Military pack-mule: Specially designed for airborne logistics, the Fairchild XC-120 Pack-plane features a detachable cargo pod which can be quickly demounted and rolled away on its own undercarriage. The aircraft "sans pack" then flies away for another preloaded pack unit. Noteworthy is the quadricycle landing gear of the main aircraft.

CARGO-CARRIER CONCEPT

Design-logic for Airborne Logistics: The Fairchild XC-120 Pack-plane

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TO the Greek logicians may be attributed the common alliance of logic and logistics, for while logic might be defined as the intuitive art of reasoning, logistics was its spouse from which sprang the science of reckoning, estimating and present-day figure-juggling. And now that the Western Alliance has apparently adopted the Greeks *en masse*, it seems altogether fitting that we should adopt their logic and adapt their logistics to the demands of the twentieth-century air age. Logistics in the military sense of planning and supplying the personnel and material of war is now a favourite word in the military lexicon; and the subject of our current review—the Fairchild XC-120 Pack-plane—is an interesting study in showing how the aircraft designer is logically meeting this demand.

Conceived with Gallic logic by Armand J. Thieblot, French-born chief engineer of Fairchild's Aircraft Division, and developed under a U.S.A.F. experimental contract, the Fairchild XC-120 Pack-plane is a military transport prototype patterned after the trailer-truck principle, in which the aerial truck or basic flight structure can be flown with or without its cargo pack, or lower fuselage container. Publicized as the first aircraft to be built with a detachable fuselage, the XC-120 is believed by the Fairchild designers to pioneer an entirely new cargo-carrier concept for meeting some of the urgent problems of military logistics—of which, perhaps, the most pressing is the time required to load and unload cargo, particularly in forward staging areas under combat conditions.

Pack Drill

Completed in June, the prototype has since been undergoing intensive inspections and ground tests to try out and bed down its unorthodox quadricycle landing gear. (Initial troubles have been reported.) On August 11th, flying with its pack *in situ*, the XC-120 was aloft for some 45 minutes and is reported to have handled in the air much like its family forebear, the C-119 Packet transport, which, in its twin-boom airframe layout, it resembles to a large extent. After some more flights with the cargo-container attached, and some additional ground taxi tests, the XC-120 will be flown minus its huge pod—under which conditions the wind-tunnel tests indicate that no unusual flight characteristics should arise. (This deduction seems logical enough—on the principle that the foot-soldier is always a lot happier when he gets the pack off his back !)

The design concept back of the Pack-plane—to quote Thieblot—is that the prime mover, containing wings, control surfaces, power-plant, tankage and flight bridge, is the major investment in the aircraft. The cargo-container, on the other hand, is a relatively minor item, which can be tailor-made to carry a fixed installation such as a command post, radar station, repair shop, or field hospital—all ready for operation immediately after landing. It can, in effect, be a pre-packed supply depot, where all the needs of a military unit for a fixed period are loaded in correct order at a base depot, flown to the air-head and towed from there, on its own wheels, to the dispersal area or the point of ultimate use. Actually, says Thieblot, the XC-120 is the guinea-pig for a theory in transportation, new in aviation but a very old one in every other kind of haulage; for example, the idea of separating the payload from the prime mover made the road haulage business the versatile enterprise that it is to-day.

In military use, the chief advantage of this airborne pack-mule idea is that it eliminates the long, expensive (and vulnerable) periods on the ground while cargo is being handled, as is necessary with current transport designs—especially so in the case of conventional-fuselage types with side-door loading. A Pack-plane can fly into a field, have its cargo pod quickly detached and towed away on its own individual carriage, and be ready to take off to pick up another fuselage pack, all within a matter of minutes. (In recent U.S. joint Army-Air Force exercises, the unload times at the air-head became a critical factor, ranging from 45 minutes for the Douglas side-door C-74 to about 15-20 minutes for the Fairchild end-door C-82 and C-119 Packets).

Moreover, apart from providing greater utility of the prime mover, this reduced time on the ground limits the