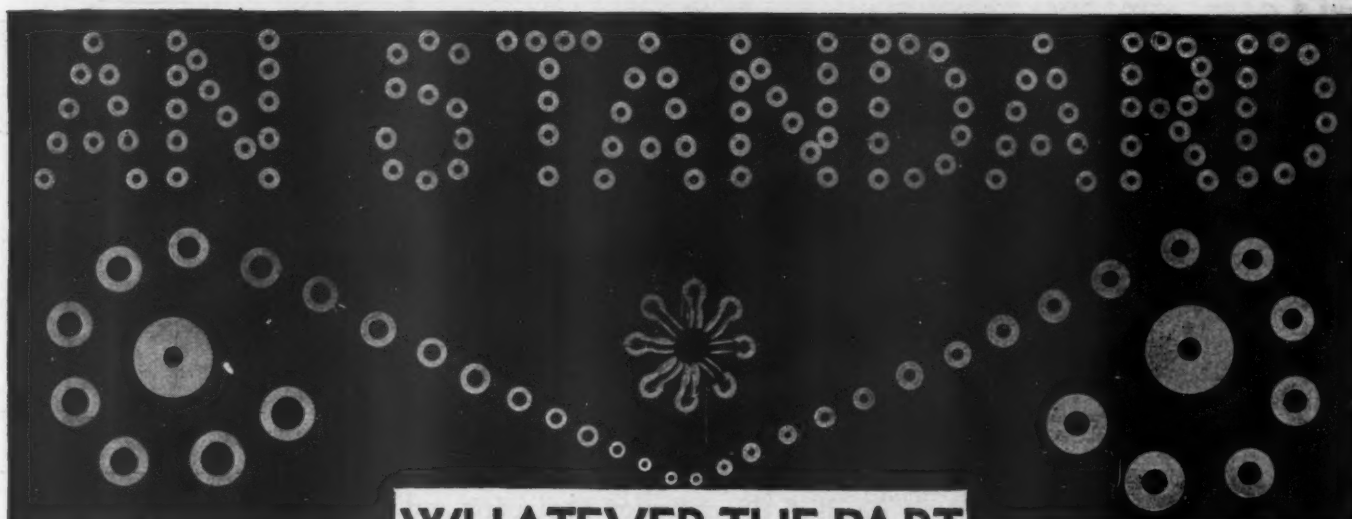


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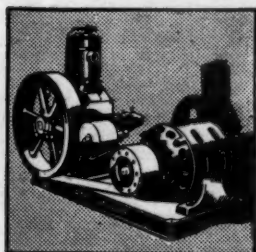


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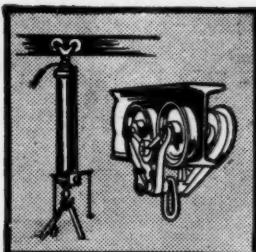


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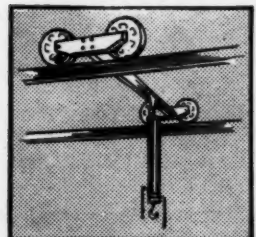
~ in Airports and
Airplane Factories



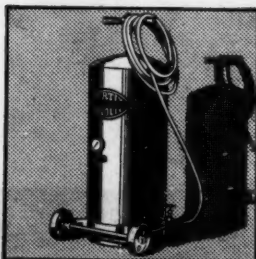
Curtis Compressors are $\frac{3}{4}$ to 50 H. P. with capacities up to 250 cu. ft. per minute.



Curtis Air Hoists, capacities from $\frac{1}{2}$ ton to 10 tons.



Curtis I-Beam Cranes and Trolleys, 10 to 40 ft. span and $\frac{1}{2}$ to 10 ton capacities.



Curtis Portable Air Tank—For taking air out to a plane away from the usual source of supply.

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CURTIS COMPRESSORS—Provide air for spray painting, spraying dope on the wings, tire inflation, charging shock absorbers, spray cleaning of engines, spraying of grease solvent or paint removers, air drying of parts dipped in kerosene, gasoline or other cleaning solutions, blowing out dust, chips, etc., at work benches and drilling presses; air power for operating air hoists, riveters, pneumatic drills, sand blasts, pneumatic water systems, etc.

CURTIS AIR HOISTS—A power hoist at little more than the cost of an ordinary chain block and in connection with a Curtis I-Beam Trolley or Crane, they can serve a wide-area floor space. Used for lifting engines out of the fuselage, mounting engines, wings and other parts of the plane, and many other purposes where a combination of power, speed, and accuracy is a factor of economy.

