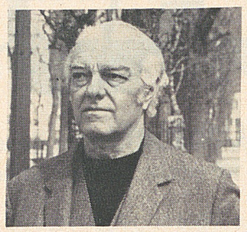
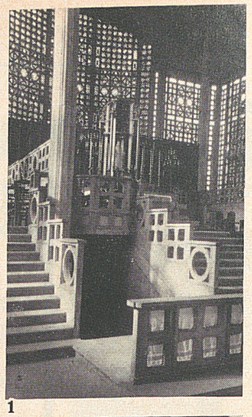
Goldfinger

It is particularly appropriate that Ernö Goldfinger's 70th birthday last September should have so nearly coincided with our entry into Europe. Although he has lived and practised here for the last 40 years he has always been the most European of British architects and his work can and should be judged in a continental rather than an island context.





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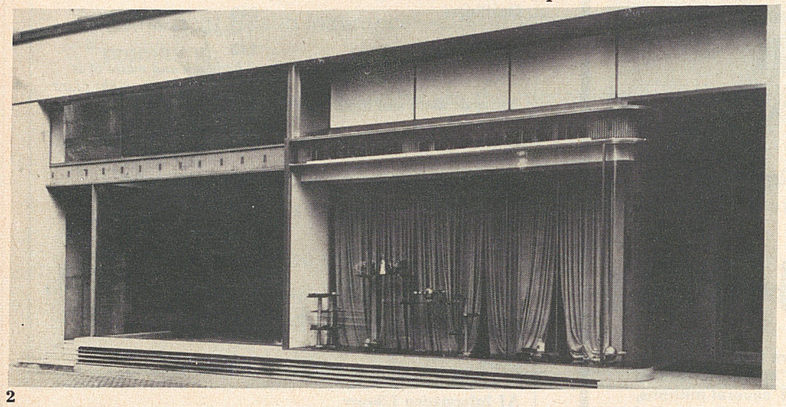

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1 *An early influence—Auguste Perret's concrete and glass Church of Notre Dame le Raincy, Paris* 1922.
2 *London shop front for Helena Rubenstein, Dover Street* 1926.
3 *Chair and stool for Lee Milner* 1928. *Chair first designed in* 1925 *is based on traditional military models.*
4 *House at Le Touquet* 1933-1934. *Goldfinger moved beyond the 'white architecture' of the* 1930s, *and used a variety of materials.*
5 *His own house in Hampstead,* 1938, *shows some Le Touquet characteristics.*

'The style is the man', perhaps even 'the man is the style'. Ernö Goldfinger was born in Budapest in 1902. As a child he knew both country life and the life of the metropolis in Budapest and Vienna. His education was truly European, including 'gymnasiums' in Budapest and Vienna, Rosay in Switzerland, and the Beaux Arts in Paris. At the Beaux Arts he joined with other students, who like him, were dissatisfied with the ateliers available to them, in asking Auguste Perret to form an atelier in which they could work. This was done on the advice of Le Corbusier who had previously worked in Perret's office. It was significant as a rejection of the prevailing academism and the deliberate choice of a teacher who was a bold constructional innovator, professionally responsible (Perret was a contractor architect), working almost exclusively in reinforced concrete, and producing work characterised by elegance of concept, economy of means, and delicacy of detail. All of these attributes are present in Goldfinger's own work. As a young architect in Paris he had a wide circle of friends in the visual arts, and tangible evidence of this can be seen on the walls of his London house. As an architect in London he has maintained his European contacts and has extended them through his activities in CIAM, MARS and IUA.

At the outset of an appraisal of Goldfinger's work one characteristic emerges that sets him apart from his architectural contemporaries and friends; this is that he never took part in the 'white architecture' of the 1920s and 1930s. It is obvious from his own work that he has always considered the differences between materials too important to be glossed over. Concrete, brickwork, wood, metal and glass have been brought together with respect for the nature of each, and in this aspect his work in the 1920s presaged this reaction to the 'white architecture' which took place 20 years later.

Another characteristic which has led to a noticeably individual approach is that he has preferred always to return in a scientific manner to first principles, like the architectural pioneers some years his senior, rather than accepting their work as a foundation for his own. This independence of spirit shows itself in all his work, in his buildings, interiors and furniture. Everything he does is inspired by his desire to solve problems from first principles and to arrive at a calm and economic style.

Goldfinger's importance as an architect in England derives from his steadfast aim to create a rational and vernacular answer to architectural problems—this style is really non-style, in contrast to that 'style' in a modish sense which has always interested architects more in England than in Europe. Unfortunately he has never

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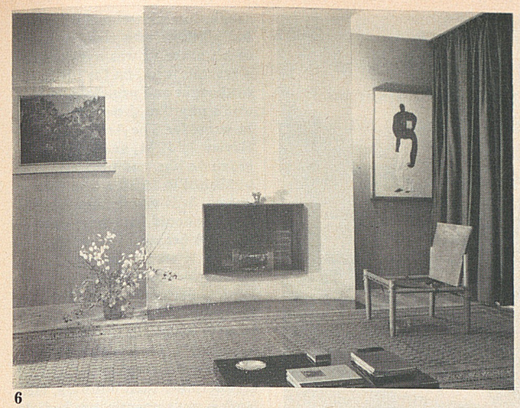

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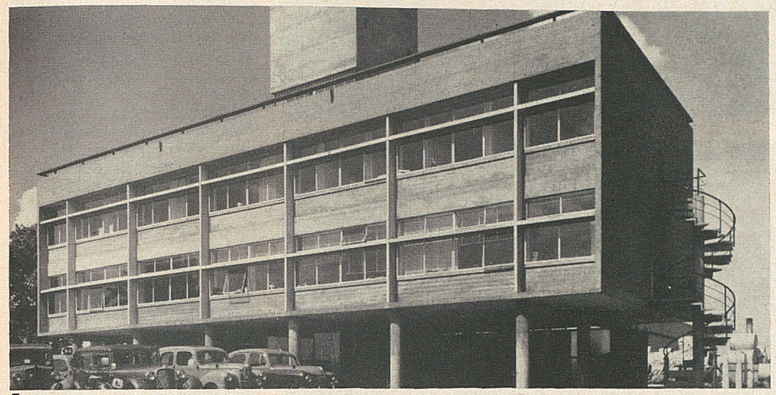

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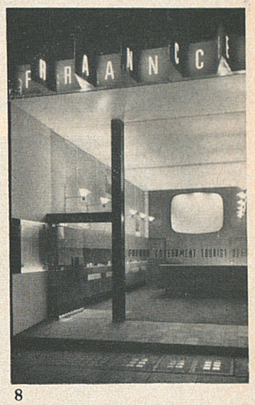

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6 *Living room of Goldfinger's house, pictures by Max Ernst and Ozenfont.*
7 *Carr offices, Solihull* 1955. *Transoms as used at Hampstead house.*
8 *French (now Belgian) tourist office* 1959, *Haymarket London.*
9 *Alexander Fleming House* 1962, *Elephant and Castle, London.*
10 *Frame and infill design applied to a small building. A proposal for rebuilding* 69-70 *Piccadilly.*

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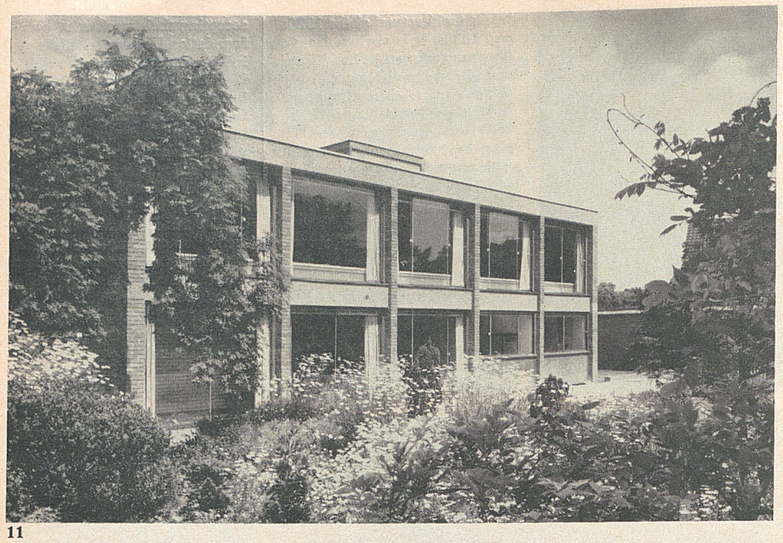

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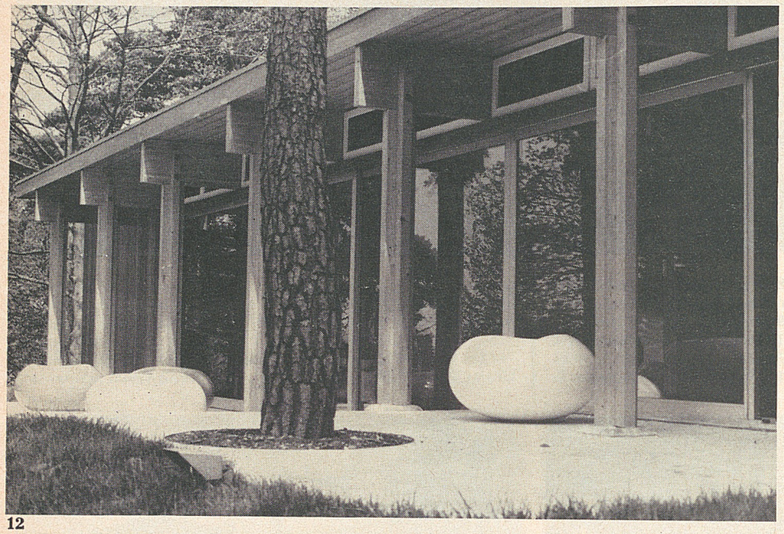

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taught in architectural schools but all those who come to learn in his office (I was one) realise a great debt to him for his clarity of thought and principle. It is also a pity that three long articles he wrote for The Architectural Review in 1941, and a monograph on him and his work published in 1963, are so little known. It is wholly appropriate that he should have been elected an ARA because he is in the best sense an academician, a teacher by example.

Ernö Goldfinger is the whole man, the rational artist (his tests: is it clear, is it true, is it beautiful?). He sets an example of classical European thought, of reason rather than intuition. His work is not romantic, not lyrical, but unambiguous, reasoned, cool, considered, ordered, beautiful; buildings not particularly of today in a transitory sense but of our time, free of stylistic quirks, and free, thank heaven, from literary explanations and obscure interpretations. May he long continue to flourish.

H. T. CADBURY BROWN

14

11 *Brick and bush hammered concrete, Player House,* 1962, *Coombe Hill, Surrey.*
12 *Perry House, Windlesham* 1970. *A timber house in a woodland setting.*
13 *French Railways office on the Champs Elysées, Paris,* 1971.
14 *Rowlett Street housing for the GLC* 1972. *Large scale but based on the module of 2ft 9in, as is all his work.*

The editors

THE BLACK AND WHITE OF IT

The basic elements of the RIBA and apartheid controversy are not complicated. The RIBA has a special relationship with the Institute of South African Architects and with four provincial institutes in South Africa. Like the other 28 overseas institutes allied to the RIBA, these are societies in which council believes the members are educationally well qualified and 'that they share with the members of the Royal Institute links of language, professional ethics or concepts of professional practice'. The institute also recognises five schools of architecture in South Africa as being of suitable standard to be exempt from RIBA external exams.

The ISAA is, like all other organisations in South Africa, subject to the Government's apartheid machinery, and so the institute becomes part of the racialist system (it has no black members and only a handful of Chinese, Indian and coloured ones—their numbers are severely restricted because of the inadequacy of South Africa's secondary education system). The institute and the schools operate an effective colour bar whether they want to or not and every architect who builds in South Africa—whether he be native or from overseas—supports the system in a tangible way (see below).

The South African Government has introduced politics to architecture; nothing we can do will separate them.

The main argument is not about whether the South Africans have similar professional ethics to ours or not; they can't have.

