THE ARCHITECTURAL REVIEW

A Magazine of Architecture & Decoration

Gruppo di Scale ornato di magnifica Architettura, le quali stanno disposte in modo che conducano a vary piani, e specialmente ad una Rotonda che serve per rappresentarvi teatrali.

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The church of St. George's-in-the-East by Nicholas Hawksmore, situated north of the London Docks, was gutted by incendiary bombs early this year. An obituary notice on its style and significance appears on pages 135-140 of this issue. The bombs set the tower alight. Then the roof caught fire, came down, burnt all the woodwork and calcined the columns. The loss is grave; for St. George's was one of the most inspired pieces of architecture of its date in England. Hawksmore, that great and not yet fully appreciated pupil, assistant and (though only in matters of style) antagonist of Wren, and sympathetic collaborator of Vanbrugh, designed the church in 1715, when he was fifty-four years old. It was consecrated in 1729, as one of the three churches built under Queen Anne and George I. to satisfy the needs of the rapidly growing population of the old parish of Stepney. The others, also by Hawksmore, are St. Anne's, Limehouse, and Christ Church, Spitalfields. These three, together with St. Mary Woolnoth, St. George's, Bloomsbury, St. Alphege's, Greenwich, the towers of Westminster Abbey and the Gothic Revival (or should one say Survival?) work at All Souls, Oxford, form Hawksmore's principal contribution to the corpus of English architecture. This photograph, which is reproduced by courtesy of the National Buildings Record, shows the gutted interior and the two turrets without their domes.

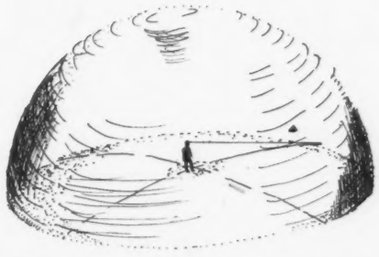
Architecture is the art of enclosing space. So elementary a definition would hardly seem to merit discussion at length, if it were not for the fact that it provides a foundation for discussing architectural aesthetics from a scientific view-point. It is such a discussion that this article is intended to initiate and others which follow it to develop. There has always been a tendency to treat the aesthetic aspect of art as a mystery of "intuition" that can only be approached on its own terms, but it is also, like everything else, a natural phenomenon, and it may serve some purpose to recapitulate its characteristics in the simple factual way that the recognition of this fact suggests.

The Sensation of Space

By Ernö Goldfinger

A PERSON within a defined space is subject to psychological effect; *the sensation of space.* It is a subconscious phenomenon, and the impression on the person subjected to it (apart from individual differences) varies with the degree of enclosure, the size of the enclosed space and the shape of the enclosed space.

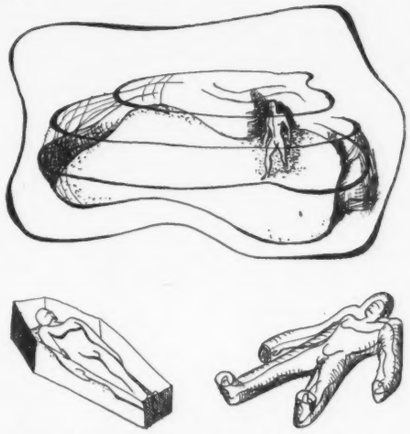
The pathological manifestations of the phenomenon are well known and manifest in mental disorders such as claustrophobia and agorophobia, but although we are always subjected to it under normal conditions, these normal conditions have hardly ever been investigated. Indeed, architects and architectural critics, the people who should be most concerned, seem to be not even slightly interested in this vital aspect of architecture. One of the reasons for this lack of interest in so fascinating a subject may be the difficulty of imagining the sensation of space created by a certain spatial order if one is not directly subjected to it at the time. Very little help is given by representation of spatial order in a different medium. The imagination of the critic, as well as that of the public, is taxed to too high a degree when scale drawings, plans, sections and elevations have to be transformed into space. It is possible to describe space with words, and illustrate it with drawings and photographs, but all this gives only a poor idea of space and does not give one the *experience* of spatial sensation. It cannot be compared, for instance, with the idea given of a painting by a reproduction (however imperfect a reproduction may be, even at its best). This may be attributed to the fact that while a painting, which is a two-dimensional creation, is reproduced in a two-dimensional reproduction, and thus produces a sensation of the same order as the original painting, architecture, a three-dimensional spatial creation, can only be hinted at by a two-dimensional representation such as a photograph, a perspective, etc., and while looking at these no spatial sensation can possibly be experienced, but only imagined. A scale model only adds confusion to the other difficulties by introducing a three-dimensional element of an utterly different order and scale which then gets confused with spatial order. This difficulty in illustrating the spatial sensation, the *being within,* is a great handicap for criticism and comprehension.* Therefore, the point is generally eluded and the whole arsenal of the supernatural, the " je ne sais quois," the things which can be felt but not explained, are brought out of their age-old dusty cupboard. Facts must be faced more simply. It is not necessary to elevate æsthetic emotion on to a special pedestal of its own, to make it the sublime phenomenon it is. It is part of other natural phenomena, and as such can and must be scientifically analysed.



A person enclosed by the celestial sphere and the imaginary line of the horizon experiences the least enclosure imaginable within the limitation of our planet.

We are always subjected to a spatial sensation as we are always in an enclosed space. It is, before going any further, necessary to define the elements which contribute to " enclosure," with special reference to the sensation of space. The behaviour of two elements determine the spatial sensation. These are: (1) The enclosing agent (wall, fence, etc. . . . imaginary or real); (2) the enclosed space (room, square, field, clearing, etc. . . .). The quality and quantity of both play an important and inter-related rôle, and a table could be devised setting out a scale of quality, where 0 per cent. would represent absence of any enclosure and 100 per cent. represent total enclosure. The scale of size is that of the width, length and height of the enclosed space.

Some examples will best illustrate this argument. 0 per cent. is experienced by a person in space without any spatial relationships. This ideal case can hardly exist in our universe, even less on our planet, subjected as we are to gravitation, air pressure, etc. For this reason we shall find that there is always an enclosing agent. But let us say, for argument's sake, that minimum enclosure, in the practical sense, occurs to a person on a perfectly flat expanse, reaching to the horizon and covered by the apparent celestial sphere. The quality of this enclosure is determined by the (apparently) flat barrier of the horizontal plane limited by the circle of the apparent horizon and the imaginary globe of the celestial sphere. Nevertheless, even in this condition, there are quantitative differences. The relation of the enclosed person to the enclosure and consequently to the enclosed space would alter if, for instance, instead of standing on the ground on his perfectly flat desert he were standing on top of a column in the same spot. Not only would the horizon have receded, but the relation of the person to the horizontal plane would have altered.

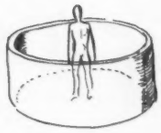


Completely enclosed, but the size of the enclosed space becomes an important factor. A quantitative increase causes a qualitative change.

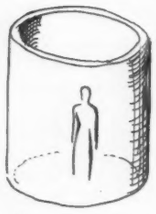
On the other end of the scale is the person 100 per cent. enclosed. This person should be imagined either completely cast in plaster-of-Paris or enclosed in a coffin or inside a cavern with no opening. In this case size again plays an essential rôle. The space around the person concerned in all three cases is completely closed, but the size of the enclosure varies, and this makes all the difference, not only by way of physical hindrance of movement (as in the first two assumed examples), but in the sensation of enclosure.

It is essential to realize the importance of size or " scale " in order to comprehend the

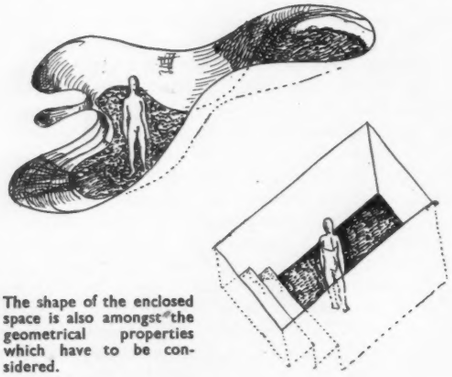
* The sketches accompanying this article do not intend to evoke any sensation of space but only to depict situations in which certain sensations would be experienced.



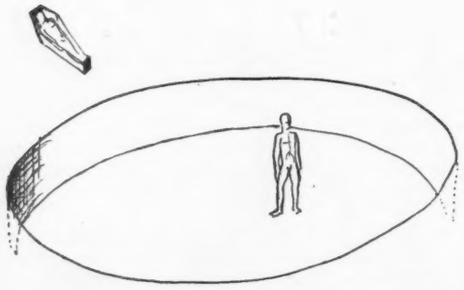
The qualitative change in the enclosing agent: **1**, a person standing free in a limitless desert. **2**, surrounded by the imaginary barriers of a pattern. **3**, the barrier has become more tangible, but the sensation is still mainly suggested. **4**, the barrier is real.



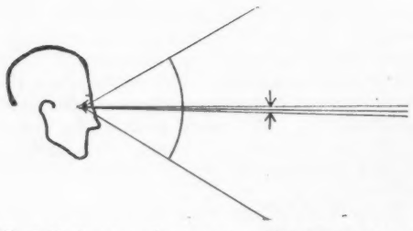
5 and **6**, the size of the barrier is another of the components which influence the intensity of the spatial sensation.



The shape of the enclosed space is also amongst the geometrical properties which have to be considered.



The scale of the enclosure influences the comfort and æsthetic appreciation of the enclosed person.



The field of vision embraces a cone of 60°, but the field of " perception " only embraces 1°.

absurdity of the venerable classical assumption of self-contained ideal spatial proportions without relation to human size, and to reflect on the complete absence of scale articulation in classical architecture (that is, in renaissance and baroque architecture and their academic bastards). Such architecture, although it has always relied for effect on spatial sensation, seems to have done everything to destroy scale by fixed modulation.

We have seen that two elements are involved in the creation of the sensation of space: (1) the enclosing agent; (2) the enclosed space. The qualitative as well as the quantitative variations of both these agents are the essence of spatial sensation. To these primary considerations the following secondary points of view must be added: (1) the relation of enclosed spaces to one another; (2) the relation of the enclosed person to the enclosed space or succession of enclosed spaces.

The changes in quality and quantity are intimately related and, at certain definite nodal points, the purely quantitative increase or decrease gives rise to a qualitative leap, . . . " quantity is transformed into quality " (Engels: *Anti-Dühring*, p. 54). If we follow, for instance, the quantitative change on the size of the enclosed space, from the state of the person completely cast in plaster, to the state when the enclosed space has grown to such an extent that it no longer conveys the sense of enclosure, we shall see that, from complete imprisonment, the enclosed person has passed to complete freedom of movement. Several nodal points have been passed: first, when the casting (where all movement was prohibited) gives place to a space where movement is possible, up to the completion of expansion when the enclosed space has grown to such an extent that it can no longer be experienced. The same characteristics apply to the quantitative change in the enclosing agent.

Whatever the utilitarian, æsthetic and other aims of an architect may be, architecture becomes manifest by the barriers (imaginary or real) enclosing space. A person within this defined space is subject to the subconscious *spatial sensation*, although it is a remarkable fact that space is rarely enclosed for this purpose. A person subjected to a spatial sensation is usually (at the time of being affected by it) absorbed in other pursuits and is only subconsciously affected by it. But it is also a fact that whatever a person is doing and however much absorbed he may be in other pursuits he is always intensely affected by his spatial relationships and enclosure. It is in some way similar to being within range of audibility of music. It is not necessary to listen (consciously) to be affected by music, it is equally not necessary to be consciously scrutinizing spatial relationships to be affected by them. Looking at architecture may provide the spectator with æsthetic pleasure (or disgust), but while contemplating various pictorial or plastic effects of a building the spectator is within a spatial order which subjects him to a spatial emotion. The observation of architectural details in this case ranks with other occupations (physical or mental) and it is the mere fact of " being within " which makes a person subject to spatial sensation. A point that it is essential to make clear is that *the sensation of space cannot be experienced by simple visual contemplation*. It cannot be experienced by any one organ alone.

How can it be experienced ? What are the means of perception ? I hope to make my point clear by comparing the means of expression and perception of architectural (*i.e.*, spatial) order with those of pictorial and plastic order. Although sensation of space cannot be experienced by visual contemplation alone, one of the most important agents of its perception is nevertheless visual. So is the perception of pictorial and plastic phenomena, but while the essence of perception in these two is *conscious* that of spatial perception is *subconscious*.

If we examine the means of visual perception in greater detail we shall find that they also differ fundamentally. Plastic and pictorial visualisation is " static " while spatial visualisation is " kinetic." The difference of expression can be tabulated as follows:

PICTORIAL :	*Two-dimensional*	*Flat*	*Picture*
PLASTIC :	*Three-dimensional*	*Convex*	*Sculpture*
SPATIAL :	*Three-dimensional*	*Concave*	*Architecture*

If we consider first the pictorial phenomenon (a painting for instance), we find that it consists of the organization of a flat surface by means of an ordered juxtaposition of colour and shapes. If the picture is not purely decorative (and it will not help our argument to consider this aspect of painting), it is necessary for a person, in order to derive any sort of emotion from it, to contemplate it. It is not sufficient to hang it on the wall or to put it in a cupboard (though this may be all right for investment purposes); no sensation can be derived from it unless *consciously* contemplated. For this purpose the spectator must be at a certain distance from the picture. For the appreciation of the whole picture this distance must be such that the picture shall be in the spectator's field of vision, but at the same time such that the details will be within his field of perception. The field of vision (for the normal eye) is within a cone of 60° and the field of perception within a cone of 1°, although in order to scrutinize every detail the eye automatically sweeps the whole surface of it with a beam of 1°, the spectator becomes aware of it by simple visual contemplation. We can therefore consider pictorial perception as *static* visualization.

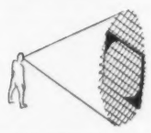
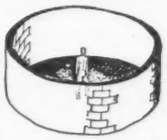
If we go on to consider the plastic phenomenon, we find that it is three-dimensional and

convex in essence. The means of visual perception which differentiate the perception of this phenomenon are *stereoscopic* (i.e., the two eyes register two distinct, slightly different, images which get confused into one stereoscopic picture and thus the sensation of plasticity is created). Here, again, the effect is created by conscious contemplation, and though it may be necessary for the spectator to move around the object to appreciate all its aspects, each image he gets is in itself a complete and self-contained sensation. An obvious but noteworthy characteristic of these first two examples is that perception takes place from *without the object.*

We next reach the means of perception of *a spatial order* (for example architecture). The process is somewhat different and more complicated, for we have no special organ for registering a spatial sensation; the awareness in this case is subconscious and takes place by the *automatic registration of successive images* and by the *effect of memorized analogies.* The spatial order is built up by an amalgamation of a multitude of phenomena, the perception of which, subconsciously integrated, helps in building up the sensation of space. Memories and experience, not only of visual sensation but also of sound and touch and smell, enter into it. The sound and vibration in a hall; the physical touch of the walls of a narrow passage; the atmosphere and temperature of a stuffy room; the smell of a damp cellar; all are, in various degrees, components of spatial sensation. Every element, plastic or pictorial, partially obstructing the view, and people in the crowd rubbing against you, are part of it.

