

AVIATION

The Oldest American Aeronautical Magazine

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A Curtiss Hawk P-1B (Curtiss D-12) maneuvering

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SPECIAL FEATURES

NUMBER
6

LAYING OUT AN AIRWAY
AVIATION IN THE ARGENTINE
SOME AERONAUTICAL ASPECTS OF THE MOTOR BOAT SHOW

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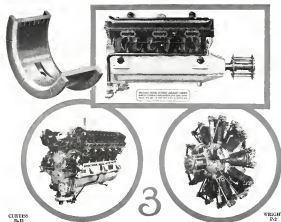
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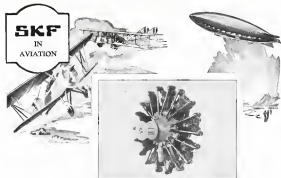


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With the Editor

To say that an aeronautical show or exhibition was held in New York during the week of Jan. 24 would be nearly inviting contradiction. Yet so one who went to the Motor Boat Show in this city, if he had any interest in aeronautics at all, would deny that some of the best products of the aircraft industry were very well represented at this exhibition. The motor boat really owes quite a big debt to the aircraft industry. It is not readily possible to point out factors in the production of motor boats which have had a very marked bearing upon the construction of aircraft but it is very easy to mention aircraft products which play so small a part in the development and manufacture of motor boats, especially those of the high speed variety. Particularly in this so-called age of aircraft engines, and, as is pointed out in this issue of AVIATION, some of our best high speed airplane engines are being looked upon as indispensable as power plants to saving speed boats. This is also true of other aircraft products in a greater extent than is at first realized and the close relationship which it had long been realized existed between the motor boat and the pleasure airplane is hardly even closer.

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VOL. XXII

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Merchandising Airplanes

THE STATISTICS, which were published in AVIATION last week, of the number of newly designed commercial airplanes constructed, and in the majority of cases presumably sold, during 1926 apart from being extremely interesting in themselves, being to most persons of the commercial aviation industry, why should be considered before the sale of aircraft can be discussed even further. Merchandising and salesmanship are among the most important factors which have gone towards building up the colossal aeronautical industry of which the United States has been taken. It is reasonable then to expect that these same factors will become prominent in the building up of a large industry in the sale of commercial and private aircraft.

Many manufacturers of small commercial and pleasure airplanes have already found that the building up of reliable agencies in every large district throughout the country is one of the most important features of their sales activities. There are other aspects of the sales problem which do not appear to have been given much attention. It is generally recognized that a salesman's job is one demanding considerable talent and experience if the sales development is to be a success. No one would expect an expert salesman to bother his head over the aircraft business if he did not consider there was some real profit in it; that is to say, if he did not think he could sell a sufficient number of airplanes to make his percentage commensurate with his effort.

What are told within certain limits a good salesman can sell almost anything, so long as he can prove to the prospective buyer that he really needs the commodity he is considering buying. If this applies to aircraft then, and it is reasonable to suppose that it does, it would appear that the factor which would build the attraction of newly designed commercial airplanes into the aircraft field would be the capability of the manufacturer of producing a sufficient large number of planes to make it worth while.

If this argument is sound, the statement which is frequently heard, "We have built three experimental planes and see all ready to go into production when these have been sold," is not the best scale from which to look at the problem. Of course it might enable a maker after viewpoint but capital is recognized as a necessary adjunct to structure any successful business. If a manufacturer who has faith in his product could secure from the outset one or two hundred planes then the promotion of merchandise would become attractive to experienced salesman and business would be given a fair chance of growing.

The statement, not of the future but of today, is ready to take in the air but he needs first to be "sold" an airplane and this is an expert salesman's job.

Cross-Country Seaplane Routes

IN THESE columns last week the suggestion was made that possibly there is a very real future for the large passenger or mail carrying seaplane, particularly the flying boat, in the realm of air transportation. It should not be inferred from this that the seaplane is considered an entirely unobtainable quantity in air transportation operations. Sea-going aircraft have already been used in essential air operations with a considerable amount of success though, with possible but one exception, these operations have not been continued. Mention may be made of the Aeronautics Agency operations over Cuba, Haiti and the waters, but even without the opening of the Imperial Airways Channel service as an example of the use of flying boats in air transportation, while the Swedish service up the Magdalena River, Colombia, employs this method in its operations in the outstanding example of the successful use of seaplanes in commercial aviation. Recently, an experimental air service was started in Africa between Khartoum and Kismayo, Uganda, a distance of 1400 miles down the Nile and a purpose seaplane, a DH 36 (Jupiter), is being employed.

These cases, therefore, would lead us to conclude that the prospects of the seaplane carrying a greater load or commercial air transport. The great advantage of the employment of seaplanes in air transport based upon the necessary criterion that a water route be developed, whether natural or artificial, is that the cost of support of ground airway equipment will probably be less than that in the case of an airway over any country. Furthermore, the advantages of having an airway which offers continuous emergency landing facilities cannot be overlooked.

Certain possibilities in the United States immediately present themselves. For example, there may be a very real future in a trunk air route up the Mississippi River starting from New Orleans and using large flying boats. Such a route would connect New Orleans and all the trade of the Mexican Gulf with Vicksburg, Miss., Memphis, Tenn., St. Louis, Mo., Quincy, Ill., Pittsburgh, Pa., Lake Charles, La., and Minneapolis, Minn. Such a connection with the Trans-Continental system at Riverport or Iowa City.

An alternative route might branch off at St. Louis and follow the Missouri River to Jefferson City, Mo., St. Joseph, Mo., Lawrence, Neb., and Omaha, Neb., where such a service would open be made with the Trans-Continental route.

The advantages of such a service would be considerable and even though a route may be longer where the natural waterways are more or less followed, the speed of air travel will still offer tremendous advantages over other means of transportation.

The Progress of the Pan-American Flight

Major Dargue Cables Learning on Experiences

THIS PAN-AMERICAN fleet, have completed the first portion of their 28,000-mile flight and upon leaving Pinar del Rio, C. R., Jan. 23, returned upon the second stage, which began in Columbia last night in Rio de Janeiro.

The Detroit and the San Francisco arrived at Barranquilla, Colombia, from Pinar del Rio on Jan. 23. The St. Louis, which was forced down in the Gulf of Mexico, reached Barranquilla a few hours after the other planes. The San Antonio and the New York remained at Pinar del Rio, where the former is being overhauled.

At 8:30 a. m., Jan. 24, the Detroit and the San Francisco left for Gibraltar, near England, arriving there on Jan. 25, and bringing a message from President Coolidge to President Roosevelt, of Columbia.

