



A Tri-motored Transport with Mt. Rainier in the Background

The Development of Commercial Aviation

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COMMERCIAL aviation in the United States had as its basis military flying, just as the commercial airplanes of today are developments of the aircraft produced for war purposes.

Eleven years ago one daily round trip flight of government-owned and -operated airplanes between Washington, D. C. and New York represented the only regularly scheduled commercial air transport operations in the United States. For several years after that, commercial aviation lagged. It was not until 1927, following Lindbergh's flight and other transoceanic and transcontinental trips, that commercial aviation began to take its proper place. Commercial aviation today, statistically expressed, is as follows:

The Department of Commerce recently estimated that commercial airplanes in this country were flying 80,000 miles daily on schedule transport operations, as compared with 10,830 miles on December 31, 1928. It was estimated that during the first six months of 1929, forty thousand persons had flown as paying passengers, as against thirty-five thousand for all of 1928, eight thousand, six hundred and seventy-nine for 1927, and five thousand, seven hundred and eighty-two for 1926. The amount of express carried by air during 1929 was approximately three times that of the previous year, when 2,000,000 pounds were carried.

Air Mail Operations

Any narrative of commercial aviation in the United States in recent years, must be built around air mail operations. At the present time there are approximately 35,000 miles of established airways over which mail, express and passenger planes, operating on regular schedules, flew in excess of 20,000,000 miles during the past year. Mail planes now serve one hundred and eight cities in thirty-seven states, and during 1929 transported more than 3,000 tons of letters, exclusive of express and passengers. There are 12,000 miles of lighted airways, and one American company, the Boeing System, operating on the Chicago-San Francisco and Los Angeles-Seattle routes, does more night flying than all European companies combined.

There are sixteen hundred improved or semi-improved airports, the majority municipally owned. The value of existing air terminals is \$100,000,000, and last year approximately \$200,000,000 was spent by eleven hundred airports for land, improvements, equipment, and supplies.

Development by Federal Agencies

In this development of commercial aviation the government has played a constructive part.

For a decade after the first successful flight, aviation was in the doldrums. It took a World War to hasten the development of the airplane and prove its possibilities, and also to recruit the personnel for peace-time use of the plane. But after the Armistice, the aircraft industry paid the penalty exacted by reason of the sudden cessation of buying orders on military account, and until 1923 the industry was at low ebb. Then the Government stepped in to play its constructive part.

The Department of Commerce assumed the sponsoring and regulation of air traffic. The Army and Navy embarked on a building program calling for thirty-two hundred planes over a five-year period. The Post Office Department, which had done a splendid job pioneering with the air mail, expanded its activities, and, around the air mail network, this nation began to build its commercial air-transport system. In 1927, the Post Office Department discontinued its operation of the mail routes and private contractors took over the work and put into it the administrative ability, initiative, and enthusiasm so characteristic of private enterprise.

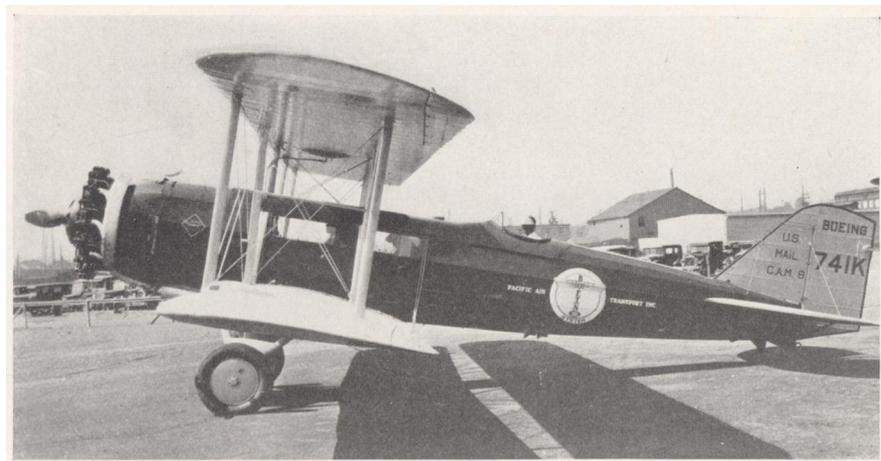
In 1927, the public began to be air-minded, and suddenly realized that the airplane was an effective transportation vehicle, available in the ceaseless fight against time and space. People wanted to ride in airplanes and they began to send mail and express matter in an increasing volume. Airplane manufacturers and operators capitalized on this interest. Powerful banking groups looked into the future and made funds available for all legitimate expansions.