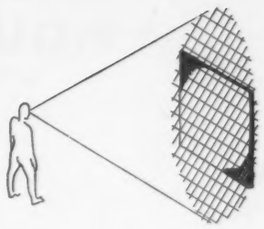
We can also consider a quite different order of spatial sensation: a vast expanse without any spatial meaning is capable of becoming a tightly knitted entity around the magnet of a central attraction—an orator, for instance. The shifting crowd forms ever-changing elements of enclosure. The sensation of space in architecture is created by physical barriers surrounding the subjected individual. The spatial effect on an individual in a crowd when this is intensely affected by a psychological event (i.e., listening to an orator. is a sort of spatial magnetism, exerted from a focal point but affecting the whole crowd) The individual is affected only as long as the crowd is held as a whole. The effect stops as soon as the source of attraction ceases. This is a case of spatial sensation created by a cause other than physical barriers. It seems, nevertheless, worth mentioning in view of its importance to architecture, although strictly speaking it comes under the heading of mass psychose and the subject heading of " spatial effect on the individual in a crowd."

The above difference between pictorial and plastic orders taking place from *without* the object by conscious visual contemplation, and the sensation of space arising from the fact of being *within* the object by subconscious integration of visual and other experiences, should be the basis of all æsthetic theory. Some of the characteristic similarities and dissimilarities are summed up in the table alongside.

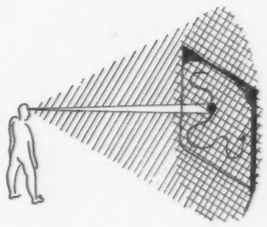
PICTORIAL	PLASTIC	SPATIAL
2-dimensional (flat)	3-dimensional (convex)	3-dimensional (concave)
Static	Stereoscopic	Kinetic
Apprehended consciously from without	Apprehended consciously from without	Apprehended sub-consciously from within
		

When space is enclosed with the skill of an artist, when the purpose is to move, then " spatial sensation " becomes spatial emotion and enclosed space becomes ARCHITECTURE.

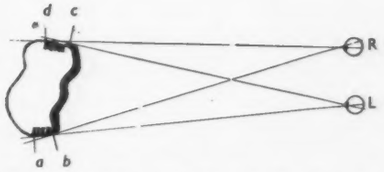
Gruppo di Scale ornato di magnifica Architettura, le quali stanno disposte in modo che conducano a vary piani, e specialmente ad una Rotonda che serve per rappresentarize teatrali.



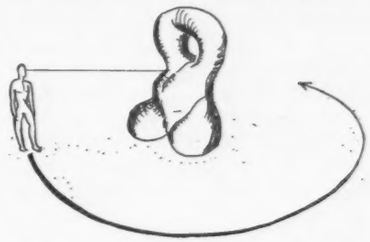
A spectator must place himself at such a distance as to embrace the picture he wishes to observe within the field of vision.



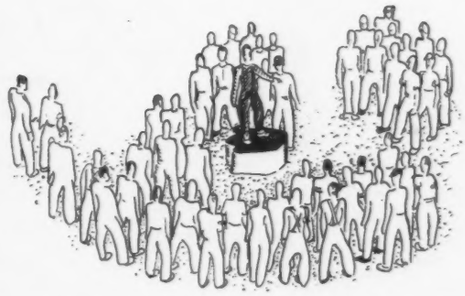
The spectator will discern such details of the picture as are within a cone of 1°. To become conscious of the picture the eye will automatically sweep it with a cone of the angle of perception.



The stereoscopic effect derives from the eyes perceiving a double picture which becomes combined in the brain. The dark line indicates the zone seen by both eyes, the left eye (L) sees from (*a*) to (*c*); the right eye (R) sees from (*b*) to (*d*).



A plastic object (a piece of sculpture) is observed from without.



The spell of an orator and the promiscuity of the crowd create a spatial sensation related to that caused by enclosed space, but somewhat different. The person in the crowd is drawn by a central magnet simultaneously with other members of the crowd; as soon as the attraction ceases the crowd falls into its components.

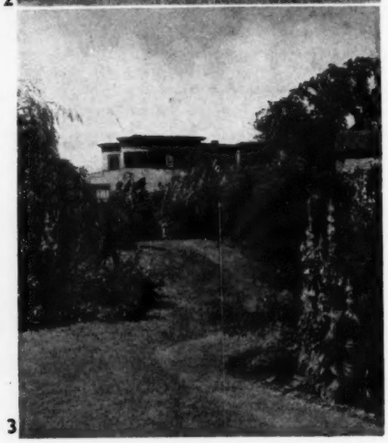
HOUSE AT GALBY, LEICESTERSHIRE

RAYMOND McGRATH, ARCHITECT

This house is situated ten or twelve miles north-east of Leicester, in quiet rural surroundings. From the living-room one looks across wide fields interspersed here and there with patches of wood towards the grey tower of King's Norton church and some houses of the village in the far distance (above is the view from the site of the house sketched by the architect). The building materials were chosen to fit in with this scenery: the ground floor is of old bricks from Beaudesert Manor in Yorkshire, acquired when the manor house was demolished, and the first floor is of timber, weatherboarded with English elm. The major portion of the garden, **1**, **2** and **3**, which was laid out by Christopher Tunnard, is also interpreted as a link between the house and the open landscape rather than a formal pattern. The north side of the house is composed on the first floor of a sequence of projecting and recessed planes, while the south side has no such features. The contrast between the two aspects is very marked and forms one of the most successful characteristics of the building. The west part is curved in harmony with the gentle undulations of the site. This curve not only creates a pleasant variety of atmosphere in the living-room (this will be realized in comparing **7** with **9** on page 134), but also leads to a very interesting vista from the top of the staircase towards the main stretch of the long first floor corridor with its Pullman or airship-like windows (compare **12** on page 134).


1


2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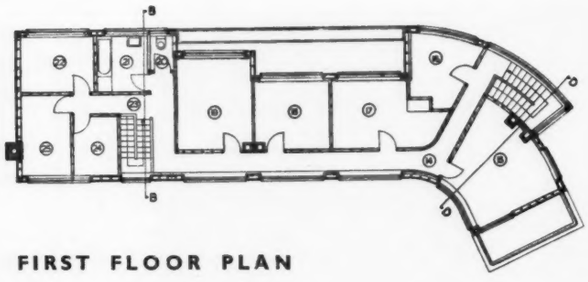
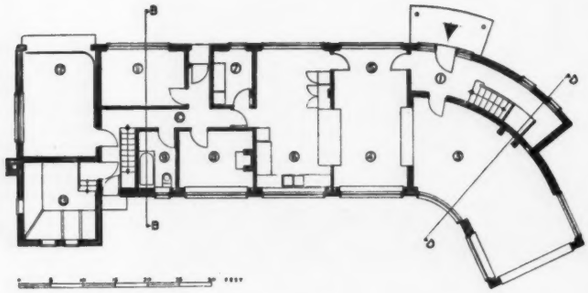

FIRST FLOOR PLAN


GROUND FLOOR PLAN

SECTIONS

KEY TO PLANS

1. Entrance hall
2. Cloak room
3. Living room
4. Dining room
5. Passage
6. Kitchen
7. Larder
8. Owner's wife's study
9. Maids' bathroom
10. Passage
11. Boys' room
12. Garage
13. Boiler room
14. Passage
15. Owner's study
16, 17, 18, 19. Bedrooms
20. W.C.
21. Bathroom
22, 25. Maids' bedrooms
23. Passage
24. Linen room

4

In spite of the subtle way in which the architect has endeavoured, by the use of old brick and weather-boarding, to blend the modern shape of the house into the surrounding countryside, there was at first one of the usual Rural Council campaigns against it. The original design was rejected because the amount of window space was supposed not to conform with the planning of the district. Modifications were agreed and the Council's approval secured. The roofs of the house incidentally are not flat. They are of the lean-to type, as seen in the sections on the preceding page, and covered with green patent roofing. The ceilings of the first floor rooms follow the slope of the roof. Painting is used on the outside only for the drain pipes. The windows are of Swiss pine and exceptionally carefully worked in their details. Cills and posts are of Canadian rock elm. For the external doors Burma teak was chosen. Other Empire timbers used are gaboon for the living-room furniture, Indian silver greywood for the dining-room furniture, Tasmanian silky oak, English oak and Australian walnut. The posts of the porch are bronze ; its roof is covered with 22-gauge copper. **4,** the entrance side of the house. **5**, the view from the living-room windows (see the sketch on the facing page). **6,** the ground floor study window.

5

6

7

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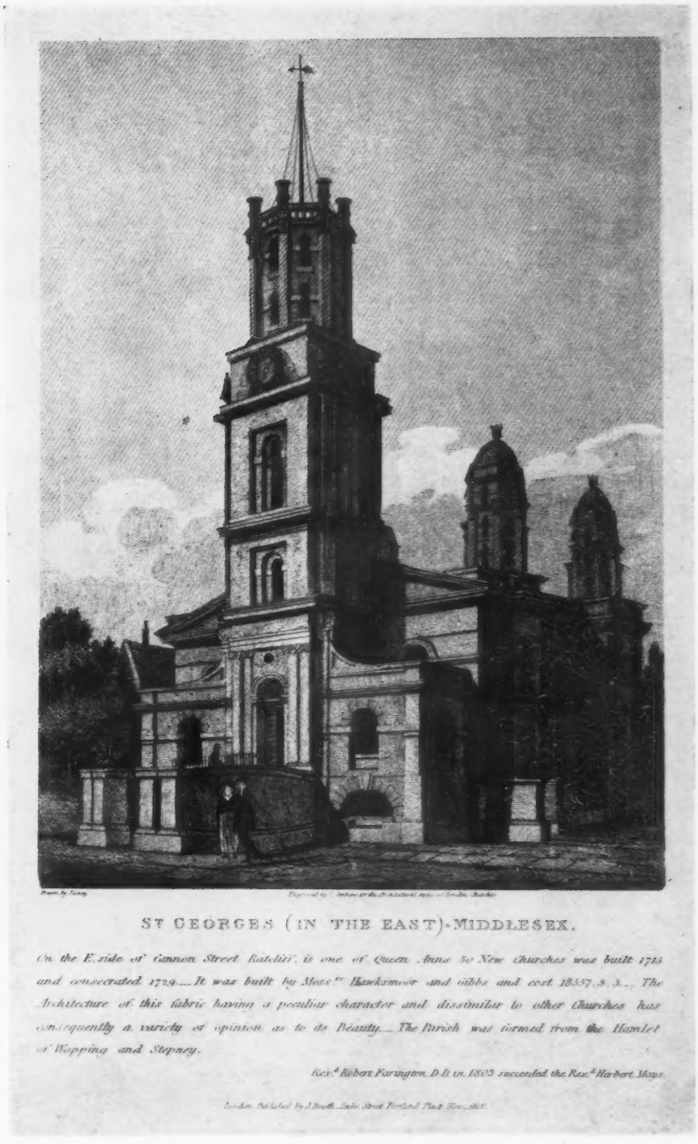
11

12

The curved living-room, **7** and **9**, receives light from three sides. Most of its furniture is built in. The floor here and in the dining-room is of Tasmanian myrtle, a beautiful, all too rarely used timber. Swiss pine is the material of the windows and the folding and sliding door from the living-room to the terrace. Above the living-room is the study, **8**. The photographs over the mantelpiece show details from Chartres Cathedral. Through the window of the service stairs, **10**, one has a particularly charming view of the tower of King's Norton church. The corridor on the first floor, **12**, is also opened up almost in its full length to the far-stretching view across the fields. The kitchen is connected with the dining-room by a spacious special fitment to be seen on the left of the photograph illustrated, **11**. All the photographs on pp. 132-134 were taken by Mr. F. L. Attenborough.



ST GEORGES (IN THE EAST)-MIDDLESEX.

On the E. side of Cannon Street Ratcliff, is one of Queen Anne's 50 New churches was built 1715 and consecrated 1729.—It was built by Mess.rs Hawksmoor and Gibbs and cost 18557.8.3.— The Architecture of this fabric having a peculiar character and dissimilar to other Churches has consequently a variety of opinion as to its Beauty.—The Parish was formed from the Hamlet of Wapping and Stepney.

Rev.d Robert Farington. D.D. in. 1803 succeeded the Rev.d Herbert Mayo.

London. Published by J. Booth. Duke Street Portland Place. Nov.r 1811.

When the National Buildings Record was established, early this year, its first act was to obtain supplementary records of the Greater London churches. Among the subjects chosen was the rarely visited Hawksmore church of St. George's-in-the-East. The interior photographs reproduced on this and the following pages were taken for the Record a few days before the building was completely gutted by fire. The exterior photographs are from the same source, but were mostly taken after the fire, which, it will be observed, did little damage to the exterior masonry.

St. George's-in-the-East

An obituary note by John Summerson

INCENDIARY bombs clattered down on St. George's-in-the-East in one of the biggest air raids of this year. Some were put out, but a fire started in the tower. The vast timbering of the roof caught alight, fell into the church, burned up every vestige of the wood-work and calcined the columns. Only the sturdy shell remains.

St. George's is, as everybody knows, the work of Nicholas Hawksmore. It is one of the three churches he built in the old parish of Stepney under the Act for Building Fifty New Churches, introduced by the Tory Government of 1710. The other two are St. Anne's, Limehouse, and Christ Church, Spitalfields. These three enormous white temples, presented by the State to a population of seafarers, rope-makers, ship's chandlers and silk-weavers, stood in a landscape of damp meadows and pigmy russet hamlets. Then, as now, the churches must have seemed too noble, too sacerdotal for their neighbourhoods. The parishioners, one imagines, would readily have accepted snug galleried boxes like the churches at Deptford and Bermondsey, Rotherhithe and Woolwich, instead of accomplished and profound works of art. Hawksmore is not quite at home in the East End. Perhaps because of this, perhaps because he took architecture rather beyond the ken of the ordinary man, London has never accepted these proud, lonely churches among her great monuments. The strong element of fantasy (as strong and original as in Swift, Hawskmore's nearest parallel in literature) has frightened the conventional critic. An absurd and demonstrably false theory that Hawksmore was a dull-witted offspring of Vanbrugh has misled the readers of text-books. And so when enemy assault tears out the vaults and columns of St. George's, the fact is less noticed than the blasting of some indifferent ornament in one of the least masterly masterpieces of Sir Christopher Wren.

The foundation stone of St. George's was laid in 1715, when its architect was fifty-four: a rather dour elderly man, painfully prone to gout, utterly self-effacing and utterly absorbed in his passion for architecture. Three years before, he had begun St. Anne's, Limehouse—curiously enough almost the first work associated with his name alone. How much he had

contributed to Wren's later churches, to St. Paul's and to Chelsea, and to Vanbrugh's enormous works, nobody will ever know. But St. Anne's is pure Hawksmore and so is St. George's. Both are perfectly mature, the fruits of a lifetime of thought and experience, decisive in plan, precisely articulated. H. S. Goodhart-Rendel has called St. George's " one of the most profound and expressive designs in the whole range of modern architecture," and his comparative study of the Hawksmore churches shows this to be no off-hand verdict. The church is, indeed, a breath-taking fusion of discipline and fantasy, of scholarship and imagination.