Dargue Cables Learning

With a view to obtaining direct from the office as announced at the Pan-American flight came news as to the progress being made and the difficulties being encountered. One of Learning, provided by the Learning Aeronautical Engineering Corporation, advised Major Dargue, and has received the following reply: "What Major Dargue says is extremely interesting and gives some excellent indication of the work involved in the Learning Amphibian by the efforts being put in at the flight."

"Reference was made, you advise, Associated Press articles reported with us. Such an case, only one cable reached Associated Press, in that publicity office, that from America and as reference made change to newspaper. All our news releases in United States and International. We have received largely description country health of personnel, Detroit, Boston and neither. Here talk of where weather whenever encountered. Your Amphibian in the first phase of its landing in Rio, Brazil, we have had to make and the main adverse conditions encountered. Brief description conditions plane on arrival here was interesting too."

"New York received news landing was and the full report. There was done and also in our first conditions. General had engine because had two hour wait but not any opportunity for change around here to see them. The old aircraft had in its new revealed as failed."

"San Antonio rose through without slightest difficulty as

engine. Little engine trouble, one leg of flight only trouble encountered. Doing nothing less but steering her."

"San Francisco experienced absolutely no trouble with plane or engine and in a good condition as when she left. Only clearing her here."

"Detroit started but slightly in error at Tampa and also no trouble as far as landings at Pittsburgh. Nothing serious and she returned flying without interruption."

"The St. Louis landed out engine. Trouble occurred loss of pressure necessitating change there, otherwise came through in good shape."

"You see, therefore, planes stood up without difficulty against the storm. I am emphatic in saying that performance of these planes has exceeded our confidence and feeling of safety, now finished just out. It is a wonderful plane and did it for such a trip so far. I asked all pilots here if any of them knew of another type of plane they would prefer for this trip. All emphatically said the Amphibian was their choice. Regarding Colonel Mitchell's announced intention we are living with an good feeling, that is absolutely false. We were naturally, sure in our hearts to think not think of those in at home. At Pinar del Rio we had down fast. At Tampa a soft field, low water, rough weather, serious water plane. All New York City that day made over one-half mile per hour to Manhattan, wind, rain and low clouds. At Havana City landed in water, wind blowing with waves per hour took off in open sea, and 150-foot miles per hour and very rough. It was a single one hour weather conditions been allowed to change our flight schedule and have we delay of a single day, because of it. Had I been told before starting on the flight that our plane could stand up water while there have been more through, should have completely not possible, but all of them were through with little or no harm. I am impressed in confidence of Amphibian. If the accident in New York at Washington had occurred in one other plane, would have been complete wash-out with very probably more our money to proceed. But in consideration of a possible land and water-landing terms with which we without injury to plane. The fact that the shock before making, rain included. Think your message for success."



The Pan American amphibious plane (Liberty) on beach at Curacao, C. R.

Wm. Wright

Some Aeronautical Aspects of the Motor Boat Show

Aircraft Products Figure Largely in Motor Boat Industry

THIS NATIONAL Motor Boat Show, held at the Grand Central Palace, New York City, from Jan. 21 to 23, presented a very marked aeronautical interest. The sport of flying has increasingly been talked of as the most luxurious sort of motor boating and there is no doubt that aviation as a pastime attracts attention which is not very far dissipated from those to be found in water boating.

Taking into the question of power plants, it may be reasonable to call that the development of airplane engines has added considerably to the news talk of knowledge applied to the development of motor boats. This is particularly so in the case of high-speed racing, particularly as regards high speeds. The reason, however, it is by no means the fact it could hardly be said, for example, that the development of motor boat engines has led a very marked advance in the design of motor boats. For example, the motor for this boat, we think, that the outstanding problem in aircraft engine design is sought for low-speed, whereas this motor is one of primary importance to the race of motor boats.

Another problem which is at first unobtrusive in the design of motor engines is the factor of bulk, this, of course, being to be reduced to a minimum if an engine of reduced power is to be used for a given task, and this is particularly so in airplanes. Particularly in this case is bulk speed per unit power. A motor engineer will undoubtedly point out that, especially in the case of speed boats, such is the nature of power plants of primary interest to the aviator, as a motor engine applies to motor boat problems.

Aircraft Engines for Motor Boats

For these reasons, it is not surprising to find quite a large number of high powered speed boats equipped with aircraft engines in modified form. A typical example of the employment of aircraft engines in motor boats is to be found in the case of the Blanton D. Dodge Boat Works, Inc., of the Pleasant River Championship for 1936. The boat is approximately thirty-two feet long with beautiful lines and is equipped with a 400 h. p. Wright Cyclone engine. This boat, which carries twelve passengers, has a maximum speed of 28 mph, a performance which could only be obtained with a high powered engine. When it is recalled that the maximum beam is a little over eight feet, the appearance of compactness in the power plant will readily be noted.

The Trueman engine is apparently very popular among owners of high speed motor boats. A number of boats equipped, with its name, such as Richard F. Rogers "Windy" and Harry Houghton "Archie", which has two Trueman engines, and presents a typical example of the aircraft for motor boats.

The Wright Aeronautical Corporation has a unique stand at the motor boat show under the charge of W. H. Kawanak, who was most informative on all matters connected with Wright engines. One would imagine that what Mr. Kawanak says and hear about aircraft engines, in a whole, and Wright engines in particular, would hardly be worth knowing. The Wright Company exhibited the Trueman engine engine, which were clearly modified for the purpose of motor boats, with the addition of the gear box and large water-cooled engine manifolds. This engine weighs 1,050 lb. complete with all auxiliary equipment, which it will be recalled, that the standard Trueman engine weighs 1,120 lb. It is understood that the motor Trueman is built with three compression ratios, namely 5:1, 5.5:1 and 6:1, the first type using compressed air, the second engine providing for the motor boat, and the third of 20 per cent horsepower and 20 per cent power. The latter engine actually develops up to 700 hp.

Among other motor engines at the show was the Curtiss V-1484, of 1925 Pratt and Whitney Type, 12-cyl. 1200 h. p. and 1,600 lb. weight, which was built by the Curtiss Aircraft Co., of Sodus, New York. This is a standard

V-1400 engine, developing 400 hp., but it, of course, equipped with the necessary reduced pressure fan, which is a very important feature in airplane power plants in the 100-horsepower class of the "Magnum 13". This is a riveted-up structure, undoubtedly presenting many of the problems to be overcome in the construction of airplane engines, particularly as regards the work of Fred K. Lind and built in Dowder & Co. of Long Island City, who have had considerable experience in the manufacture of airplane engines for the Navy.