The question is whether severing the special links will do any good. If links are cut immediately, will South African architects be moved by embarrassment and shame to try to improve their standards or will they drift even further from civilised behaviour? Those who want to cut links argue that the cricket ban in 1970 did dint the previously monolithic edifice of

Reviews

Help through the maze

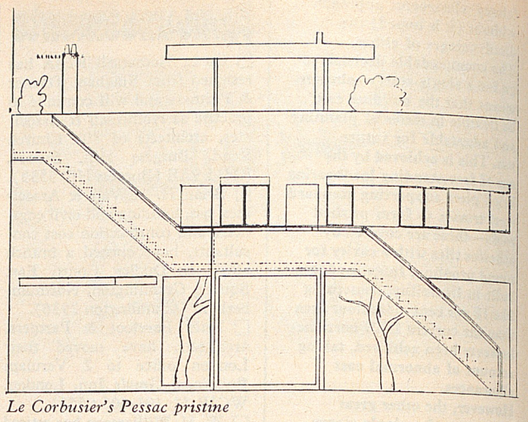
Guide to the Building Regulations 1972
by A. J. Elder. Architectural Press
£2·25

The author's earlier versions, under the title *AJ metric guide to the Building Regulations*, although valuable, were something of a stop-gap. This new guide not only covers the 1972 Regulations but is also more comprehensive than the earlier issues. The guide cannot eliminate the need for occasional reference to the official Regulations, but for most purposes it provides what will be needed and in a form much easier to read. Layout and typography help, as do good diagrams. Schedules printed adjacent to relevant Regulations make reference easy and useful comments are included. The translation of much of the official wording of the Regulations into plain English is a welcome relief. Relaxations of the Regulations can be obtained only for particular cases. An appendix gives examples of some of the more important decisions so far.
It would be very foolish for any office to be without copies of this book in its latest form.
C. C. Handisyde

Machine for living in

Lived-in architecture
by Philippe Boudon. Lund Humphries
£3·50

This is an important book whose subject, if not content, is well known by now. By the mid-60s Le Corbusier's housing scheme at Pessac had been adapted by the residents and had therefore, in many people's terms, proved an architectural failure. Boudon's book can be read as an amusing study of architects' folly, and indeed many of the user's quotes may be grist to a Habraken mill.
But there is a more serious level of inquiry here. Pessac is a fascinating subject in itself—it was here that Corb said 'Life is always right and the architect wrong'—and on its intrinsic interest Boudon builds his study, with a methodology of humane, perceptive criticism. His technique is to prise apart layers of intention and meaning, to show up paradox and duality between them, thus throwing light on his subject. Action by Pessac residents in adapting their homes is 'read' by the author, who sees Pessac as the *oeuvre* not only of Corb but of his tenants.
Boudon separates the architect's intentions (written) from his actions (built), the residents' intentions (in interview) from their actions (adaptations), and compares contemporary reactions (press reports) with a modern 'critical' reaction (in taped discussion). A yet deeper layer, Corbusier's intentions (as distinct from what he *said* they were) is alluded to continually. Contradictions between these statements are pointed up with a sharpness that is continually fascinating.
The potential and open quality of the architecture (at one point tellingly contrasted with Oud's similar size Weissenhof terrace of enclosed, functional, discrete spaces) not only lends itself to a dialectic with the occupants—it also offers a physical critique of 'functionalism' in terms of *machine à habiter*.
The Oud housing, based on a rational reduction of life into discrete components, offers discrete spaces for specific uses. And in his writing, particularly on an urban scale, Corb tended towards this simplistic view. However, at Pessac the space is very flexible in use; for example there is no specific circulation area, and the stair—a part of the living room—is both vantage point and point of contact and reference.
This open form, Boudon claims, seems to call for response and all the houses have been rearranged more than once. Acceptance of the occupants' positive role, is a reaction within rather than against Corb's scheme.
The study is both open-ended and allusive; particularly as the interviews are 'non-directive' and the author's presence made as transparent as possible.
Where, for example, Herbert Gans in *The Levittowners* saw reality in the way people grouped, as a shifting herd in a 'natural' (culturally empty) situation, Boudon sees reality in what people say and do; they are individuals in a cultural situation.
The more recent book is a refreshing change, a welcome and too rare approach.
Boudon writes clearly and deceptively simply. He offers an enjoyable essay in architectural criticism, but also a serious investigation of the ambiguities and contradictions in such ideas as functionalism, inside/outside, user requirements, and standardisation which must remain important.



Le Corbusier's Pessac pristine

If not a great book, this is not far below the angels. If a small book, it is nevertheless strong enough to keep at bay the fertile 'scientific' jungle which stretches from Conrad Jameson to David Canter.
JMMcK

More Corb

Le Corbusier by Robert Furneaux Jordan. Dent
£3·50

Robert Jordan is an author who can tell a story really well. Too well, perhaps: for the pen of this immaculate stylist endows his tale with more emphasis and eloquence than the facts themselves would allow. Yet his biography of Le Corbusier is a pleasure to read, his interpretations often convincing. Nevertheless this is a work—he calls it modestly 'no more than a sketch'—which will be better understood by those with some previous knowledge of the subject.
With the steadily growing number of studies on Le Corbusier a stage has now been reached when restraint on the part of the historian is a virtue; as a man and his period recede into the past, so his image becomes less personal. The author might have written with more detachment, and its absence dates Peter Blake's study of Le Corbusier, too; a work which the present author generously acknowledges and which now considerably assisted the reviewer who had not read it before.
It was somewhat surprising to have a new book on Le Corbusier coming from this author who on various occasions had taken exception to what he called Le Corbusier's *prima donna* attitudes. However, the reader quickly senses Jordan's genuine warmth and sympathy for the Master and the pains which he took to make this apparent. Too apparent, perhaps; for nowadays the image of Le Corbusier does not gain from a lack of critical appreciation. Not that this is missing entirely in the volume but it is centred more on the person than on the work. This is sad, for with the passage of time Le Corbusier's enormous achievement invites reassessment.
Another shortcoming of this study—after all a biography—is the meagre attention to the master's work as a painter: much of his architecture and many of his facades are not comprehensible without this key. The author's preoccupation with geometry alone is too one-sided a guide. It is not the task of the reviewer to compile a list of errors, inaccuracies and misinterpretations; however, Frank Lloyd Wright did not build in Venice as the author states: his design for the Masieri Memorial Building was not executed.
Walter Segal

Painting the frame

Structural steel painting by J. R. Venison. International Decorative Paints, Henrietta House, Henrietta Place, London W1
£3

The painting of structural steelwork is too often a repeat of what was done on the last project, rather than a careful appraisal of the structure in detail and in use, thus resulting in the proper preparation specification combined with the right paint or other surface following treatment. As the foreword says, there is no single paint, material or treatment which will fulfil all requirements and the vast range of products available from the paint industry needs some guidance to be given for its usage. This book covers the basic problems of corrosion, the preparation of the surface, about 80 painting specifications and information on about 40 products of International Decorative Paints. Although there would appear to be an element of advertising, the nomenclature is such that other products could be specified. The book is well produced, easy to follow and provides considerable information and advice for the price.
Allan Hodgkinson

Building study

Housing in North Kensington

CI/SfB 81
Housing
Ernö Goldfinger

Ernö Goldfinger has remained a consistent advocate of high-rise living in urban densities for over 40 years. At the Cheltenham Estate, whose completion coincided with his 70th birthday, he has designed one of the tallest residential blocks yet built in the UK. Whether one accepts its theoretical basis or not, this scheme is impossible to ignore—not simply because of its size, but for the organisation of form and control of detail which it displays.

Building study

Cheltenham Estate housing

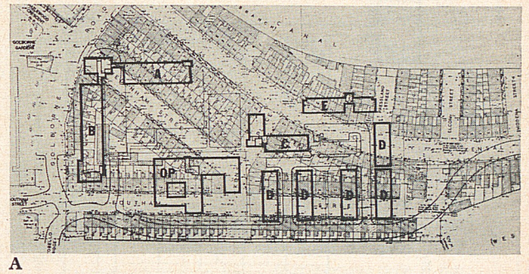
Architect's account

At Golborne Road, London W10
for Greater London Council by Erno Goldfinger
associate N. Molis-Poloczanska
group leaders Richard G. Laxton, Robert Sigrist
assistants H. Bindschedler, I. Boutell, W. Butler, J. M. Copley, M. G. E. Goldfinger, J. Leong, M. Molloy, P. Nadin, M. Purdy, J. P. Renevey, R. F. Rogers, M. V. Stephenson, S. Xenopoulos, H. J. Yates
quantity surveyor Davis Belfield & Everest, partner in charge E. R. Parrinder, associate B. A. Imms, assistant A. G. Hollingworth
services engineer Dale & Ewbank, partner K. W. Dale, associate (plumbing and drainage) J. R. Rudman
structural engineer Charles Weiss & Partners partner in charge, A. S. Safier, associate I. W. Menzies
clerk of works J. Gilman, L. Peppiatt

1 *Cheltenham Estate from Carlton Bridge over Grand Union Canal. To left of Trellick Tower (block A) is seven-storey block B and (nearer) six-storey block C. Canal side between bridge and estate is due to become open space.*
A *New layout superimposed on former street pattern.*

Completion of new Elkstone Road to south will allow closure of Kensal Road and construction of blocks D5 and E. Land between Kensal Road and canal is zoned public open space in City of Westminster. Rearrangement of boundaries will allow its integration with housing layout.

Planning: an integrated neighbourhood
The Cheltenham Estate will ultimately comprise 317 dwellings, of which 281 have been completed, in block A, B, C and D1 to 4; a further 36 dwellings in blocks E and D5 are to be built after closure of Kensal Road when the junction of Elkstone Road and Great Western Road has been effected at the end of 1972. Rational development required the closure of five streets, roads and courts, and the creation of quasi-pedestrian precinct of seven acres. The site will join an open space of some six acres running along the Regent Canal and bordering its north side **A, B**.
To the west, the site is bounded by Golborne Road, developed into a shopping street connected to the existing shopping and market street by Portobello bridge. To the south it is bordered by the new Elkstone Road running along the railway line. This road will develop into a busy public



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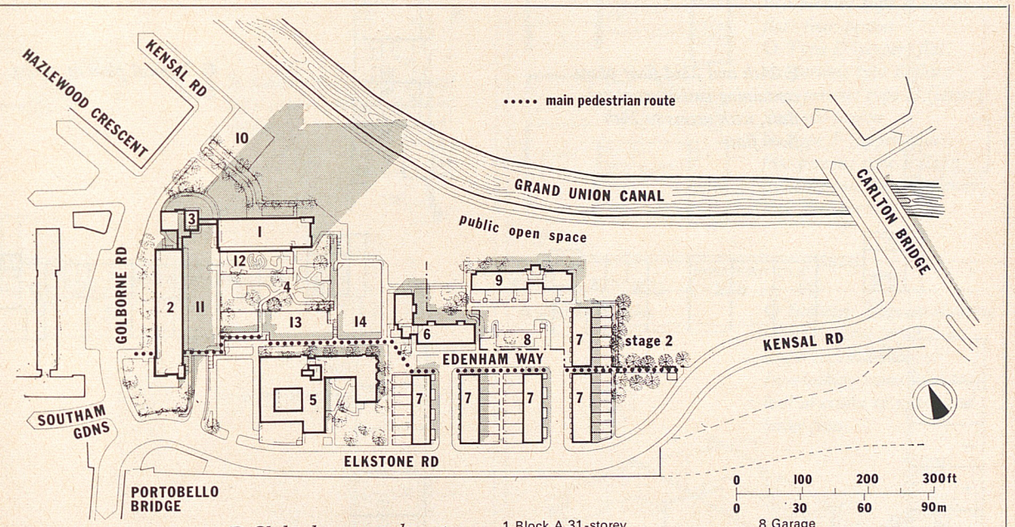
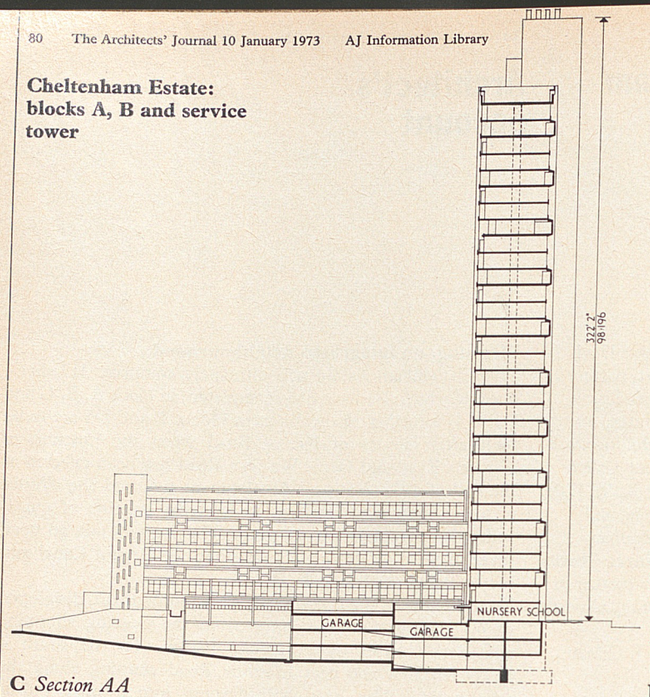


B *Cheltenham estate layout stages one and two, showing vehicle and pedestrian routes (also old people's home, not included in this study).*

