EXTRAORDINARY GENERAL MEETING

Held on 26th May, 1948, at the Great Northern Hotel, London, at 6 p.m., when the General Business was followed by talks:—

THE EXTERNAL APPEARANCE OF SMALL ORGANS

By Mr. C. T. L. Harrison

In choosing the above title for my talk, I have deliberately not used the words "organ cases". I do not intend to mention case design as such, partly because much has already been written on this, and partly because it can be made a separate subject for a talk complementary to what I am going to say to-night.

Case design should normally be left to architects who specialise in such work, but when small organs are being considered their employment need not be necessary, in fact many organ builders provide case work with their instruments.

But for many years there has been the well known and derogatory term "an organ builder's case", and there are organs in this country, some of quite recent date, which rightly deserve such condemnation.

I want to try and show, therefore, how small organs can be made to appear attractive, with little additional expenditure, by taking care in designing the external appearance as a whole.

Before the detailed construction of the organ is decided, a careful survey of the position should be made with a view to checking the proportions of that part of the Church or other building into which it is to go, *e.g.*, the relations between height and width; where arches are involved, the relation between floor and springers, springers and apex, apex and eaves; where windows are involved, the relation between floor and sill, sill and lintel, etc.

Then by carefully proportioning the width and height of the organ, the relation between floor and pipe block level, pipe block level and top of the pipes, towers and/or flats, we can arrive at a satisfactory basic outline for the organ.

These proportions are soon realised by a practised eye, but can be measured and checked, using several methods.

As will be seen from the tenth chapter (Rhythm of Proportion) of Walter Dorwin Teague's valuable work "Design this Day", published by "The Studio", these methods are not new and have been used either consciously or unconsciously for possibly over 2,000 years, and we must go back to the ancient

Fig. 1

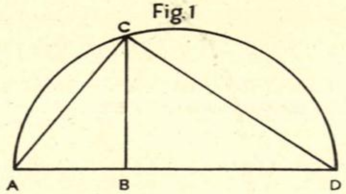


Fig. 2

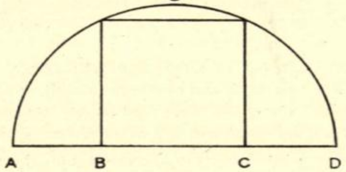


Fig 3.

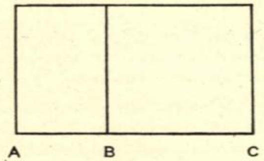


Fig. 4

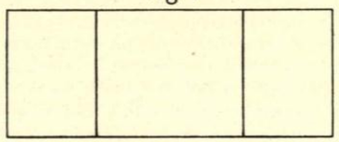
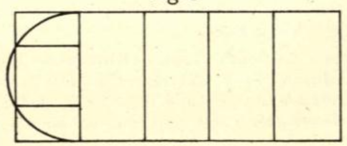


Fig. 5



Egyptians and ancient Greeks to see how some of them have been evolved. In the first instance, the ancient Egyptians discovered what every schoolboy now knows, that a piece of string with its ends knotted together and divided into 12 equal portions, will if the corners are held and given sides of three, four and five portions, produce a right-angled triangle.

The Greeks went further, and with their genius for geometry made many interesting discoveries.

The first perhaps was that a triangle drawn within a semi-circle with the chord for its base and its apex touching the arc is a right-angled triangle. From that it was discovered that if a line is dropped from the apex of the triangle perpendicular to the base, the dropped line will be a mean proportion between the two portions into which the base is then cut. Fig. 1, AB will bear to BC the same relation as BC is to BD, and wherever the apex is placed on the arc of the circle, the proportional result will be the same.

This was a start, but it was probable that something more than this was being looked for, viz., some system of extreme and mean proportion, and eventually it was found that a square drawn within a semi-circle gave the answer. Thus, in Fig. 2, AB : BC : : BC : AC.

This principle can be extended further to include areas by a simple process of erecting a square and rectangle on the line AB, BC, when it will be seen that the smaller area is to the larger as the larger is to the whole. Fig. 3.

The ancient Greeks realised that here was a method of dividing areas which could be extended indefinitely and which would always be visually pleasant, so much so that the rectangle formed in this manner became known as the golden section rectangle.

