an equal loss; while it is a consideration that the arrangement adopted only means three engineers on duty at a time instead of six. The two wing cars are attached at frame 9, and the rear car at the centre line at frame 12. All the cars are well aft of the living quarters, so that the noise and vibration will be reduced to a minimum.

The two wing cars each carry an A.C. motor car six-cylinder engine for driving a 15 kw. D.C. electrical generator to supply current for lighting, heating, cooking, and wireless. In each car there is a Bristol gas starter to start the main engines. Lodge Plugs are fitted to R 100's engines.

The Fins

One could not see from the ground that the lower fin and rudder are smaller than the three other control surfaces, but the balance on the elevators and its absence from the rudder was noticeable. It seems that this is standard German practice, but has not before been adopted on any British airship. It was explained that the elevators often have to be kept on continuously for considerable periods, and that therefore the controls must be light; whereas the rudder is only used occasionally, and a heavy control does not matter so much. Moreover, an under-finned airship always has a tendency to yaw, and to leave the rudders slack tends to produce an effect of being under-finned. In fact, it is easier to start the airship turning sideways than to make it climb or dive.

A scoop projecting below each horizontal fin attracted attention. We were told that there was a corresponding scoop on the top also. Normally they would be closed. When open they provide space for the head and feet of a man who may be sent inside the fin (which is about 2 ft. thick) to operate the elevator by hand in an emergency. It does not sound at all an attractive task, but we were assured that the man could not fall through the lower scoop, and that he would not really be very uncomfortable. His seat is provided with a speaking tube which runs to the control car.

Another job sometimes has to be done which does not sound at all pleasant. There are automatic valves towards the bottom of each gas bag, which will deal with sudden expansions of the hydrogen due to variations of temperature. Incidentally, No. 15 bag is connected with No. 14, and so does not need a separate valve. Top valves are fitted to 11 of the bags, which can be operated from the control car. It is expected that normally this valving will only be necessary when manœuvring down to moor at the tower. Whenever these valves have been used, one of the crew has to climb on top of the ship outside the cover, and crawl along, holding on to a rope, on a small crawling way, to see that all the valves have been properly closed. This crawling way will also be useful when it is necessary to clear snow off the top of the cover when moored at the tower. A rope is then passed right over the hull of the ship and worked along from bow to stern, but a man must go along the top to guide the rope.