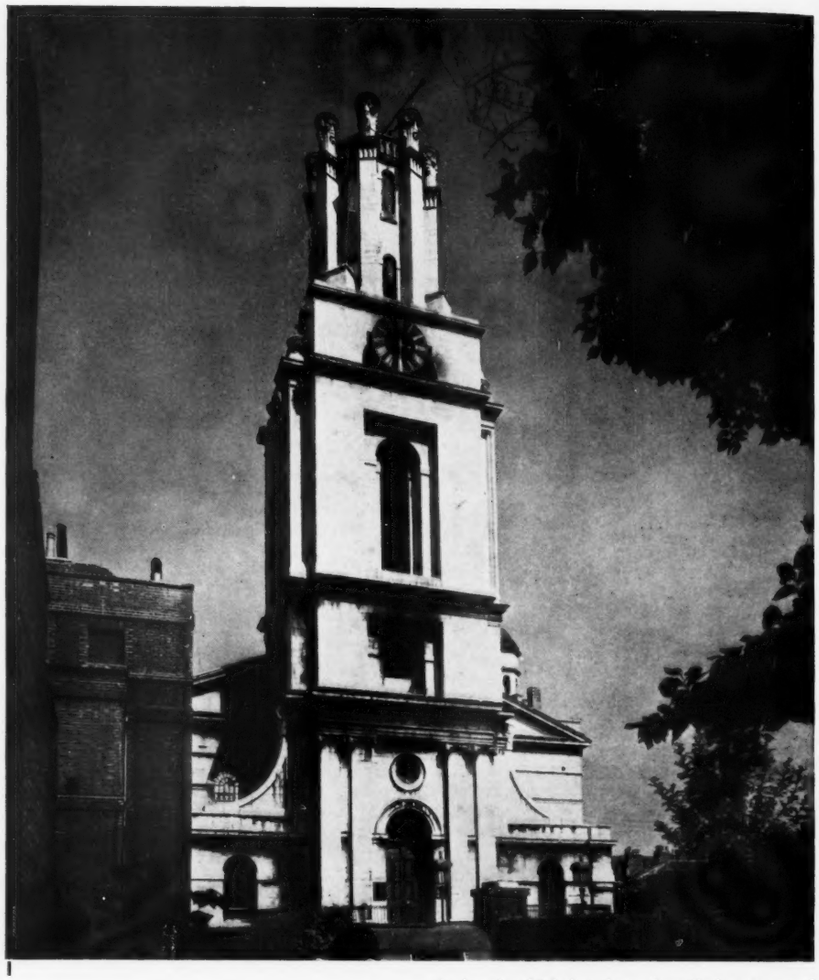
What evidence we have about Hawksmore's life and studies makes it not too difficult to probe his mind and learn something of his point of view. The great fact about him is his extraordinary detachment. He seems to have been a man of wide and unconventional learning. He was one of the very few architects of his time, for instance, who could not only discern the merits of a Jacobean building but hazard a guess at the source of the continental influences which produced it. Such near-contemporary scholarship is rare at any time and in sharpest contrast to the Palladio-Inigo bigotry of most of the younger architects of 1715. His classicism is Classical in the most understanding sense: no portico in Britain is more nobly Roman than that of St. George's, Bloomsbury. His Gothic work is neither sham nor dilettantist, but a thoughtful, appreciative revision of mediæval forms. As a technician in the practical sense he had the reputation of being competent to the last degree. And none of his knowledge was for show. It was the private storehouse on which his imagination freely drew.

Looking at St. George's, one needs to understand something of this intellectual detachment before one can feel perfectly at home with it. The plan is developed from a Greek cross, with giant Doric columns supporting an exceedingly flat elliptical vault. The galleries fall naturally into place as tribunes between the columns. Narrow " transepts " are added at east and west, and these have semi-circular barrel vaults; their projections, on plan, beyond the walls of the church return against staircase towers which are carried up as turrets, more than half Gothic in character. At the west end is the immense steeple, again decidedly Gothic in origin, with its side buttresses and octagonal lantern, but thoroughly Roman in technique. In the design of these features one enters that curious world of architectural abstraction which Hawksmore and Vanbrugh seem to have shared between them. The insistence on plain massive masonry, the openings with heavy architraves and deep reveals, the emphatic shelf-like cornices, and the pedestals introduced diagonally at the foot of the lantern—all these things relate the design to Blenheim and to the service wings at Castle Howard and to the discarded designs for a chapel at Greenwich. It is emotional, deeply romantic, architecture —a foretaste of Piranesi but without a hint of the swagger of Italian Baroque; a native style which seemed to spring from nowhere and which vanished with its few great exponents.

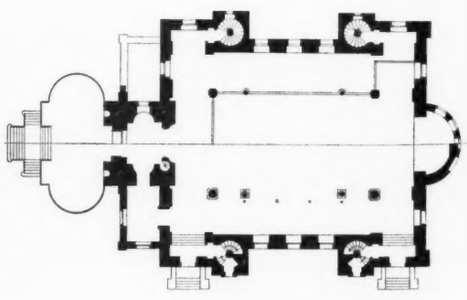
When St. George's was burnt, it did not stand exactly as Hawksmore had left it. A miniature timber spire had vanished from the steeple. Minor alterations had been made when the building was " repaired and beautified " in 1783. Coloured glass of exceptionally charming quality, based on Reynolds's work at New College, Oxford, had been placed in the apse windows in the early nineteenth century, when the iron gates to the churchyard were also constructed. The same period contributed the Grecian communion rails, while later in the century extensive redecorations were effected in the hope of producing an atmosphere more appropriate to the century.

But most of Hawksmore's fittings had survived, including the pulpit with its marquetry panels, the churchwardens' pews, the gallery fronts and organ-case. All these were said to have been in " Dutch " oak, meaning oak imported from the Continent, perhaps from Austria. Apart from the pulpit, they were not of outstanding value except in so far as they formed part of this grand and spacious interior.

Few will remember the interior of St. George's, for the church was very generally locked. Standing in a district where three-quarters of the inhabitants are Jews and many of the remainder Roman Catholics, it was one of London's unwanted churches. It had once had some reputation for its music and, further back, in the eighteen-fifties, had been the scene of dreadful anti-high-church brawls, when hooligans pelted the Rector and set dogs on to the surpliced choir. But its last days were days of melancholy padlocked silence, as if its doom was understood and patiently expected.



A church which has been described as " one of the most profound and expressive designs in the whole range of modern architecture," St. George's-in-the-East, is a singular blend of scholarship and imagination. The western steeple, in particular, combines Gothic and Classical characteristics in an original and dramatic way. The interior was an inspired interpretation of the Greek cross theme. The sketch-plan given below is derived from a notable set of measured drawings made by Mr. F. J. Stevens in 1915.



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THE INTERIOR AS IT IS AND AS IT WAS

The interior of St. George's-in-the-East was just as imaginative and original as its exterior. It was a rectangle, of which slices at the west and east ends were cut off as transepts of full height covered with barrel-vaults, **4**. *Into the remaining rectangle a Greek cross was inscribed. The corners of the cross where the arms met were marked by four Doric columns. The arms had very flat elliptical vaults, meeting in the centre in a flat cross vault. To appreciate the spatial qualities of this interior one had to leave the simple east-west and north-south perspectives and seek such diagonal vistas as the one illustrated,* **5**. *Only by doing so did one become fully aware of the curious contrast between Hawksmore's strictly Classic detail and his truly Baroque sensibility.*

Hawksmore's Church of St.

6

7

THE APPROACH

On the whole, the church had come down to us unaltered. The Neo-Classic gate, **6**, *was added early in the nineteenth century. So were the altar railings which can be seen in* **5**. *A minute wooden spire had been removed from the top of the West tower. The arrangement of the approach with the three flights of steps leading up to an elliptical platform,* **7**, *was different in* 1803 *(the time when the engraving shown on page* 135 *was printed) from what it is now.*

THE EAST END

It is not easy today to visualise what Stepney was like about 1720 *when St. George's was being built. The parish had a population of about* 110,000. *It was far, therefore, from the rural appearance that it must have possessed when Dean Colet was its vicar two hundred years before. Long roads of houses put up in a higgledy-piggledy fashion, and gone slummy as time went on, led out of the city, congested near the gates and the river and connected by dirty alleys, but thinning out into hamlets amid fields as one approached the east and north limits of the parish. St. George's stood just on the edge of the built-over part. To the north were meadows and a rope walk, to the east one or two fields before one reached Shadwell and Ratcliffe. Even today the churchyard with its old trees screening off most of a neighbourhood now crowded and dingy on all sides seems to belong to a large village or a country town.*

8

George's-in-the-East

9

10

HAWKSMORE MOTIFS

It is in motifs such as the panelled pilasters of the tower, **9**, *or the finials on top of the lantern,* **10**, *that Hawksmore's personal style comes out most poignantly. No other English architect, not even Vanbrugh—and it has by no means yet been established how far Hawksmore was responsible for some of the most daring features in Castle Howard and Blenheim—has ventured to contrast so violently the bareness of unmoulded recesses, deep reveals and heavy architraves with the fantastic ornament blossoming out in a few sensitively chosen places. The spot where the sturdy fluting of the capitals of the buttresses meets the delicate fluting of the circular finials with their busy swags is immensely instructive.*

SOME INTERIOR DETAILS

11

The composition of a rectangular church as a vaulted Greek cross with flat-ceilinged corner rectangles supported by columns was not invented by Hawksmore. He had it from Wren (St. Anne and St. Agnes), who in his turn must have had it from the Netherlands. The severely Roman details, **11**, *are also of the Wren school. While Hawksmore was certainly responsible for their use, it is not so sure whether he himself designed any of the woodwork such as the charming swag,* **12**, *over the inner doorway below the western tower, through which the church was entered.*

12

FITTINGS

13

14

15

The wooden fittings of St. George's, made of Continental, probably Austrian, oak, were completely destroyed by the fire. The pulpit, **15**, *was an exquisite piece of carving and marquetry. The churchwardens' pews,* **13**, *the organ case, the gallery fronts and the panelling of the walls,* **14**, *were of no exceptional quality or character. Yet it was their presence, as it so often is in Wren's churches, that added warmth and comfort to otherwise somewhat cold architectural surroundings.*

Hawksmore's St. George's-in-the-East

SCHOOL

R. S. WILSHERE

1

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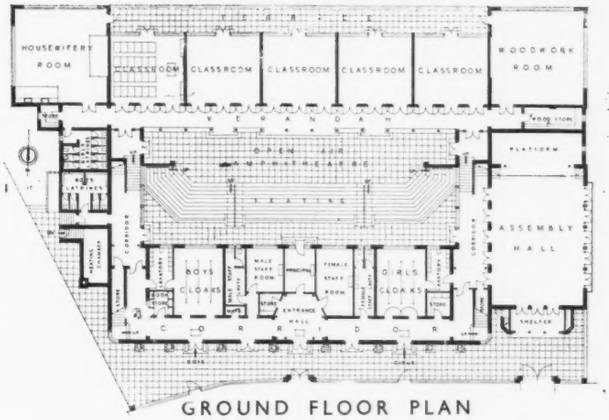
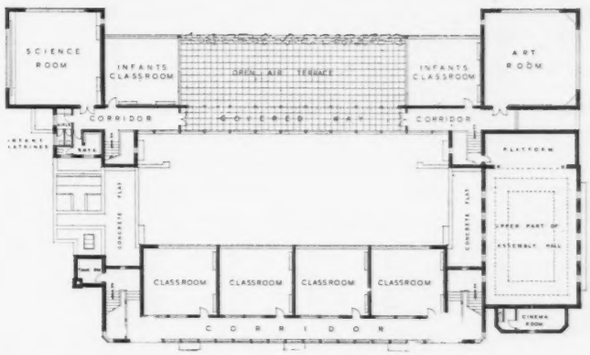
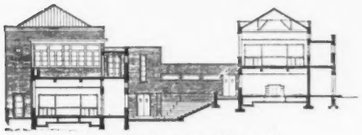


GROUND FLOOR PLAN



FIRST FLOOR PLAN

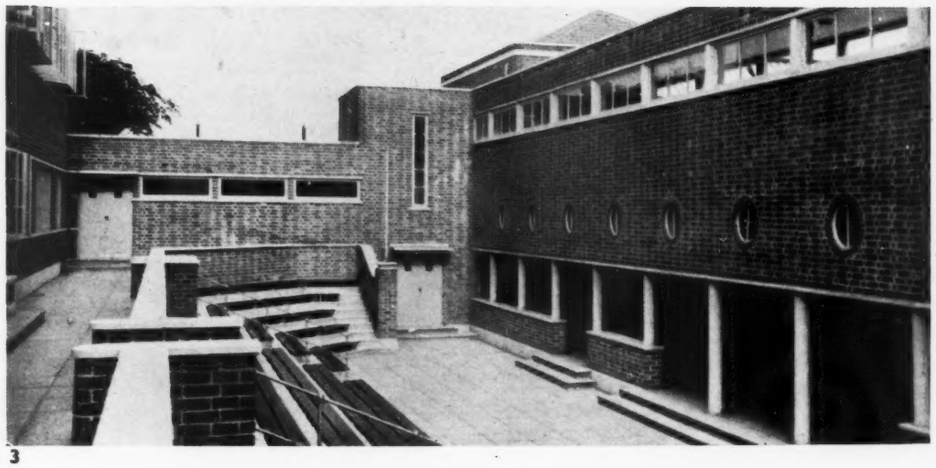


CROSS SECTION

SITE—This elementary school at Belfast is situated on a steep slope opposite the Botanic Gardens and close to the river Lagan.

PLANNING—The building consists of two blocks connected by the assembly hall on the one side, the lavatories and the boiler-room on the other. The north block faces the street and lies higher than the south block, which overlooks the park. The

1, north block with entrance from road. Above are the windows of the corridor in front of the classrooms. 2, balcony of assembly hall.



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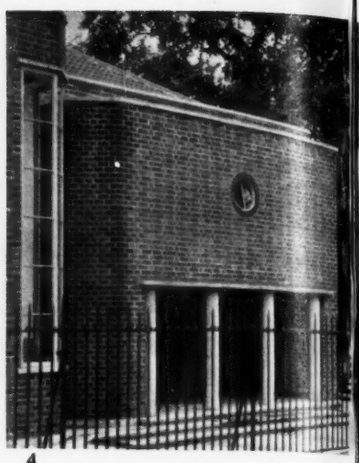


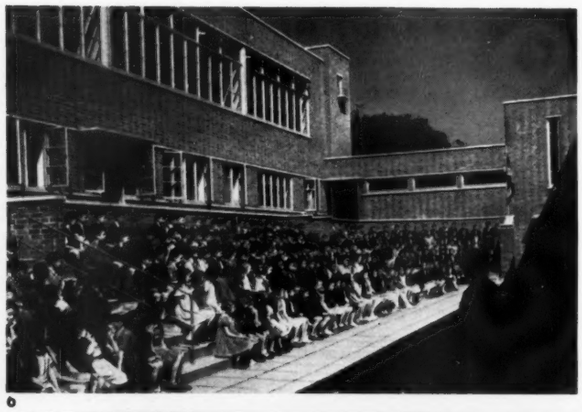
4

difference in the ground levels suggested an interesting and unusual treatment for the inner courtyard. It is made into an amphitheatre, the slope being used for the tiers of terraced seating. There is enough accommodation for the whole school. As the courtyard is used for concerts and theatrical performances, it is especially useful that the corridor running along the south side of the north block is open towards the courtyard and can be used to house an orchestra or form part of the stage. Another consequence of the difference in the levels of the two blocks is that in order to keep an even sky-line for the whole building and also an even height of the rooms on the upper floor the ground floor of the north block had to be made lower than that of the south block. The architect has therefore placed staff-rooms and cloak-rooms (with their windows facing south) into the ground floor of the northern, the girls' classrooms into the higher and airier ground-floor of the southern block. The first floor contains the boys' classrooms above the staff- and cloak-rooms. Above the girls' classrooms is a large terrace separating the room for the smaller girls and the arts room from the room for the smaller boys and the science room. The terrace has green paving to reduce glare and a brick flower box instead of a parapet along the whole front.