This golden section rectangle can be further extended to complete the picture, as in Fig. 4, by erecting the smaller rectangle at the other end of the semi-circle as well, the result being two golden section rectangles overlapping each other to the extent of the common square in the centre. This rectangle in its turn was found by the Greek geometricians to have properties of its own, in fact, that a square erected on the side is exactly five times the area of a square erected on the end; as we would describe it to-day, if the end were one, the side is the square root of five. This rectangle has been called, by some eminent designers, the root five rectangle. This rectangle can again be divided into five equal portions, each one being a root five rectangle, each one being formed of two overlapping golden square rectangles with a square common to both in the centre. Fig. 5.

Now, with a little experimenting with pencil and paper and compasses, you will find you can go on sub-dividing the root five and the golden square rectangles and their diagonals to infinity and you will always get the same proportions recurring.

Other rectangles that can be used but have less value from the visual side, are those where the end is one and the sides are the square root of 2, 3, and 4 respectively.

Fig 6

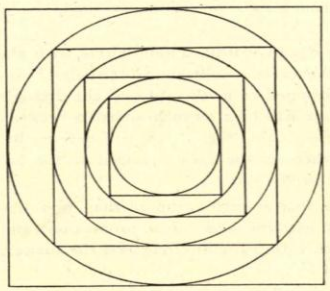


Fig. 7

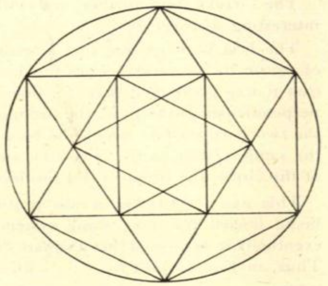
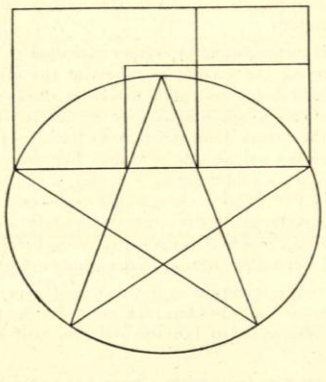


Fig 8



That rectangle which has one side one and the other the square root of 2 has the same ratio of proportions as the square and circle system used by many designers, from Roman times onwards. Fig. 6.

Other patterns of lines which can be used in checking a design are the six-pointed star and hexagon, Fig. 7, and the five-pointed star, Fig. 8. You will see that the six-pointed star and hexagon forms root three rectangles, and the five-pointed star cross lines divide up into golden sections.

This outline of patterns that can be used gives you almost unlimited scope for checking and correcting the proportions of any design you wish to use, and I would suggest that when you have an idle moment, a very fascinating occupation is trying to check by means of any of these systems, organ cases which attract your eye by their proportions.

So much for the main proportions of the organ front, and now let us consider some details of the various parts.

As I am only dealing with the simplest of cases, I sub-divide the front into (*a*) the array of pipes, and (*b*) the panelling, etc., below.

In the mathematical world there is known the "summation series" of whole numbers, which gives a fairly accurate means of assessing extreme and mean proportion. Their name is due to the fact that each number is the sum of the two preceding and they run as follows:—1, 2, 3, 5, 8, 13, etc. (We are unlikely to go beyond 8, as it has been proved that 6 is normally the largest number of units that can be seen as individual in one glance.) This series can be used most successfully in deciding the number of pipes in a group of panels in an area, or as units of measurement for a series of panels. Fig. 9 (*a*) and 9 (*b*).