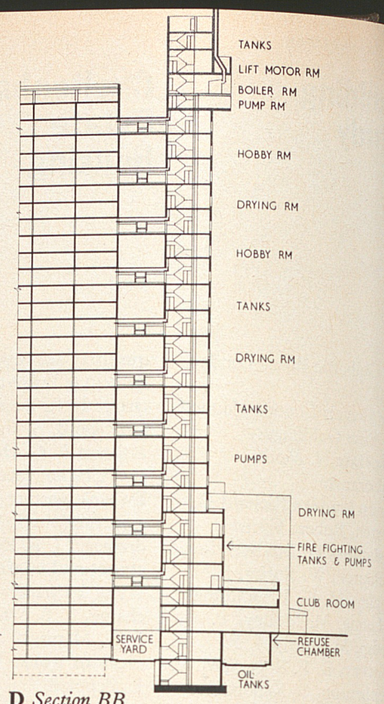
1 Block A 31-storey
2 Block B 7-storey
3 Service tower
4 Garage
5 Old people's home
6 Block C 6-storey
7 Blocks D 3-storey
8 Garage
9 Block E 6-storey
10 Mission Hall (reserved area)
11 Service yard
12 Nursery school play area
13 Playground
14 Ball games

1 ←

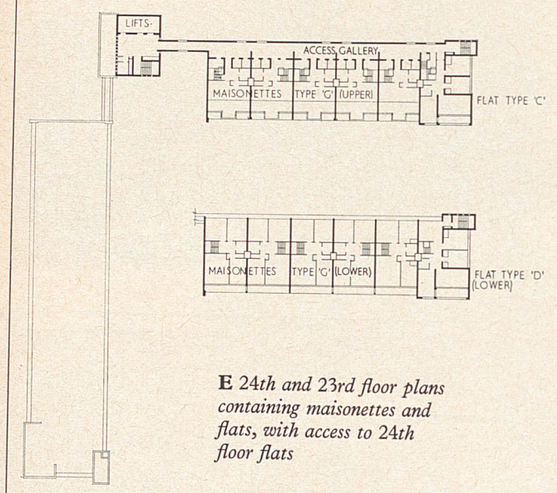
Cheltenham Estate: blocks A, B and service tower



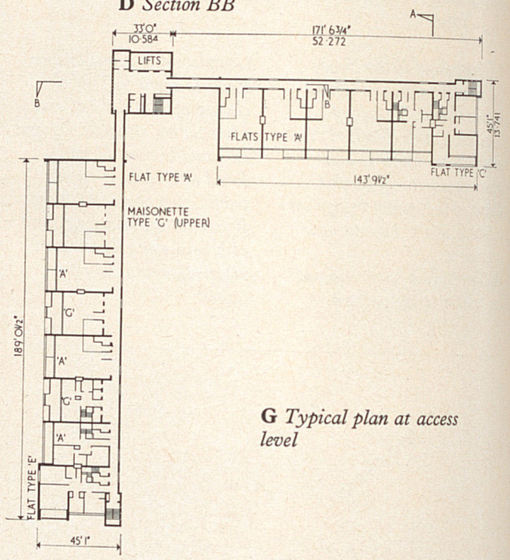
C *Section AA*



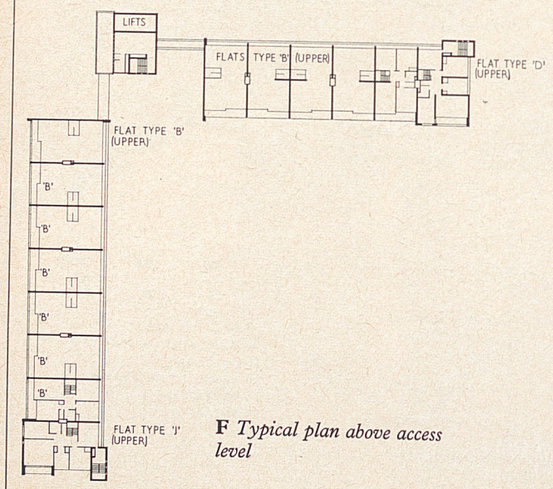
D *Section BB*



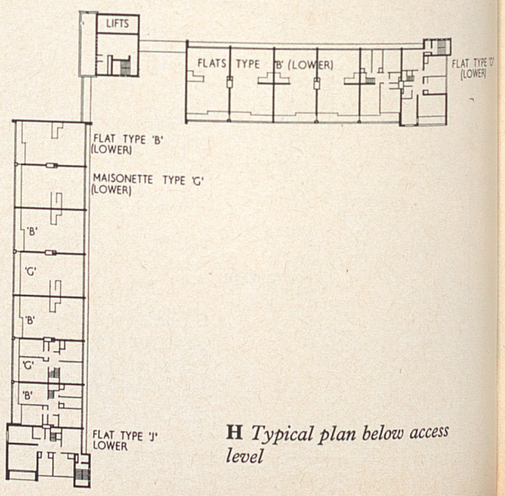
E *24th and 23rd floor plans containing maisonettes and flats, with access to 24th floor flats*



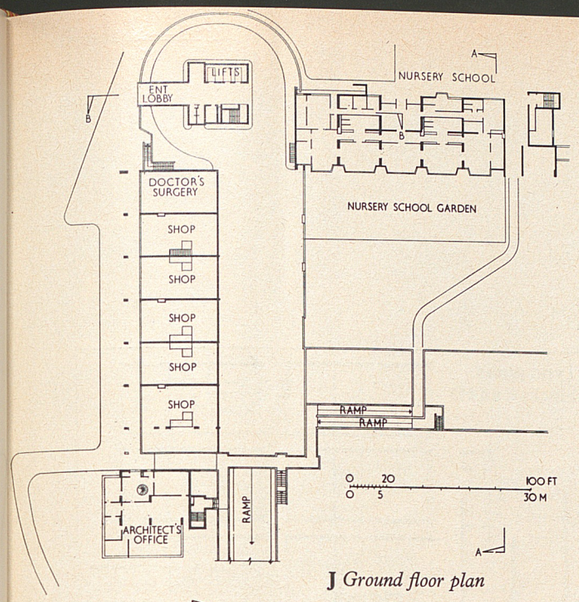
G *Typical plan at access level*



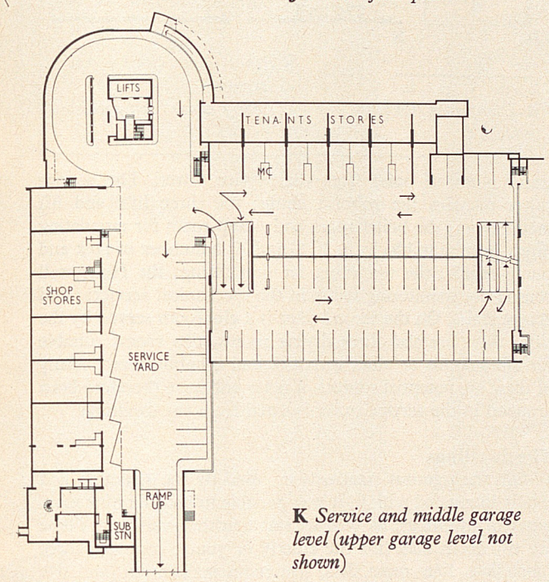
F *Typical plan above access level*



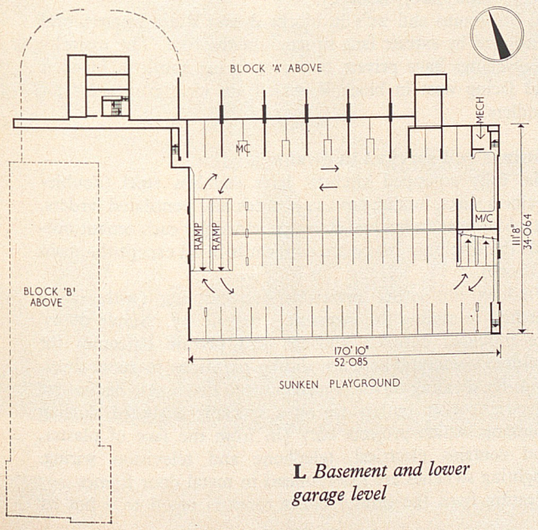
H *Typical plan below access level*



J *Ground floor plan*

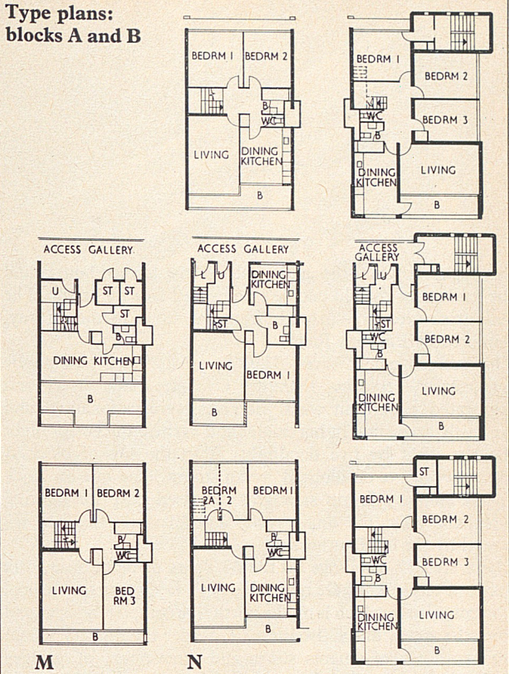


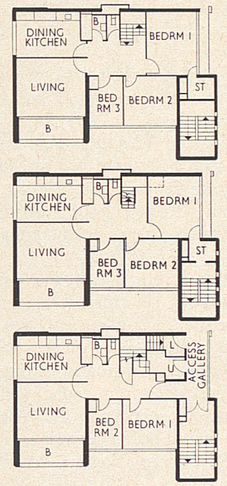
K *Service and middle garage level (upper garage level not shown)*

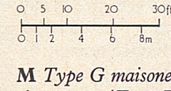


L *Basement and lower garage level*

Type plans: blocks A and B

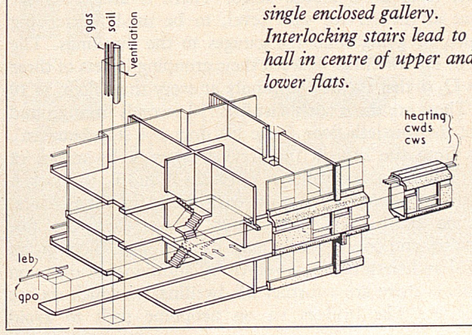






M *Type G maisonette: six-person. (Type B flat occurs above access level)*
N *Type B (upper) flat: four-person; type A flat: two-person; type B (lower) flat: four-person*
O *Type D (upper) flat: six-person; type C flat: four-person; type D (lower) flat: six-person*
P *Type F (upper) flat: five-person; type E flat: three-person; type F (lower) flat: five-person*

A and B blocks



Q *Isometric diagram showing access to three levels from single enclosed gallery. Interlocking stairs lead to hall in centre of upper and lower flats.*

thoroughfare. Only the gable walls of the terrace houses and the gardens of the old people's home will face the traffic. The pedestrian area thus extends from the canal to the railway, bordered by Elkstone Road.

This rearrangement saved 3340 sq yd (2783 m²) of public carriageway, replacing them by a single traffic artery and segregated pedestrian ways. Services were rationalised and are easily accessible in horizontal and vertical ducts. At night the site is lit by five floodlights from the top of block A (31 storeys), five on block B (seven storeys) and one on block C (six storeys). Lamp standards are used only for lighting Edenham Way (the estate road) and Elkstone Road as required by the local authority.

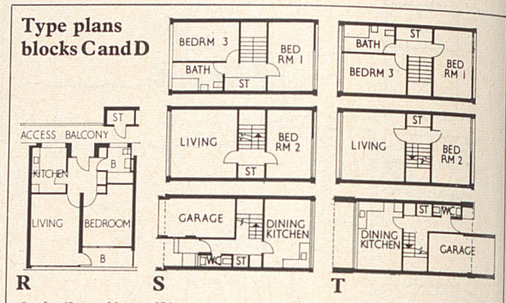
There are 217 dwellings on the 30 floors of block A and six floors of block B, **E, G**; under block A is the nursery school (the entrance to which is on the north side completely separated from the access to the dwellings) **J**. Under the nursery school are two floors of tenants stores and three floors of garages **K, L**. Under block B are two floors of six shops, the higher of which opens on to a sheltered arcade, the lower on to a loading deck accessible from the service yard.

There are 36 two roomed **R** flats on six floors of block C, which is served by two lifts and heated from the communal boiler house in the service tower.

Four terraces are situated on Edenham Way of seven individual three-storey houses **S, T** each with their own garage and gas-fired central heating. In stage two six more, similar, houses will be built in a terrace and a further block E of six maisonettes and 24 two-room flats on six floors, incorporating a further clubroom.