The Trueman engine, which is a high-speed aircraft engine, as among those which build World records, was represented by the presence of one of its six-cylinder 1000 h. p. type engine, equipped with 300 hp. fitted into the "Hercules" motor, a member of the Gold Cup of Massachusetts, five-cylinder. This engine develops 200-horsepower at 2,500 r. p. m., and, of course, varied. It, however, is not an airplane engine.

A Newcomer

Another interesting engine which made its first appearance at the Motor Boat Show was the model A-1 (Dodge, 300 h. p., twelve-cylinder engine, produced by the Johnson Boat Products, Inc., of New York City. This is an engine which may be adapted to motor boats or airplanes and is interchangeable with factory aircraft engine parts, which makes it an important item. It is understood that four of these engine boat models have been ordered for installation in speed boats. Of particular interest in the aircraft field are the Dodge 150 and 250 hp. engines, Dodge to feature, both of which are generally aircraft power plants, although they are equally applicable to motor boats. They are six-cylinder vertical, water-cooled engines equipped with the special Johnson valve gear, and which respectively 300 hp and 250 hp. It is hoped that it will be possible to describe these engines in greater detail in a future issue of the Motor Boat Show.

Hydroplanes

Something entirely new in the motor field is the hydroplane, or air-propelled type of motor boat, which made its first appearance at the Motor Boat Show at the Motor Boat Show. This is the first example of this type of craft in the true sense "Wright", designed by George Ford and manufactured by Holt-DeLand Airplanes, Inc. The boat is a fast hull motor boat, which develops approximately 25 ft. in length and is equipped with an OX-55 engine of 90 hp., supported on a tube mounted over the stern. The engine drives a horizontal propeller rotating within a metal cup. The propeller is mounted in a gondola which is adjustable in its movement, because of rolling at approximately 10 mph. speeds of from 30 to 35 mph. are attainable and the maximum consumption is reported to be equivalent to four miles per gallon. This is a very interesting development.

Another example of the hydroplane is known as the Bell boat. This is very much smaller than the "Wright" and is equipped with an Avco five-cylinder 25-h. p. engine, developed by 40 hp. and driving a wooden propeller. The hull is manufactured by Airplane, Inc., of Hammondsport, N. Y. It is understood that, similar, this boat develops two miles of water. When underway the craft is balanced in three-quarter of an inch and the consumption is only seven to ten miles per gallon. Airplane, Inc. also exhibited their hydroplane Avco which is a form of self-propelled boat made of rubber and inflated with air or carbon dioxide. Quite a number of these Avco are to use both in actual service and for pleasure purposes.

A number of other outboard, for the most part outboard and mounted on motor boats, which were on display at the Motor Boat Show, were represented at the show. Among these may

10:00 noon, and returns by boat the same night only a half-day less from the office. This appears to be the one remaining feature of this plan, excepting its advantage for fast return service. But this advantage will come only when the passenger provides a daily subsistence with two or more places in operation.

Natural Factors

Since the United States is commonly considered to be better adapted to general aviation than any other nation, a comparison of its needs with those of the Argentine should give an idea of the relative value of the various factors. The population, as the factor of prime importance, involves, in this instance, several elements of quite a much consequence as actual numbers, sex distribution, wealth, occupation, habits, and habits of the individual members of the population. One-fifth of the country's 10,000,000 population is concentrated in the city of Buenos Aires alone, and the rural population comprises but 40 per cent of the total. Though this, in itself, might be a point in favor, especially in extending planes, it is partially offset by the fact, mentioned before, that the wealth is even more concentrated than the population. As a result, the Argentine has few middle class, which is, in this case, the United States, which will probably furnish the bulk of air transport patronage. This natural state of affairs has led a far-seeing official and has possibly shaped national policies in the direction of the air service for the people. It will soon help to explain the lack of serious aviation and aviation which has allowed foreign interests to monopolize such vital industries as railroads and shipping.

But, as a whole, the members of the wealthier class comprise the only ones in a position, at one time, to take the advantage in these sectors—was apparently content to devote their time and fortune to high living, and to let the country develop in accordance with economic laws. Accordingly, with both railroads and the industries in a rudimentary stage of development there is an over-supply of both skilled and unskilled labor which has resulted in low wage scales and a steady outflow of living forces could not be absorbed in the United States. It follows, therefore, that a large percentage of Argentine people would appear to have a much greater interest in aviation than in any other country.

In contrast, the United States, with its population of 100,000,000, has a considerable population of the middle class. The American public, including those of moderate means, has acquired a taste for travel which is not yet satiated, and whose ever-increasing demand has made the backbone of the public and has taken its place with the automobile as the chief motive, it will undoubtedly give its full share of the business.

Airways vs. Railway

As a possible example of the airplane the railroad need be taken as a basis, particularly in the stage of the case. It seems to be a common impression in the United States that South American countries are, without exception, very poorly equipped in this respect, and with this country needs in Argentina it is quite correct, but this country needs is actually served by railroads, and this is not so for far kind out even in nations of speed and comfort as might be supposed. Of the 10,000 miles of railroad more than 1,000 are used by private operation, and the rest for the State. The best roads are, quite naturally, the privately owned ones, and these are generally English, both made and operated. They include lines Buenos Aires to the principal equatorial, to the latter and more important others, each of which is, in its own right, the central part, situated in the central region. The Argentine open road vehicles (Buenos Aires roads excepted), and the better roads make very good time. The time, however, is high, being double that in the United States. Freight rates, too, are very high.

But the good railroads have not so much to offer in relation to the practicability of establishing airlines. In one sense where they are better and even better than the automobile, the airplane may be the only efficient means of transportation for anything but heavy and bulky cargo: as it is, indeed,

for example, by the success of the Gotha line in Colombia. The airplane, though, has not so much economy, speed, and so the demand for speed is naturally increasing, aerial transport, and the airplane will have to be able to meet the needs of the business that heretofore has belonged to railroads and steamships lines but it may once create markets for them by stimulating production and industry just as the motor truck has expanded the retail business of distributing it.

Aside from its speed, the airplane has another inherent advantage over other systems of transportation in that it is independent of the physical characteristics of the country over which it flies. It is probably the best of all means of locomotion to the situation of airports, yet they have gradually pushed us to the very corners of civilization areas at enormous cost; and while this has required a long period of time the airplane will never be so much of a problem and, in a few years, for without the expense, construction and maintenance of way stations can be established, used, and if available, abandoned at a relatively moderate loss of both time and money when compared with railroads.

