San Diego Air & Space Museum — Lindbergh's *Spirit of St. Louis* in flight over San Diego, California, 1927

HAS AVIATION A FUTURE: A DEBATE

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Has aviation a *commercial* future was the proposition in these essays invited by the *Forum*, a periodical of social and political commentary. Both commentators viewed flight from experience in naval aviation—one at the end of his career, one at the beginning. Alfred Dewar, chief of the Historical Section of the British Royal Navy, claimed the airplane could never deliver regular efficient transport and would remain at best "an auxiliary to sea transport." Richard Byrd, the famed aviator and polar explorer, insisted "that flying has a future as yet undreamed of," dismissing Dewar's pessimism as a casualty of faulty logic—predicting aviation's future from the earlier paths of the railroad and automobile.

I. THE LIMITS OF COMMERCIAL AVIATION

CAPT. ALFRED CHARLES DEWAR

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When one speaks of a future for commercial aviation, one means a future not merely of daring enterprise and heavily subsidized routes, but a future in terms of definite commercial success on a large scale. Every new instrument of man's invention attracts around it a ring of ardent [passionate] enthusiasts who paint its future in roseate [optimistic] hues. But sooner or later they find that it is encompassed about with definite and inevitable limitations, inherent in its own nature, which cannot be overcome. It reaches a certain point of development which it can only surpass at the cost of vastly disproportionate labor and expense.

It has been so with the locomotive and steamship, and it will be so with aircraft. Limitations may be imposed as surely by considerations of economic expediency as by the more rigid restrictions of natural laws. . . . Nowhere do these limitations apply more forcibly than to aircraft. A plane has to contend directly against gravity. Before it can carry anything, it has first to lift itself, and then lift its load. This is a staggering handicap. Approximately four fifths of the horsepower of a big plane is absorbed merely in maintaining the craft and its load in the air. Air transport can never contend seriously with transport by land and water, where the actual weight is carried by the earth and sea and the engine has merely to push or pull its load along. . . .

It comes finally to this, that a passenger plane developing 1,155 horsepower is capable of a comparatively short voyage of say two hundred miles with fourteen passengers and seven hundred pounds of freight, or approximately three pounds of paying load to the horsepower. . . .

In one word, power load is an insuperable [insurmountable] bar to air transport on a big scale. Apart from all questions of convenience and comfort—in which land and water transport must always be infinitely superior—no form of transport which is forced to measure its weights in skimpy figures of pounds and fractional ounces can ever be more than an emergency or supplementary means of locomotion. . . .

. . . In the United States two thirds of the cost of the Air Mail Service is met from government funds. The expenditure may be justified in terms of utility, and the advantages of a speedy mail service may be worth the expense involved. But the same argument cannot apply to the ordinary run of traffic, and the fact remains that even in the transport of mails, the air cannot compete economically with the rail or road.

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The partisans [supporters] of aviation reply airily that the plane is only in its infancy. But is it? Every machine must at some time reach its zenith [high point] of development. The steam engine took nearly a century to reach maturity. But time runs faster now: ten years of the present century can easily outstrip fifty of the last. Aircraft had seen over twenty years of forced and precocious [premature] development, and are probably well within sight of their zenith.

Whatever may be their line of development, the fact remains irrefutable that in any question of transport in bulk, the plane is hopelessly outclassed. The freight of an ordinary train carrying a load of one hundred tons would require at least twenty or thirty large planes, while the dead-weight cargo of a moderate-sized tramp steamer carrying five thousand tons would require hundreds of planes and involve a long series of transshipments.

But in using large planes in large numbers, there are limits of common-sense convenience. The large plane is an intolerably bulky and inconvenient vehicle to load and unload, and considering the small load it can carry, it may safely be said that there would be an actual loss, rather than a saving of time, in the transport of any considerable volume of freight by air.

