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SOME HOUSING EXPERIMENTS ON RADBURN PRINCIPLES

by J. LEWIS WOMERSLEY

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A . EASTFIELD , NORTHAMPTON

AT the time the Eastfield development was under consideration¹ early in 1952, the author had already been attracted by the 'Radburn Idea' but had lacked either the time or the courage to make a serious attempt to design a layout based on its principles.

The decision to apply it in a limited form at Eastfield followed a discussion in Northampton with Gordon Stephenson during which comparisons with a conventional cul-de-sac scheme at Dallington Fields (part of Kings Heath) Northampton, were made. In reply to one of the author's criticisms of the rear service road—that visitors by car would have to enter the houses by the back door—Professor Stephenson gave the very effective answer that he had, only an hour previously, been introduced in a precisely similar manner to the house of his host! This house was one of a late Victorian terrace having a traffic road separating it from a park in front and a service road leading to the garage behind.

It was this fact (emphasized by Stephenson in the January, 1954, issue of the *Review*² that the idea of the house with a front and back access was by no means new and that in a large number of cases it had evolved both naturally and extremely satisfactorily, which finally convinced the author that any risks attached to a carefully designed Radburn layout were almost negligible whilst the advantages to be attained appeared to be considerable.

Just as the shape of the land for Dallington Fields—a long and somewhat narrow strip—had led to the development of a scheme based on a spine road with culs-de-sac of the Green type branching therefrom (Fig. 1), so the shape of the land available at Eastfield, though much larger, combined with the need to link up with existing roads, pointed also to a long spine road. In addition the

¹ The Eastfield project was designed by J. Lewis Womersley, until January, 1953, Borough Architect and Town Planning Officer of Northampton. Before site work started Mr. Womersley became City Architect of Sheffield and the detailed drawings of both layout and dwelling types and the whole of the supervision were undertaken by Mr. Brian Bunch who succeeded him at Northampton as Borough Architect and Town Planning Officer.

Mr. Jesse Dean, Dip. Arch. (Leeds), A.R.I.B.A., A.M.T.P.I., Principal Assistant Architect (Housing and Planning), Northampton has given valuable assistance at all stages of the work, and Mr. P. C. R. Bryan has been the Assistant Architect on the contract.

Responsibility for the constructional design of roads and sewers has been that of Mr. F. J. Cave, B.Sc., A.M.I.C.E., A.R.I.C.S., M.I.Mun.E., A.M.T.P.I., Borough Engineer of Northampton.

² Gordon Stephenson, "The Wrexham Experiment," *Town Planning Review*, Vol. xxiv, No. 4. See p. 281.

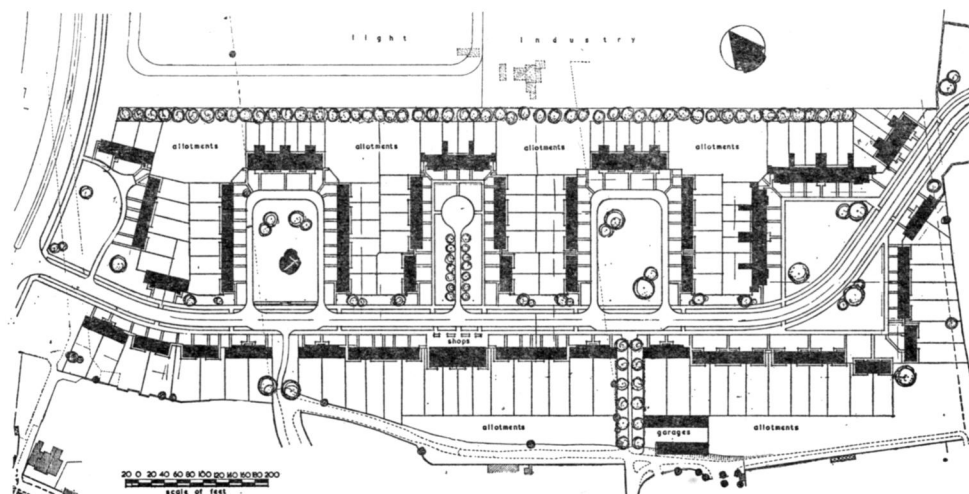


Fig. 1—Dallington Fields, Northampton. Layout plan showing a conventional *cul-de-sac* treatment, discussions on which gave rise to the Radburn experiment at Eastfield

proposal to preserve the parkland around a lake on the North appeared to offer opportunities for planning *culs-de-sac* of the open variety in such a way as to provide most of the houses with a view of the park (Fig. 4).

It was in this area between the spine road and the park that the Radburn system appeared to offer amenities that could not be achieved to the same degree by any form of the more conventional type of layout. It was, in fact, precisely the inverse of Dallington Fields. Whereas, at Dallington, house blocks enclosed the Greens and stopped the view (which in that case would have been of light industrial development), in the case of Eastfield the house blocks enclose the rear garden courts, whilst on the Greens side open views of the Park are preserved, the Greens themselves being extending fingers of the Park running into the heart of the layout. On the opposite side of the spine road complementary Greens are planned on a conventional basis, thus providing many more houses with an open view.

Parallel with the desire to make a Radburn experiment went the desire to achieve a combination of better and more intimate architectural and social grouping of dwellings together with a greater saving of land. The chief valid criticism of Dallington Fields was felt to be that it could have been designed to a higher density without any sacrifice of architectural grouping and with a probable gain in sociability. From both the social and architectural point of view the middle of the three Greens appeared to be the most successful. The middle Green was also by far the least open.