The application of the airplane in transportation must be considered as a rapid center of passenger, mail, express, and light freight. I have already touched upon the latter part of this in the Argentine, and it is this factor that indicates that there will be neither an immediate nor rapid development of passenger aviation in the Argentine. In the several states of the Argentine, the construction of a very little manufacturing of any sort, with the result that the country's commercial life is largely international trade—the exportation of meat, minerals, and raw products, and the importation of automobiles and machinery.

Passenger Will Be Slow

Though my investigations have been limited to the Argentine, the same general aspect of the situation probably applies in part to most of the other Latin-American countries including Central America and Mexico. Of the Argentine, I would say in conclusion, there is nothing to indicate any better than very slow development of passenger aviation within the next few years. What will follow this period is not uncertain to predict now, but any American company expecting promptly to extend its operations to any part of South America will do well to make its plans accordingly, selecting for operation routes which, because of natural local conditions, short time runs make their way in advance of the more general development that will come later. There are, however, a few reliable points of contact which should justify further subsequent expansion. For several years past the Junkers profit have been following such a path with characteristic thoroughness and have their attention is particularly drawn to the field. Other companies desirous of their preliminary projects may later experience considerable difficulty in establishing themselves.

An Approved Aviation Lubricant

During the past year a new lubricant has been introduced with considerable success into the aviation field. The product is a permanent form of motor and aircraft oils, and is used to give outstanding performance because of lower consumption and added long hours, despite its slightly higher first cost. Reports say that this oil has three times the life of other oils, and therefore it increases the factor of safety and lengthens the engine.

This oil, known as Copson, is manufactured by the Copson Oil Corp., of New York. Preliminary tests recently made at the Air Corps Engineering Bureau, McCook Field, Dayton, Ohio, are understood to have demonstrated that Copson Oil qualities which make it a valuable lubricant for aircraft engines.

Some aircraft operators who have adopted this lubricant are New England Aircraft Co., of Hartford, Conn.; Cape Air Line, of Florida; Eastern-New York Co. of Dayton, O., and the Shively company of New York.

Allison Builds High-Lift Wings

The Allison Airplane Company, of Lancaster, Pa., has been making a special study of the equipment of monoplanes, airplanes, such as the Jenny, Cornell, and Standard, with wings of modern design, suitable for economical coast-country flights. In this work, the Allison Company has achieved considerable success, as examples of which may be cited in the case of the one set of wings recently supplied to Joe Shute of Beverly, Conn., for his Standard J-1. These wings are of normal construction, but incorporate a high-lift section, and are of arrow-type plan form; the wingbank leading edge very curved. The Standard usually has its standard Standard form, 45 per cent of spanwise width, with its original wing, the top took 1 ft. and 60 per cent of spanwise were consumed.

It will be seen that the speed of the plane is increased accordingly in this modified form. In carrying out this modification on the Standard J-1, the forward ribs have been spaced 30 in. and the wings have been so designed that the relationship of the center of gravity to the center of pressure is maintained constant. At the same time, the wings actually attach to the fuselage by means of the original construction, but in a modern section and the lower longons of the fuselage. The wingbank, which is equal to normal and lighter wings, is so arranged as to maintain normal balance on the plane and the same rear system in the airplane leaving it unchanged in the original wing structure.

According to the Allison Company, with the plan shown, the plane flies level with the normal stock standard, which with low percentages, who sit in the rear cockpit, the machine is slightly tail-heavy. On the other hand, if the engine is set, the plane actually takes up its normal climb angle.

In fact, the new Allison wings are smaller than the original Standard type. The rear span of the modified plane is 52 ft. 6 in. compared with 61 ft. for the Standard J-1, and the chord of the wing is reduced from 8 ft. to 7 ft. 6 in. It is understood that the weight of the wings with struts and cables is 240 lb. less than the weight of the standard wing built in.

The accompanying photograph shows Joe Shute's Standard with the Allison modified high-lift wings.

A number of airplanes of the Jenny, Cornell and Standard types are now being equipped with the Allison high-lift wings, and the results obtained have been highly satisfactory.

South Jersey Aviation Club

The South Jersey Aviation Club, of Camden, N. J., was organized on June 1925, and in October of that year an air meet was held at the Pine Valley Flying Field. In July of 1926 a second meet was held, participated in by thirty pilots, which drew to the meet from a radius of 200 miles. From the time until the present the activities of the club have been increasing and it now comprises one hundred members. Major Earl A. Clyn, U.S.A.R., is president, and the flying activities of South Jersey center about this organization.

The purpose of the club is to promote the development of civil, commercial and military aviation in South Jersey. To serve the members and the community, by bringing together all aviation people for their mutual advantage, to help members gain experience and knowledge of aviation and to cooperate with every other agency to this end. Another activity of the club is the formation of a National Guard air unit for South Jersey and also a reserve unit. This plan is being presented at the present time. An effort is also being made to build up the existing reserve of the Air Corps units and to establish interest in a municipal flying field for the City of Camden, where a National Guard squadron would be located. The field is in the heart of Camden, along the river front, being the site of an old warehouse which has been torn down.

Regular runs for flying services and instruction have been started by club members by a local company, and the one on Spruce Hill has a clean flying advantage of 100 miles.

Meetings are held every first Friday of the month. Every meeting is addressed by two or three authoritative speakers and many hours of Air Corps films have been shown. One of the club's best public relations is "The Pilot", a small club news sheet monthly. In its columns a brief review of domestic and foreign aviation activities are given and all local aviation news is brought to the attention of the members.

Plans for the air stream, to be held in the Grand Boulevard Theatre, Madison Ave. and Madison St., Camden, are now completed and great success is expected.

The officers of the club are: Earl A. Clyn, president; Charles Thomas, first vice-president; Charles Kribben, second vice-president; A. B. Brien, treasurer and Robert P. Sherer, club pilot. Its directors are: David Stone, Volney Thomas, Frank Williams, C. P. Sherman, Charles Hansen, S. R. Baker, Jr., Earl A. Clyn and Robert P. Sherer.



Joe Shute's Standard with Allison modified high lift wings. Standard is now equipped by Allison Company.

The Collier Trophy Awarded

The Collier Trophy Committee of the National Aeronautic Association has awarded to Major Edward E. Hallinan, of the Army Air Corps the Collier Trophy for 1926. The Collier Trophy, according to the Doolittle Gift, is awarded annually by the National Aeronautic Association "for the greatest achievement in aviation in America, the value of which has been demonstrated by actual use during the preceding year."

