

THE art and science of gliding and soaring, having received impetus after the first World War, had reached a fairly high stage of development at the time of the outbreak of World War II.

There was no doubt from the first that aviation would play a major role in this conflict, though I am sure that few of us had the vision to see just how great its part would actually be. It was inevitable in such an all-out conflict that attempts would be made to draw into military service all the aeronautical knowledge and practice available and that pertaining to gliding was not overlooked.

The use of gliding as a preliminary training for aviators, exploited by the Germans and a subject of much discussion in the early days of the war, was advocated by some of us and even tried in a very limited manner.

It was not until the Germans started using the glider as a means of transporting troops and equipment that the glider really went to war, and that sufficient interest was aroused in high enough places in this country to do something about it.

I have often felt that the term "glider," when applied to the huge heavily laden trailers of the air developed for the purposes of war, was a misnomer, and that the whole program might have fared better, particularly in the early stages, if some other name—"air trailer," "trailplane" or some such name—had been used. The term "glider" was bound to conjure up in the minds of most people a picture of a frail-looking, slim-winged, lightly-loaded craft circling lazily among wooly cumulus clouds and floating in smoothly to land at low speed in small pastures. This misconception did much to delay the advent of the true "trailplane," by throwing the development into the wrong hands; making it a development from the pre-war glider rather than from the basic conception of a transport airplane with external power. This is borne out by the Army's experience with the CG-17 which was merely a C-47 transport with the engines removed and replaced by suitable ballast, and by the Navy's experience in towing military airplanes. Both services reported excellent characteristics in tow.

I have been trying to recall just who first had the idea, or who put the idea of towing a glider by airplane into practice. I do know that it was Frank Hawks and his Franklin-type Texaco Eaglet which first brought this form of flight into the public eye by his transcontinental glider tow in the spring of 1930. Then in the summer of 1931, I believe it was, Wally Franklin, a brother of R. E. Franklin, the designer and manufacturer of the Texaco Eaglet, and the later-to-be-most-popular Franklin Utility Glider, who attempted to get a new glider from Ann Arbor, Michigan, to Elmira, New York, in time for the soaring contest, by airplane tow. In so doing Wally became the first glider pilot member of the Caterpillar Club when his parachute saved him after the glider wing failed while being towed through a storm near Elyria, Ohio.

"Carrying the mail" always seems to give a touch of officiality or authenticity to a new form of transportation. The first widely-publicized application of this kind was in August, 1934, when, as a demonstration, three Franklin gliders, piloted by R. E. Franklin, Jack O'Meara and Stan Smith respectively, and each carry-

# Recapitulation

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ing a sack of mail, left New York, towed by one airplane. One glider was dropped off at Philadelphia, the next at Baltimore, and the last at Washington. An interesting feature of this flight was the fact that this was a true "train" as the gliders were towed one behind the other rather than the more common "fan" formation. Later, in 1935, Richard C. du Pont was towed in a Franklin glider carrying mail from Miami, Florida, to Havana, Cuba.

While there was some talk back in those days of sky-trains, few of us, if any, had any conception of the developments which lay so close ahead. I'm sure, I didn't!

It is easy now to cite, as I have often done in talking to lay audiences about gliding, how towed aircraft was a natural and logical development,—how man had learned early in his civilization that he could drag more than he could carry; citing the horse drawing a wagon versus the pack-horse, the tug-boat with its tow, the auto-trailer, and, of course, the most startling example of them all—the modern freight train.

When I started writing this paper, I had a bright idea that I might work up from some of these precedents a logical story for the future of the aerial tow but the more I tried to draw analogies the more confused I became. Afloat, tows are common for short hauls, but for long hauls the large single-unit ship is more common. On the road the auto-trailer is used principally for long hauls, the single unit truck for short hauls. The railroad uses the train whether the haul be long or short. Consequently I will forego any deep analysis of the air train and abstain from any post-war predictions which might come back to haunt me in later years but confine myself to discussing a few of the actual accomplishments, leaving to you the pleasant task of making your own guesses at the future.

Though relatively little attention had been given to the airplane towing of gliders prior to World War II, enough had been done to know that it was feasible to tow a trailer behind an airplane and that no extraordinary skill was required by either tug or trailer pilot. This, and perhaps the publicizing of the fact that free flight without power is not such a horribly hazardous experience if you stick to a few fundamental rules, pretty well sums up the pre-war status of the art and constitutes about the only constructive part of the program the pre-war gliding fraternity had to offer to the military application of gliders.

One of the first things which became apparent in the towing of aircraft was that the combination of high towing speed and low wing loading just isn't any more practical in a trailplane than in any other airplane. Anyone who has stuck the nose of a light plane, designed to cruise at about 100 miles an hour and land at about 40, down with full gun until it is making around 180 to 200 miles an hour will know that it isn't comfortable. The controls stiffen up. If it is at all rough you get slapped around in the cock-