

Simplicity in Planning

THIS is the first of four articles by JOHN G. SOWERBY, A.R.I.B.A., A.I.L.A., whose design for a three-bedroom home gained one of the prizes in the competition recently sponsored by the Government. His design (reproduced on this page) was described by the judges as the most economical submitted. "For hillside conditions," they added, "this house offers an interesting and economical development by providing two levels."

CAN we build cheaper houses? This question was the subject of much discussion when the Government announced its intention of calling a National Housing Conference, and has aroused considerable public interest ever since.

Perhaps the best answer was given by the Government competition for the design of a three-bedroom family home. Cost reduction was the primary objective, and the judges state in their report that the designs of the seven major prize winners could be built in the Wellington area "within a price range of £2000-£2200." These designs were for houses providing accommodation at least equal to the normal State house, and they represent a considerable saving, not merely on normal housing costs, but even on the experimental Hammond and Wilson houses. It should be remembered that building costs in Wellington are higher than elsewhere, and that the Christchurch equivalent to the price range mentioned above would be approximately £1700-£1900. These prices are, of course, based on labour rates before the recent general wage increase.

How was this economy achieved? For many New Zealanders now planning their homes, this question is of vital importance, and it is for these people that this series of articles is primarily intended.

Economy can be achieved in three main ways: by a simple and economical design, by the use of certain alternative materials and more efficient construction, and by the owner carrying out some of the work himself.

Let us first consider how we can produce a simple and economical plan. Of fundamental importance is the plan shape. For real economy, this must be a simple rectangle or square—that is, have only four corners to the external walls. Corners are expensive and their number should be kept to the minimum. This is particularly important when it is proposed to use a pitched roof (one that is not flat), as otherwise the roof shape would be complicated by additional hips and valleys. These are expensive items. If it is considered that a rectangular plan will not produce a satisfactory elevational effect (and there is no reason whatever why it should not), an L-shaped plan, which has six corners or angles, is the cheapest alternative.

Another reason for using a rectangular plan is that with this shape the perimeter length of the external walls is reduced to the minimum. The perimeter length is the total length of the external walls, or the distance around the outside of the house, and it is important that it should be as short as

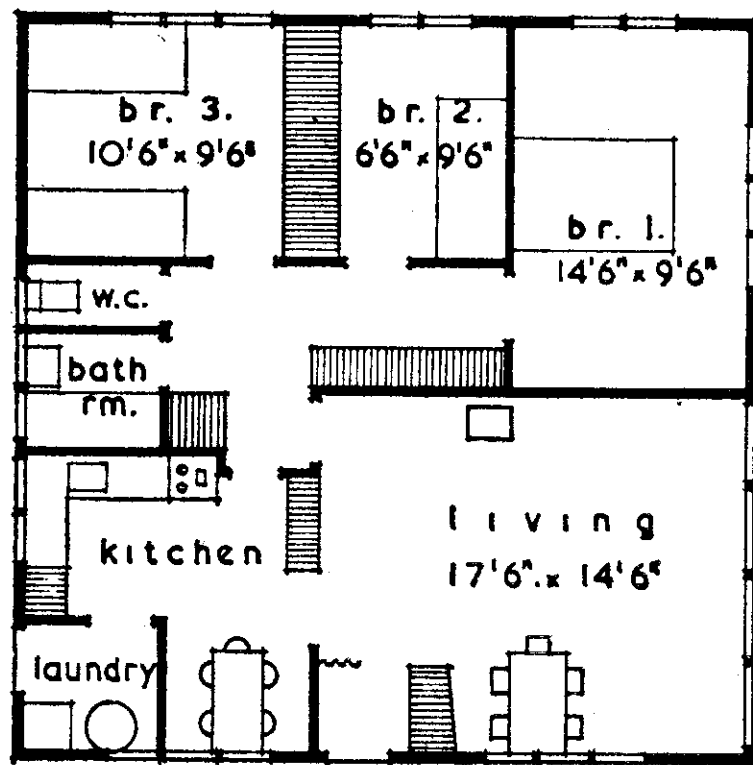
possible. For any floor area, a square plan will give the shortest perimeter length. As an example, let us take a house with a floor area of 900 square feet, for which the most economical shape is a square 30 feet by 30 feet, giving a perimeter length of 120 feet. A rectangle, providing it was not too long and narrow, would give a perimeter length of about 125 feet. In the case of a non-rectangular plan, however, the perimeter length for a house of this area would be about 140 feet or even more—that is, 20 feet more than the most economical shape. Every additional foot of perimeter length means extra foundations, extra wall framing, extra weather boards (or other facing material), extra internal wall lining, extra eaves length, extra painting, and so on. For a weatherboard house the cost of a complete external wall is about £4/10/- per foot and an additional 20 feet would therefore cost approximately £90.

