J:JGHT,
5 November 1954

MILITARY

TRANSPORTS

The Blackburn Beverley C.l pro-
totype, showing the rear loading
doors removed for heavy dropping.
Beverleys are now in production
for the Royal Air Force.

have been developed; these permit 200 troops, or 127 stretcher patients and 31 attendants, to be lifted. The floors also allow segregation when carrying mixed loads such as cargo and troops, or troops and stretcher cases. T o supplement the nose loading provisions and permit simultaneous loading or unloading at two stations, a freight lift is installed at the rear of the main cabin, worked by two electrically-powered hoists which are capable of raising a 16,000 lb load. An elevator platform is normally pro-vided, but alternatively the hoists can be hooked directly to the load. Once the load is aboard, the hoists can be controlled to traverse the length of the cabin, enabling the load to be placed at any desired location on the floor. This rear-loading well, with the platform removed, is an effective means for the air-dropping of cargo.
American planners foresee strategic transports capable of carry-ing 100,000 lb payloads over transatlantic ranges, and to explore the problems of operating such heavy "logistics" carriers the solitary Convair XC-99, with six Pratt and Whitney Wasp Majors, is being operated. Transport counterpart of the B-36 bomber, this huge machine was regarded, when it was delivered in 1949, as a white elephant, but in practice proved itself a most valuable asset. By August this year it had logged 4,105 flying hours on 508 flights, carried over 36 | million pounds of U.S.A.F. cargo, and had reduced operating costs to 11.2 cents per ton mile. It had taken off fully loaded from a 5,400ft runway and had operated with a payload of 104,000 lb from a runway at an altitude of 5,000ft. On one trip it hauled the complete ground equipment of a fighter wing 2,330 miles non-stop across the American continent.

For this monster preloaded cargo bins have been developed to fit on the upper deck, leaving the larger stowage space below free for such items as jeeps and aircraft engines. Experience has been so encouraging that it is estimated that a 100,000 lb-payload transport, designed from the outset to make use of bins, could be fully loaded in 30 min.
The Soviet Union is known to have used a version of the Tu-4 (Boeing B-29) bomber for paratroop dropping, but there is no firm indication that Russia maintains a modern long-range force of military trooper/freighters in any way comparable with that available to the U.S.A.F. and Navy.

Having sketched the "strategic" equipment of the present, we may glance ahead to a remarkable metamorphosis centring on the use of turboprop and turbojet power plants. In this connection it is appropriate to quote Lt-Gen. Joseph Smith, commander of America's Military Air Transport Service (MATS), who has avowed that the U.S.A.F. needs a transport capable of travelling 3,000-3,500 nautical miles non-stop at a speed not less than 575 m.p.h. The concept of a multi-purpose aircraft for MATS, he said, was no longer valid; and he maintained that two types of turbine-powered transports were needed, of which the pure-jet machine would be used for the transport of personnel, casualties, whole blood, nuclear supplies, perishables and "anything else needing special care and speedy transit." Because all combat forces would eventually be pure-jet, it was inevitable, he thought, that transports should also be turbine powered in order to be harmonious and compatible" with the tactical units which have to be supported in peace and war. The transport envisaged by the General would have a payload of over 30,000 lb or 100 passengers, and would be required to operate from the "average" airfield having runways 5,000-6,000ft long—without the use of assisted take-off boost or parachute braking. Some system of reverse tirust, therefore, was considered mandatory. "The jet transport ws are looking for," said the General, "should be relatively easy and simple to operate and certainly no more complicated than tie conventional transport. We cannot, for example, accept limita-tions in performance so fine that a one- or two-degree change in P_itcn

. during take-off will be critical." He went on to say that easy transition from conventional aircraft was a requirement, since J

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" jet transports must be suitable for operation by average air 0r 2 ? rew s 0 I a level of competence expected during emergency mcbuaaiajo. Easy servicing, rapid loading and unloading, and

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id refuelling, must be possible, and overall maintenance

simplified and subject to accomplishment by "our unstable and partially skilled military labour force." One jet transport "of the type now appearing" (presumably the General had in mind the Boeing 707) could replace, in terms of general cargo, nine to ten C-54s, three to four C-97s, three to four C-118s, and two to three C-121Cs, over a range of 2,500 miles; flying 140 hours a month, it could deliver about 900 passengers a month to Europe, whereas a C-54 could deliver only about 170 and a C-118 about 270.