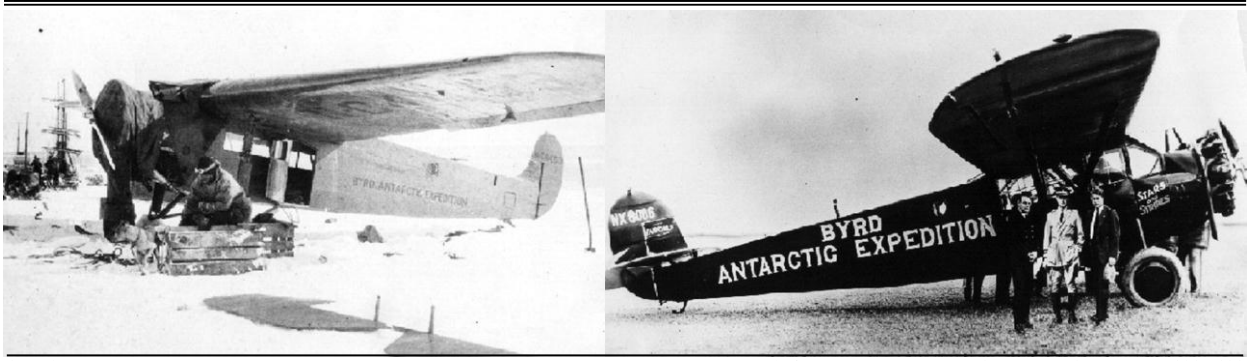
Again, though speed is the ace of air transport, it is not the ace of trumps. What is required in world transport is regularity. The prime essential of traffic on a large scale is the maintenance of a regular schedule. Speed may be very important on some occasions, but it is not a primary consideration. . . .

It is precisely in this requisite of regularity that aircraft are notoriously deficient. They are slaves of weather and cannot run to a strict schedule on voyages of any length. They are governed by the wind. Here one meets with the dominant consideration governing navigation in the air. Aircraft do not struggle against the wind. The wind is merely a moving current of air and they are carried bodily along in it, just as a ship is carried by the tide. . . .

It is not contended, of course, that there is no place for air transport. There is a place, and, in certain exceptional circumstances, possibly a considerable place—but never a great place. Across stretches of difficult and undeveloped country, where the rail and road do not run, on short routes for carrying goods of little weight and bulk, when speed is of primary importance, when a businessman wants to expedite an important interview, when a film must be rushed to Chicago or New York, then the airplane will be used. But the bulk of traffic will always go by land and sea, because earth and water can sustain great weight and air cannot. . . .

What then is the sum of the whole matter? There is no large and growing future for commercial aviation, because the future will never be much more than the present. There is a place for short range traffic in places to carry mails and those few passengers whom necessity impels to save time at the expense of comfort. But their number is not great. Recent sensational achievements in aviation have blinded its exponents [supporters] to the inevitable obstacles. The feats of heroism and endurance performed in long oceanic flights are merely a token of the stern limitations which beset them. "Thou hast placed bounds upon them which they shall not pass." [Psalm 104:9]

The devotees of new instruments can never see anything else. The princes of the power of the air wax sarcastic over what they call "the Noah's Ark school" of transport. But the Ark could carry a considerable freight and bore it in safety. Noah used flight merely as an auxiliary to sea transport, and that is all it is good for.



Ohio State University Libraries — Byrd's Antarctica expedition to fly over the South Pole, 1928-1929

II. FACING AVIATION'S CRITICS

COMMANDER RICHARD E. BYRD

U.S.N. [U. S. NAVY]

When a boxer rushes in with swinging arms, he may rain blows upon his opponent, but he leaves his midriff open to some heavy wallops from the enemy. Aviation is like such a boxer in that it is plunging gaily ahead just now with little attention to the body blows many competent critics are aiming at its midriff.

I think there are two reasons for this. First, we Americans are so enthusiastic when once we get started that occasionally our emotion runs away with our common sense. We are in a seventh heaven of self-esteem over this thrilling matter of human flight which the Wrights—our countrymen—have made possible. Again, being an imaginative people, we cannot resist the temptation to speculate extravagantly about the future of aviation. And once our mental pictures have become clear enough, we begin to feel that they are realities. Hence the catchwords of the day: "air age," "giant air liner," birdman," "ocean air service," air flivver" [small personal airplane]. All may come, but they are not here yet—and just talking about them can't bring them.

