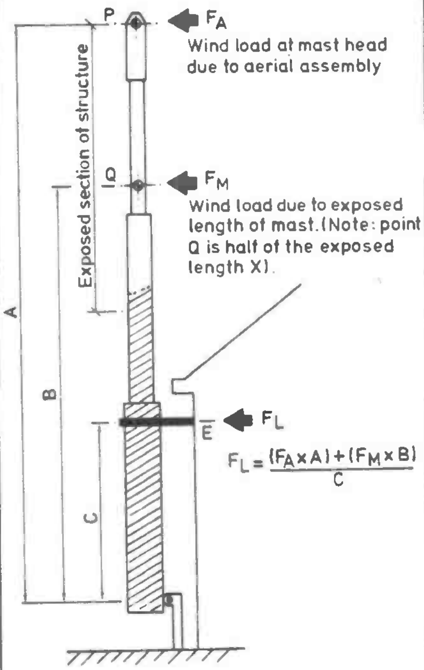

FIG.8. Wall supported tower.

the structure due to the wind loads. This would have been taken into account and a suitable safety factor allowed by the manufacturer. However, as long as the specified head loads etc., are not exceeded and the correct procedure followed

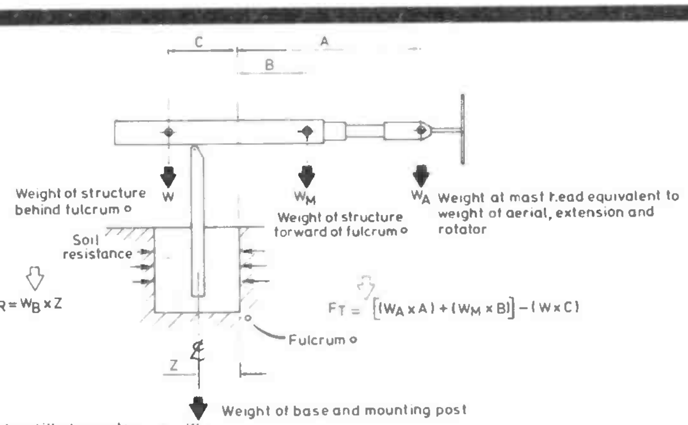

FIG.9 Effect of weight on tilted over towers

during installation, no difficulties should arise. (Excluding unforseen soil or wind conditions.)

Masts or towers that are supported by a wall, (see **Fig. 8**) differ in that the supporting wall must carry some of the load. In certain conditions, the wall will shield parts of the structure (shown shaded) from the full effect of the wind and so reduce the wind load on the structure. Bear in mind that the wind force will still affect the wall. The simplified formula:

$$F_L = (F_A \times A) + (F_M \times B)$$

can be used to obtain a useful estimate of the load that could be imposed on the wall and support bracket at point E. If the wind was blowing along the wall face, i.e. at 90% to the direction indicated in **Fig. 7**, then the circulations are a little more complex. However, with the wind in the direction of the arrows in **Fig. 8**, this is the worst condition and presents the maximum load on the wall. You will notice that the higher up the wall the bracket is anchored, the lower will be the load at point E. Bear in mind also, the taller the tower and larger the aerial, then greater will be the load at point E. Towers with an extended height of over 50 ft are not recommended for installation on the average house wall. However, there can be exceptions so get some advice from your local builder as to the strength and condition of the wall. If necessary, reinforce it.

When a post-mounted mast or tower is fitted, as in **Fig. 9**, then the weight of the aerial and tower begins to affect the stability of the installation. The weight on one side of the fulcrum (point O) tries to overturn it, in this case those to the right of point O. A weight on the other side, i.e. to the left of point O, tries to right it. These are the overturning load F_T and the righting load F_R. To ensure the installation is stable F_T should be less than F_R. Bear in mind that as before, the ground will resist any overloading load depending on soil conditions and so can form part of F_R. F_T is equal to the total weight of the structure to the right of the fulcrum point O, minus the weight of the structure to the left of point O.

$$F_T = [W_A \times A) + (W_M \times B)] - (W \times C)$$

The righting force F_R is equal to the total weight of the concrete base and the mounting post acting through a centre that is to the left of the fulcrum point O.

$$F_R = W_B \times Z.$$

The effect of ground resistance, depending on soil conditions, can be added to this to give a final righting load.

Data

Concrete: Suitable mix for foundations:
1 part cement, 2½ parts sharp sand, 4 parts coarse aggregate.
Average weight: 140 lb/cu.ft., 2240 kg/cu.m.
Aluminium tube:
The weight of aluminium tube can be found by the following.
Metric: 0.003823t (D — t) = kg/m
Imperial: 3.68t (D — t) = lb/ft.
t = wall thickness in mm or inches.
D = overall (outside) diameter: in mm or inches.
Grades of Aluminium tubing:
HE9, General purpose. Tensile strength 9-10 tons/sq.in.
HE30 Structural Grade tensile strength 25-30 tons/sq.in.

CONVERSION FACTORS
1 lb = .454 kg*
1 kg = 2.2046 lb
1" = 25.4mm
1 metre = 3.281 FT
($39\frac{3}{8}$" approximately)
1 sq. ft. = 0.1524 sq. metre
1 sq. metre = 6.562 sq. ft.
1 cubic ft. = 0.0283 cu. metre*
1 cu. metre = 35.315 cu. ft.*
1 lb. f = 4.448 Newtons*
1 kgf = 9.80665 Newtons

TUBE WALL THICKNESS
STANDARD WIRE GAUGE

swg	inches	mm
7	.176	4.470
10	.128	3.251
12	.104	2.642
14	.080	2.032
16	.064	1.626
18	.048	1.219
20	.036	0.914

*APPROXIMATE VALUE
NOTE: All data etc. given is for guidance only, and where necessary it is recommended that expert advice is sought.