CURTIS AIR TANKS—Portable tanks for taking air out to a plane away from the usual source of supply. Stationary tanks for use with compressor unit in the shop, also separate tanks for mounting on service trucks.

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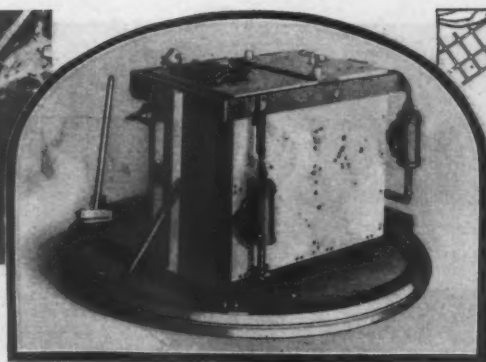
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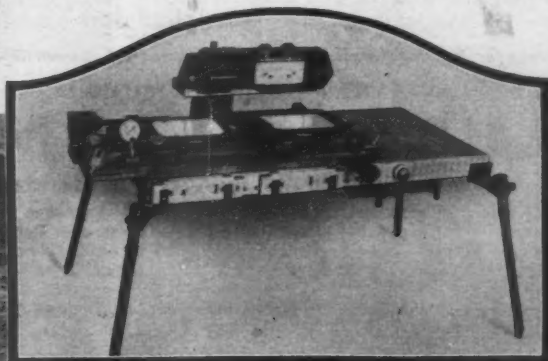