Kings Heath, adjacent to and following on from Dallington, also included Greens and *culs-de-sac* of varying shapes and sizes and before deciding on the dimensions for the Eastfield Greens a careful analysis was made of all the Dallington and Kings Heath groupings. This study was made chiefly from two

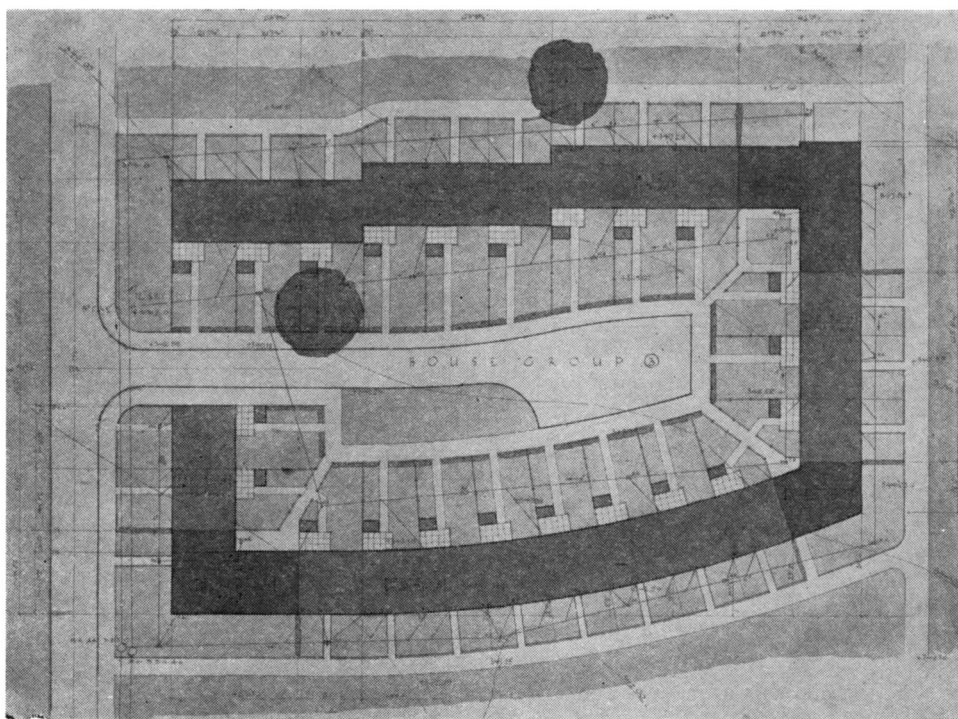


Fig. 2—Eastfield, Northampton. Plan of house group 3

points of view—architectural scale (the heights and distance apart of the dwellings) and the need for privacy and natural light within the dwellings. Both social and architectural needs were more adequately met by incorporating two storey corner flats connecting the terraces of houses. Apart from the architectural and economic advantages of introducing corner flats, their most important value is perhaps the provision made thereby for housing all sizes and compositions of families in each house group.

Whilst the Eastfield experiment cannot claim to be a complete Radburn interpretation of super-block complete with a footpath system independent of all roadways, nevertheless it has been possible to form a footpath system of sorts related to a main footpath bordering the Park near the housing area. Footpaths branching off the public pavement of the spine road give pedestrian access to the front entrances of the houses along each Green and connect at the other end with the footpath system of the Park. In order to encourage the small children to play on this, the pedestrian side of the dwellings, small paved areas, equivalent to the Radburn 'tot-lots' have been incorporated adjacent to the branch footpaths, frequently at the junction of these paths with the main path in the Park. Being as remote as possible from both service roads and main spine road, these form really safe play areas. As will be seen later in the house type