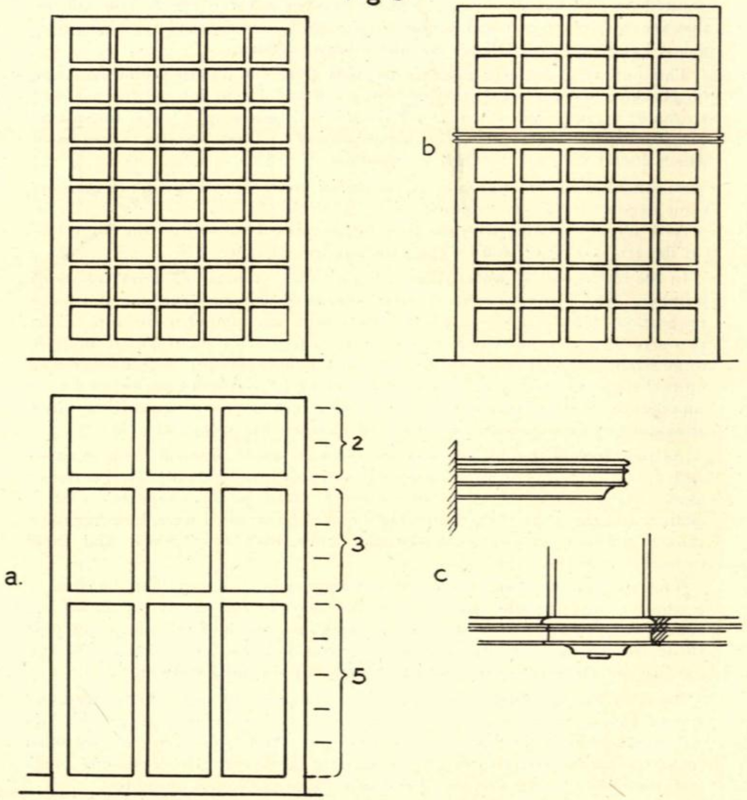
As pipe towers should be balanced, the number of pipes in them must be odd, *e.g.*, 3, 5 or 7, but as seven are difficult to see individually, as mentioned above, five are better. Seven and above tend to make the tower appear as a fluted column and the grace of the individual organ pipe is lost. I have, however, seen square towers and even semi-circular ones with four pipes, and most uncomfortable they look.

The number of pipes in a flat is not important provided that the area as a whole is well thought out, being neither too tall and narrow nor broad and squat. There is an important point to watch and that is if the mouths or pipe shade are in a curve, this should be a segment of a true circle or parabola and not just an arbitrary curve decided by some hit-and-miss method.

Now for the panelling below. To avoid a large expanse of equally sized and spaced panels, the area to be covered should be broken up into groups, and although horizontal panels can be allowed in certain circumstances, care must be taken that the general line gives a vertical appearance. Otherwise the break from horizontal to the vertical line of pipes above becomes unsightly.

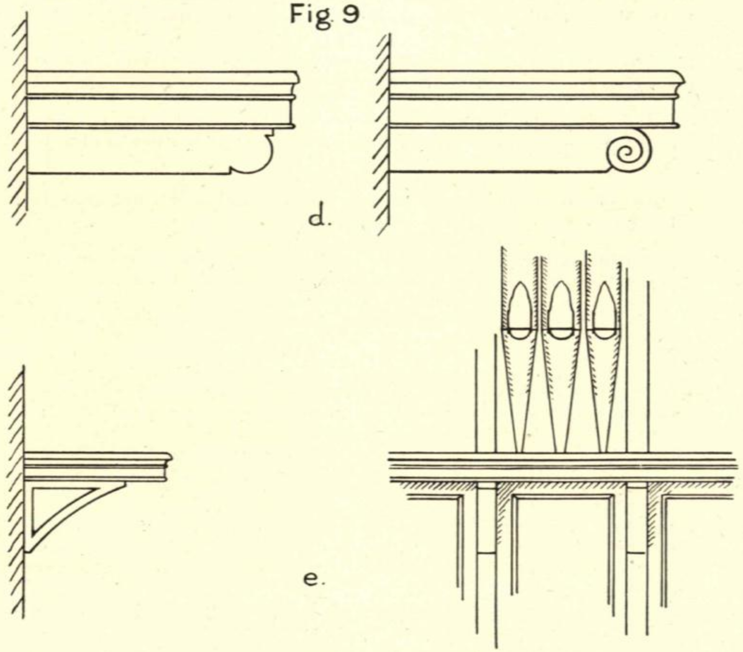
The breaking up of the groups can be done in several ways from a broad plain post to a vertical series of panels, slightly forward of the main panelling, or if horizontal by a line of moulding. Fig. 9 (*b*).

Fig 9



a. b c

Fig. 9



d. e.

The forward break between the two surfaces need be no more than an inch or two.

The vertical breaks should be introduced in line with any features of the pipes above, *e.g.*, towers—either edges, centres, or whole width.