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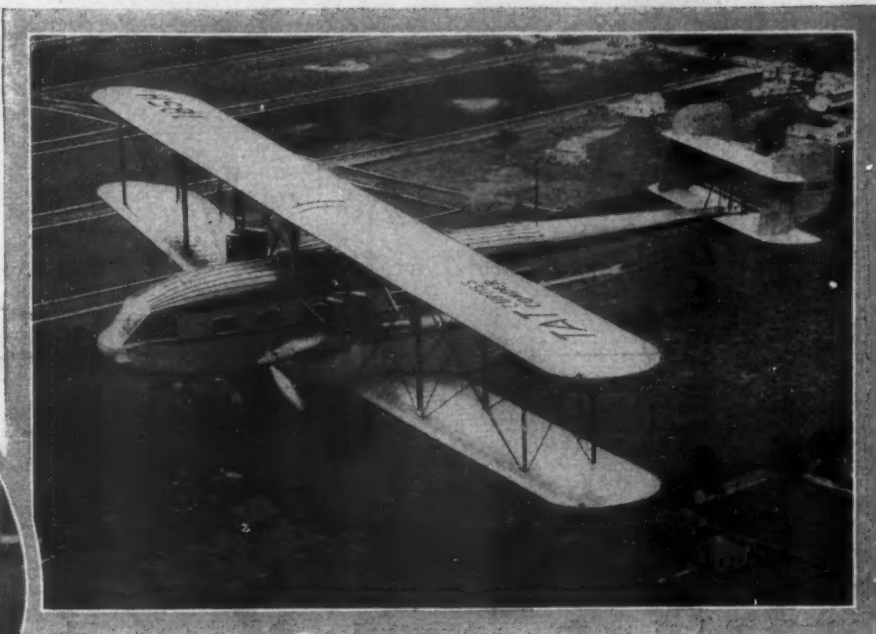
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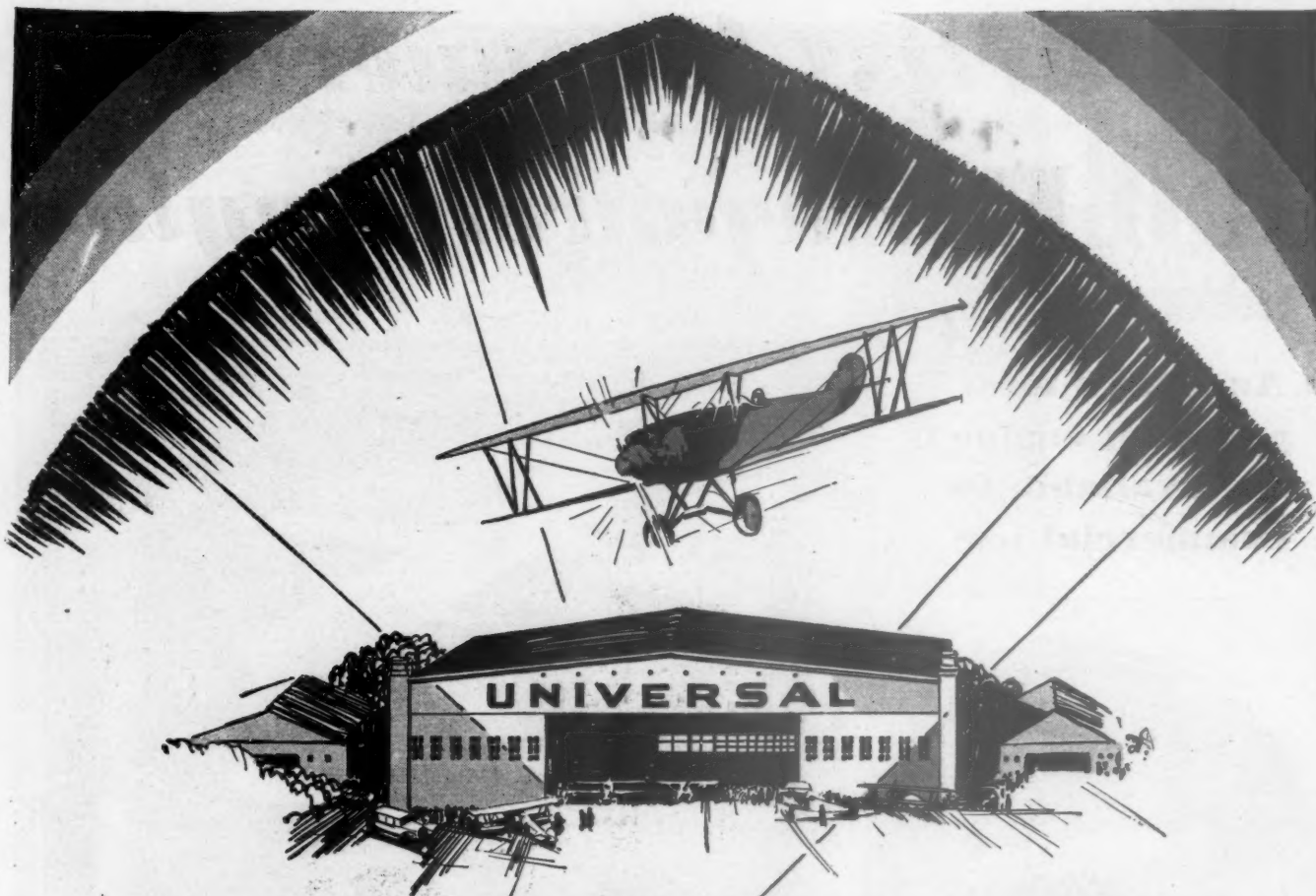
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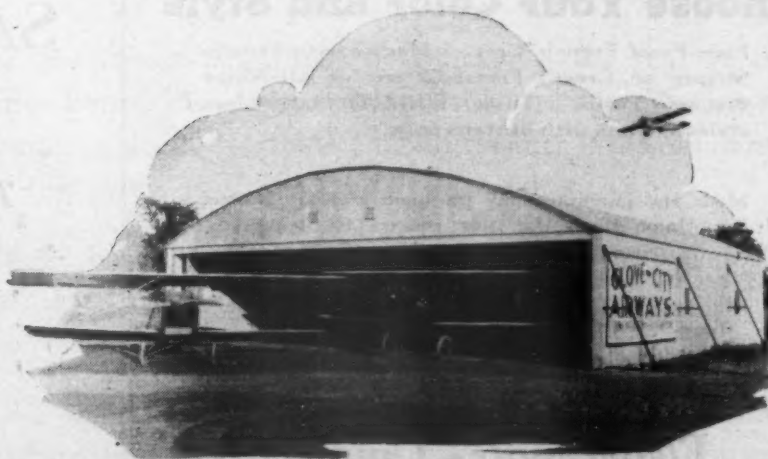
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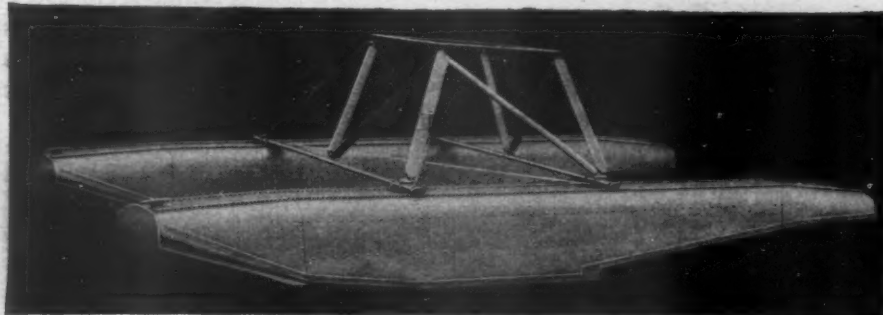
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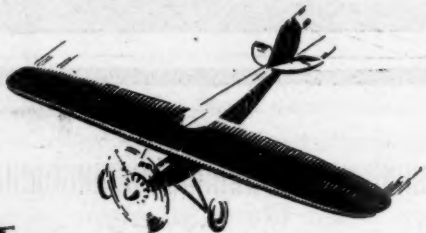