CONSTRUCTION—The soil on which the school is built is firm in the top stratum but loamy underneath. Pressure piling had therefore to be adopted for the north block, the piles being between ten and twenty feet long. The south block rests on brick piers three to four feet deep. The building itself is of multicoloured rustic brick with red rustic bricks for the quoins and flower boxes and cast stone for dressings. The doors are green, the sashes cream; the roof is of red Roman tiles. Classroom ceilings and concrete roof are insulated by fibreboard.

INTERNAL FINISHES—Subdued, restful, light colours are used throughout the building. The scheme adopted was worked out in such a way that all ceilings are pale mushroom, all walls cream and all dadoes grey. Doors and fitments are rose, salmon, light purple, mauve or blue. In each room two of these additional colours are introduced so that one of them always repeats in adjoining rooms.

3, inner courtyard with amphitheatre seating. 4, entrance to assembly hall. 5, (on facing page) south block. 6, the amphitheatre in use. 7 and 8, upper terrace.



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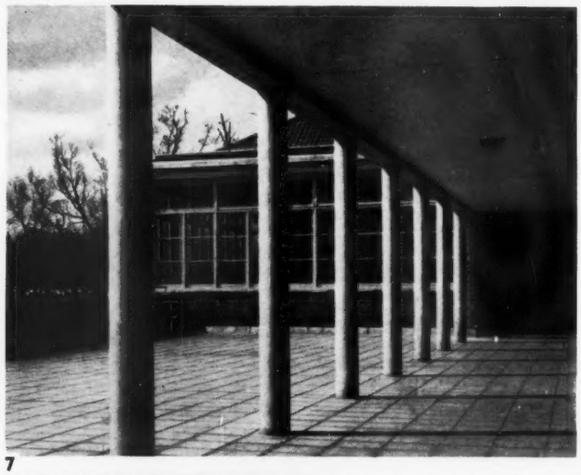

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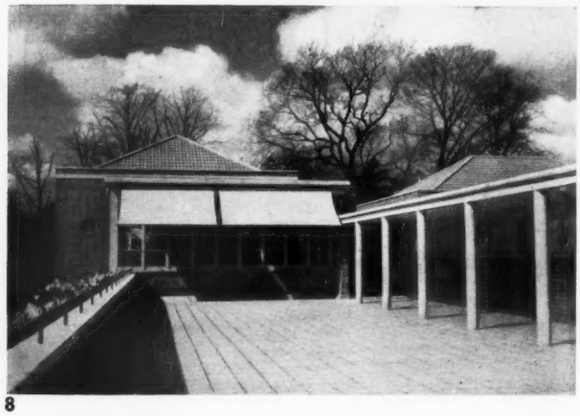

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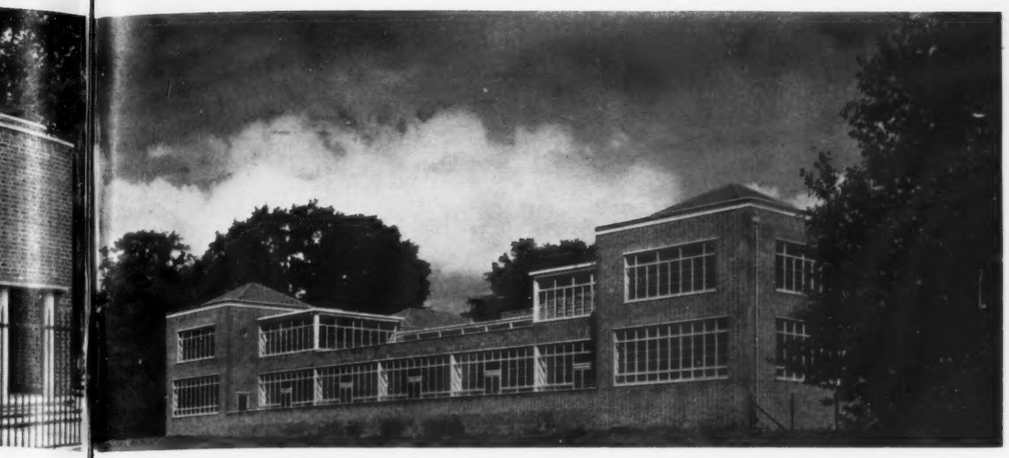
SCHOOL

R. S. WILSHERE



SHOP

RAYMOND LOEWY (designer), STARRETT AND VAN VLECK (architects)

SITE—This shop for women's and children's wear lies at Manhasset on Long Island, a town which has only in comparatively recent years been drawn into the orbit of New York and adopted a suburban character. It has in this connection become a minor shopping centre for several smaller towns and suburbs of the neighbourhood. Ground is not too costly yet, so that the selling area could be spread out comfortably. The store covers 58,000 square feet. Most customers will arrive by car; consequently, a large parking area has been set aside and made attractive by a park-like layout with adjoining terraces, walks between flower borders, etc. The site slopes down considerably from north to south. Thus both selling floors have direct access from the outside.

PLANNING—There are only two selling floors, but vertical extension has been made constructionally possible. The lower ground floor is approached from a side street on the west, the upper floor from the boulevard on the north or the parking area on the east. As pedestrians form a negligible percentage of the shop's customers, shop windows are introduced only near the entrances, an arrangement carried out consistently and very successfully. By leaving so much unbroken wall a variety of appearance has been achieved rarely to be found in shop and store design and particularly well suited for the surroundings. The main entrance is completely encased with glass. It is contrasted with the part of the wall adjoining on the right, where tall narrow windows alternate with fieldstone piers. The interior is treated neither as a completely open selling area nor as a sequence of completely enclosed departments. A compromise between these two schools of thought among shop planners has been found by keeping the principle of independent departments but separating them from each other by low partitions instead of solid walls.

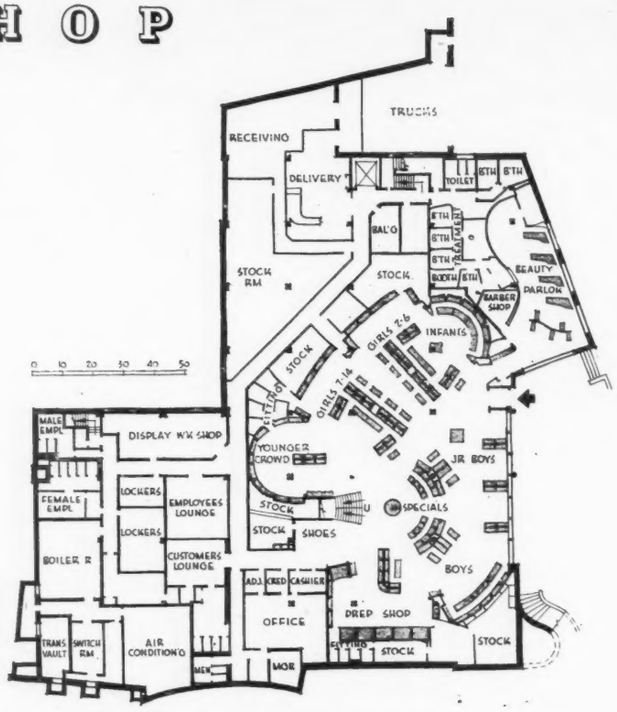
1

CONSTRUCTION—Reinforced concrete frame with supports on spread footings. The walls are of brick and fieldstone, the floors of long-span pan construction.

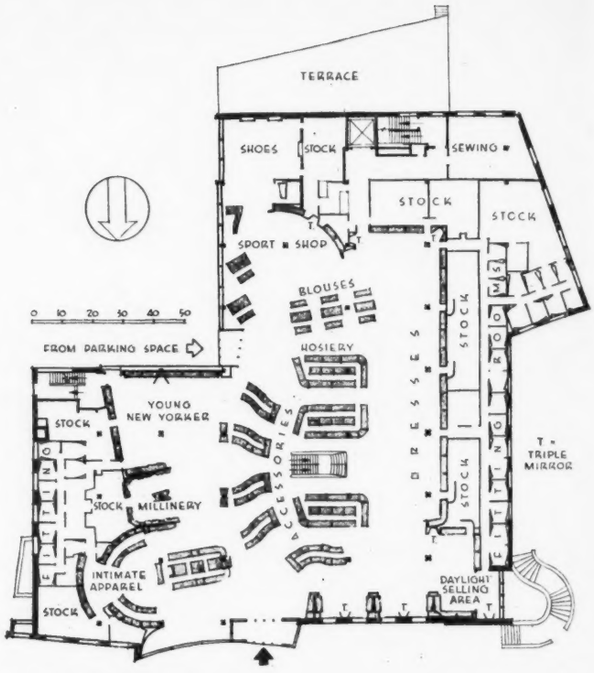
INTERNAL FINISHES—There is a vast variety of colour schemes and schemes of decoration from the straightforward sales cases and dis-

1, main entrance with air-conditioning plant in the roof. Illustrations on this and the following page are by courtesy of "The Architectural Record."

SHOP



LOWER GROUND FLOOR PLAN



MAIN FLOOR PLAN

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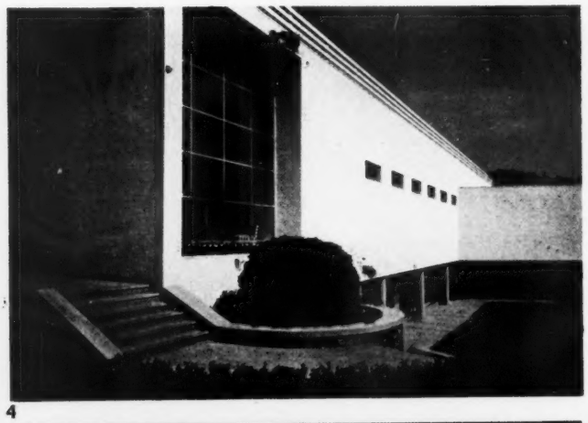

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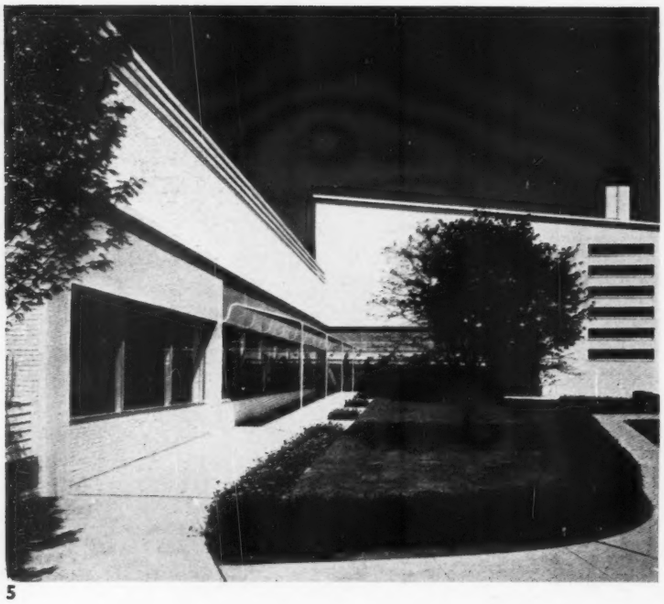


5

6

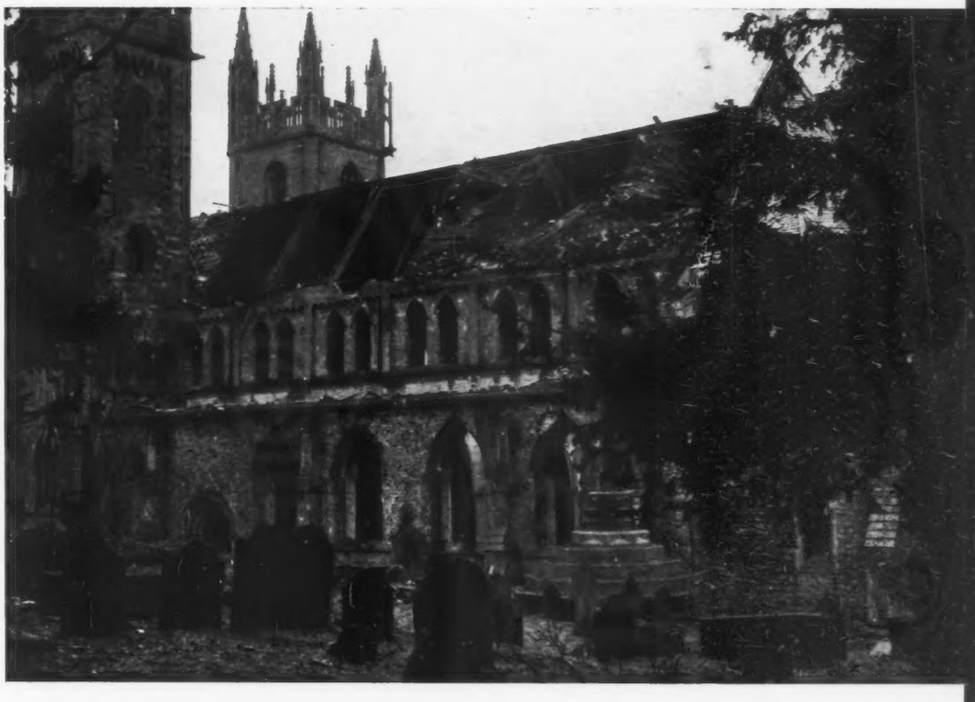
play cases of the sports' accessories department to the Infants' Shop all in pink with walls and ceiling representing a blue sky with white clouds, or the Young New Yorkers' Shop with a whimsical wall decoration of doves and flowers in pastel shades. Noteworthy features of the interior are the glass balustrade round the staircase well, the ceiling fittings planned in conjunction with sprinkler valves and air-conditioning vents, the semi-circular niche with the built-in fitments of the Young Crowd Shop, the low eye-level showcases of the children's shoe shop and the rubber tops to the sales counters. Display cases are kept quite distinct from sales counters.

2, sports' accessories department. 3, lingerie department. 4, north-west corner. 5, approach from parking area. 6, shop windows near entrance from parking area.