The closing of useless streets, roads and courts, as well as the high concentration of dwellings and the stacking of garages allowed the full development of the site for outdoor activities. These comprise a ball games area, a fitted playground with some grassed areas, as well as a toddlers playground, sitting out areas provided with benches (and away from traffic) and a large outdoor space for the nursery school. It was also possible to locate a home for some 60 old people as well as to allocate an area for a future mission hall replacing one which was displaced.

Type plans blocks C and D



R *Two-person flat (type H) in block C*

S *Type K house (west access): six-person*

T *Type J house (east access): six-person*

Service tower access

The single access to all the dwellings in blocks A and B is from the west, through the entrance hall in the service tower, at street level in Golborne Road. There is also a service entrance at the service yard level, to be used for moving furniture, or going from the garages to the dwellings. The design of the dwellings enabled their grouping in sets of three storeys **Q**, so that the lifts stop only at every third floor, ie 10 stops. There are three fairly fast lifts (50 seconds from ground floor to the thirtieth floor if the lift does not stop between). Access from the lifts in the service tower is by means of bridges into the access galleries of blocks A and B. In block A there are in general 18 flats in each group of three floors, except on the twenty-fourth floor, where there are five maisonettes and consequently only 13 dwellings. Block B, on the third and sixth floors, is served by additional bridges; on these floors there are a further 21 dwellings of which six are maisonettes. The bridges sit on neoprene pads to avoid transmission of noise from the service tower. The service tower contains the rubbish chute; the three lifts and lift motor room; the boiler room and pump room for circulating direct heating to blocks A, B, C and E; a number of tank and pump rooms; the wet risers for firefighting; the Honeywell console for monitoring faults in the mechanical services; and escape stairs. On the second floor is a clubroom served by the lifts; there are also three drying rooms, two rooms suitable for table tennis or other activities and a hobby room. Many of these are potential sources of noise and have therefore been grouped in the service tower isolated from the dwellings.

The dwellings

Within the rigorous standards imposed by the structure and totally integrated with it, it was possible to provide nine main types of dwellings, as well as some further variants. These are two room flats (for the elderly or young couples), three room flats, four room flats, five room maisonettes and five room (three-storey) houses.

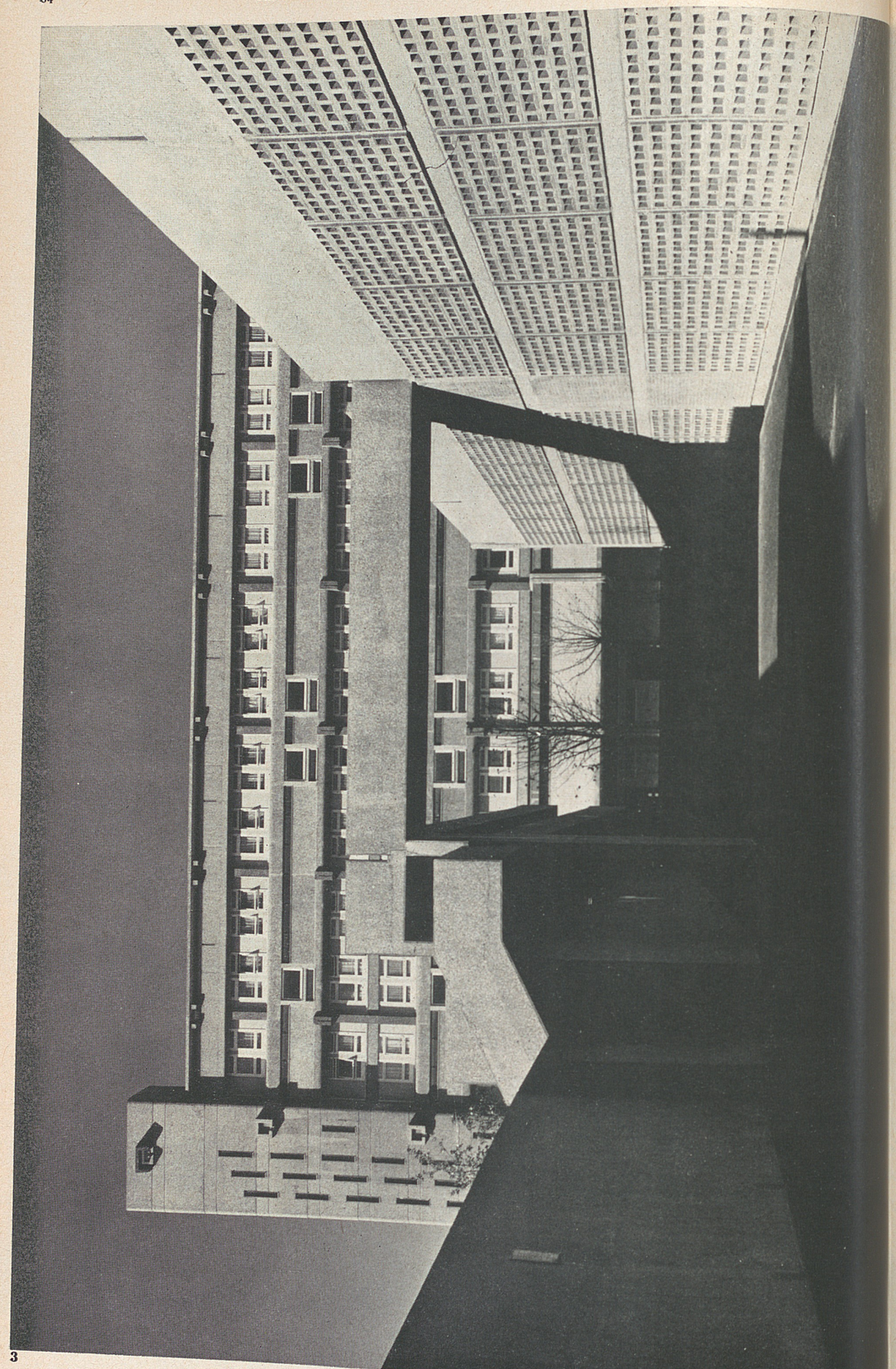
All bathrooms and wc's in blocks A and B are internal and ventilated by extract fans situated on the roof. The majority of dwellings have private balconies facing south in block A and facing west in block B, which are ideal play areas for toddlers.

Fittings and services in dwellings

The fully equipped kitchens have stainless steel (double-drainer) sinks, mixing taps, cupboards and ventilated larders. In addition to individual stores provided for each tenant outside the dwellings, there are cupboards in all except the main bedroom.

Windows are either reversible for cleaning (with safety catches) or sliding for easy access to balcony. 'Stable doors' are provided between kitchens and private balconies for children's safety. There are sliding partitions in some dwellings for dividing double bedrooms into two single bedrooms. Electric socket outlets are on a specially designed skirting trunking, which projects only $\frac{1}{4}$in from the face of plaster, and contains electrical, telephone and television wiring. Lighting switches are incorporated in metal door frames.

Heating from the central boiler room is piped to a hot air



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heat exchanger in each dwelling and distributed through specially designed glass fibre ducts. The heated air can be boosted by fans controlled individually by thermostats. Hot water is by means of under-sink electrical heaters providing hot water to sink and bathroom.

Structure

The structural engineer writes: Blocks A and B, with their freestanding service tower, are constructed entirely in reinforced concrete. The first phase also includes a six-storey block C in loadbearing brickwork with reinforced concrete floors, four three-storey blocks (D1 to D4) in loadbearing brickwork with timber floors, and a three-storey, partially underground, garage block connected to the three lower levels of block A.

In phase two a fifth three-storey block (D5), a six-storey block E, and a further single-storey underground garage will be added. The structure of block D5 is similar to the three storey block in phase one, and the basic structure of block E is similar to block C.

The 31- and seven-storey blocks are of in situ reinforced concrete cross wall construction. Precast concrete is used in the stair flights, the access bridges and the cladding on the long elevations. All externally visible in situ concrete is finished by bush-hammering. The aggregate was selected and the concrete proportions determined to fulfil the structural requirements and, at the same time suit the architectural finish.

The service tower too is in in situ concrete construction and finished externally similarly to blocks A and B. Neoprene bearings have been provided at the bridge supports, to permit independant movement of the structures of up to 2in.

The underground garages are constructed in loadbearing brickwork, and have in situ concrete floors and roof. Lateral stability is provided by in situ internal stair and ramp walls.

To permit landscaping and create the play spaces, considerable external works, consisting of retaining walls, ramps, stairs and bridges (in situ reinforced concrete) have been provided. The external works concrete is generally finished by bush-hammering or deep-hacking, but where the activities envisaged required smooth surfaces, fairfaced concrete is used.

The subsoil on the site consists mainly of London clay. The low-rise buildings are founded on strip and pad footings bearing on the upper levels of the clay. Blocks A, B and the service tower are founded on large diameter, belled-out in situ concrete piles bearing on the stiff clay at about 66ft (20 m) below ground level. Sulphate-resisting cement has been used in all concrete in contact with the ground, and the in situ concrete structures to the basement have been designed to be waterproof.

Block D5 and the garage in phase two will be founded on strip and pad footings bearing on the upper levels of the London clay. Block E, due to the greater depth of weathering of the clay and the vicinity of the canal, will be founded on straight shafted cast in situ piles bearing in the blue clay.

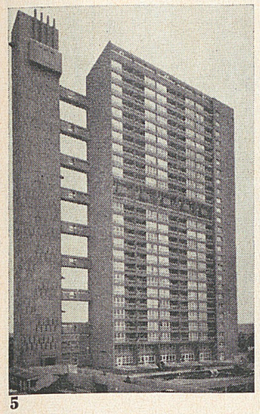
4

2 (*page* 83) *Trellick Tower from new Elkstone Road to south. Old people's home in foreground.*
3 (*facing page*) *Sunken playground with three floors of parking behind perforated screen, pedestrian bridge over and block B in background.*
4 *Looking up service tower to boiler house at top. As well as main access to blocks A and B, tower houses community rooms at intermediate floors.*

Appraisal

Cheltenham Estate housing

by Martin Richardson



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5 *Balfron Tower, Rowlett Street, Poplar—virtually a prototype for Trellick Tower. Goldfinger lived for a time at the top 'to taste his own cooking'—and liked it (AJ 22.5.68 p1133).*

A split between 'architectural' and common human values has become increasingly evident to architects—and common humans—over the last five years. It is now a platitude to say that the Ronan Point disaster catalysed a popular revolt against what architects were doing to people. Since then one has seen the ascent of such words as 'participation', 'conservation', 'environment', 'pollution' into the realm of popular cliché, and the descent of such phrases as 'comprehensive redevelopment', 'industrialised building' and 'high rise' from descriptions of ideals into terms of abuse. Among architects, complexity and contradiction have been admitted alongside the cannons of simplicity and consistency.

The appraiser, an architect in private practice with long housing experience, was formerly chief development architect to the Yorkshire Development Group. He is a previous contributor to the AJ and *The Architectural Review*.

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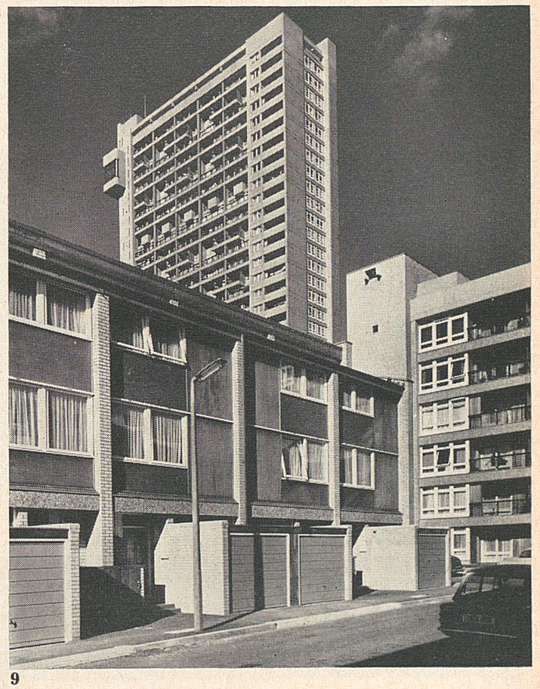

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6 *View from 23rd floor shows mounding on roof of garage, sunken playground and ball games area, old people's home on right, block of two-person flats and terraces of six-person houses beyond.*
7, 8 *Nursery school at foot of Trellick Tower. Playground on top of lower half level of garage has proved vulnerable to litter tossed down nightly from above.*
9 *Three-storey houses, six-storey block of two person flats with Trellick Tower rising behind.*

6 ←

If architectural confidence has suffered some shocks, in compensation there has been a corresponding increase in architectural sensitivity. At the extremes, the problem may now be architectural nihilism rather than architectural totalitarianism.