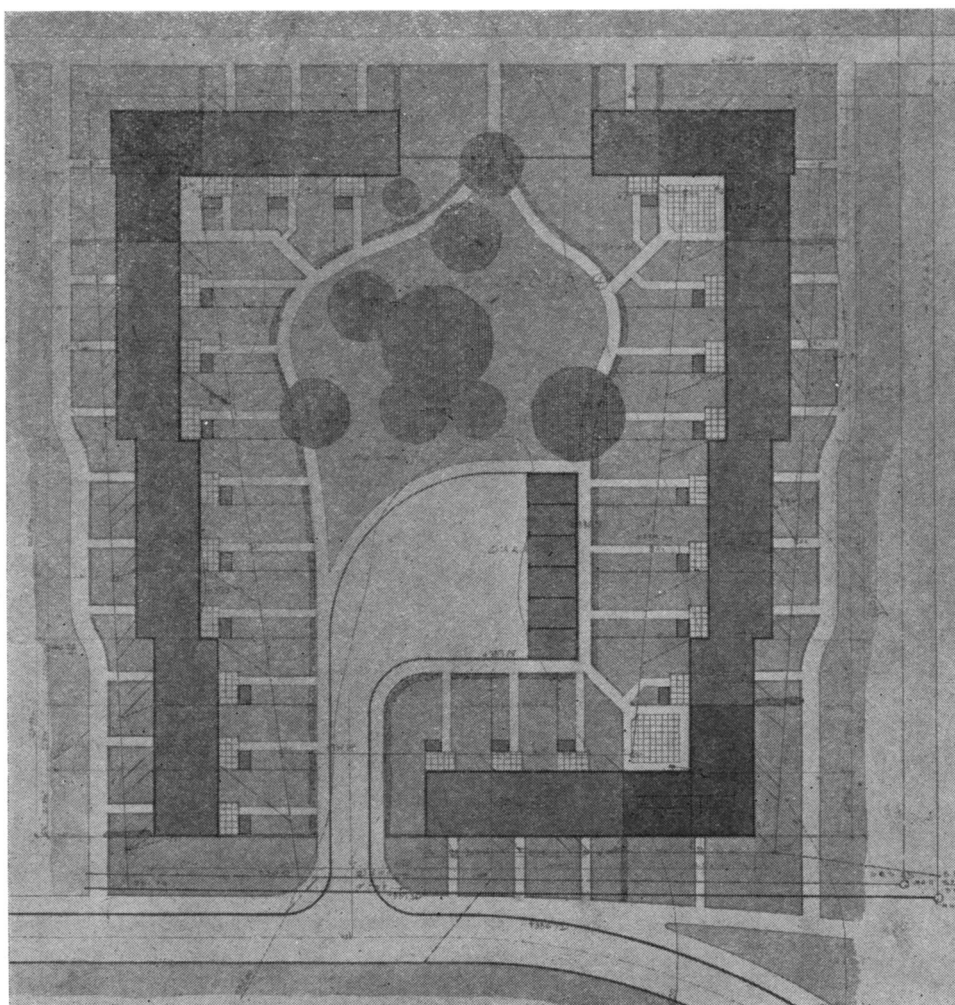


Fig. 3—Eastfield. Plan of house group 4

plans the Radburn theory has been followed through to the end by designing house plans in which the kitchens overlook the pedestrian ways so that mothers can keep their children in view. A common criticism of the 'Radburn Idea' is that children may well play in the service roads at the rear instead of the pedestrian ways at the front. It is felt that this temptation is much lessened if kitchens are planned on the pedestrian side. As yet it is too early to judge whether Eastfield is successful in this respect (the first house group was completed only in August, 1954), but it can at least be claimed that all the recommendations of Clarence Stein³—the width of the footpaths to allow children to play on

³ Clarence Stein, *Toward New Towns for America*. University Press of Liverpool. Public Administration Service, Chicago, 1951.