In considering the style and comparative sizes of panels, reference should be made first to the existing furnishings of the Church.

Two further and common faults are the overdoing of the cantilever of a pipe front and the apparent lack of strength in supporting front pipes.

The first can be improved in several simple ways, without the expense of a cove, *e.g.*

(i) By a slight thickening under the soffit at specified points, possibly under the towers. Fig. 9 (*c*). This is particularly useful where headroom is limited.

(ii) By a beam (or horn end). Quite simple finishes only are needed. Fig. 9 (*d*).

(iii) By brackets. Fig. 9 (*e*). These must appear adequate for the amount of weight they are supposed to be carrying, *i.e.*, not made too thin.

(iv) By drops. Fig. 9 (*f*). Here again, some guide to style can be found by a study of the Church furnishings.

The two faults are inter-related, and the simple cures advocated above also effect an improvement to the strength of the pipe block when seen from the front.

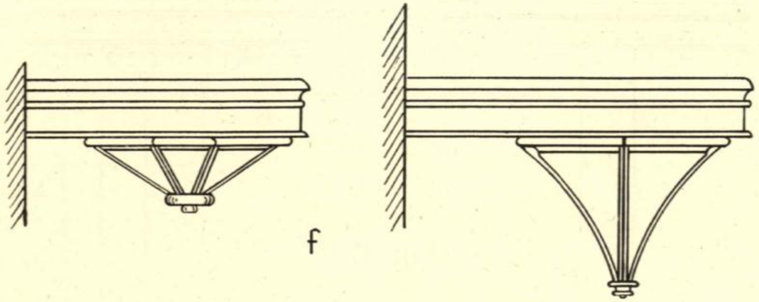
There are, however, occasions when the only view is from the front, and the apparent lack of support is due to the lack of depth to the pipe block moulding, *e.g.* Fig. 10 (*a*).

Many of the commercially produced mouldings which are often used for this purpose are too shallow, but can be increased by a plain board added below Fig. 10 (*b*) or even above, where, if placed between posts, can give a very pleasing panelling effect.

If you wish to be extravagant, as imple open pattern could be introduced, *e.g.*, as in Fig. 10 (*c*).

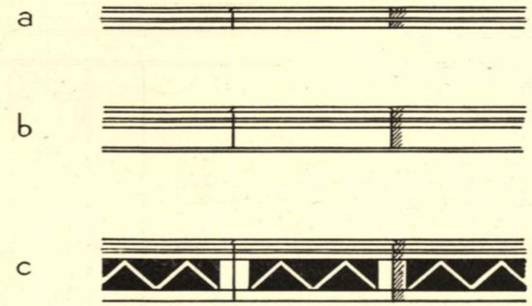
Where an organ is bracketed out from a wall, it may be necessary to add posts and the appearance of some of these is spoilt by the omission of a capital.

The samples in Fig. 11 are simple possibilities for overcoming this. Fig. 11 (*a*) should never be allowed. A variety of Fig. 11 (*b*) could be smaller and the general line concave instead of convex. Fig. 11 (*c*) is a replica of the moulding to a smaller scale and, 11 (*d*) solid blocks, to a pattern as fancy as you like, are fitted into the angle between post and moulding.