Probably the strongest argument wielded by critics of aviation is that which defines the limits of flying from the viewpoint of the railway and automobile. A common formula is this: "The railway and the automobile outgrew the period of danger to their passengers. Therefore, if flying is ever to replace them, it must likewise emerge from its present hazards."

It is true that in 1845 the railway was viewed much as the layman looks on flying today—as a shortcut to suicide. By 1895 it was widely used, though still a thorn in the side of civilization. Now railways no longer advertise on the basis of safety, but of luxury. It is true that in 1900 the horseless carriage was thought a futile experiment, and that by 1910 automobile races were a public scandal in the deaths they caused, and that by 1928—though we still kill about 30,000 people and injure around 800,000—the motor car is accepted as a safe conveyance for women and children as well as racing drivers.

It is likewise true that men have known how to fly for twenty-five years, and that there has been no miraculous progress in safety of flying. The percentage of deaths is still higher than it ought to be. But to point the future of the airplane by analogy to the railway and automobile is as futile as comparing the telephone with radio. One has only to turn to the files of old newspapers to find the railway and motor car condemned by the same faulty logic.

But to point the future of the airplane by analogy to the railway and automobile is as futile as comparing the telephone with radio. One has only to turn to the files of old newspapers to find the railway and motor car condemned by the same faulty logic.

For instance: "The railway cannot succeed (this was 1839) because of two

definite shortcomings: first it cannot go uphill, and second, not enough people want to go somewhere in a hurry to make it pay." The American citizen of 1839 did not picture the gigantic engineering machinery that would make it possible to build our transcontinental roadbeds with only slight grades, nor the tumultuous rush of twentieth-century existence that necessitates high-speed transportation.

In the same way, early critics could see no future for the automobile. "The automobile cannot possibly succeed (this was 1897) because of two inherent defects: first, its engine will always be so unreliable that the average citizen will not tolerate the delay and inconvenience sure to arise; and second, there will never be sufficient funds to build level roads permitting travel at high speed." The American of 1897 did not foresee an automobile tire that would last for 20,000 miles, an engine that would go 150,000 miles, nor a public opinion that would support a budget of $200,000,000 for good roads. . . .

. . . However, it is not profitable to meet critics of aviation simply by declaring that their arguments are behind the times. Some of them are in advance of the opinions held by the very men who defend flying with all their might and main [strength].

The average pilot gives little thought to the fact that a plane's capacity cannot be increased in the same proportion as that of a ship by increasing its size. By the law of cubes, one ship twice as large as another can carry eight times as much. A freight car of fifty tons capacity can carry four hundred tons if its dimensions be doubled. A plane doubled in size cannot carry even twice as much for two reasons: its power load, or weight per horsepower, cannot be increased beyond a definite limit, and its wing structure is not quite so efficient when increased in size. . . .

American aviation suffers much for not keeping pace with that of Europe. German and British airways carry many thousands of passengers every month. Why cannot we do so? The answer is that European airways are heavily subsidized by the government. "Ah," says flying's critic, "we here uncover another defect in aviation. It can never pay its way!"

As a matter of fact, this very point is a fine feather in the cap of the American businessman. He is of fighting stock that does not tolerate paternalism.

"All right," said an airplane manufacturer the other day, "if our passenger and mail planes can't run at a profit, let's don't have 'em!"

He could well afford to make such a statement because he knew that at least half a dozen new passenger lines are going into commission this year between the big cities of the East, and that more and more private contractors are taking over government air mail contracts. Neither one is out to live on subsidy; both are already beginning to pay. . . .

"Fanatic" they call us today for warmly supporting aviation. The art of flying has been much hurt by air enthusiasts, I admit. There have been too many predictions that have not yet come true. That is why many of us try hard to steer a middle course. But for all my conservatism I am confident that flying has a future as yet undreamed of, and that in a few years these hot blasts now issuing against it will read as foolishly as do the original arguments against the railway and the automobile. . . .

The greatest progress—and the development that will mean most to aviation—must come from banking support. So far this support has been very limited, but it is increasing markedly as more successful flying is done. When American business joins hands with American aviation, the future of flying is assured.

San Diego Air & Space Museum

First day of Ryan Airlines passenger service from San Diego to Los Angeles, California, May 1, 1925