DESTRUCTION AND RECONSTRUCTION

THE ARCHITECTURAL REVIEW SUPPLEMENT: NOVEMBER, 1941

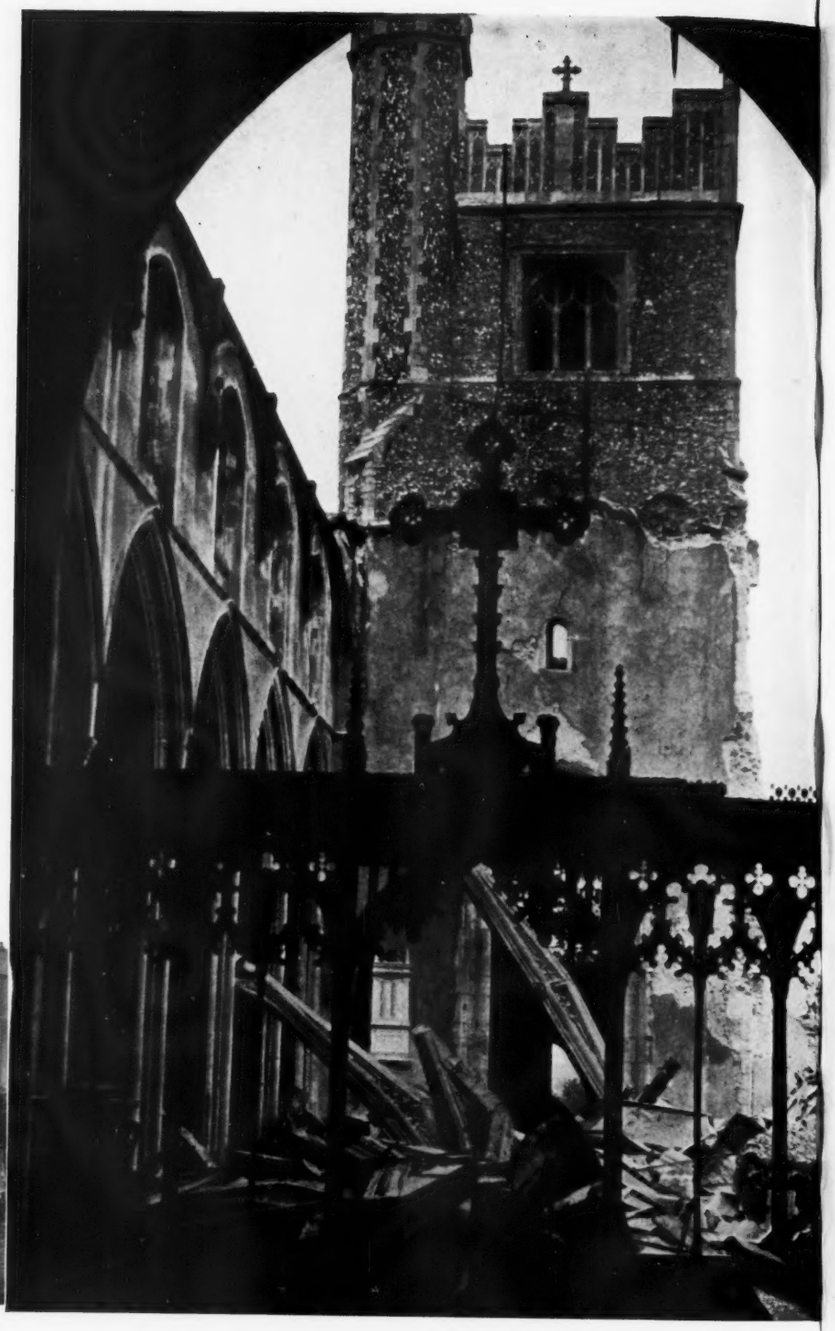
BOMB DAMAGE TO BUILDINGS OF ARCHITECTURAL VALUE



LLANDAFF CATHEDRAL, on the outskirts of Cardiff, is unusual for having no central tower and no transepts, so that nave and choir are all under one roof. The nave is Early English; the choir is Decorated; so is the lady chapel. There is no triforium. The best features are the graceful Early English west front, the late Norman doorways to north and south of the nave and, in the interior, the late Norman arch at the back of the choir. There is an unusual Chapter House: square in plan, with quadripartite roof and a central column. The south tower, which is crowned by a spire, collapsed in a storm in 1703 and was rebuilt in 1869 by a local architect, John Prichard, a pupil of Pugin. The whole cathedral was allowed to fall into a bad state between the Reformation and 1732, when John Wood of Bath built a classical temple within its walls.

The building suffered severely in an air raid on Cardiff. The whole south side of the nave was unroofed, the interior considerably damaged, nearly all the windows, including the large west window, blown out and the roof of the Chapter House, on the right of the picture, destroyed.

Country Churches



GREAT COGGESHALL, ESSEX. The church of St. Peter-ad-Vincula is a very fine example of the East Anglican Perpendicular style, with a good embattled flint and stone tower with an angle turret. It is very consistent in style, the only considerable later addition being an ornate stone and alabaster reredos put up in 1880. A direct hit did extensive damage to the west end of the church. The large picture is taken from the chancel, looking towards the ruined west end, and the small one is an exterior from the north-west. Great Coggeshall contains the famous Peaycock's house, a remarkable example of decorated timber architecture. A brass effigy of Thomas Peaycock, dated 1586, is in the church.

PAKEFIELD, SUFFOLK (adjoining Lowestoft, on a stretch of coast which has lately been considerably eroded). This church has an unusual plan, being divided longitudinally into two equal-sized naves, which were originally independent churches, All Saints' and St. Margaret's. An elevated chancel has a crypt beneath. The church was of flint with a thatched roof and has been almost destroyed. The thatch can be seen still burning in the pictures alongside.

STOW-BEDON, NORFOLK (a village in the southern part of the county). St. Botolph's church is a considerably restored Perpendicular building with two early Decorated windows and an Early English east window. The western porch seen in the picture is an addition of 1887. The best features of the interior are a carved oak rood screen and some stained glass removed from Hildersham, Cambridge. Bomb damage is chiefly confined to the roof.

SANDERSTEAD, SURREY. All Saints is an Early English church with later additions including tower and spire in typical Surrey style. Built of flint and stone, it was considerably restored in 1846. During enlargement in 1938 some early fourteenth-century mural paintings were discovered. Structural damage has been chiefly confined to the roof.

SOUTHWICK, SUSSEX. Serious damage to the parish church of St. Michael and All Angels, one of the oldest in the county, is confined to the very fine Norman west tower, shown in the picture. The walls of the tower were badly cracked from top to bottom by a bomb which fell in the churchyard between the west end of the church and the rectory, so much so that the upper portion will have to be removed, the north-west part of the tower having sunk several inches. It has been temporarily shored up to prevent total collapse. The interior is of less interest than the exterior, having suffered considerably from nineteenth-century restoration, but it contains several features of value including a Jacobean pulpit.

BROMLEY, KENT. The oldest portion of the parish church of SS. Peter and Paul was the fifteenth-century tower, which is the one portion that has escaped total destruction. The tower is of flint, but the body of the church had been remodelled in red brick in 1792. It was again largely rebuilt in 1830 and restored in 1873 and 1884, with the result that the Georgian rebuilding, though good of its kind, had lost its characteristic simplicity. The tower, which houses a peal of eight bells hung in 1727, was itself set alight but, as the picture shows, damage to its structure was not great.

Wanted: an Hypothesis

This supplement is just as much concerned with how things are going to get done as with exactly *what* ought to be done; and with studying the technique of planning as an essential part of the plans themselves. It is the thesis of the following article that we have reached a time when we can afford to have theories and formulate principles without the risk of being unscientific; indeed that unless we do so the immense amount of research work that is now being undertaken as a preliminary to reconstruction cannot hope to lead to positive action.

DO not let me be misunderstood. If I plead in this article for a less uncritical acceptance of "research" as the key to all modern planning problems, that must not be taken as disparagement of the value of research as an instrument, and still less as disparagement of the modern realistic attitude to architecture and town-planning of which the reverence for research is symptomatic and which has done so much to re-establish both of them as scientific and socially useful arts.

All I want to do in this article is to try and put research and all it connotes into a clearer perspective by defining its functions more exactly; for its essential rôle has lately become obscured by the thoughtless adoption of the word "research" as one of those catchwords—"planning" is another—that serve only to allow intention and goodwill to masquerade as action. Research particularly lends itself to this perversion, *because it provides an opportunity of rationalizing a wait-and-see policy:* one of waiting till all the data has been amassed before anyone is so rash as to make an actual plan, let alone put it into operation. Which, carried to the absurd lengths it only too easily can be carried to, means waiting for ever, since absolute finality can never be reached. This tendency comes also from a fear of being unscientific, a fear which is not unreasonable, seeing that we have so many object-lessons before our eyes to warn us of what happens when anti-scientific ideas get control; the whole philosophy of Fascism, for example, which takes a pride in denying reason, whether in the blind worship of the State as an entity, in the blind acceptance of an obviously erroneous racial creed, or in the deliberate fostering of a mystical worship of force.

To be horrified at all these, however, is only to pay negative respect to scientific truth; the *answer* to them lies in allowing science to play its *positive* rôle or—to put it another and more topical way—the *positive* answer to Hitler's New Order is not contemptuous rejection but the assertion of a new order of our own that shows up Hitler's as the spurious affair it is. In this context alone it is a matter of immediate urgency for our attitude to be something more than not unscientific.

What has this got to do with research in general and town-planning research in particular? Research can, of course, and often is, part of a positive process, but equally often it is also a means of escape for those experts who can only agree that they do not yet know enough to be able to agree about anything. But it is surely a falsification of the scientific tradition to allow humility in the face of ignorance to become ennobled into a virtue. I am speaking of research, not in the general sense of investigating truths, in which sense it is synonymous with science itself, but in the special sense of the amassing of data, out of which conclusions are supposed to be revealed. And my point is that the ability to state an hypothesis must *precede* the ability to take experimental evidence. Nevertheless, it has become regarded, as I have already said, as scientific to hold no opinions at all, and—what is just as bad—the idea has grown up that truth is revealed only in proportion to information collected.

But the total amount of information already available of the sort that research workers collect so indefatigably, is prodigious. It is far more than we can put to use in years, and adding to it will not get us much further. A weakness of a movement like Mass Observation (a phenomenon very typical of recent years) is, it seems to me, that although it has the intelligent aim of applying the science of anthropology to our own society and codifying social behaviour according to scientific methods, it adheres too truly to its name in confronting the *mass* of accessible information with such an open mind that it might be used to prove anything and in fact proves nothing. Speaking generally, one can say that the collection of data leads, in the absence of any hypotheses, only to the collection of more data, with no more end in view than a vague hope that somehow, when the endlessly hoarded facts and observations have been sifted, truth will automatically be revealed.

But the fact is that truth must take the form of a substantial hypothesis, and the only purpose of the data is that of evidence; it can prove or disprove an hypothesis but it cannot invent one. ***The object of the scientific approach to planning problems is the laying down of sound principles, which shall eventually become principles of action; but field-work cannot establish principles, it can only test their validity.***

The lack of principles has been a serious handicap to the progressive development of town-planning, if only because, without a basis in theory, planning cannot be anything more constructive than an *ad hoc* technique of dealing with existing emergencies—which is exactly what it has become in practice in recent years. These *ad hoc* decisions have, it is true, been backed by a number of useful slogans that have had some of the appearance of principles: slogans such as "regionalism," "decentralization," and the like, but rather than forming part of a systematic theory of planning, these pseudo-principles are in fact only prejudices with all the unscientific shortcomings of their kind. They come very near, indeed, to partaking of the character of mystical belief in a formula which we have already noted as typical of the anti-scientific attitude.

The needs of society are a fit subject for scientific study, but they cannot be elucidated by a gigantic piece of consumer-research. It is a fallacy that the needs of society are the aggregate of as many individual demands as can be ascertained. The popularity of such modern techniques as the American Gallup polls is justified by the use to which they are put: the legitimate one of arriving at a *quantitative* estimate of opinion; similarly the statistical investigations sponsored by advertising agencies. But society is an organic structure with its own laws and behaviours, which the science of sociology exists to study.

Another point is that the numerical science of objective observation, made into an end in itself, is itself unscientific, if only because the observer is never in practice impartial. It is well known that investigators are apt to find just the facts they are looking for. Field-work only provides the superficial evidence; it needs theory to relate it to the forces at work in society—forces, it may be added, that are constantly shifting, which is another reason for discounting the value of a mere collection of data. The whole tendency of science, in fact (as I think Prof. Whitehead was the first to remark), is

to become the study of organisms and no longer the study of facts.

What, then, is the proper rôle of field-work and the evidence that is collected by this means? In a sentence, it is this: it exists to check theory by practice—and thus to ensure that the theory in question remains scientific and is not debased into the intuitive generalizations of the Fascist or the crank. The integrity of the scientist does not prevent his having theories; it only insists that he is willing to discard them if the evidence proves them wrong.

And what does this ideal suggest as the answer to the quandary in which town-planning finds itself—that of possessing a great and growing wealth of statistical information but no rule of action except what expediency suggests? Certainly not that research and all the care for truth and realism that goes with it are useless. The answer, I think, is simply that, realizing that even science cannot be impartial, knowledge must take sides; it must be made to lead, not follow a will-of-the-wisp in the shape of absolute truth revealed at the bottom of a pile of statistics or at the end of a house-to-house investigation.

Territorial planning is the science of controlling the physical environment of people, considered as society. The study of the principles by which it should be controlled is known as sociology, and the plea that I am making is only for the proper recognition of sociology as the source of the principles of action of which factual research provides both the raw material and the practical testing-ground. Sociological theories do become dangerous when those who uphold them acquire a vested interest in them, but it can just as truly be said that equal danger lies in the deliberate abandonment of all theoretical conjecture, and the acquisition of a vested interest in the disinterested pursuit of facts.

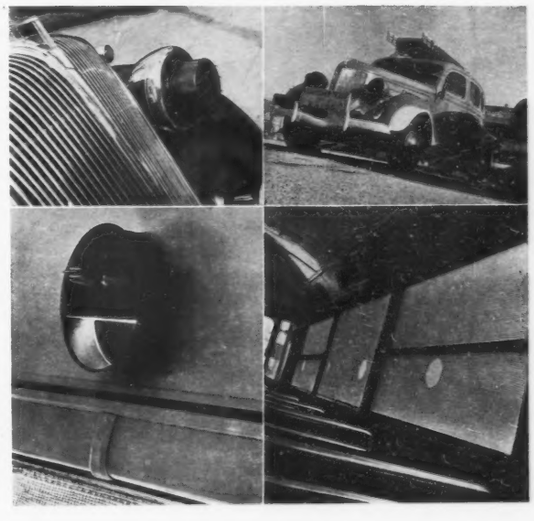
The real rôle of research can be summed up in a few words. It is to ensure that the planner's theoretical ideas are met neither with the cynicism of the defeatist nor with the reactionary intuition of the mystic, but with the *positive* enquiring scepticism of the scientist.

J. M. R.

ANONYMOUS DESIGN IN WAR-TIME

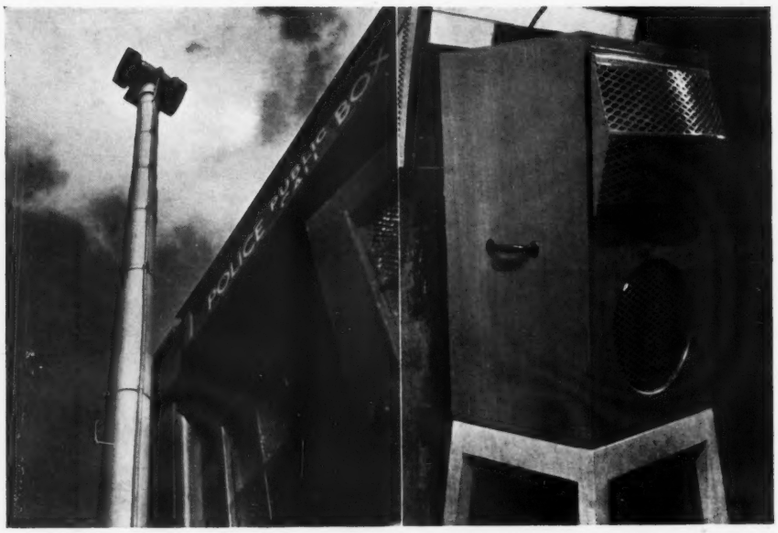
It has already been emphasized in another context that planning should consist in tackling the present problems, out of our solution to which the programme for future planning will grow. In the same way design standards of the future can only evolve from design achievements of the moment, and it has been encouraging to notice that quite a number of good standard designs, produced anonymously and without any aesthetic self-consciousness, have grown out of war-time needs. A first selection is given here of designs that deserve to be put on record. The ability to continue to produce good type forms of this sort is what the aesthetic standards in reconstruction will largely rest on.