The difference perhaps is that 10 years ago (and certainly 20) architects felt that the mere exercise of their skills was to the public good. There was a belief that if the ideology was right so were its products. Somehow the taste of the cake could be ignored; the exhilaration of seeing the theory on the ground blinded one to its actual sensory and practical effects. If then we were concerned with the morality of our theories, now many of us are apprehensive of the possible immorality of what we may build.

The first and major phase of the Cheltenham Estate was completed about five months ago; the brief was given to the architect in April 1966. However, Ernö Goldfinger's Rowlett Street scheme, whose tall block **5** is a first edition of the Cheltenham tall block, was completed in January 1968 and its brief given to the architect in 1960. The immediate context of the Cheltenham Estate concept is, therefore, really the mixed development schemes of the 1950s, which by the early 1960s were already tending to be overtaken by more homogeneous high-density schemes such as Park Hill (AJ 23.8.61 p271-286) and Lillington Street, these in turn being replaced by the high-density low-rise schemes typically produced by Camden and Southwark. Since then, as has already been implied, the concepts of comprehensive redevelopment and homogeneity have been reinterpreted in favour of a more fine-grained process of integration and renewal. Against such an interpretation of recent housing history the Cheltenham Estate appears to me anachronistic.

It sets out to be an integrated neighbourhood. It does contain dwellings of all sizes; garages; shops; a nursery school **7, 8**; and an old people's home. (The latter is for the Royal Borough of Kensington and Chelsea and the nursery school for the Inner London Education Authority.) But though integrated in materials and detailing in form it is not. Its 31-storey and seven-storey linked slabs, its six-storey L-shaped block and three-storey houses **9** form decisively separate entities.

The distribution of dwelling types seems curious. Of the largest units (six-person) no fewer than 25 out of 66 are in the tower, six in the seven-storey linked slab, only the privileged remainder being in the houses. Two-thirds of the remaining units in the big slab are family units for four persons. Big as the balconies are, not every mother is keen to leave her children behind a balustrade with a 20- to 30-storey drop on the other side. And when they are big enough to descend to their allotted play zones, even if she can see her children, it is not easy for her to communicate with them or to help them if necessary. So what happens in practice is that the children descend to the ground aware of the safe distance from their parents; the two tarmac rectangles do not satisfy all their imaginative

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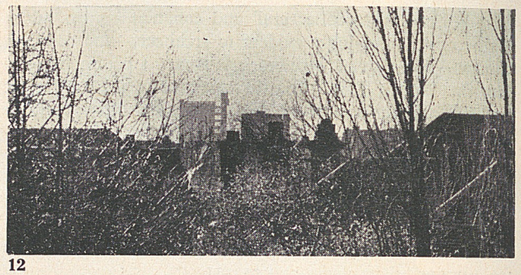

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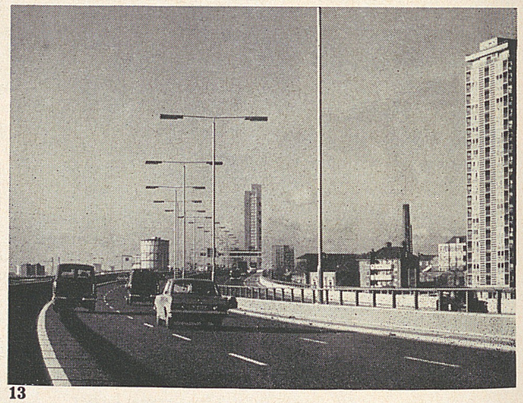

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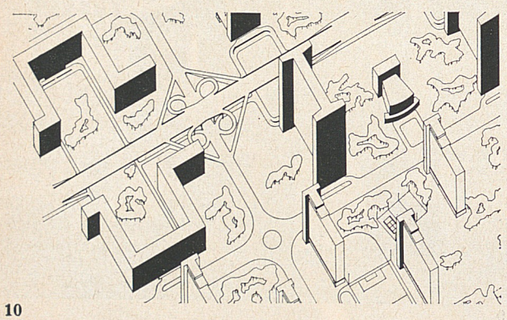

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10 *Project submitted by Goldfinger to Antwerp Competition. Dwellings are based on his earlier Athens Charter housing.*
11 *Looking south-east towards central London; railway and motorway in middle distance.*
12 *Trellick Tower seen from Finchley Road, some two miles distant . . .*
13 *. . . and from Westway.*

14

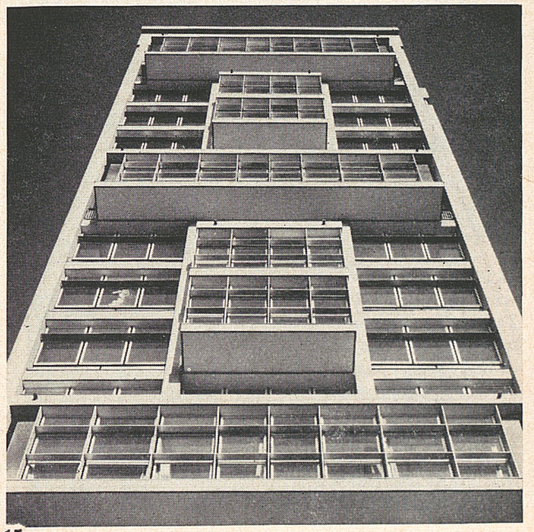
needs; they find the lifts, stairs, lobbies, even angry old people more interesting. So the inhabitants of the six-storey block, between the tall slab and the six-person houses, are besieged by and apparently united in hostility towards the two communities. As to the old people's home, some inhabitants are delighted by the children through the fence; others find them disturbing.

One of the clearer findings of the DOE's report '*Living off the ground*' (AJ 20.8.69 p459) was that 'a much higher proportion of housewives with children under five felt unhappy living off the ground than any others' though 'high blocks may be satisfactory if occupied by households without children'. It listed one of the advantages of living off the ground as being that tenants 'were away from the nuisance of children'.

In short, the splitting up of the inhabitants into their different blocks encourages separateness rather than integration; and the effect is reinforced by the fact that the nuisance of children is suffered by the low living older people rather than the high living families.

What then of the actual environment produced on the site? One assumes that the theory of building so high is to gain

14 *From Golborne Road, a typical North Kensington shopping street.*
15 *Alexander Fleming House, Elephant and Castle* (1962), *again demonstrates Goldfinger's insistence on total organisation*'.



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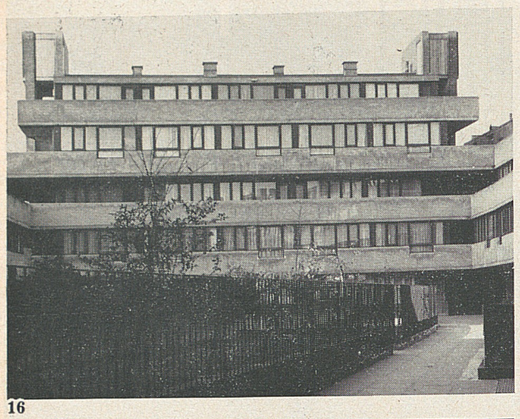

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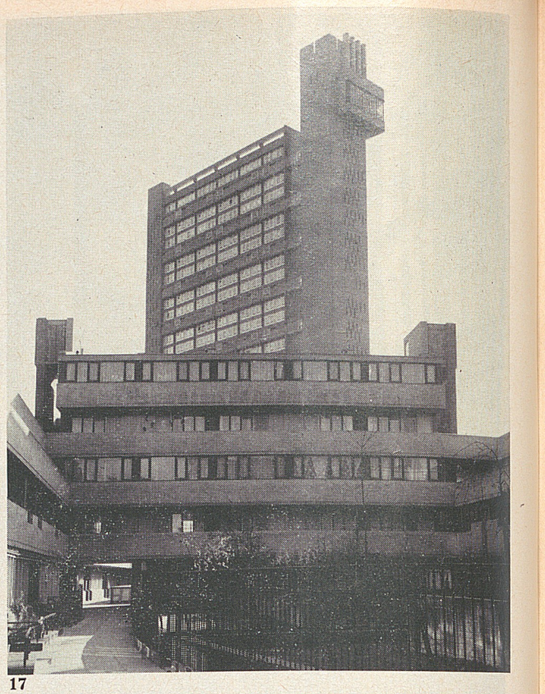

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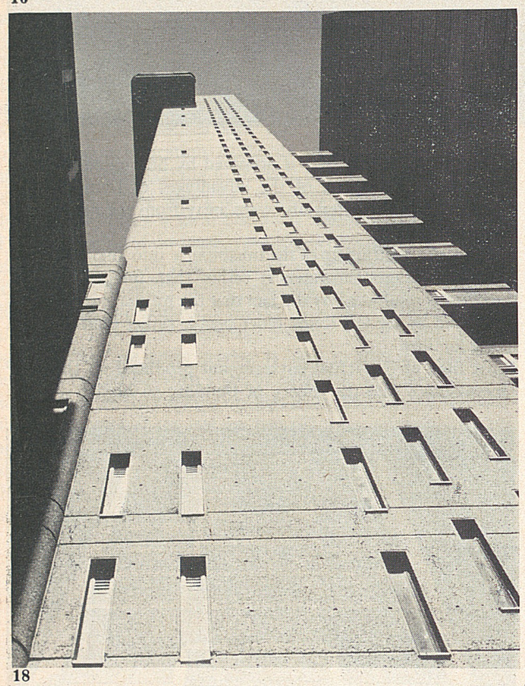

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19

16 *Modest courtyard housing across the road from Trellick Tower, looking towards north—and* **17** *looking towards south.*
18 *'The colossal concrete service pylon . . . and its cyclopean eye (the boiler house) at the top', seen* **19** *from south-west. Shopping arcade at base of block B.*

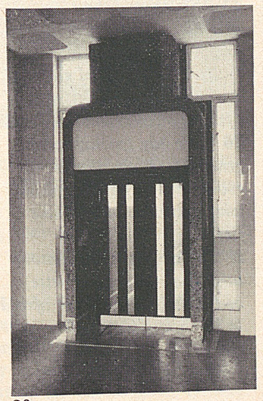
common benefits at ground level. If at 50 households to the acre, it would seem that the 175 households in the 30 floors of the tower should be entitled to their own 3½ acres of ground. But in fact the 34 houses enjoy between them more land than the tower. Of the common open space half goes to a ball games area, and a sunken playground **3**; the remaining half is on top of the multi-storey garage ingeniously camouflaged with mounded turf **7**. But pretty as it is, is this really the payoff? Apart from the crushing effect of the slab above you, winds are exaggerated, the noise of the railway exposed all along the edge of the site echoes back from the face of the building, and the view rent open is to the motorway to the east and the railway below **11***. The public open space to be formed along the canal should to some extent relieve the pressure within the site itself, but I fear will not solve its problems.

The Ville Radieuse was a *ville* radieuse, a world in which living off the ground was compensated for by the park scale greenery that resulted. Indeed Ernö Goldfinger's Athens Charter housing of 1933 **8** reflected just these principles. But something else happens when elements from such a concept are squashed together on a few acres. I can no longer believe that this is the beginning of a new world for which there is a common consensus—not now, in North Kensington.

The conflict is not just within the site—it extends beyond, whole worlds of Victorian North Kensington **14** are shattered. On the opposite side of the road to the tower is a small, thoughtful, quietly agreeable housing scheme of three linked courtyards **16**, through which I walked with some pleasure*. On turning round I was confronted by the colossus crushing the domestic intimacy of the courtyards **17**. Even from more distant parts as Swiss Cottage **12** and Camden Hill, scale is distorted as one sights the tower.

