



The "Rotorcycle" can hover without use of the cyclic pitch control during a demonstration. The holes in the sides of the "body" admit air to the horizontal cooling fan, which drives it over the engine



The machine is erected on a wheeled trolley. Notice the instrument panel, which is between the yaw control pedals; the pitot tube is supported directly off the air speed indicator

Helicopters in London

LAST week the site of the erstwhile heliport on the South Bank of the Thames was visited by two Hiller helicopters, an H-23, used for crop control in this country, and the experimental "Rotorcycle" XROE-1. The one-man helicopter, which was originally built for the United States Marine Corps, was demonstrated on various occasions during its visit to this country, including a Royal Marine exercise at Eastney. It is intended that, if the machine is put into production, it would be built by a European firm, but the original engine, an air-cooled, two-stroke Nelson flat-four of 43 h.p., would be retained. The prototype weighs 300 lb unladen and has a maximum rate of climb of 1160ft per minute, while up to 70 m.p.h. can be attained.

The machine is designed to be not only portable but air-droppable, and a special trolley is used to support it during and after folding. The machine can be stowed and carried folded without even draining the fuel tank, while there is, of course, no engine sump. Assembly involves only the fitting of fourteen self-locking "Pip" pins, and can be performed in about four minutes.

The small machine illustrates more clearly than the larger examples the Hiller "Rotor-matic" control system, in which the power to effect cyclic pitch changes is derived mainly from a pair of small blades at right angles to the main blades. In the close-up illustration on this page it can be seen that the auxiliary rotor is free to flap while remaining straight, i.e. one end up, the other down, and that this motion is communicated by bellcranks to the main blades as a change of incidence. The incidence of the auxiliary blades is altered by a cyclic pitch change mechanism of the accepted design, but the bellcranks project downward instead of forward in order to maintain the correct phase angle between stick movement and disc response. The control column can be seen passing behind the head of the man nearest the camera; the short handle projecting upward below it is the rotor brake. Another interesting mechanical detail visible is on the left-hand door of the Mercedes van; until the door is bolted the right-hand door cannot be closed.

Hiller Helicopters is represented in this country by Helicopter Sales, Ltd., 14, Woodlands Parade, Watford, Herts.