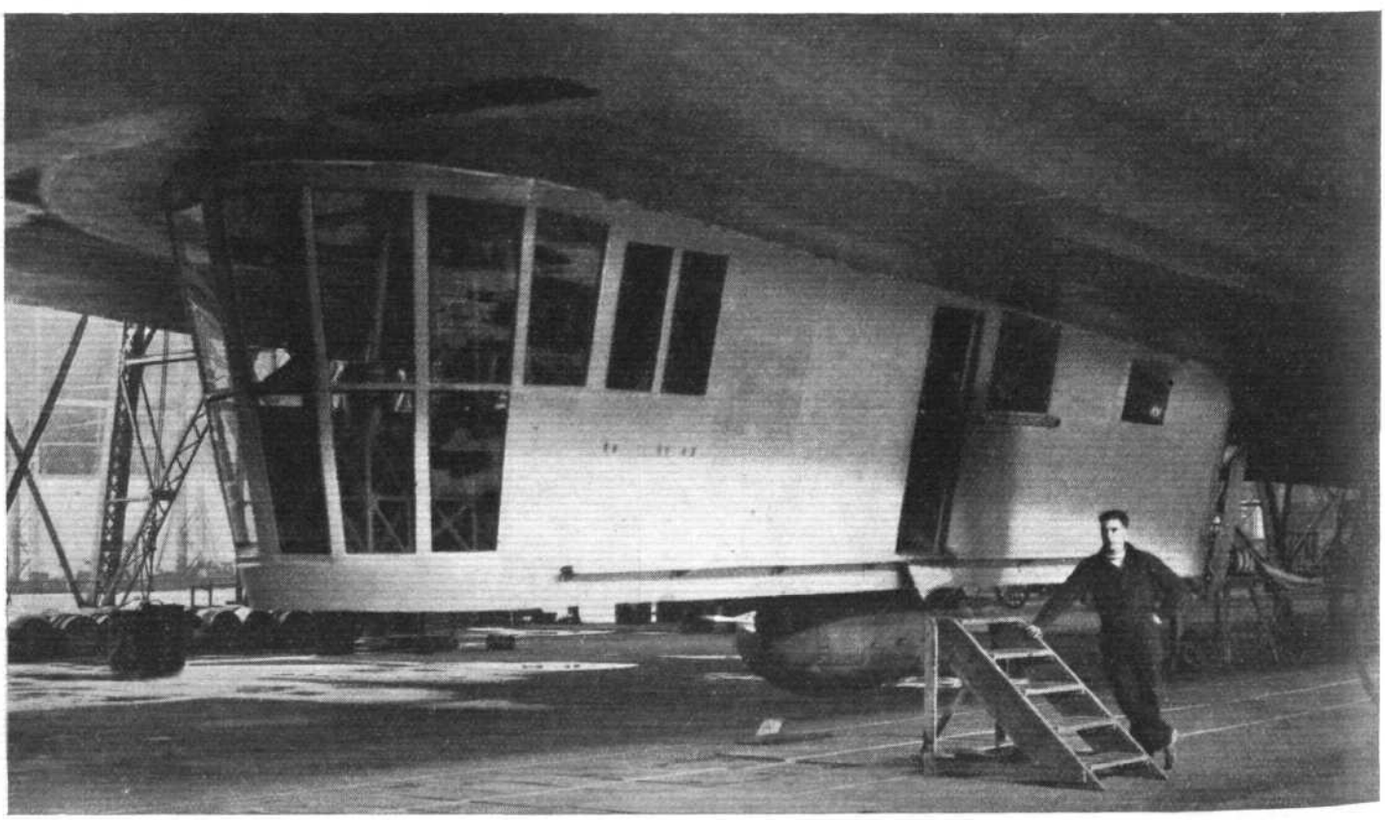
On the occasion of this visit nothing could be seen of the girder work of R 100. Some description of it was given in FLIGHT of July 12, 1928, and perhaps an opportunity will be given later for a full description by the technical editor. It has been mentioned above that the duralumin tubes are made of strip wound helically and riveted along the overlap. The girders are triangular. Throughout the airship the outer tube of the triangle of the longitudinals is outside that of the transverse frames, so that the latter do not make ridges in the cover. The longitudinal and transverse girders are joined by two triangular members set at right angles to each other.

The axial girder runs through the structure from frame 1 to frame 13, and passes through each gas-bag. From frame 13 to 15 the axial girder is of square section (in the centre it is triangular) and joins the cruciform girders at frames 13, 14 and 15, where it is part of the plane structure.

Lunch on the Airship

When we had seen and learnt all that we could in the shed, Sir Dennistoun Burney invited us to enter the ship and have lunch in the lounge. Of course we could not get in by the corridor which runs to the nose and which will in due course connect with the platform of the tower. We climbed up by a ladder through a hatch in the bottom of the ship, and groped our way to the stairs which lead up into the saloon. The lowest deck is devoted to quarters for the officers and crew, and we could see but little of it as we passed. The saloon occupies most of the floor space of the second deck. The electric kitchen is aft of it, and is connected to it by a buttery hatch. On each side are cabins, and a passage leads from the saloon between the blocks of cabins to a balcony promenade, from which passengers can look down through the windows in the cover and see the view. The top deck is not all floored in. It forms a sort of gallery round the sides of the saloon. Here there are more blocks of cabins, and two more balconies with windows. So passengers have the choice of six places to sit:—four balconies, the saloon, and the gallery.

The saloon, which is by far the largest apartment, is also the dining room. Not much daylight will ever penetrate to it, and electric light will, I think, always be necessary. Here tables were set out, and waitresses served a hot lunch, and a very good lunch too. I do not suppose that the waitresses have



The control car of R 100. Note the bumper underneath. (FLIGHT *Photo.*)