This oppressive quality is due I think not only to its size, but to its form and treatment; the superhuman, broad-shouldered, honeycomb front **2**, the colossal concrete service

*The architect has asked the AJ to state that the elevational treatment of the tower has been designed to eliminate turbulence and echo; that the railway is invisible from ground level, and that the courtyard housing mentioned lacks play provision.
The editors



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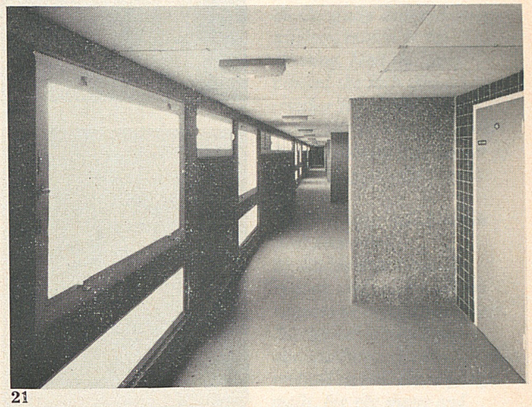

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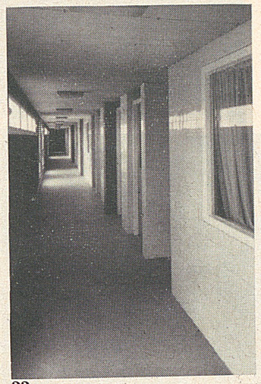

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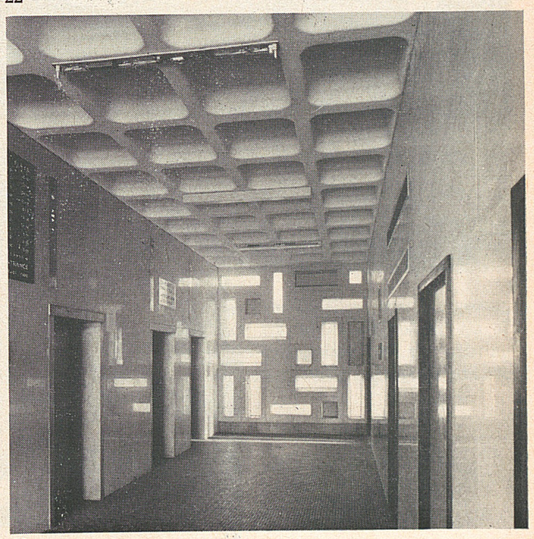

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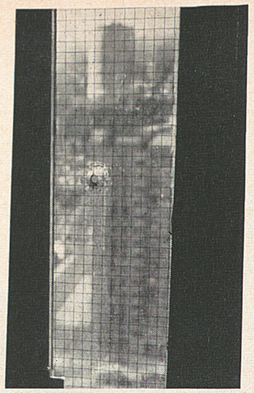
20 *Lift lobby showing penetration of access bridge and heavy hardwood doors.*
21, 22 *Access galleries (to flats and maisonettes respectively) have an ambiguous quality—one is 'outside' (kitchen windows on right in* **22**) *yet totally enclosed.*
23 *Marble lined entrance hall.*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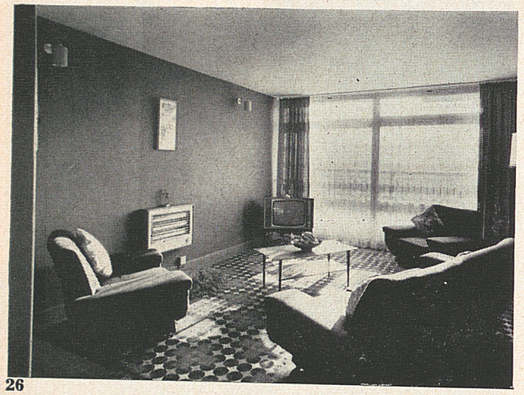
25

pylon perforated with scale-less slots, and its cyclopean eye (the boiler house) at the top **18**. This is a quality common to other Ernö Goldfinger's buildings, eg the offices at the Elephant and Castle **15**. It is a quality of almost obsessive insistence on total organisation which seems to go beyond normal control. Forms are shaped three dimensionally into patterns with a symmetrical, hieratic, totem-like full frontal quality which reinforce the effects of size. At first, these forms may seem reminiscent of le Corbusier; but with him, rigorous as was the control, the effect was dynamic, organised to represent the chance relationships that functions demanded. With Corb, shuttering was, as it were, allowed to create its patterns on the concrete; with Goldfinger it seems as though almost every square inch is bush hammered.

But at this point one begins to receive a payoff from Goldfinger's control because the bush hammering provides a very much better weathering finish than smooth or boarded shuttering. The control and quality of detail is impressive. The entrance hall **23** is lined with marble. Lobby doors at all levels are of heavy hardwood with narrow glass strips **20**. Along access galleries, the dwelling wall is in glazed tile (a different colour at each access level), and the outer wall in bush hammered concrete **21**. The quality of these materials in public spaces does a great deal for the building, although still not enough to prevent vandals from seeking out the few weak spots (the wired glass and the light fittings) **25, 26**.

Goldfinger's control and organisation is seen at its best at the smaller end of the scale; in the dwelling planning and the control of detail and workmanship. The dwellings themselves are spacious. This is in part because many are over Parker Morris' minimum areas; it is also because there tend to be fewer rather than more rooms (in the six-person maisonette **M** there are three not four bedrooms), and they are clearly and generously planned. The exceptionally wide bay frontage (22ft 2in) (6·75 m) helps the proportions of the rooms **26**, and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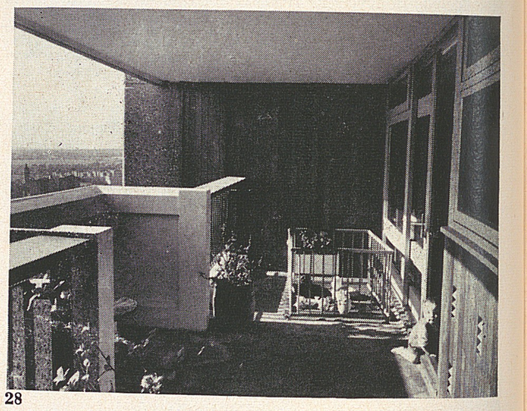
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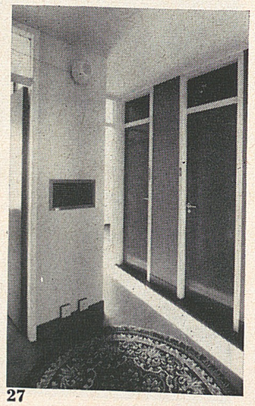
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24, 25 *Despite robust materials, vandals have sought out weak spots: 'bullet hole' in wired glass and smashed light fitting in lift lobby.*
26 *Wide bay frontage allows generously proportioned rooms and* **27** *big central hall which gives value to whole flat.*
28 *Balconies are impressively large (here in a maisonette) and not all mothers are afraid to let their children play on them.*

also allows a big central hall **27** which gives value to the whole flat. The balconies are also impressively large **28**—5ft (1·5 m) deep for half, and sometimes all of their width—and in the tall block, all face south-west.

Detail within the units is good; such as the windows which turn, securely, inside-out for cleaning **29**, the stable door between balcony and kitchen **31**, the metal door frames and their neat light switches **30**. At this smaller end of the scale, the houses are perhaps the most successful part of the scheme. Here Goldfinger's liking for massive scale gives an agreeable simplicity and sturdiness, realised in bull-nosed 13½in (330


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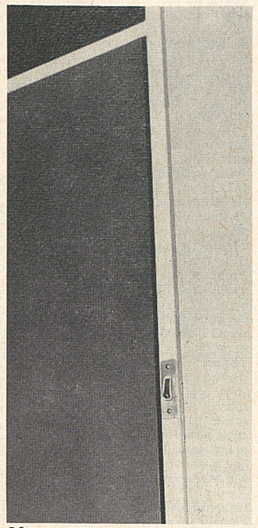
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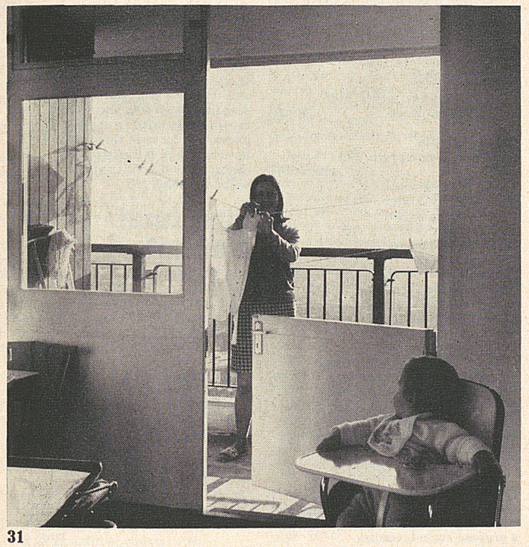
29 *Carefully designed timber window, reversible for cleaning. Had this lady pivoted the sash through another few degrees, an automatic safety catch would have prevented any danger of her being precipitated into space.*
30 *Neat light switch set in steel door jamb.*
31 *Stable door between kitchen and balcony allows mothers to supervise toddlers.*
32 *Agreeable simplicity and sturdiness of terrace houses realised in bull-nosed party walls, big ply sheets and broad paned windows. Sloping roofs are pleasantly echoed by ceilings within.*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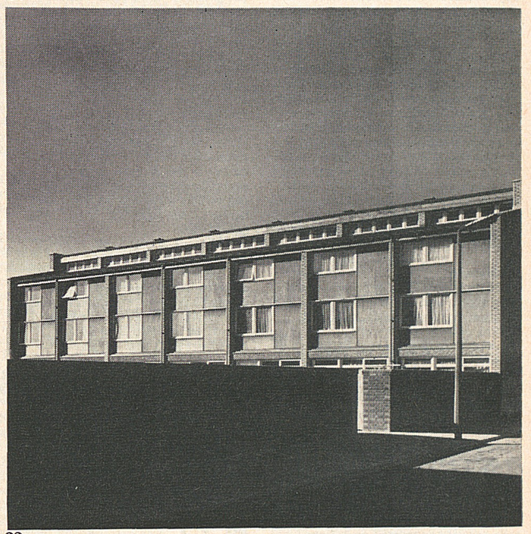
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mm) party walls, big ply sheets and broad paned windows **32**. The sloping roof is pleasantly echoed by sloping ceilings within.

Whatever the tenants' criticisms, they are almost invariably prefaced by 'the flats (or houses) are lovely . . .'. Certainly the interiors are enjoyed.

To summarise, it would seem that this scheme demonstrates that no amount of control of detail or expenditure of money can overcome the inherent problems of placing such grouping of households in such an assembly of buildings on such a site. It is to me revealing that adjacent to the Cheltenham Estate, on the other side of the railway, the GLC are now instigating, with public participation (see AJ 3.1.73 p10) a process of renewal and short term rehabilitation based on the existing street pattern. I can't help feeling that this is progress and not just the wilfulness of fashion.

Summary: block A

Ground floor area: 5012 sq ft
Total floor area: 151 221 sq ft
Type of contract: RIBA/GLC fluctuating with quantities
Tender date: October 1967
Work began: April 1968
Work finished: August 1972
Price of foundations, superstructure, installation and finishes, but excluding drainage: £1 013 913

Cost analysis

All costs per sq ft
Based on tender

Preliminaries and insurances £0·69
11·82 per cent of remainder of contract.

Contingencies £0·18
3·02 per cent of remainder of contract.

Work below ground level £1·40
Three level underground garage with the lowest floor approximately 16ft 6in below ground level, also housing tenants stores.
Block A is supported on 36in diameter piles and caps. The garage is of rc, includes ramps and access, and has precast concrete stairs linking levels. The projecting roof area is tanked with asphalt. The rate includes brick or block partitions to stores and garages, all doors and finishings and mechanical and electrical services.
(Note: Nursery school at ground floor is billed separately.)

Structural elements

Upper floors £0·56
9in thick rc slabs tied with rc cross walls, wrot formwork to soffits; L-shaped precast concrete access balcony floor and roof units fixed at edge of slabs to 10 access levels: 17 891 sq yd, £4·12 per sq yd (£4·94/m²).

Roof £0·08
9in thick rc slab with wrot formwork soffits to main roof with 6in rc parapet wall; 6in thick rc slab over stairwell with 9in wall enclosing access to roof. Part preformed aluminium cappings and part precast concrete copings to parapet walls. Roof coverings two-coat mastic asphalt on lightweight screed. 4in diameter cast iron rainwater stacks with roof outlets and branches to private balconies: 646 sq yd (excluding parapets), £6·70 per sq yd (£8·04/m²).

Staircases £0·14
Main escape staircase precast concrete stair flights with integral granolithic and non-slip insert finish, in situ rc intermediate landings with thermoplastic on screed, mild steel spandril-shaped panels between flights and tubular handrails both sides of stairway.

Staircase	*Total rise*	*Width overall tread*
Main escape	273ft 10in	3ft 5½in

Precast concrete staircases and intermediate landings to upper and lower flats from access level and to maisonettes, with pvc covering to treads, pvc nosings and string, timber rails one side supported on hollow steel square balusters.