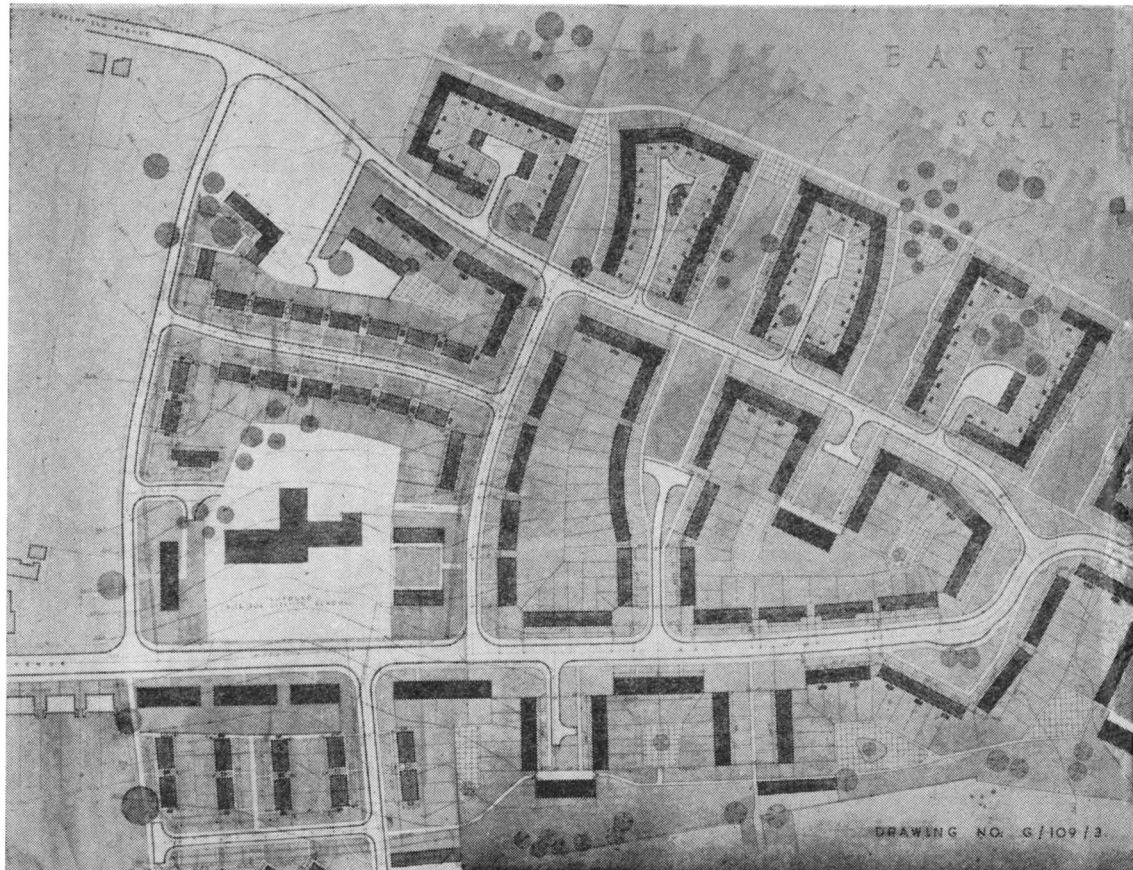


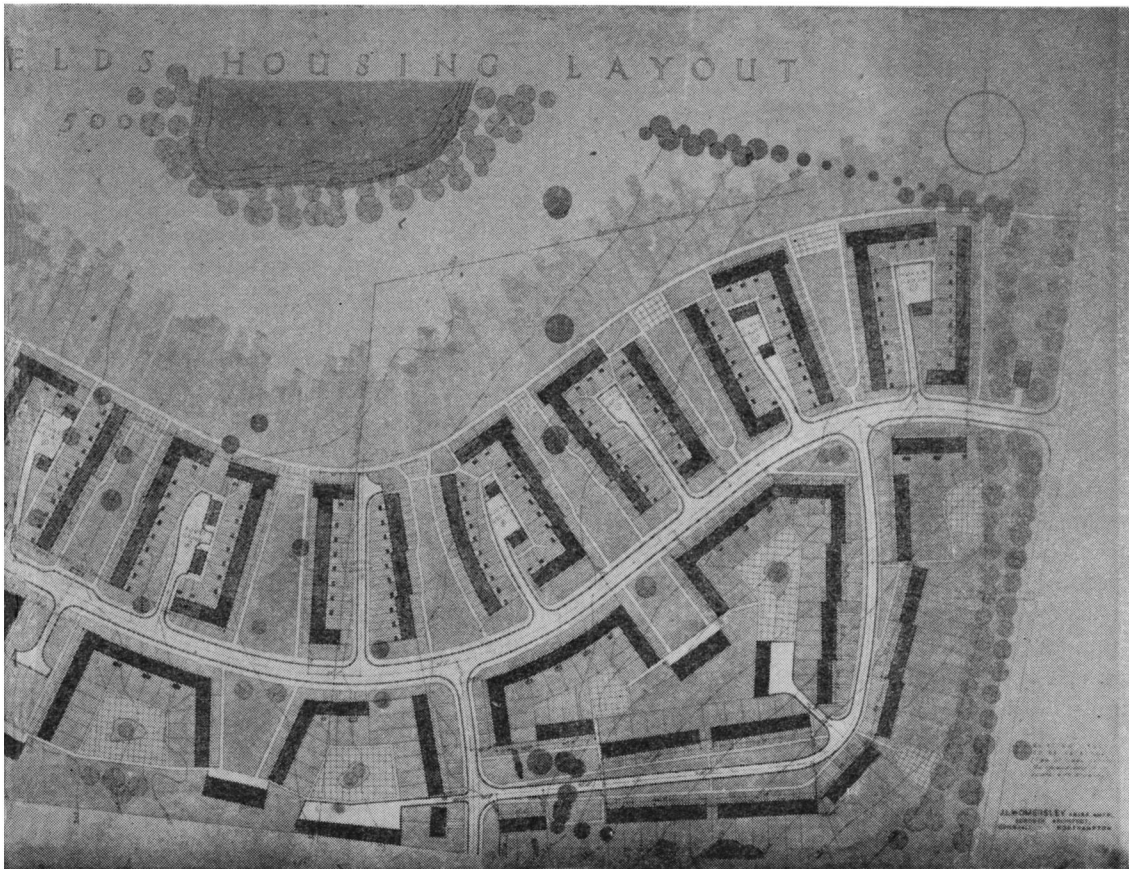
Fig. 4—Eastfield, Northampton. This layout shows Radburn-type *culs-de-sac*

their tricycles, the incorporation of paved play areas adjacent thereto and the kitchen window overlooking them—have been faithfully followed. It is felt, therefore, that the experiment has been given a fair chance of success.

A feature likely to give a special character to this development is the existence of fine individual and groups of trees in the parkland which formed the backcloth for the scheme. These trees vary from the mature to the young and all the sound ones have been carefully preserved. So far as possible these groups have been incorporated in the front open Greens but in certain cases proximity caused some of them to figure in the rear courts. In planning the house groups to suit the trees a distinctive character has been given to each house group, thus achieving variety where, due to the number of *culs-de-sac* of similar length, monotony might otherwise have occurred.

One of the differences between Wrexham⁴ and Eastfield lies in the detailed treatment of the pedestrian side of the houses. Whereas at Wrexham, generally

⁴ The Queen's Park South Estate. See Gordon Stephenson, *op. cit.*



with open views of the Park, the Greens being restricted to pedestrian use

speaking, the common ground is limited to the 8' 0" footpath, the liberal front gardens on either side being privately maintained, at Eastfield the individual front gardens have been kept quite short (15' 0" to 20' 0") and between them a common park strip has been incorporated with 6' 0" footpaths on either side. The duplication of the footpaths is, of course, an additional expense but in view of the general economy of the Radburn layout in terms of roads, paths and services per house and the desirability of keeping the park strips, with their trees, open and under the control of the Council, this arrangement was felt to be justified. The park strips will be maintained in every respect as parts of the park itself.

The following dimensions may be of interest so far as the scale of the scheme is concerned. Widths between fronts of houses on either side of the Greens vary from 55' 0" to 125' 0", the average width being about 80' 0". At the rear, private gardens were fixed at a mean dimension of 30' 0" being perhaps

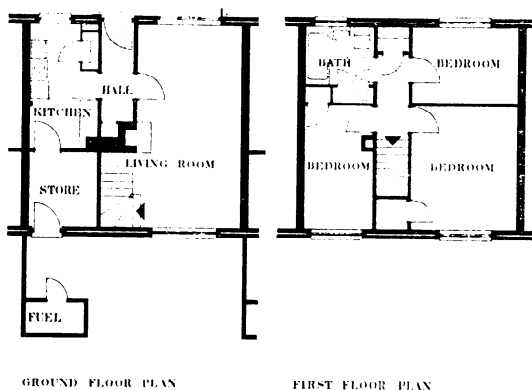


Fig. 5—Eastfield.
Plan of typical 3-bedroom 4-person house

a minimum to allow for any reasonable cultivation and yet quite enough for carrying of fuel and dustbins. Nearby allotment areas provide for tenants requiring further ground.