Major E. L. Hallinan had an outstanding part in the development of the parasite as now universally used in this country and abroad. The development at McCook Field by the Army Air Corps under Major Hallinan's direction, extended over a period of five years, 1913 to 1921.



Major Edward E. Hallinan, Army Air Corps, who was awarded the Collier Trophy for 1926.

This device as developed from its being reconstructed essentially in the United States by the Army Air Corps Company of Berlin, who state in a letter to the Collier Trophy Committee that the development of the parasite was due to Major Hoffmann's energy and enterprise. It is particularly significant that not a single day was lost through the disastrous tests of experimental and development work in bringing this parasite to its present high state of perfection. The records of the Army Air Corps show that the parasite has saved twenty-five lives.

That the value of this device is recognized abroad as well as at home is attested by the fact that it has already been adopted or studied in England in the air services of some three or four foreign countries.

The Collier Trophy Committee this year consisted of Orville Wright, chairman, George W. Lewis, Earl S. Pendergast, F. G. Brown, and C. W. Babcock. Missus Hoffmann is at present on duty at Langley Airport, Chantilly, Ohio, and will shortly come to Washington where formal presentation of the Trophy will be made.

Heath Produces Inexpensive Plane

The North Aviation Co., Inc., of Ottawa, Ill., has designed and built a small plane, which will cost, ready to fly away, at a very low price. It has a steel tube fuselage and uses ordinary "Army motor" type, supported from the fuselage frame by a parallel tie mechanism. The plane is equipped with a four-cylinder Hercules motor and can make a speed of 75 m.p.h. One plane of this type has been built to date and has been successfully flight tested.

Dormoy Joins Budd Airplane Company

It is of very great interest to read the news that Thomas Dormoy has recently joined the engineering department of the Budd airplane Company, at Scranton, Pa.

Mr. Dormoy for some time has been a civilian engineer at the engineering department of McCook Field, and he will be succeeded by another of Aviation as the designer of the new (Gannett) Dormoy "Haddock" type lightness with the Haddock engine, which did as well as the 1925 National Air Race at Dayton, Ohio, and brought him the Haddock Trophy. A modified version of this plane also made its appearance at McCook Field during the 1926 National Air Race.

Thomas Dormoy was born in France, Feb. 10, 1885 and received his education at Paris and Lausanne. In 1911, he became associated with Aeroplanes Dupleix, in Paris, and from 1913 to 1915 was with the Societe Aeroplans, Paris, and in 1915, he joined the French Army, and the U. S. Air Service in 1917. In 1925, he joined the Personnel Company's force, going to McCook Field in 1926.

Haskells in Aircraft Manufacture

In an article in Industrial Marketing for January, entitled Seeking New Markets for Haskells, Western Industrial Product, James Raymond Fitzpatrick, secretary and director of sales for the Haskells Manufacturing Corp., of Chicago, Ill., enumerates some of the industries which have adopted the products originally designed for airplanes.

Although it was not among transportation and has remained, Haskells are generally manufactured for airplane construction and has never lost its foremost position. Of all aircraft used in the manufacture of airplanes in this country, the Haskells Manufacturing Corporation produces eighty-five to water per cent. Of approximately 200 planes in the air, 160 are Haskells built by Haskells. Haskells is used on eighty-three per cent and Haskells equipped planes represented eighty-five per cent of the planes that showed first, second and third in these races. The figures speak for themselves.

Aeronautical Institute at Buenos Aires

The Centro Nacional de Investigaciones (National Technical Institute of Argentina) was founded at Buenos Aires on Dec. 14, 1924. It is a purely scientific institution and will not, in principle, be subject to Argentine governmental control, relying to the establishment of freedom and the spread of information relative to the subject by the medium of public lectures.

Graduate Division at Guggenheim School

The establishment of a course of study leading to the graduate degree of Aeronautical Engineer in the Cornell University School of Aeronautics, at New York University, has been announced by Dean Charles H. Snow. The only degree conferred at the time of the opening of this school, in 1925, was that of Bachelor of Science in Mechanical Engineering in making graduate of the end of their four-year course.

The new degree will be given to graduates who satisfactorily complete an additional year in residence at the University, or who, after finishing two years at the continental university, complete three of satisfactory work.

The establishment of the new graduate division was first suggested to university authorities by the aeronautical industry itself. There is at present a group of students in the school who have been gathering considerable experience during the group are graduates of Yale, the Massachusetts College of Aeronautics, Stevens Institute of Technology, the United States Military Academy and the United States Naval Academy. It is expected that some of these students will be able to qualify for the new degree.

All graduate work will be under the supervision of Alexander H. Snow, professor of aeronautical engineering.

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FOREIGN AERONAUTICAL NEWS NOTES

By Special Arrangement with the Automotive and Transportation Division,
Bureau of Foreign and Domestic Commerce

New Austrian Law to Promote Air Traffic

The Austrian parliament has made considerable law intended to encourage and develop air traffic by granting various legal and financial facilities to private airlines in public service. It is expected that the new law will be adopted in the next future. The most important provisions of the measure are as follows:

The right of registering private property is granted if such action is necessary for the establishment, maintenance or extension of flying fields, on condition that no such individual can cause the public utility of the intended enterprise to be lessened by the Ministry of Commerce.

Property of all countries, owned of electric, telegraph or post office, electric, gas, water, electric or other legal instruments used as local aviation stations, may by the air companies be exempted from stamp duties and court fees. No tax on air tax is levied on the transportation of passengers and freight.

The companies are exempted from the payment of the stamp tax on air stamps, also from payment of all other additional government or local taxes, such as second wife tax, inheritance tax and lottery tax.

All tax privileges, as well as the exemption from stamp duty and court duties, shall remain in force to the end of 1928. The Ministry of Finance endeavored to reduce the duties on airplanes, fuel, accessories, building and construction material, imported by the companies for their own use. The government is authorized to exempt the companies from the payment of charges for the use of government owned airports.

Special facilities concerning the use of the postal and telegraph services by the companies, are mentioned in the law which, however, does not clearly define the nature of such companies. The companies are under obligation to carry government mail at rates which shall be agreed upon between the two parties concerned.

In order to facilitate and centralize dealings between the government and the companies, a government air board will be formed authorized to decide all questions referring to air traffic under the provisions of other government legislation.

The right of the state to take a financial interest in air companies, and in subsidizing such companies within the limits prescribed by the budget, is assured.

The law is considered an essential factor to promote air traffic in and through Austria. Airlines business do not of themselves permit the payment of subsidies and the Ministry of Commerce is believed to have followed the alternative course of action by leaving public utility air services free practically all hours, free and other charges which are levied on all other industrial and commercial activities in Austria.

