CONTINENTAL AFFAIRS *(Continued)*

Dortmund Tower

FOLLOWING the construction of the Stuttgart television tower (THE ENGINEER, January 13, 1956, page 64), a certain spirit of competition appears to have arisen among the larger towns of Germany and neighbouring countries, who are vying with one another in the erection of similar structures. Examples are the Rotterdam "Euromast" (Plate 16) and the Dortmund observation and telecommunications tower.

The Dortmund Tower, at present the highest tower structure in Germany, was erected in the period May 22, 1958 to April 30, 1959, the immediate occasion being last year's Federal Garden Exhibition which was held throughout the spring and summer. Our illustration (Fig. 1) shows the structure which comprises principally a reinforced concrete cylinder of 173·45m height, tapering from an outside diameter of 11·74m at ground level to 5·50m at a height of 133·2m.

The foundation extends to −8·10m and consists of a circular concrete footing 25m in diameter which at the centre is 2·5m thick.

The tower carries two sets of balconies, the lower, larger one between the levels 133·2m and 144·7m, while the upper platforms extend from 151·8m to 155·5m. The principal data are listed in Table I.

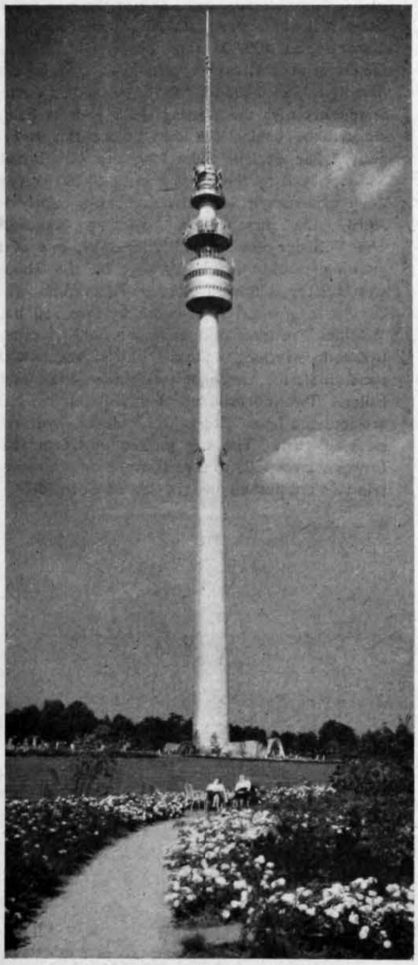


Fig. 1—Observation and telecommunications tower

TABLE I—*Principal Data of Dortmund Tower*

Overall height, metres	219·60
Total height of concrete tower, metres	173·45
Depth of foundations, metres	8·30
Diameter of foundation slab, metres	27·00
Diameter of concrete shaft :	
At ground level, metres	11·74
At and above 133·20m level, metres	5·50
Wall thickness :	
At ground level, metres	0·51
At and above 133·20m level, metres	0·20
Levels :	
Restaurant, metres	137·60
Observation platform, metres	142·0
Telecommunications equipment, metres	151·70
Installed electrical capacity, total, kVA	500
Lift speed, metres per second	4
Lift capacity (two lifts), persons per hour	480
Total weight of tower, tonnes	7700

The lower balcony has a maximum diameter of about 14·74m and comprises two interior levels, the upper one at 137·6m serving as a restaurant for 100 people, while the lower level at 133·2m is used for the kitchen and offices. This part of the tower, shown in section in Fig. 2, rests on a cantilevered ring. The roof forms an observation platform for 200 persons.

While the main structure is carried out in concrete, the restaurant floor at 137·6m level and its glazed outer wall are a steel structure supported on rollers in such a way that it can be slowly rotated by an electric drive. For the choice of this arrangement several considerations were responsible, the principal one being, of course, to enable the full panorama to be seen from each table. It is, however, also important to maintain an even temperature inside the restaurant. This is difficult on sunny days when the side towards the sun tends to get unbearably hot, while in the winter, the shadowy side may easily lose too much heat through radiation through the windows. With rotating floor and windows these adverse effects are diminished or disappear entirely. Another point which is of benefit is that the tendency of the glass to deform under thermal stress is reduced. An 8 h.p. electric motor driving through a steplessly variable gear allows speeds between 2 r.p.h. and 6 r.p.h.