Rear service roads are 13' 0" wide with footpaths of 4' 6" on either side. In the majority of cases the rear service spaces include sites for garages which will be built as demand arises.

Dwelling Types

The existing development surrounding Eastfield consists largely of 3-bedroom houses for 5 persons. Thus in order to provide a more balanced pattern of accommodation in keeping with the needs of the town it was decided to build a preponderance of 4-person houses, with smaller proportions of dwellings for 1, 2 and 5 persons. In addition, as the drawback of the 2-bedroom 4-person house lies in the difficulty of segregating children of different sexes it was decided to provide these 4-person houses by means of 3-bedroom types—1 double and 2 single rooms.

So far as the Radburn portion of the development was concerned it was clear that if the principle of having the kitchen overlooking the pedestrian side of the layout (in order to encourage small children to play on this side in preference to the service court) was to be followed in a house of reasonably economic frontage, the all-aspect through-room type, which would also ensure that one window of the living room would overlook the Greens, was the obvious answer. This plan arrangement also allowed, by placing the store behind the kitchen, for easy delivery of fuel and other goods, and for collection of refuse on the service road side.

To pursue the need for economy whilst at the same time providing for more adequate heating of the house it was decided to provide an 'open' plan with the staircase leading out of the living room, which room would incorporate a back-boiler type of fire capable of heating 3 radiators in other parts of the house. Ultimately the radiators were placed in the kitchen, on the landing (to avoid losing the heat of the fire up the staircase) and in one single bedroom. The decision to place a radiator in the bedroom arose from the desire to provide an alternative room to the common living room for homework or other similar activity. The working-kitchen in the 4-person house is rarely adequate for this type of work and, unless some permanent heat is provided, it is felt unlikely

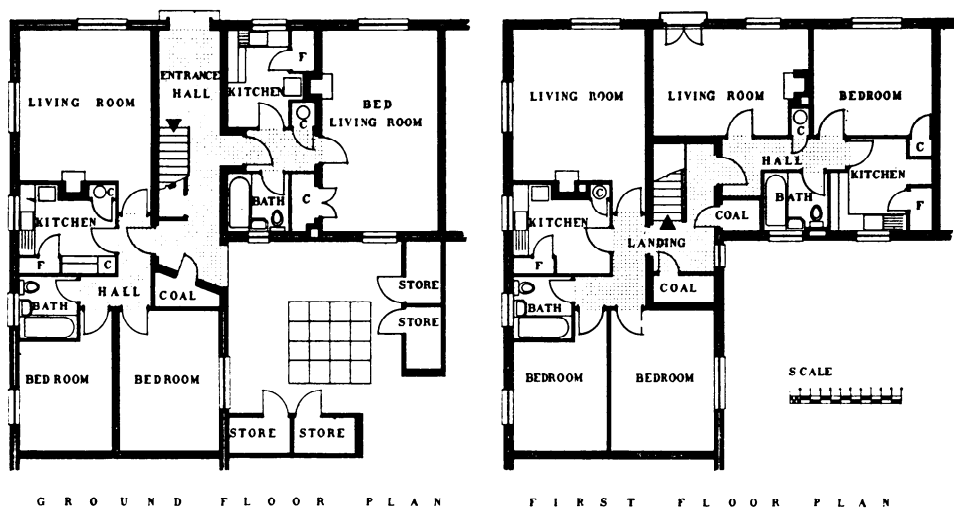


Fig. 6—Eastfield. Plan of typical corner flats

that a bedroom, despite the existence of either a fixed electric fire or a plug point for a portable one will prove sufficiently attractive to lure the would-be worker from the warm living room with its wireless, television or other distractions. It will be seen that the plumbing, heating and drainage system of this house are compact and that the maximum of warmth is obtained from the central chimney (Fig. 5).

The type of house with the through living room on one side and the kitchen and store on the other has one great advantage when used in terrace form and that is in respect of its sound insulation, provided it is planned 'in series' and not 'paired' in the terrace. Planned in this way no two living rooms are adjacent, so that fears of disturbance by a neighbour's wireless set—the worst and most general of all estate nuisances—are rendered non-existent. No amount of insulation in a single party wall will ever be as effective as the sound barrier created by the kitchen, store, hall and passage in a plan of this type. From the tenant's point of view this question of security from noise-intrusion figures undoubtedly as one of the most important attributes of his dwelling.

Corner Flats

The corner flats provide on the ground floor a 2-bedroom flat and a bed-sitting room flat on either side of the 'through' entrance hall and on the first floor, whilst the 2-bedroom flat is repeated, part of the entrance hall is built over to enable a 1-bedroom flat to replace the bed-sitting room flat below (Fig. 6).

The flats are planned to allow all the living rooms to overlook the pedestrian or park side of the development, whilst easy access to fuel and other stores is obtained from the service road side. Back-boiler fires in the living rooms

supply both hot water for kitchen and bathroom and radiators in the bedrooms. In the bed-sitting room flat the fire heats a radiator at the remote sleeping end of the long ' through ' room.