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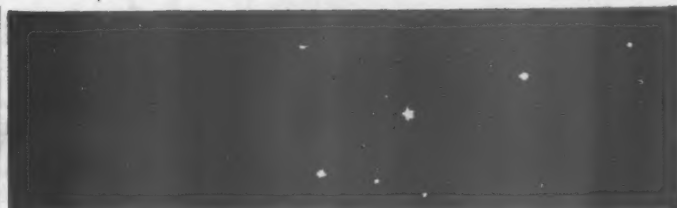
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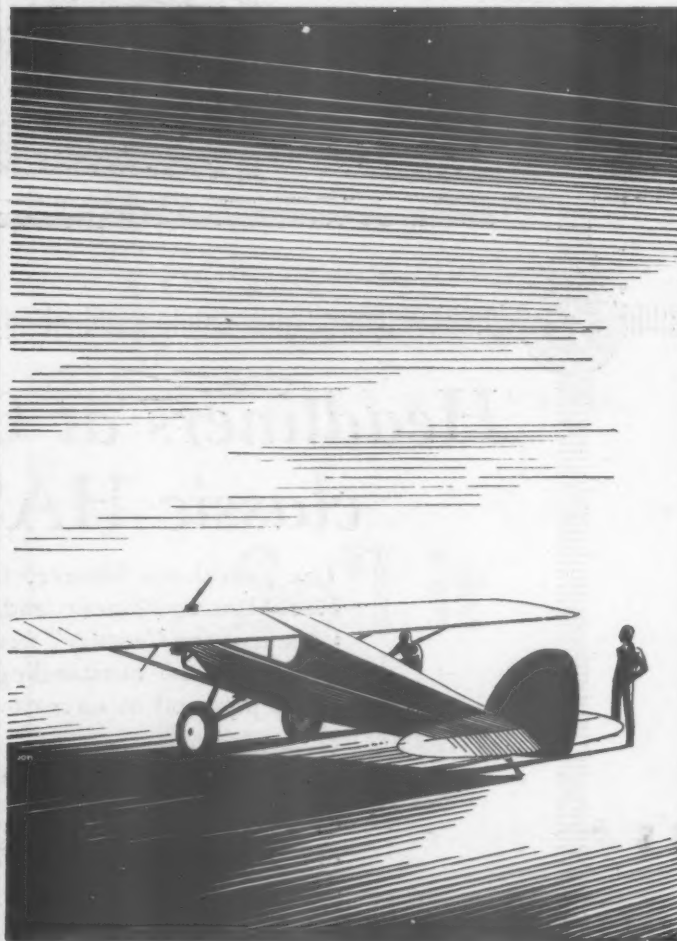
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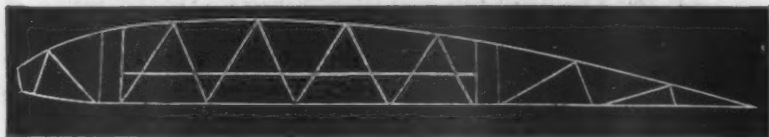


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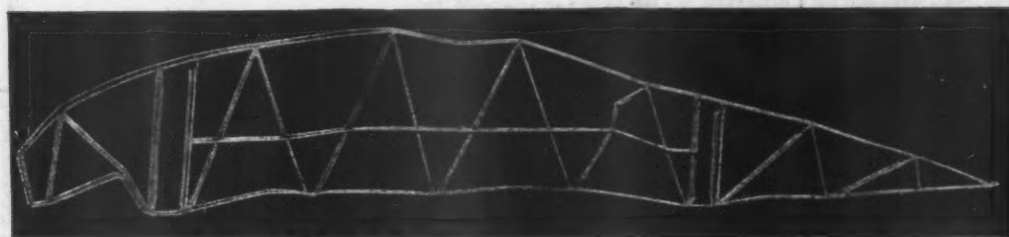