The experience of the past indicates some of the definite trends of the future. Until now the largest expansion has been in the carrying of mail and of

passengers, and the majority of lines have carried both in the same planes. However, we can look for a separation of mail and passengers on many lines, because air mail loads have so increased and schedules of departures and arrivals are often at such inconvenient hours, that it is desirable to operate mail on one schedule and fly passengers on another.

Assistant Postmaster General Glover recently predicted that all first-class mail between certain communities will be carried by air. The Post Office Department averages daily 476 tons of first-class mail which must be given transit handling. So the future of the airplane as a mail transport can be envisioned. Mr. Glover also predicted that within two years practically all cities of fifty thousand or more inhabitants will be located on air-mail lines. He pointed out that the busy man has always been impatient regarding the speed with which his mail is handled, and will naturally demand that all first-class mail be given the speed that air mail now receives in the fast-flying planes.

The Boeing airplane factory, looking toward the day when we will have these much talked of flying Post Offices, has an 18-passenger transport which can be quickly changed over into a Post Office. It can carry in excess of 2 tons of letters. With such planes as these with mail clerks aboard to sort mail, cities as distant as 1200 miles will have dusk-to-dawn delivery of mail, and for all practical business purposes, as far as correspondence and communication are concerned, will be as neighborly as cities in adjoining counties. The airplane is so speedy that already it eliminates the loss of any business hours in transportation of mail and express



A Boeing Mail-passenger Plane, Model 40-B-4

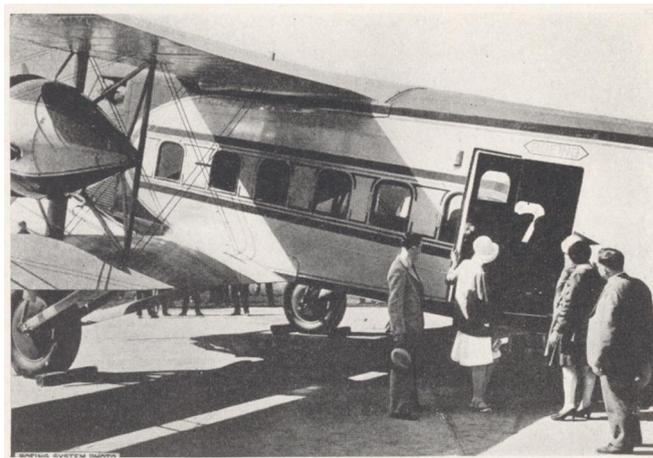
between cities, as for instance, between Chicago and New York; between New York and Atlanta, Georgia; between Chicago and Dallas, Texas; between Chicago and Cheyenne, Wyoming.

Transportation of Express

Air transportation must also be reckoned with in the transportation of express. In this day of small stocks, quick turnover, little profit, and a growing demand for service—which costs money—competition has become keener and business is reaching out into new and larger trade zones. The railroad and the automobile have left their mark on our business structure, and air transportation, averaging 100 miles an hour, has already begun to revamp certain long-established distribution and selling methods.

Recently the chamber of commerce of a prominent city in the Middle West complained that its banks and wholesale houses were losing long-established trade because competitive cities had direct overnight air-mail express service to commercial centers of the Southwest.