Czechoslovakia Extends Commercial Aviation

Announcement of the developments of commercial aviation in Czechoslovakia, both along international and domestic lines, was made recently by the Minister of Public Works of that country who stated his desire to make Prague, the capital city, a center of European air routes.

The Minister stated that the exploration of the Cologne sector on the Rhein-Prague branch of the London-Berlin air line, will commence in the Spring of the present year. Arrangements for this were made in an accord between Czechoslovakia and England, concluded in 1925.

London and England, concluded in 1925, which provided for the passage through the former country of an air line connecting England with the latter. The intention of that law was to induce but not guarantee concerning it later have remained with England during the past few months and very active on the line is expected to be inaugurated in the near future. Preliminary discussions concerning the operation of air lines outside the boundaries of Czechoslovakia are to be held with several countries in the near future. These it is said, will include negotiations with Canada concerning the operation of a Prague-Berlin line or a Berlin-Prague-Vienna line, with Italy and with Hungary. The discussions of 1925 with Yugoslavia, regarding a Prague-Stratford-Belgrade-Budapest line, and with Denmark regarding a Copenhagen-Prague line, are also being discussed. The intention is to agree the next session both to the routes and to outline the development of the aviation routes of Prague which is one of the bases in Europe. In addition to the principal aviation fields there will be established a number of smaller forced landing. Another item on the program for 1927 is the construction of holding facilities on aviation fields where the creation of a state school, which would supply pilots for commercial and sport, is being considered. The preparation of individual aviation maps will be continued. Devises will complete the 1925 law affecting aviation and these will be established on flying fields a motorized service as well as a wireless service.

Swedish Aviation

The plant of the Almkvist Flygfabrik in Landskov (Malmo), Sweden, was razed to the ground during the winter ended July 30, 1926, and all indications are that the extensive production of airplanes for military and commercial purposes now being carried on in this firm, will be kept by the other Swedish firms.

In July 1926, three military planes, of the G2L type, equipped with three 200 hp engines were shipped to Sweden. During the same month a commission from Chile visited the local plant to examine a military biplane of the G2L type, equipped with four radial engines and motor to the five liter planes is possible to have been delivered in 1925 to the Government of Chile.

Almkvist Flygfabrik was also visited by the Director of the Polish Air Traffic Company, which has intended to open an line between Danzig and Copenhagen with one of the Junkers model G2L, three-engine passenger planes. It is also reported that the Polish Government is carrying on negotiations with the local firm for the purchase of military planes, but this information has not been confirmed.

During August, the local plant was visited by the Cuban Consul General Alvarado of London, and on Sept. 3, 1926, a commission, representing the Turkish Government, also visited Almkvist Flygfabrik. This commission appears to be especially interested in the two-engine passenger planes which the local firm is manufacturing.

Airline Between Vera Cruz and Progress

The Company Mexico del Golfo del Mexico will inaugurate services between Vera Cruz and Progress, Mexico, about the middle of February.

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AIRPORTS AND AIRWAYS

Pocono, Ill.

By Alexander Vowey

The new municipal and commercial flying field at Pocono, known as the Vowey Airport, officially opened Feb. 1. The air field has been under the field for the past two months. This airport will be one of the best fields of its kind in the United States. It is located in the Chicago-St. Louis Airways, and is well lighted with a General Electric beacon, landing lights and six powerful floodlights mounted on two towers.

The new airport is far superior to the old one, from which the Vowey Aircraft Co. has operated for the past six years. The new field is three miles West of the old one and seven miles from the heart of Pocono, as compared to the New Hudson Road.

The field is one-quarter of a mile wide and a half mile long, the long one being East and West. On the South West and North side of the field, the new air field has low fences and a road with telephone lines bounds the West side of the field. It is in a good flying country, with no resident population, and no other flying field near by. The terrain is one hundred feet over low hills than the old field and is considered the most level piece of land in Pocono, as well as the best desired. This has been the case for the longest time in the city.

Complete first-aid service can be obtained from the Vowey Aircraft Co. at a moment's notice. The Vowey Aircraft Co. reports the best construction of its

plants in the history of their school. Classes, however, will not start until March 1, due to the fact that outside has made it impossible to conduct the regular Winter course.

Detroit, Mich.

By Robt. Lindner

The newspapers have it that the General Motors Corp. is up to its old tricks again of comparing with Sperry. First in every field possible. The latest is that General Motors is to ally with Eddie Heisenhacker in the production of its turbo-prop engine in a venture to the light plane and engine department of the Sperry. We hope this is to be such a rare event to bring some quick results.

The Detroit Free Press states that GMV is continuing its intention to take on aviation even more. Widespread rumors are a part of the Detroit news program. Aviation fans would do well to tune in on this.

There are two events, scheduled by the Detroit Free Press, which will be of interest to you. The first is a meeting in Detroit to be held in March, and the second is a meeting in Detroit to be held in April. The first is a meeting in Detroit to be held in March, and the second is a meeting in Detroit to be held in April. The first is a meeting in Detroit to be held in March, and the second is a meeting in Detroit to be held in April.

Among the speakers are Mr. Royal, designer of the Third plane; Mr. Heisenhacker and Mr. Eddie Heisenhacker. The first

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Aircraft Corp., the Bell Aircraft Co. and others were again during the war.

The matter of reducing the public vote found to be unprofitable effective, the station has long years of many letters from people in what might be called the ordinary walks of life. It is very apparent from the large number of airplane designs approved according to the popular suggestion, that the public is eager for any advancement which makes rapid flying and when this word comes in over the radio the listener sits up and takes notes.

It would be well, while in this position, for the other editor claiming to be "The Aircraft Editor of The D. B." to follow the example set by W.C. DeWitt.

Seattle, Wash.

By F. K. Hubel

The Boeing Airplane Company, of Seattle and Edward Hubbard, former plane builder in the Pacific Northwest has made the low bid in the lease-lease contract for the Trans-Continental Air Mail route between Chicago and San Francisco. If they are awarded the contract this means that the Boeing company will now enter the commercial aviation field and on a large scale, according to C. K. Ely, first vice president of the company.

To start with, there will be the construction of four airplanes to operate the mail planes, involving the construction of a new airfield and the construction of half a million dollars, and a million in those states in the air mail service the company now operates to manufacture planes of a similar type to offer for sale to the general public.

"We have long contemplated rebuilding in the commercial field," explained Hubbard, whose company has for the past two years devoted itself to the manufacture of planes for the Government. "But we have never taken the very serious step of looking the service starting point for such an undertaking, but we now expect to make considerable operations in our plant and have will make machines to fit the field."