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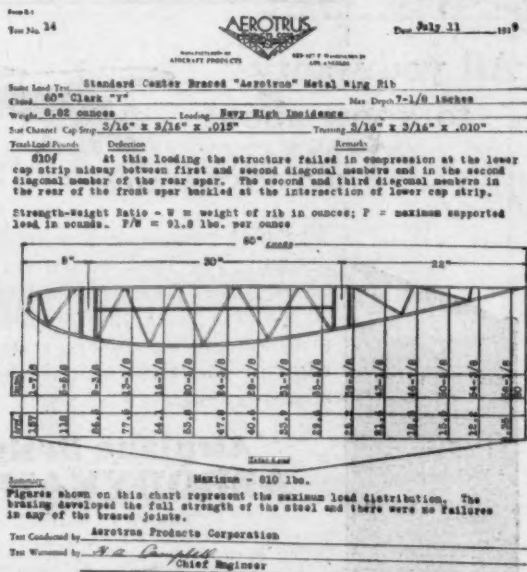
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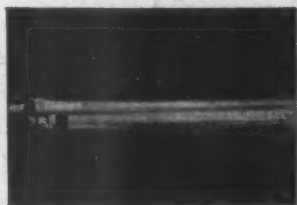
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- XIII. Effects of Altitude;
- XIV. Speed and Climb Calculations;
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- XVI. Performance Formulae and Charts;
- XVII. Stability;
- XVIII. Statical Longitudinal Stability and Balance;
- XIX. Factors Affecting Statical Longitudinal Stability;
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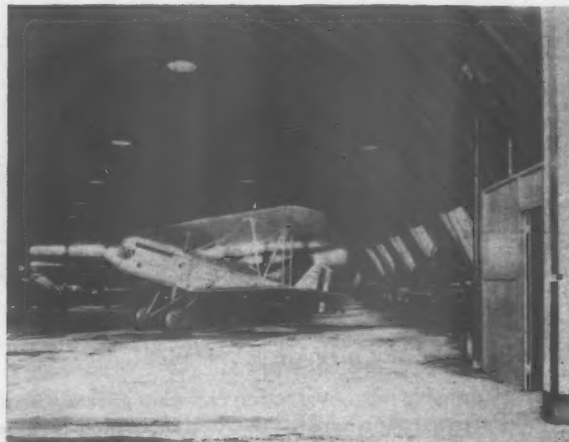
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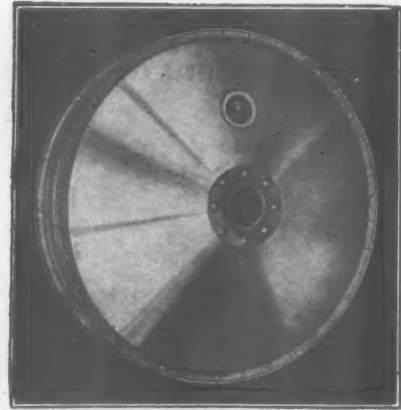
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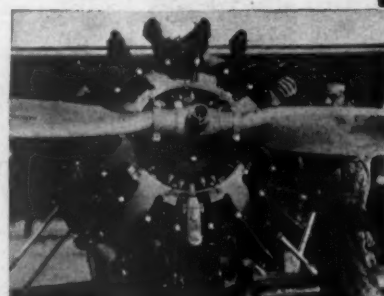
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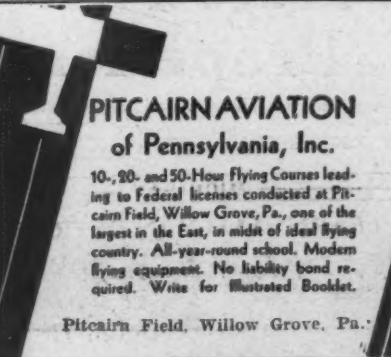
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Complete Set includes tacks, rib cord, magnetic hammer and rib needle.

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Canuck	105	Swallow '27	100
Waco 9	100	Commandaire	110
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1 to 50 yds. 45c.—50 to 100 yds. 40c.—over 100, 38c.
Van Schaack Bros. Dope, 1 gal. \$2.25, 5 gal. \$1.80
gal., 30-gal. drum, \$1.60 gal., 50 gal., \$1.50.
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(Send 25¢ with Order.)

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Consult
the Professional Service
Directory on Page 48

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BIRD, new OX-5 motor, 125 hours, Miller valve action, fast, A-1 condition, flyaway, \$2,350. A. W. Freyman, Curtiss Aeroplane Co., Garden City, L. I.

CHALLENGER, OX-5, less than one year old, absolutely sound, motor completely rebuilt. New Berryloid finish, \$2,300. Wm. Penn Airport, Bustleton, Phila., Pa. Fairchilds and Challenger dealers.