Accommodation and Density

The area of the portion of the site devoted to ' Radburn ' development is 18.1 acres and contains 328 dwellings, 1,160 habitable rooms and will house 1,172 persons. This gives a density of 18.1 dwellings, 64.0 habitable rooms, or 64.7 persons per acre.

The composition of this portion of the Estate is as follows:—

House Type	Bedrooms	Persons	Number
Houses	3	4	232
Corner Flats	2	4	40
Corner Flats	1	2	28
Corner Flats	1	1	28

Roadworks

The following table gives comparisons of density, roadworks and open Greens for various pre-war and post-war estates in Northampton. To make comparison easier, the lengths of road per house have been reduced to a common width of 16' 0".

Site	Density Dwellings per Acre	Area of Rd. per house (Sq. yds.)	Yard run per house 16' 0" wide	Area of open Green per House Yd. Sup.*
<i>Pre-War</i>				
St. David's	15.2	47.3	8.8	Negligible
Headlands (Private developers)	11.1	44.4	8.46	Nil
<i>Post-War</i>				
Dallington Fields	9.0	33.8	6.4	78.0
Kings Heath	10.0	42.7	8.3	67.0
Sunnyside	13.5	42.5	8.4	61.2
Eastfield (whole estate)	15.0	25.3	4.8	52.6

* excluding house forecourts.

The maintenance of Greens is an expensive item, and although a return to the form of development without open Greens at all would be undesirable, it is essential to make sure that the maintenance cost per dwelling is reasonable.

The following comparison, based on a recent estimate of £40 os. od. per acre per annum for low standard maintenance⁵ and £80 os. od. per acre per annum for high standard maintenance,⁶ indicates how these costs can be kept down and amenity still preserved.

GREENS TO BE MAINTAINED BY HOUSING COMMITTEE
(IN NETT RESIDENTIAL AREA)

Site	Area of Greens (acres)	Cost per annum		Area per Dwelling Yds. sup.	Cost per Dwelling per annum		Cost per Dwelling per week	
		@ £40	@ £80		@ £40	@ £80	@ £40	@ £80
¹⁹⁴⁶ Kings Heath	27.1	£1084	£2168	131.2*	21/8	43/4	5d.	10d.
¹⁹⁴⁹ Sunnyside	6.11	£244.4	£488.8	61.2	10/1½	20/3	2½d.	4½d.
¹⁹⁵² Eastfield	8.66	£346.4	£692.8	52.7	8/8½	17/5	2d.	4d.

* includes house forecourts, which in this estate are maintained by the Housing Committee.

B. GREENHILL, SHEFFIELD

At about the time the roadworks at Eastfield were due to start (February, 1953), the author moved to Sheffield where the City Architect's Department was in course of designing the Greenhill neighbourhood, accommodating some 10,000 persons, for the 1953-4 housing programme.

The time available for introducing any amendments was extremely limited and the relationship of manpower to programme (2,000 dwellings per year) inadequate, but nevertheless it was found possible to take the Eastfield experiment a stage further and to plan Section 7 of the large neighbourhood as a complete Radburn superblock of some 280 dwellings having a completely independent footpath system and incorporating a children's playground and a nursery school.⁷

Apart from the introduction of some 4-storey maisonettes, the time factor precluded any advance on the Eastfield house and corner flat types, which with only minor amendments were adopted at Greenhill, so that any additional

⁵ 3 or 4 annual cuts with agricultural reaper and periodic 'edging.'

⁶ Cuts at 10-day intervals with standard mower.

⁷ The persons responsible under the City Architect for the design of the Greenhill Estate, including Section 7, are Mr. Bernard Warren, A.R.I.B.A., A.M.T.P.I., Chief Assistant (Housing) and Mr. Andrew Adam, D.A. (Glas.) Dip. T.P. Dist. (Glas.) A.R.I.B.A., A.M.T.P.I.

interest lies chiefly in the nature of the layout. Here again, such quality as the scheme may have in its present form owes much to discussion with Gordon Stephenson following an examination of the Queen's Park South Estate, Wrexham.

The location selected in the neighbourhood for the Section 7 superblock has many advantages. Firstly, it contains more mature trees and hedges than in any other part of the estate, including a lane between hedgerows which becomes a major link in the footpath system. All these are carefully preserved in the layout (Fig. 11). Secondly, one of the two shopping centres, combined with the 'bus terminus, is sited within the superblock, thus providing a focal point of considerable interest.

Around the 'bus turning-space are grouped two blocks of shops and a public house, the larger central row of shops being only of single-storey height to avoid forming too great a physical barrier between the shopping 'square' and the inner pedestrian area. The other block has maisonettes over the shops and will balance the public house and tall trees on the other side of the single-storey block.

The main longitudinal and cross footpaths of the pedestrian-way system intersect near the shopping centre whilst the cross footpath will serve also as a walking route to the centre from other parts of the estate.

Apart from the differing heights of the shops there is diversity also in the heights of the dwellings. In addition to the two-storey corner flats for smaller families, four blocks of 4-storey maisonettes of the 2-bedroom type for 4-person households are incorporated. These blocks are strategically placed in relation to the Greens in the open space system. Garages and electricity sub-stations are grouped in the rear service roads.

The object of using super-imposed maisonettes is to double the accommodation that would be obtained by the use of two-storey blocks without incurring the increased expenditure of a framed building. The form of construction proposed is known as the 'cross-wall system,' the principle being that all floor loads are supported by the party walls leaving the front and rear walls as non-load bearing partitions. By this system bricks are reduced to the minimum, foundations are required under the cross walls only and use can, if necessary, be made of pre-fabrication for the non-load bearing walls to speed construction and reduce work on site (Fig. 12).