As with the external shape, the internal arrangement of partitions should be simple. As far as possible all rooms should be simple rectangles, as once again corners cost money, besides in many cases giving an awkward appearance to the room concerned. Consideration should be given to the support of the roof framing, although it would be advisable for the amateur to discuss this with his builder. Internal partitions which support roof framing are termed load-bearing partitions, and are more expensive than non-load bearing partitions which carry no roof load. For this reason, only the minimum number of load-bearing partitions should be used, an economical arrangement being to have one in the centre of the plan and to support the roof entirely on this and the external walls. This subject will be referred to later when construction is discussed. Internal partitions cost almost £2 per foot, and their length should therefore be kept to the minimum.

As a means of effecting economy, simplicity is equalled in importance only by economical internal planning, which will be the subject of the next article. Indeed, it can be said that in most cases the adoption of a rectangular plan, in preference to one of equal area but with eight corners, will result in a saving of approximately 5 per cent of the total cost of the house. Thus, on a house costing £2500, approximately £125 would be saved.

Mention will now be made of several minor though important ways in which planning can assist in cost reduction. It may not be possible to incorporate all these savings in any one plan, as there are often conflicting circumstances.

As is reasonably well known, the bathroom, w.c., kitchen, laundry and cylinder cupboard should, if possible, be kept fairly close together so as to reduce



plumbing costs, and incidentally, to obtain a more efficient hot water service. This grouping also results in a cheaper drainage layout, particularly if the bath, wash-basin, and kitchen sink can be arranged to discharge over the same gully trap. If possible, the front and back entrances should not be on opposite sides of the house, as this requires additional path length.

When dealing with sloping sections, the implications of the ground fall should be fully considered, as otherwise an expensive and inconvenient house will result. If, however, planning is imaginatively and carefully done, an interesting, inexpensive and often original solution is possible. Before proceeding to plan the house, particularly on really steep slopes, it is necessary to have an accurate knowledge of levels at various points on the site.

In general, the aim should be to obtain a solution in which the foundation height is as low as possible, as each additional foot of height costs anything between £25 and £50, depending upon the type of construction adopted. Obviously, except in exceptional circumstances, the house should be sited on the flattest portion of the section. It should be remembered that base height is affected, not only by the angle of slope, but also by the distance over which this slope occurs. For the latter reason, the house should have its longer dimension across the direction of the slope, and the dimension running parallel with the slope should be kept to the minimum.

The entrances to the house should be on, or towards, the higher side of the slope, as this avoids lengthy flights of steps, which are costly to build and inconvenient to use.

On slopes steeper than about one in six, consideration should be given to the possibility of using the basement space for some purpose such as a garage,

laundry, storage, or even living accommodation. For habitable rooms, most by-laws require a minimum floor to ceiling height of eight feet. In some cases it may be found that it is more economical to increase the base height slightly so as to obtain sufficient headroom for, say, a garage. This, of course, depends on the relative costs of the various alternatives.

Another possibility which saves base height, and often produces an interesting elevational effect, is the use of a two-level plan. With this arrangement, the house is "stepped" down the slope and steps are provided at the change of level. This type of house should not be confused with a two-storey house, as the two floors are merely at different levels, not over one another. The most convenient arrangement is to keep the kitchen and living room at one level, and the bedrooms at the other.

To conclude this article, an example of economical and simple planning is given. This plan, designed by the author, was awarded fourth prize in the Government Housing Competition, and was described by the judges in their report as the most economical design submitted. The house is 30 feet square, giving a floor area of 900 square feet, which is about 100 square feet less than the vast majority of three-bedroom houses erected today. But, as will be observed, this reduced area has not resulted in any reduction in accommodation standards; indeed, the living room, for example, is considerably larger than usual. The accommodation includes a space in the kitchen for normal and casual meals, and also a dining space in the living room for use on more formal occasions. This appears to be the most popular arrangement in this country, but could be varied to suit individual preference.

Consideration of this plan leads us to the subject of economical planning, which will be discussed in the next article.