A New Film Technique

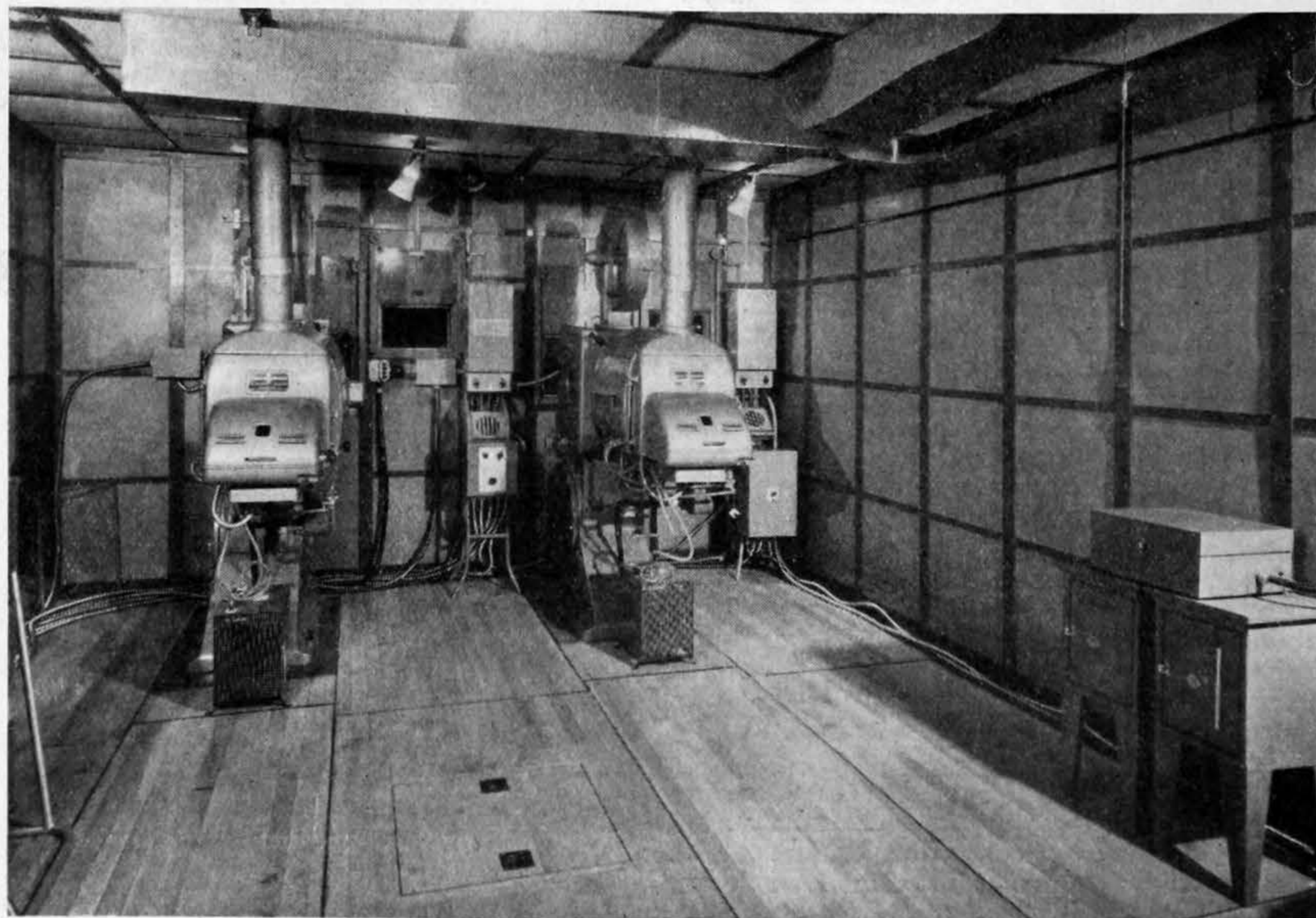
A NEW process of filming and reproduction for the cinema which, it is claimed, creates a greater sense of audience participation in the action on the screen has been developed by the

American Optical Company, and was demonstrated for the first time in this country at the Dominion Theatre in London last week. Known as "Todd-AO," the system includes a new camera with interchangeable lenses covering angles from 37 deg. to 128 deg., a new projector, and a curved screen with a highly reflective surface. A wide gauge negative film of 65mm is used. This is printed on a 70mm wide positive film on which six magnetic sound tracks are also accommodated. Five of these tracks feed sound to five loudspeaker assemblies carefully positioned behind the screen, whilst the sixth track carries sound effects to loudspeakers located behind and around the audience in the auditorium.

The projector, which was developed and manufactured by the Philips Company in Eindhoven, Holland, in co-operation with the American Optical Company, is designed to take 70mm film, but, with minor adjustments, it can handle other film processes. The spool boxes accept 3100ft of film, and this film passes through the picture

gate at a little over 111.6ft per minute. All sprockets and rollers are made of non-magnetic aluminium, stainless steel or nylon, and the projector gate is made of "Tantung," a hard metal alloy which will not become magnetised, thus almost eliminating the problem of degaussing. A focus drift compensator automatically corrects any loss of focus due to dimensional changes in the lens elements resulting from the heating of the lens, and also compensates for the shallow depth of focus of short focal length lenses. The arc lamp in use with this projector is the Mole Richardson, Gaumont-Kalee type 490 high-power arc lamp supplied by Rank Precision Industries, Ltd. The lamp has its own water circulating system and running at 130A gives a white light of high brightness, filtered to remove unwanted heat radiation.

A special projection room has been built [the inside of it can be seen in the accompanying illustration] to give, as near as possible, horizontal projection, and the location of this room in the midst of the audience brought its attendant



Inside of prefabricated projection room showing 70mm projectors