The lower dwellings are approached directly from the ground with individual entrances. The upper dwellings are approached by staircase and the access balcony on the 2nd floor, each dwelling having a lobby off the balcony. Off this lobby is the fuel store and front entrance door. Inside, the hall is large enough to accommodate a small pram as well as coats. The kitchen is intended for dining in addition to cooking and is well equipped with carefully disposed cupboards, leaving as much unobstructed floor space as possible. The living room has windows along one side with french casements to a small balcony. A built-in glazed crockery cabinet and cupboard is provided between

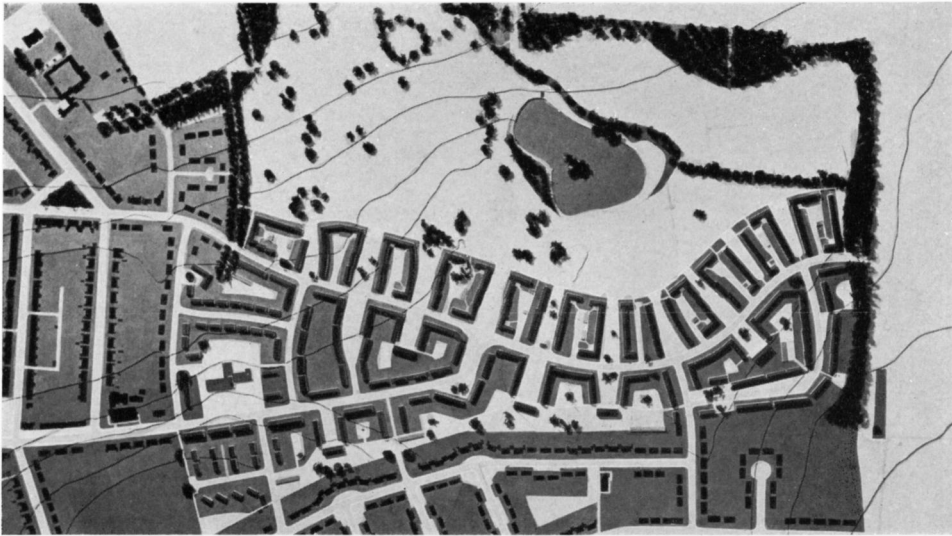


Fig. 7—Plan view of model showing the relationship of new and old developments at Eastfield. The large building towards the left is the new Primary School, sited near the existing church, shops and hotel which together provide a neighbourhood centre to both existing and new developments

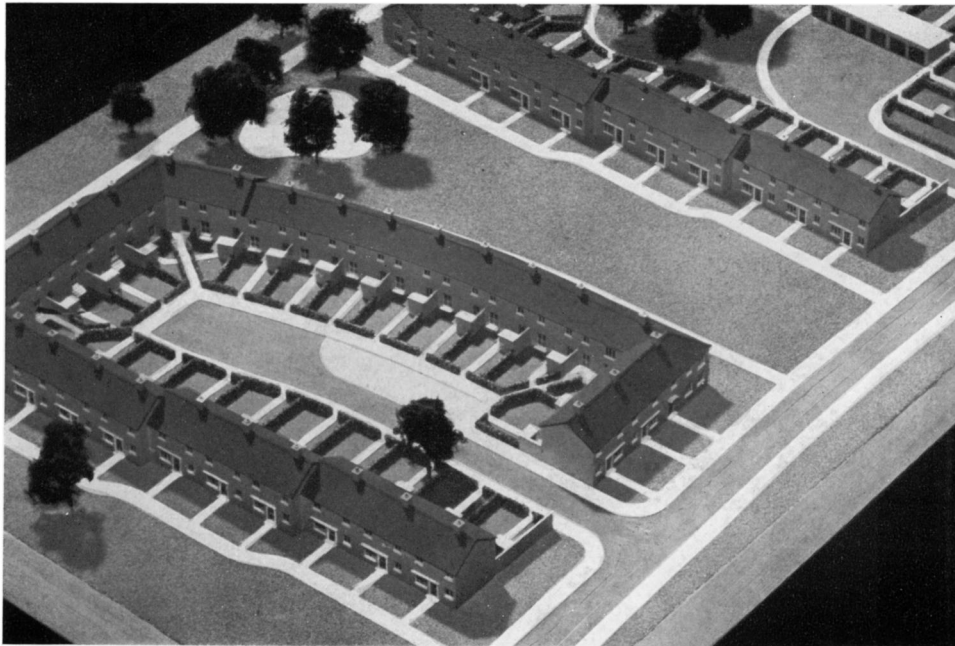


Fig. 8—Eastfield. Model of house groups 3 and 4

Plate 8



Figs. 9 and 10—Eastfield. Photographs of pedestrian (above) and service (below) sides of house group 3 nearing completion