In the upper balcony, 151·7m above ground level, equipment for a directional telecommunications link is installed, while above, on the remaining 17·2m-high concrete section, the horn and parabolic aerials are arranged. The concrete tower is surmounted by two aerial masts for television broadcasting, one above the other, which have a combined height of 46·15m.

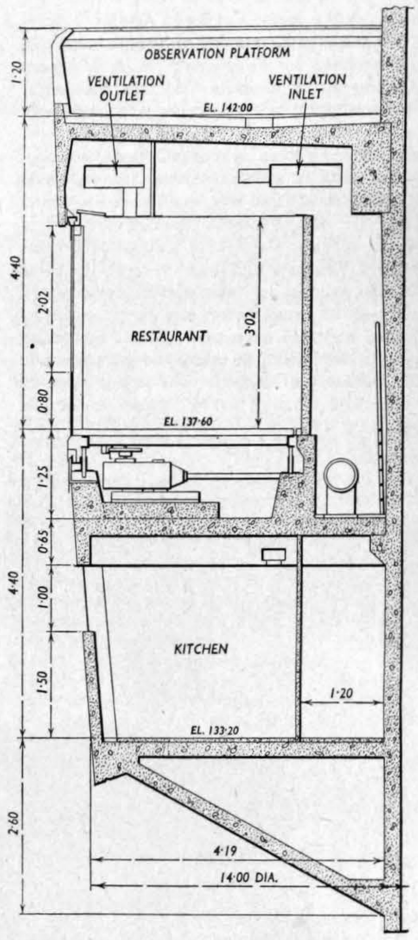
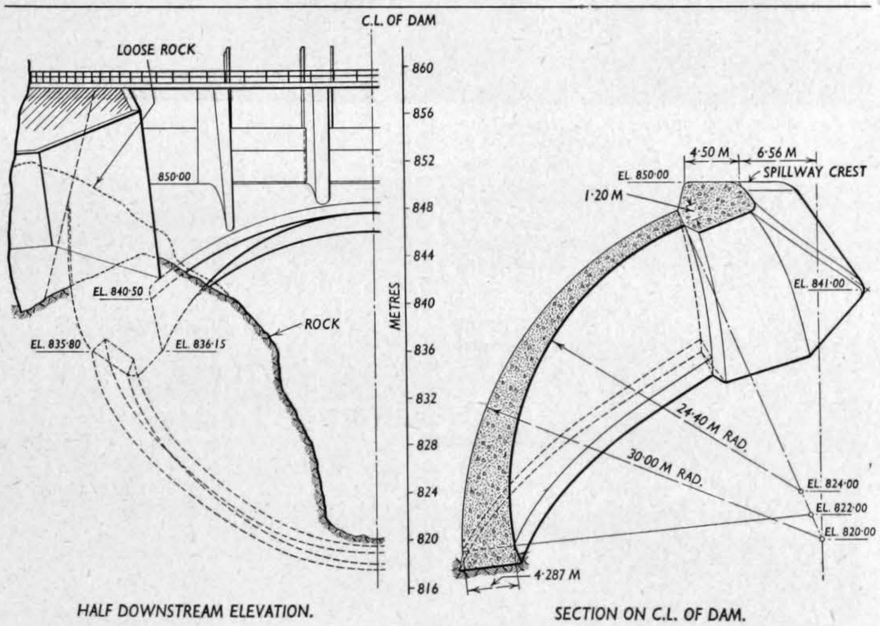


Fig. 2—Part section showing lower balcony containing the restaurant and kitchen, and surmounted by an observation platform. The restaurant floor and windows form a separate steel structure which can be rotated at between 2 and 6 revolutions per hour



Sectional elevation and end view of Vodo dam (see also Plate 7). This dam is under construction on the Boite River as part of the Piave-Boite-Mae-Vaiont hydro-electric scheme. The strongly curved cupola is supported on a saddle foundation and rests against the arch carrying the spillways; it is separated from these supports by joints. A fairly substantial amount of rock was excavated in order to obtain a symmetrical dam design