Staircase	*Total rise*	*Width overall tread*
120 staircases to flats and maisonettes	8ft 10in each	Generally 2ft 8½in

External walls and windows £1·28
Walls enclosing main staircase generally 9in rc with bush hammered face externally, metal window inserts: 1560 sq yd, £6·70 per sq yd (£8·04/m²).
End walls and those enclosing end flats, 10in rc with 2in wood wool permanent formwork internally and bush hammered face externally: 2267 sq yd, £7·52 per sq yd (£9·02/m²).
North elevation has precast exposed aggregate cladding to edges of floor slabs and ends of cross walls, access balconies have 5½in precast concrete walls, exposed aggregate both sides. Metal window inserts glazed with ¼in georgian-wired glass: 3683 sq ft, £2·62 per sq ft (£28·19/m²).
Upper and lower levels have timber window units part double-glazed and part with pvc coated metal faced asbestos infill panels: 48 293 sq ft, £1·68 per sq ft (£18·08/m²).
South elevation has precast exposed aggregate concrete cladding to edges of floor slabs and ends of cross walls, timber window and door units part single and part double-glazed (included above).
4in block wall with ¾in cedar board externally on ¾in × 2in softwood battens at 2ft centres cladding 4in block partitioning to private balconies: 597 sq yd, £4·99 per sq yd (£5·99/m²).

Internal structural walls and partitions £0·40
8in rc walls within end flats: 1675 sq yd, £5·20 per sq yd.
9in rc cross walls: 5507 sq yd, £5·44 per sq yd (£6·53/m²).
9in internal stairwell walls fairfaced one side: 414 sq yd, £5·60 per sq yd (£6·72/m²).
3in block wall partitions within dwellings: 11 743 sq yd, £1·24 per sq yd (£1·49/m²).
6in block walls between dwellings and access balconies: 1020 sq yd, £2 per sq yd (£2·40/m²).
Timber windows to access level flat kitchen glazed with ¼in georgian-wired glass. Ends of walls next to concrete in splayed sided chase. Tops of walls against concrete soffits in splayed sided chase with ¼in glass fibre sound-deadening quilt. Concrete lintels over balcony kitchen windows and over access to ducts.

Internal and external doors £0·12
Pairs of 2in sapele doors glazed with ¼in georgian-wired glass with fully moulded sapele door handles and sapele frame to both ends of access balconies: 567 sq ft, £1·83 per sq ft (£19·69/m²).
Generally 1⅜in flush doors within flats, 1⅜in half-hour fire resisting flush doors to flat entrances with ¼in georgian-wired glass panel. 1⅜in half-hour fire resisting flush doors to living rooms and kitchens; generally metal door frames to flush doors but timber to flat entrance doors; generally glazed fanlights over doors (single access door to roof included here): 27 382 sq ft, £0·53 per sq ft (£5·70/m²).
No of single doors: 1340
No of double doors: 20
¾in blockboard and 1¼in asbestos-backed blockboard removable access panels with softwood framing: (¾in) 1344 sq ft, £0·55 per sq ft (£5·92/m²); (1¼in) 2466 sq ft, £0·57 per sq ft (£6·13/m²).

Ironmongery £0·02
Single action spring hinges to pairs of doors to access levels with 'push' and 'pull' plates, and aluminium kicking plates both sides.
Flat entrance doors with rising butts, night latches and postal plates.
Internal doors have mortise latches (butts or hinges included with metal door frames).

Finishes and fittings

Wall finishes £0·16
Lightweight plaster render and set within dwellings: 35 873 sq yd, £0·54 per sq yd (£0·65/m²).
Small areas of ¼in white glazed wall tiling fixed to and including plaster in kitchens, bathrooms and wcs: 440 sq yd, £3·29 per sq yd (£3·95/m²).
Walls to dwelling side of access balcony finished with ⅛in colour glazed wall tiling on plaster: 1112 sq yd, £3·29 per sq yd (£3·95/m²).

Floor finishes £0·28
¼in thermoplastic tile flooring within dwellings on 2⅜in cement and sand screed on galvanised wire mesh on ¼in sound insulating quilt; 2⅜in thermoplastic skirtings: 13 761 sq yd, £2·21 per sq yd (£2·65/m²).
⅜in quarry tile paving to access balconies on two layers felt damp-proof membrane on 1½in cement and sand screed on galvanised wire mesh on ¼in sound insulating quilt; 3in quarry tile skirtings: 856 sq yd, £3·69 per sq yd (£4·43/m²).

Ceiling finishes £0·06
Generally plastic compound finish to soffits within dwellings included with 'decorations'.
⅛in self-finished asbestos cement sheeting on 2in × 2in softwood bearers in false soffit to access balconies: 882 sq yd, £4·06 per sq yd (£4·87/m²).
¼in perforated asbestos sheeting on ¾in × 2in softwood bearers with 1in thermal insulation in false ceiling to private balconies: 1791 sq yd, £2·79 per sq yd (£3·35/m²).

Decoration £0·16
Washable plastic compound to fairfaced concrete soffits within dwellings and to soffits of staircases. Two coats of emulsion paint to plastered walls generally but two coats of oil paint to bathrooms. Two coats of oil to fairfaced concrete walls of main staircase. Two coats emulsion externally to soffit of asbestos to private balconies. Two coats of oil internally on wood or metalwork and three coats generally externally, except galvanised metal where two coats are taken. Selected hardwood internally and externally finished with two coats of sealer, external cedar cladding similarly finished.

Fittings £0·27
Kitchen fittings comprising standard sink units, wall and floor cupboards: £70 per kitchen. 245 wardrobe cupboard front units with shelving and hanging rails: £51 each. 245 storage cupboard front units with shelving: £27 each. 180 heater cupboard front units with shelving: £30 each.

Services

Sanitary fittings, waste, soil and overflow pipes £0·21

Type	*No*
5ft 6in porcelain enamelled cast iron bath	175 (19 with grab rails)
22in × 16in vitreous china lavatory basin	175
Vitreous china wc with plastic cistern	200
63in × 21in stainless steel sink	175

Copper wastes, overflows and anti-syphonage pipes, 6in diameter coated cast iron main waste and soil stack with 4in diameter anti-syphonage and shunt pipes.

Cold and hot water, heating, ventilation and gas services £0·40
Branch pipework of heavy gauge galvanised mild steel pipes and fittings with screwed joints connected to rising main, drinking water services and cold water down service in service tower.
No of cold draw-off points: 725.

Domestic hot water supply to each flat provided by an under draining board unit electrically heated, fed from a purpose-made breaktank.
No of hot draw-off points: 525.
Heating by fan convector supplied by oil-fired boilers (in service tower).
Panel fires in electrical installation.

Extract ventilation from internal bathrooms and wcs via flexible shunt ducts attached to vertical risers connecting at roof level to duplicate roof extract units. Extract ventilation from access level kitchens is by ducted system which connects to duplicate centrifugal fans at each access level. Fans included with electrical services.

Metered gas supply to three blank points in each dwelling.
Total no of outlets: 525.

Builder's work: 7p per sq ft.

Electrical services £0·29
LEB supply to domestic meters.
Dwellings generally pvc insulated cable in plastic skirting trunking with switches fixed into metal architrave of door frames and wall-mounted batten lampholders. Access balcony lighting: pvc wiring in galvanised conduit carried in ceiling void.
Escape stairs lighting: pvc wiring in galvanised conduit cast into concrete walls. Extract fans from bathrooms and toilets and access level kitchens.
Total no of lighting outlets: 2725.
Total no of power outlets: 3755.
Builder's work: 2p per sq ft.

Drainage
Included with external works.

Total per sq ft of floor area £6·70
£1 013 913 (net cost excluding external works)
151 221 sq ft (measured inside external walls)

Summary: block B

Ground floor area: 6500 sq ft
Total floor area: 38 894 sq ft
Contract details as block A
Price of foundation, superstructure, installation and finishes, but excluding drainage: £252 651

Cost analysis

All costs per sq ft
Based on tender

Preliminaries and insurances £0·67
11·82 per cent of remainder of contract.

Contingencies £0·17
3·02 per cent of the remainder of the contract.

Work below ground level £0·99
Basement to shop stores approximately 1ft 6in below ground level. The block is supported on 36in diameter piles and caps. The basement is of rc construction with 9in floor slab and retaining walls and 9in suspended slab over shop stores. The rate includes brick cross walls to stores, wcs for each shop, doors, finishes and m & e services.
(Note: ground floor level shops are billed separately.)

Structural elements

Upper floors £0·57
Description as block A.
9in rc suspended floor slab with fairfaced soffit: 4645 sq yd, £4·17 per sq yd (£4·99/m²).

Roof £0·26
Description as block A.
9in rc slab with fairfaced soffit, lightweight screed and two coat mastic asphalt covering 855 sq yd, £6·28 per sq yd (£7·54/m²).

Staircases £0·21
Description as block A.

Staircase	*Total rise*	*Width overall tread*
Escape stair	53ft	3ft 5½in
28 staircases to flats and maisonettes	8ft 10in each	Generally 2ft 8½in

External walls and windows £1·16
Description as block A.
10in external walling: 376 sq yd, £6·50 per sq yd (£7·80/m²).
9in external walling: 276 sq yd, £5·78 per sq yd (£6·94/m²).
4in cedar board clad blocks: 149 sq yd, £4·88 per sq yd (£5·86/m²).
Timber windows: 12 176 sq ft, £1·68 per sq ft (£18·08/m²).
Metal windows: 899 sq ft, £2·62 per sq ft (£28·19/m²).

Internal structural walls and partitions £0·30
Generally 7in rc cross walls: 1352 sq yd, £4·81 per sq yd (£5·77/m²).
9in rc walls enclosing escape stairs finished fairfaced one side: 126 sq yd, £4·91 per sq yd (£5·89/m²).
Partitions as block A.
3in block wall: 3076 sq yd, £1·19 per sq yd (£1·43/m²).
6in block wall: 311 sq yd, £1·94 per sq yd (£2·33/m²).

Internal and external doors £0·12
Description as block A.
2in sapele: 227 sq ft, £1·77 per sq ft (£19·05/m²).
Flush doors with wood or metal frames: 7197 sq ft, £0·48 per sq ft (£5·16/m²).
No of single doors: 346.
No of double doors: 11.

Ironmongery £0·03
Description as block A.

Finishes and fittings

Wall finishes £0·16
Description as block A.
Render and set in plaster: 9060 sq yd £0·54 per sq yd (£0·65/m²).
¼in white glazed tiles including plaster: 80 sq yd, £3·29 per sq yd (£3·95/m²).
⅛in coloured glazed wall tiles including plaster: 264 sq yd, £3·29 per sq yd (£3·95/m²).

Floor finishes £0·29
Description as block A.
Thermoplastic flooring: 3465 sq yd, £2·21 per sq yd (£2·65/m²).
Quarry tile flooring: 286 sq yd, £3·69 per sq yd (£4·43/m²).
Precast concrete slab paving: 484 sq yd, £3·93 per sq yd (£4·72/m²).

Ceiling finishes £0·07
Description as block A.
⅛in self finished asbestos: 295 sq yd, £4·06 per sq yd (£4·87/m²).
¼in perforated asbestos: 510 sq yd, £2·79 per sq yd (£3·35/m²).

Decoration £0·13
Description as block A.

Fittings £0·25
Description as block A but with 66 wardrobe units, 64 storage cupboard fronts, 42 heater cupboard fronts.

Services

Sanitary fittings, waste, soil and overflow pipes £0·19

Type	*No*
5ft 6in porcelain enamelled cast iron bath	42 (8 with grab rails)
22in × 16in vitreous china lavatory basin	42
Wc suite	48
63in × 21in stainless steel sink units	42

Waste, soil and overflow pipes as block A, but with 4in stack and 2in cast iron anti-siphonage pipes.

Cold and hot water, heating, ventilation and gas services £0·61
Description as block A
No of cold draw-off points: 174.
No of hot water draw-off points: 126.
Total no of gas outlets: 126.
Builder's work: 8p per sq ft.

Electrical services £0·32
Description as block A.
Builder's work: 3p per sq ft.
Total no of lighting outlets: 684.
Total no of power outlets: 844.

Drainage
Included with external works.

Total per sq ft of floor area £6·50
£252 651 (net cost excluding external works)
38 894 sq ft (measured inside external walls)

Summary: service tower and link bridges

Ground floor area: 970 sq ft
Total floor area: 22 630 sq ft
Contract details as block A
Price of foundation, superstructure, installation and finishes, but excluding drainage: £292 909

Cost analysis

All costs per sq ft
Based on tender

Preliminaries and insurances £1·33
11·82 per cent of the remainder of the contract.

Contingencies £0·34
3·02 per cent of the remainder of the contract.

Work below ground level £1·24
Tower supported on 23 36in diameter cast in situ bored piles. This element includes two levels below main entrance level (ie refuse chamber level and oil storage tank level); it also includes service yard next to tower and a substantial amount of concrete retaining walls to adjacent road.

Structural elements

Upper floors £0·71
9in rc floor slabs with fairfaced soffits: 1349 sq yd, £5·27 per sq yd (£6·32/m²).
6in rc floor slab to main access bridge with fairfaced soffit: 44 sq yd, £4·75 per sq yd (£5·70/m²).
Precast concrete exposed aggregate finish floor, roof, roof capping and end units to link bridges.