BALLOON BARRAGE. For many people the most startling new æsthetic experience of the war has been their first sight of the sky over London and other cities filled with balloons. The quality this scene possesses of adding some quite new element to everyday life is probably due to the fact that the balloons have the effect of limiting aerial distance and defining the sky as an enclosing arc of visible dimensions. Right, an individual silver balloon, which often has its own aesthetic charm and a surprising scale close to.



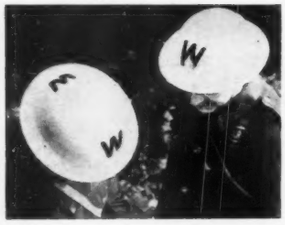
TRANSPORT. Right, standard designs for the adaptation of peace-time vehicles to war-time needs. Top: black-out hood for motor-car headlamps, and a private car converted for the use of a stretcher party. Note the white-painted front and the neatly stacked tubular stretchers on the roof. Bottom: the black-out lamp on the upper decks of buses, and anti-splinter protection, with circular peep-holes, inside. Left, a bus-stop sign for diverted routes.

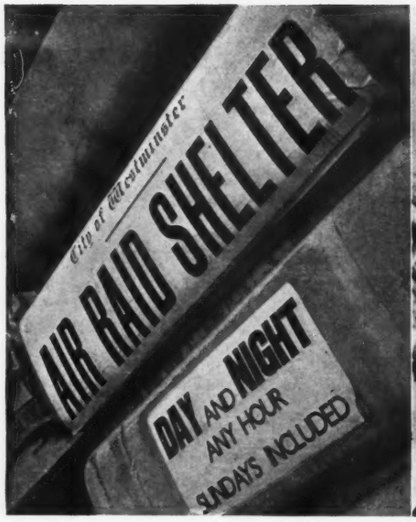
The majority of the photographs on this and the following page were taken by Peter Ray for the Ministry of Information, by whose permission they are reproduced.

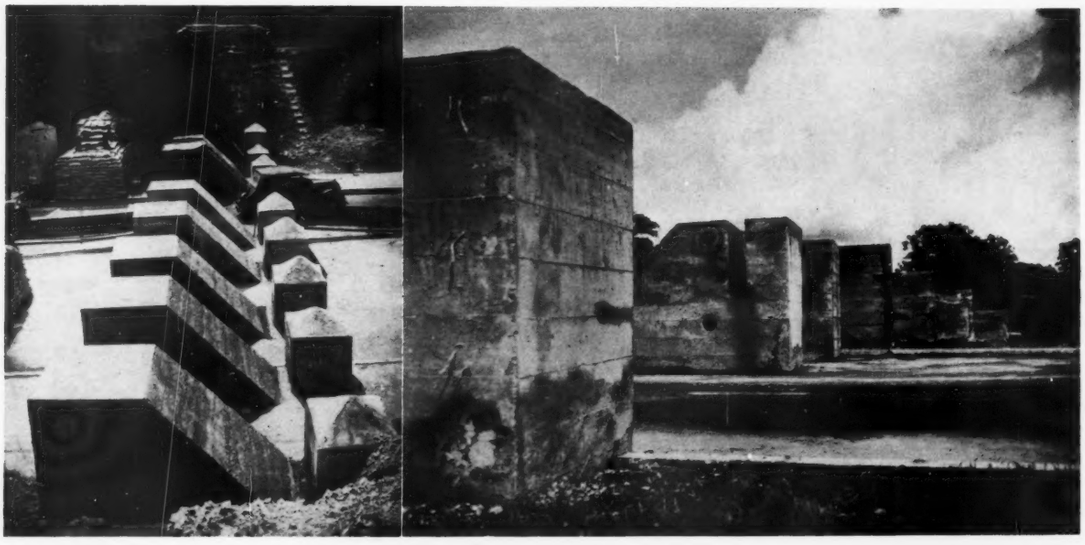


AIR-RAID MUSIC. Sirens are situated in many different places, often among the chimney-pots on the roofs of buildings. This is a free-standing one in front of a police box, supported on a tubular steel mast. The other picture shows the standard pattern relay loud-speaker installed in underground stations for the entertainment of shelterers. It is a neat design in grey-cellulosed pressed metal.

AIR-RAID PROTECTION. Boldly designed lettering indicating the location of shelters is a feature of every city street scene. One of the best standard designs the war has introduced to city streets is the shelter sign, which combines a metal sign-plate bearing the white letter S on a black ground with a screened light fitting illuminating the sign at night with the significant blue light. Most of the official A.R.P. equipment is simple, bold and expressive in its lettering. Below: the white helmets of the wardens with their prominent black W fore-and-aft.







LAND DEFENCES. Many of the concrete road-blocks and tank traps that were put up a year ago as emergency anti-invasion defences had considerable architectural quality. Above are two examples of this abstract geometry.

ANONYMOUS DESIGN IN WAR-TIME

These monthly articles are frankly about the æsthetic aspect of architectural design. They are written in the belief that we can now take the practical basis of modern architecture for granted. They claim, that is to say, that we have got beyond the stage when we were so thankful for the sheer reasonableness and efficiency that the modern movement in architecture brought with it, that these were sufficient recommendation in themselves; but there is now room, in criticism as in actual design, for study of the æsthetic basis that the art of architecture postulates.

CRITICISM

By Peter F. R. Donner

EVERY phase in history has its style permeating all its productions, whether of fashion or finance, of agriculture or architecture. Wherever you take a cross-section, you find a style of the day—complex, of course, yet a style. This was so in 1350 as in 1660 as in 1930. It is indispensable for the understanding of history to place one's cross-sections judiciously. There are, however, longitudinal sections as well, and they are just as indispensable. For each historical moment consists of three or four strata, because at each moment three or four generations of men are active, trying to imprint their styles on it, styles which are aggregates of the personal and the generational.

What does 1890 stand for? Pearson's Truro Cathedral, or Bentley's Westminster Cathedral, or Voysey's houses? Historicism at its most conscientious and sensitive, or historicism at its broadest and boldest, or the first revolt against historicism? About 1935 Mr. Maxwell Fry, aged thirty-six, came to the fore; Mr. Robert Atkinson, aged fifty-two, enjoyed an established reputation; Sir Herbert Baker, aged seventy-three, could still depend on the fame and advantages of academic distinction. Yet the historian would be right in calling Voysey's the style of 1890 and the Modern Movement that of 1935, and not Pearson's or Sir Herbert Baker's. For the three systems of co-ordinates, the style of a moment, the style of a generation, and the style of a personality, are everywhere inextricably intertwined. In this lies one of the chief fascinations of historical research. There is no end of variety in the encounters of the individual with his generational limitations and the compulsion of the moment at which he works. One architect—Mr. Baillie Scott for example—evolves a style at the age of about thirty and then sticks to it throughout a long life. Another—for example, Norman Shaw—goes from change to change, reflecting in his career all the innovations of half a century. Yet another—for example, Mr. Holden—one of the most progressive at the age of thirty, remained in the vanguard when he was fifty, leading not once at an important juncture but twice. Mr. Holden's building of 1908 for the British Medical Association in the Strand was just as revolutionary in 1908 as his Arno's Grove Station in 1932.

And now, to complicate matters still further and render them more fascinating still, the æsthetic value of a building does not by any means necessarily coincide with its historical value. In 1913, as Mr. Pevsner has recently pointed out,* the Omega designs were the most advanced in Europe. But they certainly were not the most beautiful. Voysey's contemporary designs were of a higher æsthetic perfection though no longer of immediate topical interest. One cannot even say that the innovator is always the strongest personality. To keep faith with an ideal, to shape it over and over again, while those around you have turned their backs on it, may require just as much strength and more determination. On the other hand, keeping abreast of the essential stylistic changes all through one's life, may be a sign of highest vitality and deepest sensibility as in the case of Michelangelo, or merely of an exceptional agility of mind as in the case of Norman Shaw.

However, both the consistent conservative and the inspired innovator are exceptions. What happens as a rule at a certain moment in a man's mental development is that, while he still clings to the faith of his youth (whether he was in his youth inclined towards conservatism or *novarum rerum cupidus*) he cannot help noticing that new ideals grow up around him, and will either endeavour to come to terms with them or be unknowingly influenced by them. The result can be a genuine synthesis or a compromise, according to the adaptive powers at an individual's command. In analysing such cases where they occur in architecture—and they occur in all countries and at all times—one has thus to differentiate between conscious and unconscious modifications and between changes in the general tenor of buildings and changes merely brought about by the introduction of a few new motifs.

Of the first of these two, I have taken some works by Mr. Robert Atkinson and of Sir Edwin Cooper as providing instructive examples. Mr. Atkinson in his youth designed Neo-Georgian private houses; now that he has reached full maturity he builds such blocks of flats as Stockleigh Hall or Regency Lodge. Fifteen years have changed his idiom almost completely. Yet in his sympathetic treatment of brickwork, his care for proportion, his desire for poise, he is still the same now that he was when he began. Here the appealing qualities of the old have been so successfully blended with the new that surely nobody will regret that Mr. Atkinson did not—as some of his equally talented contemporaries did—stick to the idiom of 1910-25.

Styles change, and architects change with them. The various ways in which these alterations and adaptations are undertaken or undergone by architects form the subject of this article. The architect's own development may be in complete harmony with that of his age, so that changes of general style and changes of his personal style coincide. Thus it seems to have been in the case of Mr. Atkinson whose house in Wildwood Road, Hampstead Garden Suburb of 1924, and whose block of flats, Stockleigh Hall of 1937 (the latter designed in partnership with Mr. A. F. B. Anderson), though clearly expressed in the idioms of two periods, are yet representative of the same personal attitude towards materials and the paramount importance of proportion.

* The Architectural Review, August, 1941.

Sir Edwin Cooper designed the St. Marylebone Town Hall in 1912, *a characteristic work of Edwardian Baroque, powerful, prosperous and self-confident. In his extension of* 1938 *he consciously repeated his former composition in such general features as the centre loggia with its columns, cornice and balustrade, and the proportion of the windows. But owing to the change of style that had taken place between* 1912 *and* 1938 *he simplified everywhere, consciously adapting himself to a changed atmosphere, or unconsciously influenced by it. The details of the loggias should be compared and, above all, the side elevations.*

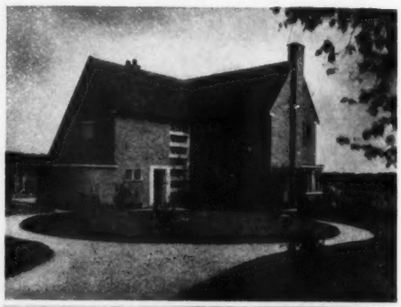
It is different, I think, in the case of Sir Edwin Cooper's St. Marylebone Town Hall. The old part was designed in 1912, the new in 1938. Sir Edwin was just under forty when the building was first placed in his hands. He had in his Port of London Authority building proved himself one of the most dashing leaders of that spectacular Neo-Baroque which expresses so well the noisy imperialism and the bustling prosperity of the pre-last-war years. So for St. Marylebone he designed a tower powerful and self-certain enough to stand up against the multitude of brilliant towers and spires that London can boast. He placed giant Corinthian columns into the main entrance porch, squeezed them along the side façade into narrow recesses, such as Michelangelo, the father of Baroque architecture, had been the first to use, piled heavy cornices on them, and, in the centre of the front above the cornice, a balustrade with bulging vases. One may like this display of Edwardian self-confidence or dislike it. But one should not deny that it is genuine and that it is of a piece.

Now the extension of 1938-39 follows deliberately the same scheme of composition. There is first of all the same central porch, again with its giant columns, cornice, balustrade and vases. But the columns are plain instead of fluted. At the corners they are replaced by pilasters so that the emotional effect of a struggle against a sideways pressure is obviated. The cornice is characteristically simplified; the vases have become smooth and slender. The windows, moreover, while carrying on the proportions of those of the older building, have flat unassuming bosses and not the protruding ones which Sir Edwin had designed with so much gusto twenty-five years before. Still more illuminating are the changes that have taken place in the side elevations. Where in 1912 there had been heavy masonry and two projecting bays with giant columns and a massive low side entrance crammed in between one pair of these, we see now to our surprise the typical bay design of modern industrial and commercial architecture—all glass and steel except for the supporting piers (which have not even capitals)—and side entrances nearly as uncompromising in their general outlines as though they had been designed by a believer in the Modern Movement.

I do not want to venture upon an answer to the question as to whether Sir Edwin in this extension was conscious of the implications of what he let himself in for, or whether he was modern *malgré lui*, whether the result of his effects is a synthesis of his generational style and the style of the moment at which he designed —or a compromise; whether it is an integer or a sum, representational Modern or "deflowered" Baroque. Yet on a decision upon these points one's ultimate æsthetic judgment must depend.

Where, as in two private houses which I also illustrate, the atmosphere of a style is disturbed by the intrusion of just one or two odd motifs from another, it is easier to make up one's mind. A weather-boarded cottage with a ground floor built of brick and a timber-framed upper floor does not seem to call for one of those long horizontal window bands, unifying two sides without any intermediate corner support, such as were conceived in relation to systems of steel and concrete construction with stancheons kept well inside the building. Nor can the heavy rather ostentatiously modern concrete bars of a Mendelsohnian staircase window be brought into harmony with the prevailing sentiment of a cottage in the Voysey tradition. Æsthetically such a mixture of a belated adherence to the style of 1890-1900 with one detail in the style of 1930, and in no apparent relation to the generational style of the architect, can hardly be successful. Psychologically it can safely be defined as the outcome of a conscious process of adoption. In the case of the other cottage the introduction of the window band is equally illogical, yet from a purely æsthetical point of view less jarring (because of the straightforward simplicity of the cottage as a whole). Psychologically it seems just possible that the architect here was modern not as the result of a deliberate effort but *malgré elle*, although it remains difficult to imagine how an unconscious process of infiltration of a new style into an old can lead to anything but a change —slight as it may be—in the general character of the building. This is why Sir Edwin Cooper's extension of the St. Marylebone Town Hall with its irresolute but all-round simplification is likely to appear so much more organic and satisfactory even to those who would not be prepared to accept it as a genuine synthesis.

Mr. Crickmay, in the cottage shown immediately below, has tried to keep the character of the early twentieth-century cottage revival, but introduced just one extreme 1930 *motif, the Mendelsohnian staircase window with its heavy concrete bars. Similarly, Miss E. Mayorcas, in the brick and timber cottage of the other illustration, has opened up the corner by means of one of those window bands expressive of steel or concrete construction. The insertion of one motif into an* ensemble *of a different style is as a rule the result of a conscious process of adoption and seldom successful.*



Thatching a barn on the Meopham Road in Kent

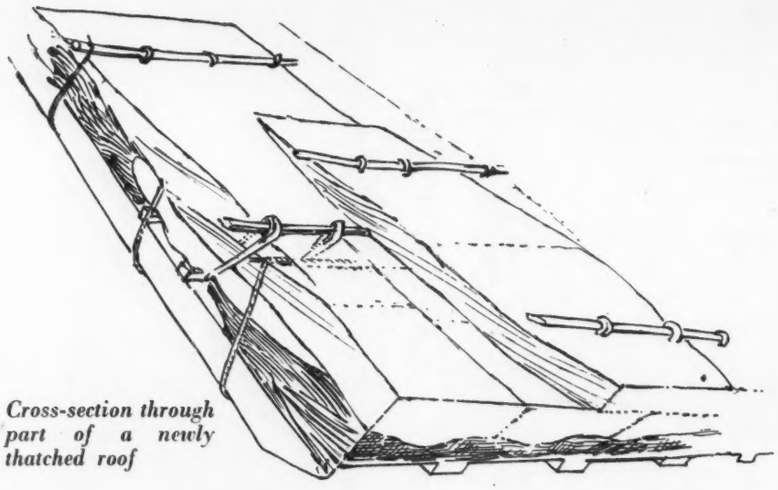
The Kentish Thatcher

By Thomas Hennell

A WEEK or two before the beginning of the hayrick-thatching season, I noticed, near the road between Wrotham and Meopham, that a barn which stands by a small farmhouse was being re-thatched. This is something of an event in our district, where so many fine old thatched buildings have fallen into ruin, or been demolished for their oak beams, or patched up with galvanized iron. And at least two good barns in the neighbourhood have been burnt out by enemy bombs. But this is a small freehold place which for generations has belonged to a yeoman family; so that last year, when the old lady who lived there died aged ninety-nine, one had fears that the place might lose its singularly modest charm. But her son who has returned here after forty years of London business is one who loves early associations: he has repaired the place without seeking strangers' advice.