Specific reference may be made to two pure-jet military trans-ports now under development. The first is Britain's Vickers-Armstrongs 1000, a prototype of which was laid down early last year—since which time the type has been ordered into production. The power plant is four Rolls-Royce Conway by-pass units, reconciling high thrust with unusually low specific fuel con-sumption. A civil variant, designated VC-7, is rumoured to have accommodation for up to 150 passengers and to be designed for a cruising Mach number in excess of 0.9. The long-range version of that aircraft would weigh some 220,000 lb.
The second machine is the Boeing 707 Stratotanker, a military development of which, known as the KC-135, has been ordered as a jet tanker/transport. The characteristics of the Type 707 are well known, having been described in detail in our issue of May 28th, 1954. The KC-135 will be heavier (all-up weight well in excess of 200,000 lb), longer, and would have more powerful turbojets than the present Pratt and Whitney J57 two-spool units of 10,000 lb static thrust.
The future for the airscrew-driving turbine looks equally bright
in the military field, and General Smith has declared that MATS will require a turboprop cargo aircraft carrying a 50,000 lb pay-load over 4,000 miles. Speed is not regarded as critical, but must be compatible with maximum overall economy of operation. Like the pure-jet transport, it must operate without external assistance out of medium-sized fields with runways of 5,000-6,000ft, be capable of fast turn-rounds, and be easy to maintain. Reliability and simplicity of access for maintenance are overriding require-ments. Such an aircraft would permit MATS to "reduce its relative man-power, facility and supporting equipment require-ments through a reduction in the number of airframes to do its job," says General Smith.
The nearest approach to the requirements outlined is Lock-heed's brilliant YC-130, the first prototype of which has already completed a great deal of flying, while the second is nearly ready to take the air. (It was lately learned that the first machine has taken off, levelled out at a height of 10ft, landed, and rolled to a stop without brakes in under 3,500ft).
The new Lockheed is powered with four Allison T56 turbo-props and makes greater use of integrally stiffened skin than any aircraft to date (about 120 components). It was designed to meet a U.S. Army requirement for an aircraft to carry troops, para-troops, casualties and all types of ground force equipment, includ-ing items weighing as much as 20 tons. The paragon envisaged was to meet tactical requirements and at the same time serve MATS as a long-range passenger transport. From the various requirements the U.S.A.F. compiled specifications for a machine to fly at low altitude and low speed for parachute drops, or high altitude and high speed for long-range woik. It had to be adapt-able for short assault missions or for transatlantic and trans-Pacific crossings. The freight floor had to be at exact lorry-height—45in from the ground—and the wing had to be placed high, so that the undercarriage could not be conveniently retracted. Accordingly, two huge wheels, one behind the other, were placed in fairings on each side of the fuselage. Notwithstanding the vast rear-loading doors, die fuselage is fully pressurized, and the interior will be warmed by heating the floor. All tie-down fittings will take a 10,000 lb load, and there will be other fittings stressed for loads of 25,000 lb. The maximum speed is expected to reach 400 m.p.h., and the gross weight, for the present at least, is about 130,000 lb.

As in the civil field, turboprop developments of the Super Constellation are in hand, notably the R7V-2 for the U.S. Navy (with Pratt and Whitney T34s). This very fast aircraft is capable of cruising at speeds up to 440 m.p.h. and of carrying over 100 passengers, 73 patients and attendants, or 36,000 lb of cargo over