

"incontrovertible" facts in support and proof of its contentions. I remember that one had to do with the "fact" that a DC-3 has to sacrifice from its own loading capacity more weight than the payload of the glider, in order to tow the loaded glider. If this were true, it would be naturally foolish even to consider the use of the glider for cargo. The truth is, however, slightly different. Very recently I was towed out of an average-to-small airport in a fully loaded glider. The Douglas towing me was loaded over a ton in excess of the gross weight permitted by commercial airlines. True, the Douglas pulled slight excess manifold pressure during the climb, the cylinder head temperature was slightly higher than in normal cruise, although not over allowed maximum. The speed was not high, yet throughout the climb it was sufficiently high to permit single-engine maintenance of flight. And when the tow was leveled out, the speed was normal tow speed, manifold pressure normal, cylinder head temperature normal (July) with cowl flaps in neutral. The Douglas had, then, at the sacrifice of some high-test gasoline and perhaps a few minutes of engine life lifted and sustained a load well in excess of what it could carry within itself.

The picture of commercial use of gliders is very interesting. But is still in the nebulous stage in the mind of most "experts." To begin with, the Douglas and CG-4A combination is strictly makeshift. We designed a glider which would land slowly and carry a certain weight. We sacrificed some speed to do it. The glider is a work horse, purely and simply. We looked around for a suitable tug, and we found the Douglas was in production and could be utilized by simply attaching a towing device. We experimented and found that the engines would do the job and the fuselage would stand up, so we standardized pretty well in that airplane. Then we added a Lockheed to the roster. Now we have several other tugs which qualify well. However, none of these—and this is the salient point—none of these was designed to be a tug. And, unless you match the tug to the glider, you have no inkling of

the ultimate in efficient and economical usage of gliders. Why put a streamliner locomotive on a string of freight cars? A speed boat may have the same rated horsepower as a small tug, yet it won't tow nearly the tonnage which the tug would take in its stride.

When we match the wingloadings of tug and glider, and when we decide to make certain designs for use as tugs only, we shall have something. We can do it for speed over long hauls, sacrificing some weight. We can go to the other way and design both ships for slow, heavy-freight work. Either way we can increase the work done by a given horsepower for a plane with a given pay load.

How about the time element? This does play a definite part in any plans of the use of gliders, since two airfoils create more drag than one and therefore decrease the speed of the passage of tug and tow. It would cost more under certain conditions to take a given load from coast to coast in one large airplane than it would to carry the same load in one tug and its glider—especially over a period of time and figuring with very large tonnages. There may be regular air freight and express air freight. The specially designed tow-plane will be able to do the job economically at a slower speed—say 120 to 150 mph. It will cost less initially, and it will be less expensive in fuel, maintenance and crew.

Perhaps the long runs will never pay, but the short hauls, into airports inaccessible to large powered aircraft, will always be readily accessible to gliders of any size. It is already well known that the glider pick-up is well along the road to perfection, and this device will enable a glider to land, unload, reload and be snatched off without it's having been necessary for a powered plane to land. In this way many communities may have air freight which, without gliders, would be neglected.

Any way you look at it, the glider has a potential value in some direction. And the companies who profit thereby will have got their research information from the CG-4A, since that glider is the only cargo type available now.