FOR SALE: One 80 hp. LeBlond. Also have number of 60 hp. Velle M-5 engines, purchased on large contract. Having now adopted 90 hp. engines as standard on our Golden Eagle airplanes, we are willing to sell these smaller engines, which are all new, at reduced prices. Golden Eagle Aircraft Corporation, 415 East Industrial Avenue, Inglewood, Calif.

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FOR SALE: Curtiss Robin, 2 Waco 10. Also wings and parts for Pitcairn Orowing. Write or call Red Bank Airport, Red Bank, N. J. Phone Red Bank 1730.

FOR SALE: OX-5 American Eagle, like new, always in hangar. Motor in excellent condition. Price \$2,000. Raymond Demass, Chester, Indiana.

FOR SALE: Curtiss OX-5 motor, brand new, still in original crate. Price \$550. Peterson Greenman Co., 117 W. University Ave., St. Paul, Minn.

FOR SALE

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FOR SALE: New tapered wing Waco J-5 motor taken in on trade, flown less than 15 hours, \$7,000. Skyways, Inc., Cleveland Airport.

FOR SALE: New Eaglerock biplane, with 150 Hispano motor; used about 90 hours. Financial difficulties. Must sell. Price \$2,500. FS-207, Aviation, 520 No. Michigan Ave., Chicago, Ill.

FOR SALE: Travel Air OX-5, Department of Commerce license, compass, booster and other extras. A real bargain at \$1,500. Hornell Airways, Hornell, New York.

FOR SALE

FOR SALE: OX-5 motor. Miller rocker arms and intake mechanism. Total time only seventy-two hours. Overhauled last winter at fifty hours. Turns 1,450 on the ground. Sacrifice for quick sale \$295. James Crawford, Mayer Aircraft Corporation, Bridgeville, Pa.

FOR SALE: OXX-6 motor completely overhauled, block tested 4 hours, turns up 1,525 on ground. Price \$500. E. W. Cernahan, Niles, Mich.

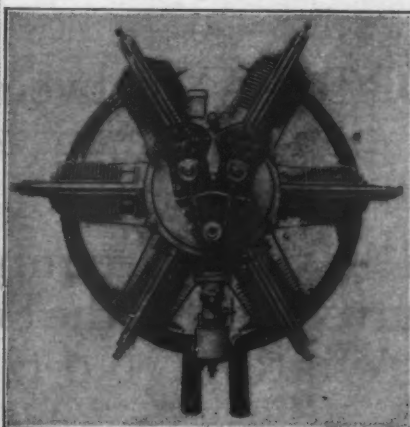
FOR SALE: Velle M-5; 12 hours since factory overhaul. New inclosed valve action; complete with hub and exhaust ring; cannot be told from new, \$575. OX-5 Hammondsport, only 35 hours; not a rebuilt motor; no rust. Complete \$550. Drigg's Dart 2-place biplane, late type dual magneto Anzani 40 hp. Only about 20 hours. Never cracked. Just the plane your club or airport should have. Earl C. Ewing, Aircraft Service, Bryan, Ohio.

FOR SALE: 1928 American Eagle, A-1 condition. Never cracked or damaged in any way. Always kept in hangar, flown by transport pilot exclusively. Ship has dual controls, double ailerons, first aid, Pyrene, Hartzell prop. Ship was licensed, but due to not using same have not renewed same. Here is your chance for a real buy. Like new in every way. Motor just overhauled. Total time on this job 130 hours. Really a buy at \$2,000. Ready to fly away. Ernest L. Zastrow, Portage, Wis.

FOR SALE: Whirlwind J-5 CA motor and standard steel propeller, guaranteed condition. Cash only. B. T. Barber, Iola, Kansas.

FOR SALE: New Hiseo parts, Dixie 800, mag. \$30, water pumps \$10, Stromberg carburetor \$30. OX-5 Zenith carburetor \$30. Berling mag. points and breaker assembly, intake manifolds. 2 Hiseo props. \$15 each. 2 S. E. 5 props., new, \$15 each. 1 Hiseo crankshaft \$5. 1 OX-5 crankshaft \$5. One Model E Hiseo motor complete, needs overhauling. One model A Hiseo motor for school purpose, both for \$400. G. D. Ludue, 1508 Calif. St., San Francisco, Calif.

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WACO 9, condition same as new; just re-covered in May; best grade Flytex. Berryloid paint job, black, silver and red; motor less than 100 hours, turns 1,400 on ground; fully equipped: dual controls and compass; approved for Department of Commerce license; for quick sale \$1,285 cash; now at Parks Airport. See P. C. Collins, 40 DeMenil Bldg., St. Louis, Mo.