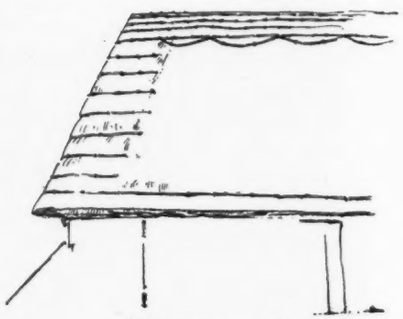
This barn was once the hop-kiln, but there have been no hops here for more than half a century; the end chamber where the brazier of charcoal stood which dried the hops on a floor of battens above, shows its flint-and-brick corners as curious panels in the timber wall, the middle part of that wall having been removed to make a doorway, and the cowled chimney brought level with the main roof.

On the roof our best thatcher, whose skill is his own family inheritance, was busy with fresh straw and wooden splints. In the yard at the bottom of the ladder was a great heap of straw, and hence from time to time the thatcher, descending, renewed his supply. He pulled out long, unbroken straws by handfuls and arranged them between two sticks (called "dogs"), of which one pair of ends was joined and the other pair could be tied when the dogs were filled. The straw thus arranged formed a wedge, thick at the butts and tapering to the heads; this was his "wad." Carrying this to the roof he sets it on the old thatch to his left and thence transfers the wad by handfuls to a corresponding position on the right of the ladder, in which it is fixed with splints of hazel, driven



Cross-section through part of a newly thatched roof

Thatching the ridge



The runners along the roof

in with a carpenter's heavy mallet. The splints are pointed at both ends and doubled like hairpins, and each row of their heads is covered by the butts of the next wad of straw. The thatch is begun over the eaves at the back and worked upwards to the ridge and then the ladder is moved to the left and another " lane " joined alongside from eaves to ridge; the corners come next, then the front, lastly the ridge is capped and the eaves and free ends of the thatch strengthened with splints and " ridgers."

The wads are laid with oblique edges and overlap one another somewhat. Before the final fixing they are combed down with the thatcher's rake, a straight five-foot length of wood with nails driven through at regular intervals. The thatcher uses his knee-pads of stout leather in pressing down the wads, in packing his dogs, and in the making of splints. The need for a fresh supply of these affords a change sometimes from the strain of working on the ladder. Then, when he begins renewing the thatch, he must first clear away the rotten, perished surface of the old thatch (a dusty and dirty job that !) fill up holes made by rats and sparrows and make good any broken laths or rafters.

The " free ends " of the thatch (where the building ends vertically, and the thatch cannot be continued round the corners) must be made up to the proper thickness within long rods or ridgers, which are first bent upwards to a right angle, pinned in the edges of thatch, finally bent again and pinned down across it. One can see the " lanes " and successive wads in the newly finished thatch, but there is skill in working them evenly together and in shaping them to corners, so that they are not obvious.

The ridge is finished by overlapping the tops of one side with a fresh wad put against the other, fixing this and bending over, and then another wad set across with its butts the other way. These are fastened with long horizontal runners pegged down with splints. To do this the thatcher climbs upon the ridge; and he may use these final fastenings ornamentally according to his fancy. And, lastly, the shaggy eaves are neatly clipped with shears, so that the rain may shoot off clear of the barn walls.

Of the drawings on this page the one on the left shows a perspective section through part of a thatched roof. The old thatch is hatched dark, the new left white. On the extreme left of the drawing a repaired hole can be seen. Only the bottom layer of the new thatch is sewn (with twine) to the rafters. The top layers are held in position by the runners and these in their turn by the splints. Of the drawings on the right the one on the top is self-explanatory, in the bottom one the horizontal runners on the finished thatch along the roof are visible.

The thatcher, cutting splints

ANTHOLOGY

The Medievalist in the Eighteen Eighties

Looking from the west end of St. Jacques' (at Lisieux) the girl observed the end of a steep narrow street of antique character, which seemed a likely haunt. . . .

She was transported to the Middle Ages. It contained the shops of tinkers, braziers, bellows-menders, hollow-turners, and other quaintest trades, their fronts open to the street beneath stories of timber overhanging so far that a slit of sky was left at the top for the light to descend, and no more. A blue misty obscurity pervaded the atmosphere, into which the sun thrust oblique staves of light. It was a street for the mediævalist to revel in, toss up his hat and shout hurrah in, send for his luggage, come and live in, die and be buried in. She had never supposed such a street to exist outside the imaginations of antiquarians. Smells direct from the sixteenth century hung in the air in all their original integrity and without a modern taint. The faces of the people in the doorways seemed those of individuals who habitually gazed on the great Francis, and spoke of Henry the Eighth as the king across the sea.

She inquired of a coppersmith if an English artist had been seen here lately. With a suddenness that almost discomfited her he announced that such a man had been seen, sketching a house just below—the "Vieux Manoir de François premier." Paula advanced to the house. The wood framework of the lower story was black and varnished; the upper story was brown and not varnished; carved figures of dragons, griffins, satyrs, and mermaids swarmed over the front; an ape stealing apples was the subject of this cantilever, a man undressing of that. These figures were cloaked with little cobwebs which waved in the breeze, so that each figure seemed alive.

She examined the woodwork closely; here and there she discerned pencil-marks which had no doubt been jotted thereon by Somerset as points of admeasurement, in the way she had seen him mark them at the castle. Some fragments of paper lay below: there were pencilled lines on them, and they bore a strong resemblance to a spoilt leaf of Somerset's sketch-book.

THOMAS HARDY

(*A Laodicean : A Story of To-Day*, 1881)

MARGINALIA

More War Art

Early last month another couple of rooms were opened at the National Gallery, containing new additions to the collection of work by war artists. This collection, which contains some first-rate work, is growing fast and is now large enough and representative enough to allow of as many as seven quite ambitious exhibitions to be sent on tour in addition to the permanent exhibition in Trafalgar Square. Exhibitions of the war artists' work have already visited New York and Ottawa and numerous provincial centres in this country, including Edinburgh, Belfast, Glasgow, Manchester, Liverpool, Newcastle, Bristol and Leeds. In the near future others are scheduled to visit the West Indies, Australia and New Zealand, and some of the portraits of airmen are being hung in R.A.F. squadron messes.

The pictures in the two new rooms maintain the high standard that has already been set as well as the catholic variety of tastes in art that have been catered for. They emphasize once more that the emotional significance, which the urgency of the times has reintroduced into daily life, has enabled representationalism to become rewarding to the artist in a way that seemed impossible a few years back, when his search for freshness of vision was driving him further and further away from realism.

The most interesting group of paintings in this new series is the work sent back from the Middle East by Edward Bowden. It is a delight to see his landscape talent, previously applied to pastoral Essex, expanded to render the wider horizons of the Abyssinian jungle and the Libyan desert without any loss of the sensibility that they always had. His camp and desert scenes are full of an enchanting mixture of topographical realism and humorous comment on the human fauna that inhabit these fantastic landscapes.

There are a number of new works of architectural interest, mostly showing air-raid damage to town landscapes and individual buildings. These include some carefully observed but rather dull water-colours by R. V. Pitchforth, some lively scenes in Edward Ardizzone's and Feliks Topolski's inimitable manner, a dramatic but rather commonplace painting by Henry Carr of St. Clement Danes church on fire and some new Graham Sutherlands whose feeling of intensity and tragedy shows up the superficiality of many attempts to record moving events in more conventional terms. Most notable of all, however, are two large paintings by John Piper of the bombed House of Commons, one of which is reproduced here.

The British Association

The importance of the British Association meeting, held at the Royal Institution, London, at the end of September, can hardly be over-rated, though whether it is to bear fruit depends on the realization of its findings. In the words of a young scientist (D. P. Riley), will it be an "opportunity of doing something, instead of only talking about doing something ?"

Scientists from all over the world came to war-ridden London to read their papers. Ambassadors and statesmen were amongst the audience, amongst the contributors and in the chair, but those whose job it will be to direct and to frame the general policy of reconstruction, in the physical sense of the word, were not present. It is a pity that there were not more architects and town-planners present, particularly those of the latter who base their theories more on the appeal of sentimental slogans than on scientifically corroborated facts of human needs. It would have been useful, for a lot of planners-to-be, to find out from scientists the nature of the technological basis of the "world order" into which towns and their life and buildings have ultimately to be fitted, and also what the biological needs of people are: "biological" being taken to include psychological as well as physiological needs.

The basic need today seems to be, to comprehend the implications of modern technology (including science) and its economic, political and biological consequences. Men of science are keenly aware of this, and it is time that "planners" understood it as well. An ostrich policy can no longer be afforded, nor the mere exploitation of publicity slogans.

"*The politician with his ears to the ground must give way to the statesman with his eyes on the future.*"

"*The Dutch auctioning of the political market place will be a social danger in the post-war world. Promising the impossible for vote-catching purposes should be frowned upon by political leaders and people alike.*" (Herbert Morrison.)

The desperate need is for the public at large to comprehend what science really means. The belief that science is completely divorced from everyday life and happenings is unfortunately only too common a superstition. It is the irony of fate that the section of human efforts which is specially intended for, and intimately linked with, the investigation and elucidation of life should be so misrepresented.

"*The old distinction between 'pure science' and 'applied science,' suggesting that applied science is somewhat impure, must disappear ; there must be one science only, with but one aim : the betterment of conditions of human life. The theoretician must remember that technique is the only way of reaching that aim, and technicians must remember that theoretical, and sometimes apparently useless work, can bear at length very important results for the comfort and happiness of mankind.*" (From a French scientist's contribution.)

The needs and wants of people must not only be ascertained more intimately and also more scientifically; but simultaneously the people, the public at large, must be informed as to how exacting they can be. Instead of creating a psychose of unsatisfied (and unsatisfiable) craving for an illusionary past, the lesson of the past should be taught, which surely, at least in this country, is to look forward. As Herbert Morrison said in his address:

"*The British people, who have colonized a great fraction of the world and travelled, traded and fought over most of the rest of it, will certainly not settle down calmly to a life without opportunities of growth. From now on these opportunities can no longer be geographical, they must be social.*"

And a public which has no precise information of its technical and scientific potentialities cannot formulate its wishes.

"*So often there is conflict between what will appeal to people—what they will comprehend and respond to—and what is really required for social progress. The scientific welfare standard is, I think, the answer. . . .*"

"*If political leaders make proper use of the truths which the scientists have unearthed, one of the last refuges of anti-social vested interest is destroyed.*" (Herbert Morrison.)

In time past knowledge was handed down from father to son. This is no longer so. Changes, fundamental

"The Aye Lobby" at the House of Commons, a new painting by John Piper. It is shown in the additional rooms of war artists' work recently opened at the National Gallery (see note on preceding page). The picture is reproduced by courtesy of the Ministry of Information.

changes, occur in our time not from generation to generation but from year to year.

It is simply not true that basic needs are neither space- nor time-bound, like Euclidian geometry. Basic needs, like all the rest, are geared to the human adventure, they change with changing technics, they change with the growth of knowledge, they make technics and knowledge change and grow.

Scientific enquiry and a scientific synthesis are the only means of ascertaining and implementing needs and wants. The time has gone when this attitude to facts and happenings could be brushed aside by ignorance masquerading as superiority, by impotence hiding behind the petticoat of "common sense" and by majority votes on scientific matters.

Science is a fine and delicate tool, in the hands of gangsters it can become a deadly weapon; we can see with our own eyes the havoc it has wrought.

"*It will take a long time for the civilized powers to repair the trail of material and moral havoc which the Germans leave behind them. It will require all the resources of science.*" (From the Prime Minister's message to the British Association.)

Science is a method to be applied to every human activity, it embraces tradition and experience, search for truth and application of findings, it is an integral part of our attitude to happenings and things alike, a sign of hope pointing to a better future. This was latent in every paper read:

"*None of these problems can be satisfactorily solved if we continue to rely on orthodoxy and tradition, with our faces turned towards the past. Only the scientific method, of adequate survey and proper delimitation of goals, together with continuous research and experiment, will avail.*" (Julian Huxley.)

"*When existing democratic institutions took shape in the seventeenth and eighteenth centuries industry was based on empirical practice transmitted by oral tradition, and the tasks of democratic government had little relevance to the consequences or uses of new scientific discoveries. During the past century new scientific discoveries have transformed the character of industry and the recognized functions of democratic government.*" (Prof. Lancelot Hogben.)

Man is organized into society in order to be able to convert the resources of the globe into things that can be used. His constant endeavour is to do this with the least effort and best result. The answer to this endeavour, in our time, is the scientific method. It applies to all branches of human activity and to a diversity of problems.

SOCIAL WELFARE: "*Trained social observers, experienced in the art of human understanding and social healing, will be needed to bring the benefits of social legislation into the lives of the people, and the community must learn to recognize the value of scientific research into human needs and individual limitations, and to exploit its staffs of trained social workers who possess the unique power of human understanding.*" (H. E. Norman, Chairman, British Federation of Social Workers.)

EDUCATION: "*Education must be surveyed and analyzed scientifically, as a function of social life.*" (Prof. Huxley.)

WORLD HEAT AND POWER REQUIREMENTS: "*This paper is a plea for a detailed consideration on a quantitative basis of energy problems and possibilities involved in schemes of reconstruction—world energy resources, their utilization and conservation. Much is to be done to make statistics more complete and informative, but they are an indispensable basis for planning the future.*" (Sir Harold Hartley.)

DOMESTIC SCIENCE: "*There has come another no less far-reaching revolution—the domestic—which has done so much to raise the standard of health and comfort in the home and may be regarded as the repayment by the technician of a long overdue debt for the social consequences of the mechanization of industry in nineteenth century. . . .*" (Mrs. M. A. Hamilton).

TOWN AND COUNTRY: "*. . . A major problem of developed countries is the inequality of conditions in town and country. Wider application of energy on farms, and in conditioned transport and storage, would increase productivity and accelerate processing.*" (Sir Harold Hartley.)

The use and the conservation of the world's resources is another major problem:

"*It is no exaggeration to say that without the successive developments that have made available heat and power, most of the scientific discoveries of the last two hundred years could not have made an effective contribution to the progress of civilization. . . .*"

"*With the scientific knowledge we now possess it should be possible to plan with much greater certainty than in the past. Fundamental research will yield continuing improvements in methods of utilizing fuel, distribution and storage of electricity, uses of power, and in the production of substitutes for mineral oil from coal or vegetable products against a possible shortage. Our ultimate goal is the utilization of the sun's radiation by some photochemical or photoelectric device or engine to take the place of the solar energy stored in coal and oil. These are the long-range problems to be solved in days to come, when once more it can be said that science knows no frontiers. Her immediate task is to ensure that in the replanning of the world full use is made of the basic knowledge that she alone can provide, particularly in fields of nutrition and energy with all that they imply for the well-being of mankind.*" (Sir Harold Hartley.)