These other builders are continuing with Boeing and Hubbard for the mail contract—the Goetzke Air Lines, the Ford-Stand Company and the Western Air Express. The Boeing-Hubbard group means the contract, only six planes will be in actual operation at the same time, the balance being in reserve using the route with a still larger number of engines.

The plane to be used is a development of the mail plane manufactured two years ago by the Boeing Company for the Postoffice Department. It has a 59 ft. wing span and is 30 ft. long, with a 425 hp. engine capable of operating at a speed of 135 m.p.h., although the normal rate will be only 118 miles.

It is of metal construction, with metal and fabric wings, metal body, metal-lath compartments and metal landing gear with shock absorbers.

It is capable of carrying, in addition to its fuel and pilot, a maximum of 1000 lb. of mail or express. When carrying a useful load it can accommodate two passengers in each of its two compartments, and loads this 500 lb. of mail. When full it weighs six tons, weighs 14,000 lb., although with a normal load the weight will not exceed 5000 lb.

This company's last shipment to the Government was twenty-five planes shipped by water to San Francisco for use at various points in California.

San Diego, Cal.

The Bruce Airline has established a flyer school and air transport line at San Diego, Cal. T. K. Brown, who is president and manager of the air enterprise, and that within a short time his planes will establish a daily passenger, freight and mail service between San Diego, Cal. and Phoenix, Ariz. The schedule calls for passengers and packages through to be landed in Phoenix within five hours after leaving San Diego. The same schedule will apply westward.

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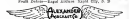
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AIRCRAFT DESIGN COMPETITION

In order to encourage the development of aviation and to improve the safety of aerial communication material, as authorized by Act of Congress, Public No. 436, approved July 2, 1925, the Secretary of the Navy under the authorization in compliance, by public announcement, of designs for rapid airplanes or approximately an outline under the following conditions:

Pro-protive competitors will be furnished identical specific information as to the conditions and requirements of the competition and as to the various features to be developed, together with the negative measures of merit that will be applied in determining the merits of the designs submitted in competition. Within the competition the design of an airplane that is shown of a structure so complicated as to require that it be completely worked out, it is not required that, for a design to receive consideration, competitors need submit sufficient drawings, calculations, weightings, dimensions, and weight estimates to permit intelligent analysis and appraisal of the merit of the design. It will not be sufficient for a competitor to submit a few words or sketches descriptive of an idea.

The competition terminates the placing of a preliminary contract with the winner of the competition, provided funds are available by the time the competition is ended. In any event, the sum of \$50,000 is available for the purchase of a winning design. The airplane must be constructed in the United States.

All designs and accompanying data must be placed in the hands not later than midnight May 16, 1927.

Information will be furnished upon application to the Bureau of Supplies and Accounts, Navy Department, Washington, D. C.

CHARLES MORRIS
Programmer General of the Navy

Chicago, Ill.

Simon Hask, a pilot of wide experience, has joined the instructor staff at the Chicago Aeronautics Service. Mr. Hask has been active in aviation since 1923, when he was an instructor in the U. S. Air Corps. Since then he has successfully operated an airport in Chicago, done the air mail route between Chicago and Minneapolis and has been actively engaged in aviation work for seven past seasons. One of his most interesting flights was from New York City to Rock Springs, Wyo., in 1925, at which time he carried the first cargo of the nation, gas-burner tanks of the Denney-Perry field. This mail bag flight was over 1,500 miles, and was made in fifty-two hours elapsed time.

Leon J. H. Miller, naval aviator, and chief instructor at instructor of the Great Lakes Naval Training Station, has

also been appointed an instructor with the Chicago Aeronautics Service.

Flot Airport, Mich.

By Ralph Bedlow

This city has, unwittingly, been brought one step nearer the point of complete aviation at the expense due to the Winter activities of George Francis. Mr. Francis advised last Fall that, so far as he was concerned, he had to get out of the Chicago air service; but has been getting his name loudly and flying hours on the Winter season. The reader will be New Year quite a crowd gathered at the FMI to watch, in spite of a chilling wind. The Winter flying does seem good to people like the writer, that we might think.



The Fisher motor plane is one by American Varsity Co., operating between Sea Pines, Ga., and Portland, Ore.

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the Flaming B-3 which led the expedition. As one from a Hawaiian fort which was held down by a Marine Battalion. It proved most successful, as the ground observers were unable to see the aircraft while they remained behind the screen. Various portable cameras were used to take snapshots of the scene. Various portable cameras were used to take snapshots of the scene. Various portable cameras were used to take snapshots of the scene.

Round-World Flier in Washington

Lieutenant Leslie P. Arnold, Air Corps, one of the Round-World fliers, accompanied by Colonel Nelson Davis, Imperial Japanese Army, Military Attaché, on Jan. 25, called on the Japanese Ambassador, His Excellency Tameo Matsudaira, to express his appreciation of the documents recently awarded him by the Japanese Government. For his participation in the flight, Lieutenant Arnold was recently awarded the Order of the Sacred Treasures.

Lieutenant Arnold has just completed a flight from Seattle, Mass., Cal., to make a new place in the Western Coast Air Corps with at Hartford, Conn. He is stationed at Los Angeles, Cal.

Captain Wilkins Lectures at Selfridge Field

Capt. George Herbert Wilkins, combat explorer, recently lectured before the Selfridge Field personnel on the experience of himself and Major Thomas E. Lamson, Air Corps, while they were members of the Detroit Arctic Expedition of 1925.

The lecture was illustrated with moving picture films of the expedition, both in the United States and the Arctic regions. Captain Wilkins was introduced by the colonel by Major Leitch, who made a brief introductory address.

Before departing the life of Eskimos, their methods of obtaining food for food and clothing, their folk stories and other incidents of their life were shown. Among the most interesting views were those of the Eielson Mountains, of which White is known. Captain Wilkins discovered that the mountain peaks of the Eielson Range are 4,969 to 5,069 ft.

higher than recorded on previous-day maps. This made flying over these mountains for the first time extremely hazardous.

It is reported that Captain Wilkins will continue his explorations in the Arctic region when he disembarks from his steamer. It is believed he will see the new places, which have been shown in Parkville. They will be reported, overlaid and salvaged on other maps.

Air Officer on Budget Council

Major Gerald C. Best, assistant officer in F. Trice Dawson, Assistant Secretary of War for Aviation, has been designated to represent his office in the War Department's Budget Advisory Council. The designation was made following a conference between Secretary Dawson and Major Gen. Charles F. Deane, in which the latter suggested that Secretary Dawson designate a representative to the budget organization.