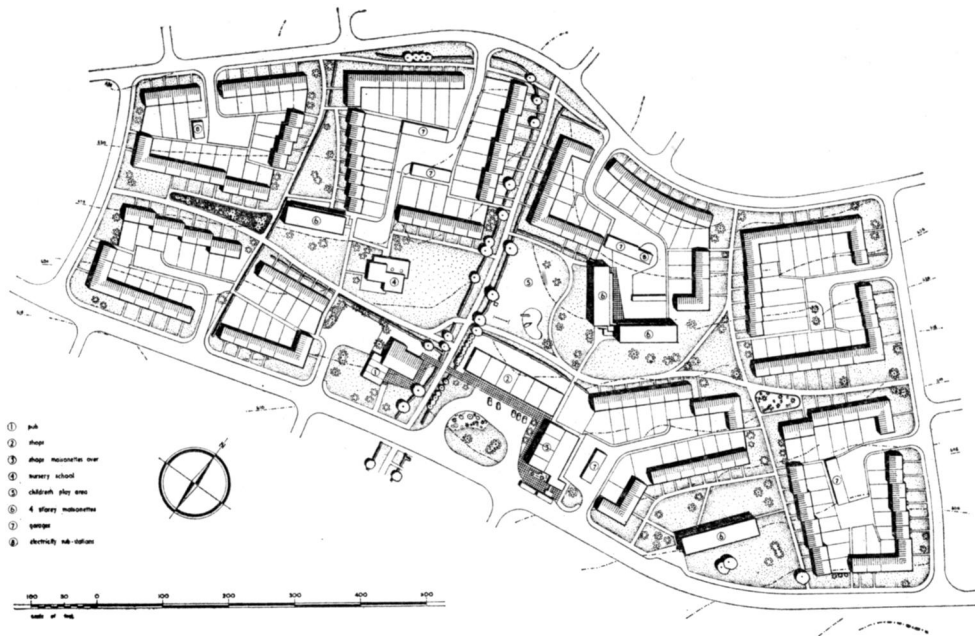


Fig. 11—Greenhill, Sheffield. Plan of Radburn type superblock

living room and kitchen, increasing the feeling of spaciousness and facilitating the serving of meals in either room.

Upstairs are two bedrooms and a combined bathroom and W.C. There is ample storage space. Each maisonette has a store on the ground floor attached to the block and there is a paved drying yard for clothes. The area around the

blocks will be planted with grass and trees, and play spaces for children and parking areas for private cars will also be provided. Private gardens can be provided for the ground floor maisonettes and, if necessary, for the upper ones.

The minimum distance between fronts of two-storey blocks is 60' 0" with occasional points as close as 55' 0". Generally speaking, rear gardens have a minimum length of 30' 0"; service roads are 13' 0" wide and have foot-

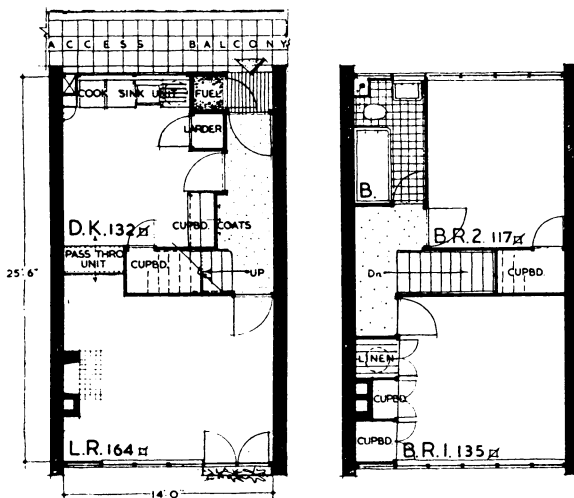


Fig. 12—Greenhill, Sheffield. Plan of 4-storey maisonettes. The 'living floor' is on the left and occurs at ground and second-storey level. The 'sleeping floor' is on the right

paths 3' 0" wide on either side. The main footpaths on the pedestrian side are 8' 0" wide, secondary branches being respectively 6' 0" and 4' 6".

The following table gives particulars of accommodation and density in respect of Section 7:—

3-bed 5-person houses	..	..	..	..	..	39
3-bed 4-person houses	..	..	..	..	..	104
2-bed 4-person maisonettes	..	..	..	..	..	52
2-bed corner flats..	28
1-bed „ „	28
Bed-sitting room corner flats	28
<hr/>						
Total Number of dwellings	279
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Net housing area	13.95	acres				
Net housing density	20	dwellings per acre.				
Net accommodation density	73.9	habitable rooms per acre.				

Conclusions

It is, of course, too early to judge whether these two experiments on the Radburn Idea have proved successful but, judging from the observations of Town Councillors and others in close touch with tenant requirements who have examined these developments in advanced stages of construction, there would appear to be little doubt that the schemes will be fully acceptable from a working point of view. Certainly the tenants of the Wrexham project of Gordon Stephenson and J. M. Davies appear to be well satisfied both with their houses and their environment. Taking all three schemes into account, therefore, it would appear that there is nothing to be lost and that there may be a good deal to be gained by pursuing the Radburn Idea further, provided always that those who do so take the trouble to familiarise themselves thoroughly with the principles which underlie it.

That the Ministry should have accepted the Radburn basis of housing layout in their publication 'Houses 1953' is, in itself, an indication that layouts of this nature are considered to be generally suitable for the British way of life. It was unfortunate, however, that the site selected to shew the four alternative types of layout in this booklet was inadequate for the development of a fully fledged Radburn scheme. The Radburn Idea is much more than 'A Service Cul-de-Sac Layout' as this article has endeavoured to explain. Its basic aim is to segregate pedestrian and vehicular traffic and, in thus providing a safe footpath system, to exploit to the full the natural amenities of the site and the possibilities of an architectural grouping of dwellings, independent of the traffic roads.

The Radburn Idea need not be confined to residential areas. In our increasingly mechanical age its fundamental gospel—the reconciliation of wheeled and foot traffic—strikes at the heart of all town planning problems. Further experiments and developments over a wider field, therefore, should materially help towards the creation of neighbourhoods, towns and cities which are more beautiful, more convenient and more safe.