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Waco	Bi.	Open	3	C921	Ox5		\$1,800.00—	Memphis
"	"	"	3	C7263	Ox5		1,900.00—	"
"	"	"	3	NC9513	Ryan Siemens		1,875.00—	Boston
"	"	"	3	C2862	Without engine		1,400.00—	Okla. City
"	"	"	3	C9506			1,750.00—	Louisville
Eaglerock	"	"	3	NC7256	Ox5	25 hrs.	1,100.00—	Valley Stream*
Fairchild	Mono.	Cabin	5	NC3569	J5 Whirlwind	206 1/2 hrs.	4,900.00—	"
"	"	"	5	NC4043	J5 Whirlwind	74 hrs.	5,550.00—	"
"	"	"	5	NC4878	J5 Whirlwind		5,900.00—	Moline, Ill.
"	"	"	5	NC4755	J5 Whirlwind	108 hrs.	5,100.00—	Valley Stream*
"	"	"	5	NC4756	J5 Whirlwind	62 hrs.	5,800.00—	"
"	"	"	5	C5985	J5 Whirlwind		5,900.00—	Baltimore
Fleet Huaky Jr.	Bi.	Open	2	NC8615	Warner Scarab		4,800.00—	Okla. City
American Eagle	"	"	3	C271E	Oxx6	90 hrs.	2,175.00—	"
"	"	"	3	C463E	Ox5	60 hrs.	1,950.00—	"
"	"	"	3	C545E	Kinner J5	36 hrs.	3,550.00—	"
"	"	"	3	C5992	Hisco	146 hrs.	2,550.00—	"
"	"	"	3	C7561	Ox5	60 hrs. (since overhaul)	1,850.00—	"
"	"	"	3	C7173	Ox5	60 hrs.	1,950.00—	"
"	"	"	3	C7762	Ox5	25 hrs. (since overhaul)	1,950.00—	"
Travelair	"	"	3	C7140	Oxx5		1,600.00—	Boston
"	"	"	3	C3747	Ox5		2,200.00—	"
"	"	"	3	NC4851	Ox5		2,100.00—	Moline, Ill.
"	"	"	3	6015	Ox5	1 hr.	3,200.00—	Boston
"	"	"	3	C6295	Ox5	113 hrs.	1,700.00—	Bridgeport
"	Mono.	Cabin	5	NC6470	J5B Whirlwind		8,600.00—	Moline, Ill.
"	Bi.	Open	3	C9029	Ox5	363 hrs.	1,450.00—	Miami
"	"	"	3	C9030	Ox5	403 hrs.	1,300.00—	Valley Stream*
Lincoln Page	"	"	3	C119E	Ox5		1,350.00—	San Francisco
Stinson	"	"	3	NC2779	J4 (Without engine)		3,500.00—	Boston
"	"	"	3	NC3795	J4 (without engine)		3,500.00—	"
Mono. Prep	Mono.	"	2	8920	Velie M5		2,000.00—	Baltimore
Monocoupe	"	Cabin	2	5725	Velie M5		1,700.00—	Louisville
"	"	"	2	C6547	Velie M5		1,700.00—	Baltimore
"	"	"	2	C6987	Velie M5	New plane — never set up	2,000.00—	"
"	"	"	2	C7011	Velie M5		1,950.00—	"
"	"	"	2	C805	Velie M5		1,800.00—	Memphis
"	"	"	2	C6557	Velie M5	E. 26 hrs. P. 189 hrs. Rebuilt by Factory	1,600.00—	Okla. City
"	"	"	2	C6733	Velie M5		1,900.00—	Baltimore
"	"	"	2	C7335	Velie M5	133 hrs.	1,875.00—	Okla. City
"	"	"	2	C7813	Velie M5	36 hrs.	1,950.00—	"
Fairchild	"	"	5	NC32	Challenger		5,000.00—	Bridgeport
"	"	"	5	4440	J5 Whirlwind		8,500.00—	Louisville
"	"	"	5	C5985	J5 Whirlwind		9,000.00—	"
"	"	"	5	NC5643	J5A Whirlwind		7,200.00—	Kansas City
"	"	"	5	NC3315	J5C Whirlwind		6,900.00—	Hartford
"	"	"	5	NC5458	J5C Whirlwind		7,500.00—	Boston
Travelair	Bi.	Open	3	NC5392	Ox5		1,800.00—	Bridgeport
"	"	"	3	6037	Hisco		2,800.00—	Louisville
"	"	"	3	C8867	Hisco		2,900.00—	"
"	"	"	3	C6149	Hisco		2,800.00—	Baltimore
"	"	"	3	NC1440	Oxx6 (Without engine)		1,200.00—	Boston
"	"	"	3	NC6012	Oxx6 (With engine)		1,500.00—	"
"	"	"	3	NC6076	Oxx6		2,200.00—	Hartford
"	"	"	3	NC4667	Oxx6		2,200.00—	Boston
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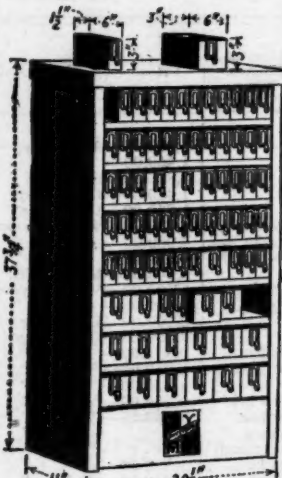