The Advisory Council is made up of the chiefs of the five divisions of the General Staff, the Budget Officer of the War Department, the Judge Advocate General, the Adjutant General, and a representative from the office of the Assistant Secretary of War.

Major Gen. F. W. Conner, Deputy Chief of Staff, is chairman of the Council, the function of which is to pass upon Army budget estimates and prepare them for their final submission to Secretary of War Deane. Major Gen. Conner, who graduated from West Point in 1904, has been in the Army Air Service since 1917.

Richard E. Byrd Made Commander

President Coolidge has signed the commission of rank of commander, U. S. Army, to Lieut. Col. Richard E. Byrd, U. S. N. (retired), which was awarded him by Act of Congress, Jan. 5, for his flight over the North Pole on May 4, 1926. By the same act of Congress, Commander Byrd was awarded a Congressional medal of honor with the citation: "For distinguished service in connection with the expedition."



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at the risk of his life in demonstrating that it is possible for a man to travel in continuous flight from a new isolated portion of the earth over the North Pole and return."

The nomination is dated May 8, 1930. This is the third nomination that Commander Byrd has had since he was transferred to the retired list in 1916. During his career he was advanced by the rank of lieutenant and in 1914, 1925, by Act of Congress, he was advanced to the rank of lieutenant commander.

The Secretary of the Navy has signed a warrant of the grade of commander of the U. S. Navy, for Philip Benham, aviation pilot, U. S. N., who accompanied Commander Byrd in his flight over the North Pole. He was awarded a Congressional medal of honor "For his gallant service to the Nation as a member of the Byrd Arctic Expedition."

Navy Will Enter National Balloon Race
The Navy has been authorized to enter the National Elmerston Balloon Race which will be held at Akron, Ohio, on May 28, in the following conditions: The race will be the first held since 1923 that the Navy has participated in this event.

The winner of the National Elmerston Race will represent the United States in the Gordon Bennett International Balloon race which is to be held in this country later in the year, as W. T. Van Orman and Walter W. Horton, representatives of the United States, in the Gordon Bennett Balloon Race which was held in Belgium in 1936.

The Navy Balloon team is undergoing training at the Naval Air Station, Lakehurst, N. J., and the entries will be awarded at a later date.

Norge Flies Receive Medal
Dr. J. H. Cook, World Expedition and Elinora Ellsworth, who flew the Norge across the North Pole last August, were given medals commemorating their feat by the Shipping Commission at the American Museum of Natural History. Prior to the presentation, Mr. Ellsworth lectured on the events of the two-day journey from Spitzbergen to the Pole and the experience of the three-day return when the amblie re-

covered an Arctic storm. Captain Amundsen showed views and moving pictures of the preparations and the trip across.

Army Air Orders
First Lieut. Otha C. Durr, 7th Aero Sqd., Air Corps, returned at the Air Corps Adv. Fly Sch., Kelly Field, Tex. Lieut. Donald S. Johnson, Air Corps, Brooks Field, to Kelly Field.
Major Robert H. Harmon, Air Corps, Washington, to London, to take station as assistant military attaché.
Capt. Walter F. Fackler, Jr., Air Corps, was relieved from further observation and treatment at Walter Reed Hospital, Washington, and will return to Kelly Field.
Tech. Sgt. James Thomas, 5th Bomb Sqd., Air Corps, Kelly Field, transferred to the grade of Tech. Sgt. to the 8th Attack Sqd., Air Corps, and will report to Fort Crane, Calif.

Sgt. Lieut. Clenden Wesley Nelson, Air Corps, Brooks Field, ordered from active duty and will proceed to his home, Anacostia, Wash.
Sgt. Lieut. Eugene P. Hines, Air Corps, relieved from further duty and leaving at the Air Corps Post, Fly. Sch., Brooks Field, and is attached for duty with the 5th Div. He will report to non com, Sec. Div. Fort Ben Harrison, Tex. Sgt. Lieut. Ray Henry Clark and Donald Walter Newland, Air Corps, proceeded to rank of First Lieutenant.

Navy Air Orders
Lieut. William M. Dillen det. Adv. Fly. Sch., Kelly Field, Tex. to VP Squad 4, Airtel Squad, 6th Fleet.
Lieut. (Det) De Long Mills det. VP Squad One, Airtel Squad, 6th Fleet, to Naval Air Sta., Lakehurst, N. J.
Lieut. Frederick S. Ross det. VP Squad 4, Airtel Squad, 6th Fleet, to Naval Air Sta., Anacostia.
Lieut. Matthew B. Gardner det. Adv. Fly. Sch., Kelly Field, to VP Squad, Airtel Squad, 6th Fleet.
Lieut. Harry F. Eble to continue duty Naval Supply Depot, San Diego, unless later directed.

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Location: Across the bay, at Bakersfield.
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Sweeney Field, controlled by Chamber of Commerce.
Location: 9 1/2 mi. W. of Pizarro Beach.
Description: 900 by 200 by 275 ft., marked.
Facilities: Supplies and minor repairs available.
SANTA MONICA
FLYING FIELDS
Van Cise Field, operated by U. S. Air Service.
Location: 1 mi. E. of city.
Description: 3,775 by 1,550 ft.; Alt. 130 ft., marked.
Facilities: Hangars, supplies and repair service.
SEBASTOPOL
FLYING FIELDS
Marshall Field, address 2 M. Chapin.
Location: 1/2 mi. SW of town.
Description: 2,010 ft. sq., marked.
Facilities: Supplies in city.

D description, 2,000 by 1,000 ft.
Bakersfield Aviation Field, owned by Commercial Aviation School Co., W. F. Crawford, Manager.
Location: 10 mi. E. of Los Angeles.
Description: 1,000 by 1,000 ft.
Facilities: Supplies and repairs available.
WOODLAND
FLYING FIELDS
Van Cise Field, owned by Van Cise Club.
Location: 10 mi. W. of San Mod. Airport.
Description: 551 mi. W. of city.
Description: 1,000 by 1,000 by 500 ft.; marked.
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YREKA
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Municipal Field, operated by Yreka County Fair Assn.
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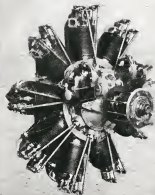
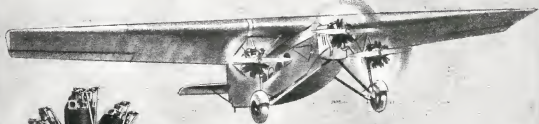
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