f

Fig. 10



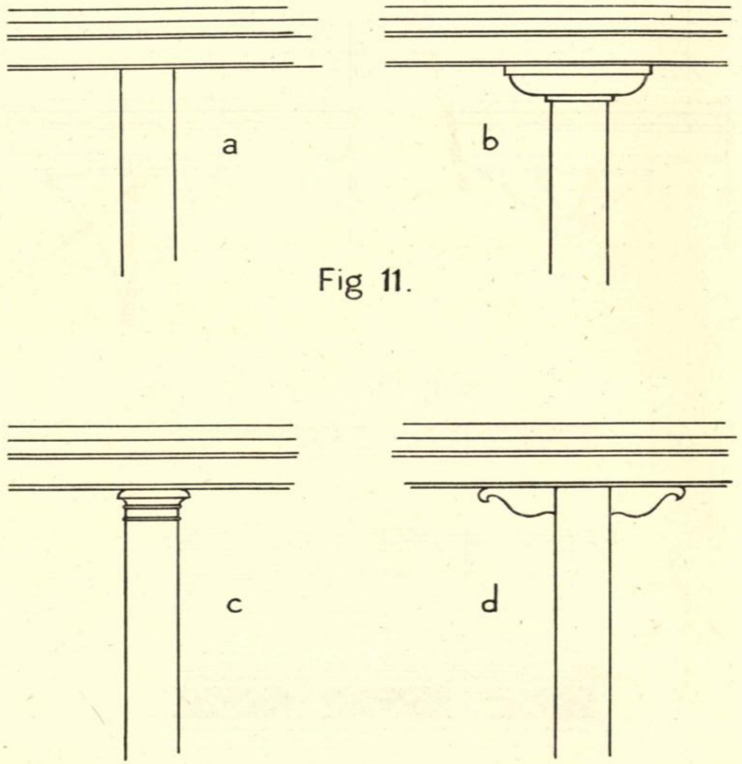


Fig 11.

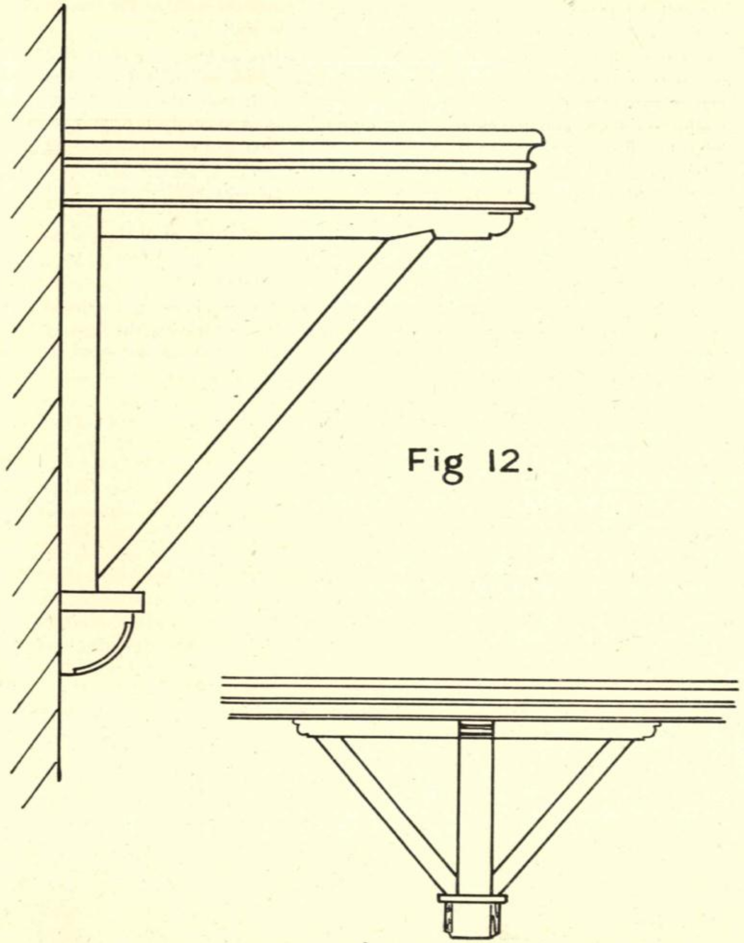


Fig 12.

There are occasions when posts cannot be arranged when a trefoil system is possible, support being provided from a corbel let into the wall, as Fig. 12, or from a post running to the ground placed against the wall.

All these illustrations are capable of infinite variety and are only intended to show some of the simple means of preventing unsightliness, and the criticism may be made that many are based on a fake. But they do make the general view restful to the eye, and, in conclusion, I would say that as most of the organs we build are destined for places of worship, it is our duty to pay more attention to ensuring that the organ, apart from its tonal qualities, is not a disturbing influence on the minds of the worshippers by having ugly and ill-considered lines.

The discussion took the form of appreciation and endorsement of the points made by Mr. Harrison. The proportion of the diameters, body and foot lengths of front pipes being agreed to be of paramount importance.

"Horrible examples" of imperfect case-designs (by architects and others) were cited, especially the pernicious but dying practice of leaving the tops of front pipes showing above the case capping. A vote of thanks was accorded to Mr. Harrison for his scholarly exposition.