"*Man does not live by bread alone, but without bread or its equivalent he cannot live at all. The first step towards a scientifically planned world order should therefore be to put mass production and mass consumption of the necessities of life on a scientific basis. Among other considerations this will involve comprehensive plans for harnessing the giant power resources of the world, drawn up mainly in terms of electrical generation and distribution.*" (H. P. Vowels.)

AGRICULTURE is the basis of one of our most important requirements: Food. It has become in some countries, and is becoming in others, a highly developed industry. Scientific experiment complements or replaces traditional practice and prejudice. Organization on an international scale is called for.

A minimum dietary standard has been scientifically established:

"*Partly through ignorance, partly through poverty, we are still well below an optimum food standard. Health, growth and expectation of life would all be greatly improved if we could attain that standard.*" (Herbert Morrison.)

That is what the politician says; the scientist has much the same opinion:

"*The right of every individual to the means of attaining his full inherited capacity for health and physical fitness should rank equal with his right to religious and political freedom. In actual fact, children born of poor parents in poor districts are of poorer physique, suffer more from disease and have a lower expectation of life than children born of well-to-do parents. There is evidence to warrant the assumption that inadequate diet is the main cause of this grave social injustice.*"

"*We have an authoritative standard of dietary requirements for health. When diets in common use are compared with this standard, it is found that, even in the wealthiest countries, the diet of the poorest third of the population does not come up to the standard. . . .*"

"*A food policy based on human needs would involve a great increase in agricultural production. It is estimated that, to bring the diet of the United States up to the standard for health, there would need to be an increase in the consumption of the five most important health foods by the following amounts: butter 15 per cent., milk 20, eggs 35, fruit 70, vegetables 100. Even larger increases are needed in most other countries. The need for increased production would bring prosperity to agriculture. For many years ahead, there would be no fear of any slump in agriculture due to overproduction of food.*

"*If the whole of mankind is to get a diet adequate for health, the various foodstuffs will need to be grown in the areas most suitable for their production. This involves increased national and international trade in foodstuffs and in commodities to be exchanged for foodstuffs. . . .*" (Sir John Orr.)

Conservation of the world's resources is important, in peace-time:

"*Russian soil scientists have recognized the need for taking steps in time. Further, they have developed soil classification and soil surveying to a high pitch, and they will be able to adopt the necessary improvement measures as soon as circumstances permit.*" (Sir John Russell.)

Conservation now in war is more pressing than ever; it can only be done on an international scale if the toil of years is to be saved:

"*. . . Rain and snowfall are out of human control, but in all countries the search for drought resistant crops is recognized as the surest way of coping with the problem. The Russian scientists have been very successful here, and it would be a tragedy if the varieties produced as the result of so many years of labour should be lost. It would greatly facilitate reconstruction if selected varieties could be sent to Western Canada and multiplied there in readiness for the time when the seed will be needed.*"

"*The reconstruction of the live stock population will be more difficult. It took five or six years to recover from the low level of 1933, which had brought great distress to Russia. Recovery could now be more rapid if the pedigree stock could be saved by sending animals eastwards out of harm's way. Selection and improvement have been steadily going on, and the technique of artificial insemination whereby a high class male animal can fertilize a much larger number of females than is otherwise possible.*"

"*The most difficult reconstruction will be that of the trees. The loss of the fruit trees is a tragedy. Interest in fruit growing had been increasing and much work had been done in selecting and breeding new varieties suited to special regions. There is the possibility that we could help in saving these if buds could be sent over for propagation here.*" (Sir John Russell.)

The scientist also calls for international agricultural planning:

"*The schemes would need to be planned on a world-wide scale. There is need for*

an international commission of representatives of the Allied Governments to review the social, agricultural and economic aspects of food and prepare plans for a post-war policy which will bring a diet adequate for health within the reach of everybody. Under the stress of war, we are forced to adopt schemes for the maximum production of food and for its distribution in accordance with nutritional needs. If these schemes were adjusted and extended to form a permanent post-war policy as the fundamental part of economic planning for human welfare, we would have taken the first and most important step towards the new and better world." (Sir John Orr.)

INDUSTRY is yet another aspect in the transformation of the world resources; here again scientific planning is necessary:

From the point of view of location three distinct types of industries exist:

"1. *Some industries, such as the extractive, must take place where the natural resources of soil and minerals exist. Here population follows the industry.*

"2. *Other industries such as the 'residentiary' services and retail trades must be distributed where people require serving. Here trade follows the population.*

"3. *The location of yet other industries, particularly manufacturers, are partly determined by sources of labour, partly by natural resources. It is these 'foot-loose,' mobile, industries that give greatest scope for planning, for their location is not narrowly circumscribed by man's needs or by nature.*" (Prof. P. Sergeant Florence.)

But location of industries and the distribution of populations must be based on scientific data and not on sentimental claims:

"*Recent scientific progress has on the whole intensified the economic trend toward industrial concentration; if the social and socio-economic criteria are accepted, and dispersion adopted as a policy, hard thinking and fighting lies ahead for planners.*" (Prof. P. Sergeant Florence.)

"*The social benefits which scientific research, by free practice and under right guidance, can bestow on all mankind, grow ever greater. It is right that such benefits should be shared among all peoples alike.*" (From H.M. the King's message to the British Association meeting.)

It is the job of economics, scientific economics, aiming at the satisfaction of biological needs to effect the "sharing out." In all fields the answer of technicians is there:

Herbert Morrison on CLOTHING: "*As to clothing, the Board of Trade has given a flying start to exploration of this field by the system of rationing now in force. We can accept 66 coupons, and what they will procure, as a useful first approximation to a minimum—not, of course, an optimum—welfare standard in clothing. We can assume that we need to aim at a state of things in which every inhabitant of these islands can acquire not less than the equivalent of 66 coupons' worth of clothing a year. And I am not sure we can assume that we have reached it yet.*"

Herbert Morrison on HOUSING: "*Systematic study of the effect on health of environment and housing standards, points towards a certain minimum individual allowance of space, privacy, fresh air and sunlight as essential for health. By that standard a great proportion of the housing and town environment of this country stands condemned as inadequate. Take the simplest and crudest test of all, that of the Government standard of overcrowding. By that standard over 340,000 houses in England and Wales were judged and found wanting. In one of our great cities nearly a third of the population were living in a state of overcrowding.*"

R. Fitzmaurice, Building Research Station, on THE BUILDING INDUSTRY: "*It has often been said that building lags behind other industries in the use it makes of scientific developments. There is some foundation for this. A considerable amount of scientific work has been done, however, in the last twenty years in the building field and, as a result, there is accumulating a fund of knowledge of the basic scientific principles which govern building problems. . . . No auditorium need ever be built again in which speech is unintelligible. . . . The next door wireless need no longer be a nuisance to dwellers in terraced and semi-detached houses or flats, and hospitals or offices need not be made unusable by street noises. . . . Science has many contributions to make towards increasing the comfort of buildings. War conditions, with the black-out, have focussed attention on obtaining the maximum efficiency for such windows as are left to us. Simple methods of predicting the day-lighting efficiency of various arrangements of windows have been developed, and these should soon be a normal part of the equipment of any architect's office. . . . There is now no more justification for a building being damp than for its falling down. . . . These and many other developments mark a decided step forward, but their practical application tends to lag, and for this there are various factors of which the following are discussed. . . . A greater emphasis might be given to elementary science in the training of workers in the building industry. This applies to architects, builders, craftsmen and surveyors alike. . . . Another factor tending to impede technological progress is a framework of regulations controlling the construction of buildings which in their operation tend to stereotype conventional forms. Ideally the regulations should state the object to be achieved rather than lay down the means by which the regulation is to be satisfied.*"

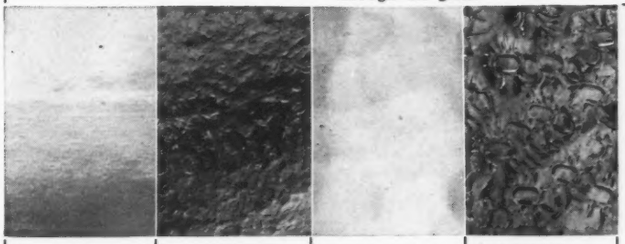
Professor Holford: "*If planning is to be anything more than a design on paper, it must be the framework and the method by which the sciences are related to human needs. Town and country planning takes on a significance as soon as this principle is admitted and applied. . . . Every technical advance that is made in the field of development alters the pattern of the plan, whether it be a new medium of transport, or an improved method of land drainage, fire-protection, or building construction. The same is true of social changes, such as improved education, holidays-with-pay, slum clearance, or communal feeding. So that while it is true that planning should precede and to a certain extent govern development, it is itself dependent on development and should*

FACTS ABOUT GLASS FOR ARCHITECTURAL STUDENTS

No. 5.–Cathedral Glass

NOTE : Cathedral Glass comes strictly into the same category as Figured Rolled Glass. Each is a rolled glass, one surface of which has a definite texture (Cathedral) or pattern (Figured) obscuring vision partially or completely according to the depth and configuration of the texture or pattern. The glass may be either tinted or untinted, and the texture or pattern imprinted by either the table or the roller. The process of manufacture may be either intermittent or continuous. Figured Rolled Glass will be dealt with in Information Sheet No. 6.

NON-FORMAL TEXTURES : The textural surface just gives sufficient obscurity to prevent clear vision through the glass.



CLEAR | PLAIN | DOUBLE ROLLED | WATERWITE

Also

RIMPLED : Similar to Double Rolled, but with slightly more pronounced pattern.

CLOUDED : Similar surface to Plain Rolled, but clouded instead of bright.

Manufacturing sizes : *White 120" × 48" ; Tinted 100" × 36" or 90" × 42".*

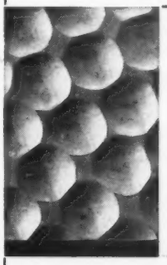
Thicknesses : *¼", ⅜" and ½" : { Clouded : ¼" only. ⅜" and ½" can be manufactured if required.*

Weights per sq. ft. : *1½ lbs., 2½ lbs. and 3½ lbs.*

Light Transmission *(with very little diffusion) about 85%.*

SEMI-FORMAL TEXTURES : On one surface a slight semi-formal pattern is impressed, giving a certain amount of brightness to the appearance of the glass. Direct vision is partly obscured.

HAMMERED CATHEDRAL



(1) **Large** : Markings approximately twice the diameter of those illustrated.

(2) **Small :** As illustrated.

(3) With extra small markings, about raindrop size (approximately half the diameter of those illustrated).

Manufacturing sizes : *White 120" × 48" ; Tinted 100" × 36" or 90" × 42"*

Thicknesses : *¼", ⅜" and ½".* ***Weights per sq. ft. :*** *1½ lbs., 2½ lbs. and 3½ lbs.*

Light Transmission : *(with very little diffusion) 80% to 85%.*

TINTS : Cathedral Glass is available in thirteen standard tints and a comprehensive range of intermediate shades.

USES : Largely used for partitions in offices and warehouses when direct vision is not desired. Also for window glazing of warehouses, factories, etc. where Wired Glass or the heavier Rolled types of glass are not considered necessary.

SPECIFICATIONS : In preparing specifications, the following clauses should be included for glazing :—

(1) General Clause : All glass to be of the type, quality, and substance specified, and to be of British manufacture. The glazier must be prepared to produce at the completion of the job invoice or voucher from the manufacturer to show that the glass supplied is of the specified standard.

(2) Glasses should be described by the recognised trade terms, thicknesses and qualities.

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always be in close touch with its progress. . . . Meanwhile even those objectives which are universally acknowledged as necessary or socially desirable, are still a long way from being achieved. Waste of land is one of them. . . . Social waste is another, whether in slums or in the twelve-to-the-acre desert of a housing estate. . . . It is high time to demonstrate how this waste can be avoided. . . . At a time when normal development is held in check, an opportunity occurs to consider the best use of the land. A survey should be the product of a series of related surveys, and should carry researches a stage further, to the point where they can be co-ordinated by a central authority on the basis of land-use, in order to form a provisional master-plan for physical reconstruction."

OVE ARUP: "*The elimination of waste is the foremost function of the engineer or technician. A good design being that which achieves its purpose with the minimum of human effort, . . . a lack of co-ordination of the available knowledge, which is the chief source of waste inside engineering to-day. It produces the specialist or expert, and the usual problem arises of how to create the organization, the 'composite mind' so to speak, which can achieve a well-balanced synthesis from the wealth of available materials. This is, I suppose, one of the central problems of our time.*

"*The three main methods which spring to mind are:*

"*1. Improvement of the technical education. It is easy to see that this will not go very far towards solving the problem.*

"*2. Collaboration of a number of experts in a team. . . .*

"*Architects, engineers, heating specialists, etc., working together in close collaboration. This development is very noticeable in the United States. . . .*

"*The most important remedy would be to check up and classify the existing technical information which often only exists in biased publications by commercial undertakings, and make it publicly available. This would involve the extension of the present research stations, and the creation of planning organizations which would undertake the systematic standardization of all the elements of planning. It would eliminate some of the unnecessary repetition of detail planning which goes on in thousands of offices, and would ensure the adoption of the most up-to-date methods. The application of this principle would, however, logically result in an extensive interference with industry and construction. In fact, it should develop into a social service undertaking the re-planning of the whole of industry, communications, town planning, etc.*

"*Gradually, the centre of gravity would thus be shifted from private enterprise to public service, which should attach to it the best technical ability in the country. It would also be reasonable and profitable to combine these planning research centres with the technical education of students, somewhat on the Bauhaus lines.*"

Listening to all this, one was compelled to add to Mr. Morrison's words ("Both our dignity and our interests require that we shall be the directors and not the victims of technical and scientific advance") those of Sir John Orr ("The carrying out of such a policy would involve some adjustment of the economic structure . . .)."

The Buildings Illustrated

House at Galby, Leicestershire

Architect: **Raymond McGrath**

The general contractors were J. Chapman and Sons Ltd. Among the sub-contractors were the following: Comyn Ching and Co. Ltd. (heating installation), Kingstone Ltd. (electrical installation), "Kiefer" (purpose-made windows), Cellulin Flooring Co. ("Cellulin"), Messrs. Tuke and Bell (sewage disposal plant), Joinery and Builders Suppliers Ltd. (doors), Constone Ltd. (precast work), Cleveland Art Metal Works (balustrades), Dryad Metal Works (various metalwork), The Ruberoid Co. Ltd. ("Ruberoid" roofing), Shanks and Co. (sanitary fittings), Tentest Fibre Board Co. ("Tentest"), P. C. Henderson (Garage door gear), Richard Tiles Ltd. (tiling), The Well Fire and Foundry Co. Ltd. (fireplaces), J. D. Beardmore and Co. Ltd. (ironmongery), Salubra Ltd. (wallpapers), Docker Brothers (paints), Rescini Ltd. (wall coverings), James Clark and Eaton Ltd. ("Vitrolite"), E. K. Cole Ltd. ("Thermovent" convecting heaters); Turner's Asbestos Cement Co. (flower boxes), W. V. Norton (painting and glazing).