

"Real smooth" was the test pilot's comment on the maiden flight of the first Lockheed L.1649A Super Star Constellation at Burbank on October 11. The aircraft is seen here taking off on its 50-minute flight over Los Angeles.



CIVIL AVIATION

DANGEROUS SOUND

WRITING in the British Air Line Pilots' Association magazine *The Log*, Capt. L. Arthur, D.F.C., F.R.Met.S., A.R.Ae.S., studies the effect of acoustic energy upon an aircraft structure and makes several recommendations for the safe design of transport aircraft. Some doubt still exists as to the true relationship between the "loudness" of a sound and the acoustic energy it produces; but the destructive effect of the equivalent pressure-rise is thought by Capt. Arthur to have been insufficiently considered—notwithstanding the immense amount of Comet 1 research in this field. One example he quotes is that the noise pressure from an engine exhaust may affect the accuracy of a pressure altimeter.

Capt. Arthur's argument is based upon the premise that any of the structure within an included cone angle of 60 deg from the jet efflux is in danger from "ultra-audible" noise and pressure pulses (which may reach 30,000 c.p.s.); a danger which, he considers, will be greatly increased by the shear velocity of efflux. In support of these contentions, the author quotes the results of fatigue tests made this year by the N.A.C.A. laboratories on panels subjected to loud noise. These tests showed that a small panel 0.03in thick would fail in twenty seconds when subjected to 167 db, or in 1,000 min when subjected to 140 db; the proximity of the sound source is not stated.

The author also concludes that damage from this cause is most likely to occur on the ground when the relative velocity of jet efflux and airflow is a maximum; these dangers should, he feels, be brought to the attention of the ground engineers, the jet pipes should be positioned to keep the critical cone angle clear of the structure, and rigid panels should be provided in the rear fuselage.

Even these precautions may not be sufficient to exclude all

likelihood of failure since vibration can be transmitted and re-created far from the original source of energy. Consideration should be given, Capt. Arthur suggests, to elastic discontinuities in the path of the vibration and special high and low frequency damping mountings should be devised for the power units.

Better still, since the loudness of a sound varies inversely as the distance squared, the engines should be mounted as far away from the fuselage as possible. The efflux cone will then be clear of the structure, localized noise source and high frequency vibration near the fuselage (as with a buried engine installation) will be reduced, and at high altitudes the reduced air density will limit the noise-level in the pressurized zone.

These criteria point towards the podded installation, the author concludes, and where this is combined with swept-back wings the noise level is reduced and the need for sound-proofing decreased, as the exhaust will be effectively aft of the passenger cabin. Capt. Arthur suggests that his preliminary noise study has opened up a field for fruitful research.

BUSINESSMAN'S VISCOUNT

WITH the Viscount selling steadily as an executive transport (four delivered, seven on order) Vickers have been encouraged to offer the aircraft specially tailored for the executive rôle. Backed by illustrations and documentation altogether worthy of its rich potential market, the Viscount Executive appears to offer the ultimate in "custom-styled" interior design. Obviously there can be no such thing as a "standard executive version" of a transport aeroplane, since personal tastes and bank accounts differ widely. But a basis of discussion is essential, and drawing office man-hours spent on illustrating in detail the scope for custom-styling are more than likely to pay off.

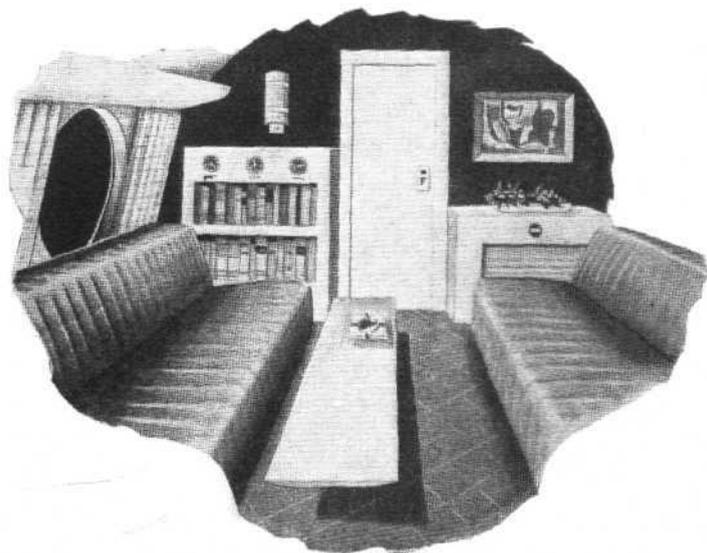
Several schemes are proposed for the Viscount, each having in common a main compartment with eight spaciouly arranged armchairs and tables, all positioned to take full advantage of the Viscount's large windows. A typical layout of this compartment provides for three pairs of chairs facing across folding three-leaf tables, plus two other individual chairs (one of them, suitable for secretarial use, facing a desk).

It is in the lounges, however, that the most appealing possibilities are apparent. One, a conference lounge (situated forward) is illustrated below. Another, also forward, is similar in layout but styled more as a private room. The third, a continuation aft of the main cabin and contrasting pleasantly with the latter's businesslike appearance, is a cocktail lounge with curving sofa and low tables.

From the performance point of view the Viscount Executive will conform exactly with the North American version of the 700D (Rolls-Royce Dart 510 engines).

AID FOR THE AFGHANS

ACCORDING to *Time* magazine, the United States is to lend \$14m to Afghanistan for the modernization of the Afghan Aryana airline—an operation that will include the buying of new equipment and the building of a first-class airfield with a 12,000ft runway at Kandahar near the Pakistan border. The agreement has been concluded between the U.S. Government, Afghanistan and Pan American World Airways, who will be granted an option to obtain a holding of up to 49 per cent in the Afghan airline's stock. In return, P.A.A. will assist Afghan Aryana by advising upon and supervising the development and modernization of its operations and its equipment, as a step towards developing Afghanistan as an international air link between East and West.



The appeal of the Viscount as an executive transport—even have so far been sold for this rôle—is certain to be widened by the new Viscount Executive (see news item above). Here is an impression of the conference lounge—one of three proposed arrangements.