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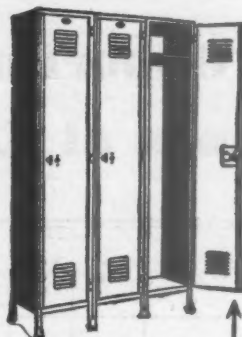
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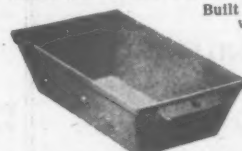
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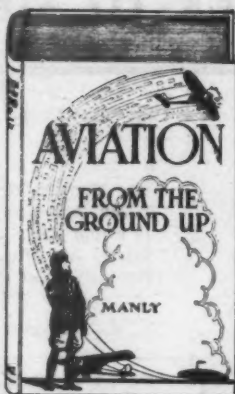
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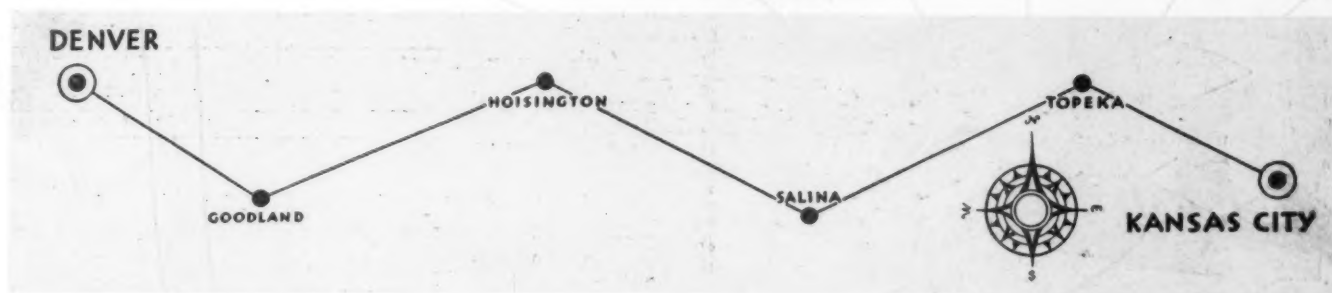
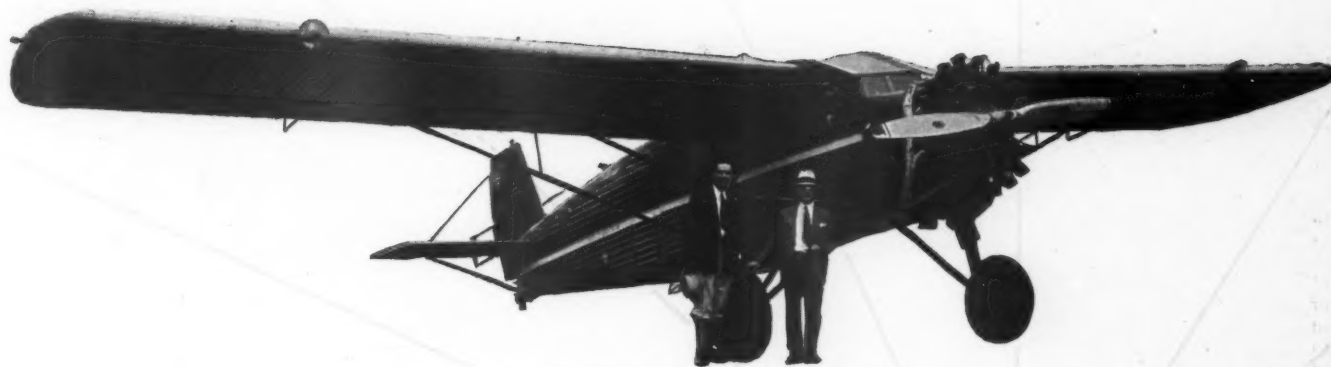
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