Air transport has its greatest value when there is continuous flying, and the air transport com-



A Boeing 18-passenger Tri-motored Transport
Powered with three 525 h. p. Hornet engines this plane has the high speed of 138 miles per hour.

panies expect to do a larger percentage of night flying. The Boeing System, on its transcontinental run, has proved that with proper equipment, experienced pilots, and a well lighted airway, planes can be flown with practically the same regularity as on day schedules. The Boeing System recently pioneered night flying of passengers in large transports by inaugurating nightly flights in both directions over the 640-mile air span between Salt Lake and Oakland. The first ninety days of operations proved the feasibility of this type of flying, and also proved that the public is willing to travel at night.

Day and Night Flying

The success of this experiment has led the Boeing System to announce the inauguration in May of day and night flying, with 18-passenger transports, between San Francisco-Oakland-Chicago, on a schedule of approximately twenty hours, which is less than one third of the train time. These 18-passenger transports have many of the comforts and refinements of an observation car, coupled with the speed of an airplane.

New safeguards are gaining public confidence. An interesting experiment which has proved successful is the radiophone, which enables pilots to talk from the air to ground stations as distant as 200 miles. The results of the plane-to-ground radiophone tests, announced by the Boeing System after months of research, test flying, and experimentation in the West, reveal these positive advantages: A great increase in safety of flying; a reduction of the number of emergency landings due to uncer-

tainty as to weather ahead; pilots on regular routes can complete a larger number of scheduled trips on time; the pay load of mail-express and passengers is increased by reducing the amount of excess gasoline now carried to give the pilot ample cruising radius when he is uncertain as to weather. Radiophone is also of considerable value in dispatching planes and giving orders to pilots in the air.

Having proven the feasibility of the radiophone in experimental flying, the Boeing System now has installed fourteen ground radiophone stations in seven States between the Golden Gate and Lake Michigan, and will shortly begin the construction of similar stations between Los Angeles and Seattle. The Boeing fleet of fifty-five mail and passenger planes is equipped for radiophones. These planes will also have the directive radio beacon and weather report service maintained on the air network by the Department of Commerce. A radio beam is broadcast by transmitters known as equi-signal beacons. Transmitters employ two cross loops, radiating a characteristic "dot and dash" signal. When dots and dashes blend into a continuous series of "dashes" the pilot knows he is on the course fixed by the beacon. If he hears "dot-dash" he knows he is to the left of his true course, and when he hears "dash-dot" he learns he is to the right.

Airplane Travel

Passenger traffic by airplane is certain to increase because the public welcomes each new form of faster transportation. Airplane travel is speedy, comfortable, and interesting, and the operators are bending every energy to make it as safe as any form of mechanical transportation.

The public pays an extra fare on faster trains like the Twentieth Century and the Broadway Limited. Speed is expensive, but travellers are willing to pay the price, especially when the airplane is three times as fast as rail transport. A plane with a cruising speed of 90 miles an hour is already becoming slow to some confirmed air travellers, and the airplanes of the future will undoubtedly be more speedy than any of those now flown on commercial routes. Airplane engineers are planning larger, faster, and more comfortable transports.

New Markets

In addition to using airplanes operated on regular routes, on scheduled services, to handle their express and to transport their employees, corporations will buy airplanes for the expedition of their own business. Executives are already flying their airplanes in the conduct of their daily affairs. Oil companies, newspapers, manufacturing plants, wholesale houses, and other corporations have their own planes, ranging from single-motored to tri-motored craft.

The airplane is used in a wide variety of pursuits such as aerial photography, airplane dusting of crops, forest patrol work, scientific studies, aerial advertising, spotting schools of fish, map making, geographical study, engineering surveys, carrying supplies to inaccessible regions, transporting emergency shipments of factory parts, and in many other ways. These instances indicate the expanding market for airplanes. Each day the air-transport companies hear of specific cases where the airplane has opened up new markets and speeded up business generally, which explains why it is being utilized by business in ever-increasing measure.



A View of the Airport at Oakland