Roof £0·12
9in rc roof slab with fairfaced soffit. Lightweight screed with two coat mastic asphalt roof covering and asphalt skirting: 141 sq yd, £4·99 per sq yd (£5·99/m²).
11in rc parapet wall and wall enclosing staircase, bush hammer finish one side, fairfaced other side with 14 gauge aluminium coping. 3in diameter cast iron rainwater pipe and roof outlet (fixed in duct).
Aluminium spouts to small areas.

Staircase £0·70
Precast concrete stair flights with integral granolithic and non-slip insert finish, 6in in situ rc intermediate landings with thermoplastic floor covering on screed, galvanised wire netting and insulation quilt with thermoplastic skirting. Mild steel spandril shaped panels between flights and tubular handrail both sides of stairway. Plastic compound finish to soffits of staircases and landings:

Total rise	*Width overall tread*
313ft 4in	3ft 5⅜in

External walls and windows £2·23
Generally 11in rc walls with bush hammered finish externally and fairfaced internally. 5⅜in precast exposed aggregate finish both sides slab walls to 10 access bridges: 3796 sq yd, £8 per sq yd (£9·60/m²).
¼in georgian-wired glazed metal windows to tower and bridges: 3790 sq ft, £2·60 per sq ft (£27·98/m²).

Internal structural walls and partitions £0·39
11in rc walls fairfaced both sides: 1276 sq yd, £6·21 per sq yd (£7·45/m²).
3in block partitions. Ends of walls to concrete in splay sided chase with ¼in glass fibre sound deadening quilt. Concrete lintels over door openings: 739 sq yd, £1·28 per sq yd (£1·54/m²).

Internal and external doors £0·14
Pairs of 2in sapele doors glazed with ¼in georgian-wired glass with fully moulded sapele door handles and sapele frames to stairs and to link bridges: 900 sq ft, £1·77 per sq ft (£19·05/m²).
1⅜in flush doors with hardwood frames to tank, lift motor and pump rooms, and to roof; 1⅜in flush doors to lavatories with metal door frames: 737 sq ft, £0·59 per sq ft (£6·35/m²).
Two pairs of plate glass doors and sidelights to main entrance: 275 sq ft, £3·81 per sq ft (£41·00/m²).
One purpose-made heavy-duty locking access cover and frame size 54in × 39in as trap door to boiler room: £65·40.
No of single doors: 43.
No of double doors: 35.

Ironmongery £0·07
Single action spring hinges to pairs of doors to staircases and access link bridges with 'pull' and 'push' plates and hardwood moulded handles (included with doors) and aluminium kicking plates both sides. Flush doors generally with hinges or rising butts and mortice latches with lever furniture (metal doors frames include butts or hinges).

Finishes and fittings

Wall finishes £0·14
Render and set in plaster: 1053 sq yd, £0·53 per sq yd (£0·64/m²).
⅛in coloured glazed wall tiling to lift landings fixed with adhesive to concrete: 186 sq yd, £3·04 per sq yd (£3·65/m²), and on plaster: 112 sq yd, £3·49 per sq yd (£4·19/m²).
⅜in heather-brown quarry tiles on ½in cement and sand backing and lightweight plaster above to refuse rooms: 89 sq yd, £2·82 per sq yd (£3·38/m²). Lightweight plaster to stores, wcs and play rooms. Marble finish to main entrance hall.

Floor finishes £0·23
⅜in heather-brown quarry tiles on 1⅜in concrete screed on galvanised wire on ½in insulation quilt to bridges and refuse rooms with quarry tile skirtings: 214 sq yd, £3·94 per sq yd (£4·73/m²).
1in waterproof granolithic paving on 2in concrete screed in tank rooms: 57 sq yd, £2·53 per sq yd (£3·04/m²).
¼in thermoplastic flooring on 2⅜in concrete screed on galvanised wire on ½in insulation quilt with thermoplastic skirting 2⅜in high elsewhere: 555 sq yd, £2·40 per sq yd (£2·88/m²).
Granite flooring to main entrance.

Ceiling finishes
Generally plastic compound finish included with 'decorations'.

Decoration £0·10
Washable plastic compound to fairfaced concrete soffits. Generally two coats of emulsion paint on plastered walls, two coats of oil to toilets and on fairfaced concrete. Two coats of oil on metal or timber internally and three coats externally. Two coats of sealer on hardwood.

Services

Sanitary fittings, waste, soil and overflow pipes £0·11

Type	*No*
2ft 6in × 2ft 6in × 6in vitreous china shower tray	1
22in × 16in vitreous china lavatory basin	7
Vitreous china wc pan and plastic flushing cistern	7
18in × 12in × 8in vitreous china sink	1

Copper wastes and overflows with compression fittings and brass traps. 4in diameter coated cast iron waste and vent pipe and branches, fixed with holderbats in duct.

Cold and hot water, heating, ventilation and gas services £2·59
Rising main and drinking water: flanged cast iron pipework and fittings connecting water board's main to break tanks on third floor. Pipework from break tanks to booster pumps and booster pumps to higher level storage tanks in heavy gauge galvanised mild steel.
Cold water down services in heavy gauge galvanised mild steel pipes with screwed joints. Rc storage tanks, lined with glass fibre.
Storage capacity: drinking water 2500gal; cold water storage 10 000 gal.

Hot water supply to toilets etc provided by heavy gauge galvanised mild steel pipes and fittings to electric water heaters.

Boiler room situated on 31st and 32nd floor levels of the service tower serves the heating in block A, including the nursery school, block B except the shops and shop stores, block C and the service tower. Installation comprising four oil-fired boilers complete with burners using 35 seconds oil; oil service tank; main circulating pumps; automatic foam installation and operating and safety controls.
Subsidiary pumps serving blocks B, C and nursery school located in pump room on ninth floor. (Two oil storage tanks are located in basement of service tower and are included in 'Work below ground level'.)
Total heat load in Btu/h: 10 000 000.

Gas supply to six tumbler driers.

Builder's work: 26p per sq ft (includes six precast concrete boiler flues each 2ft 3in × 2ft 3in × 34ft 1in starting approximately 300ft above ground floor level).

Electrical services £0·34
Installations in pvc cables in heavy gauge conduit on surface in plant rooms, tank rooms, pump rooms, boiler house and lift motor room; other areas concealed either in screed or concrete walls. Plastic skirting trunking, as flats, in hobby rooms. Including all lighting fittings and lamps, connections to pumping and drying room equipment.
Builder's work: £0·03 per sq ft.

Special services £2·16
Three GLC standard model 12-person 1800lb lifts each travelling approximately 290ft with 16 stops at 300ft per minute.
Boosted wet riser to fire fighting service in heavy quality galvanised mild steel tubing with flanged joints, including fire tanks located in third floor tank room.
Builder's work includes full height precast concrete refuse chute 18in diameter approximately 275ft long: 16p per sq ft.

Drainage
With external works.

Total per sq ft of floor area £12·94
£292 909 (net cost excluding external works)
22 630 sq ft (measured inside external walls)

Total costs statement

It will be noted in the above analyses that the whole drainage element is included under 'external works' and that the qs was unable to assign a specific proportion of external works to the three structures analysed; also that the ground floor levels containing the nursery school and shops in blocks A and B respectively were billed separately and are not included. However, the qs has provided the following costs for the whole scheme as billed (which roughly corresponds to stage one), based on tender.
Preliminaries: £215 538
Contingencies: £55 000
Buildings: £1 627 780
Drainage: £25 500
External works: £169 347
Total: £2 093 165

Summary of elemental costs

	Block A			Block B			Service tower		
	Cost per sq ft	Cost per m²	Per cent of total	Cost per sq ft	Cost per m²	Per cent of total	Cost per sq ft	Cost per m²	Per cent of total
	£	£	£	£	£	£	£	£	£
Preliminaries and insurances	0·69	7·42	10·29	0·67	7·21	10·31	1·33	14·32	10·28
Contingencies	0·18	1·94	2·69	0·17	1·83	2·62	0·34	3·65	2·62
Work below lowest floor finish	1·40	15·07	20·90	0·99	10·65	15·22	1·24	13·34	9·58
Structural elements									
Upper floors	0·56	6·03	8·36	0·57	6·13	8·77	0·71	7·65	5·49
Roof	0·08	0·86	1·19	0·26	2·80	4·00	0·12	1·29	0·93
Staircases	0·14	1·50	2·08	0·21	2·26	3·23	0·70	7·54	5·41
External walls and windows	1·28	13·78	19·11	1·16	12·49	17·85	2·23	24·01	17·24
Internal structural walls and partitions	0·40	4·31	5·98	0·30	3·23	4·61	0·39	4·19	3·01
Internal and external doors	0·12	1·29	1·79	0·12	1·29	1·85	0·14	1·50	1·08
Ironmongery	0·02	0·21	0·29	0·03	0·32	0·46	0·07	0·75	0·54
Total of structural elements	2·60	27·98	38·80	2·65	28·52	40·77	4·36	46·93	33·70
Finishes and fittings									
Wall finishes	0·16	1·73	2·40	0·16	1·73	2·47	0·14	1·50	1·08
Floor finishes	0·28	3·01	4·17	0·29	3·12	4·46	0·23	2·48	1·78
Ceiling finishes	0·06	0·65	0·90	0·07	0·75	1·07	—	—	—
Decoration	0·16	1·73	2·40	0·13	1·40	2·00	0·10	1·08	0·77
Fittings	0·27	2·89	4·01	0·25	2·69	3·85	—	—	—
Total of finishes and fittings	0·93	10·01	13·88	0·90	9·69	13·85	0·47	5·06	3·63
Services									
Sanitary appliances, waste, soil and overflow pipes	0·21	2·26	3·13	0·19	2·04	2·92	0·11	1·19	0·86
Cold and hot water, heating, ventilation and gas services	0·40	4·31	5·98	0·61	6·57	9·39	2·59	27·87	20·01
Electrical services	0·29	3·12	4·33	0·32	3·44	4·92	0·34	3·65	2·62
Special services	—	—	—	—	—	—	2·16	23·26	16·70
Total of services	0·90	9·69	13·44	1·12	12·05	17·23	5·20	55·97	40·19
Total	6·70	72·11	100·00	6·50	69·95	100·00	12·94	139·27	100·00

Contractors

Main contractor: F. G. Minter Ltd. **Subcontractors: Electrical installation** Holliday Hall & Co. **Mechanical installation** Ellis (Kensington) Ltd. **Metal windows blocks A, B and service tower** Crittall Hope Ltd. **Lining to concrete tanks** Sika Contracts Ltd. **Architectural metalwork and fencing** Singer and James **Installation of lifts to service tower** Express Lifts. **Mastic pointing** Shaw-Seal Ltd. **Radio relay systems** Radio Rentals. **Metal windows block C** Mellowes Metfab Ltd. **Installation of lift to block C** Bennie Lifts. **Vinyl flooring** Armstrong Cork Ltd. **Self finished windows block C** Archital Luxfer **Lightning conductors** J. W. Gray Ltd. **Marble wall linings** J. Whitehead and Sons Ltd. **Steel shutters and gates** Potter Rax Ltd. **Garage screens** H. and C. Davis. **Armour plate glass doors** Aygee (Glass) Ltd. **Cork flooring** National Flooring Ltd. **Rubber flooring** Pirelli Ltd. **Timber fencing** Permafence Ltd. **Pavement lights** Luxcrete Ltd. **Tarmacadam surfacing** Glossop Ltd. **Signs** Pearce Signs Ltd. **Metal fencing** Binns Fencing Ltd. **Grassing** J. Sharp (Landscape) Ltd. **Suppliers: Flush doors** Bailey and White Ltd. **Precast units** W. & C. French Ltd. **Timber windows and bedroom cupboards** Rippers Ltd. **Sanitary fittings** A.B.K. Ltd. **Kitchen fittings** John Sadd Ltd. **Timber windows block C and D** Hollis (London) Ltd. **Kitchen fittings blocks C and D** E. and H. Grace Ltd. **Double glazing** Modern Art Glass Ltd. **Sewerage machinery** Pullen Pumps Ltd. **Precast units main entrance** Portcrete Ltd. **Garden seats and bollards** Mono Concrete Ltd.

Cost comment

This housing project provides interesting cost information on high-rise housing, although it must be noted that 'preliminaries' were spread over the whole scheme and have been allocated '*pro rata*', and that contractors' rates are averaged out for similar construction in the 31- and seven-storey blocks.

The unusual and expressive feature of the scheme is the carefully designed service tower—rising to the full 31 storeys and then beyond for ventilation and flue discharge—whose total cost is £292 909 at a floor area rate of £12·94 per square foot. The link access bridges, again an important design feature, are also contained within this cost, but their particular cost effect is not easily identified.

Examining this block in detail immediately shows up the costliest elements as external walling (£2·23 per sq ft); heating, ventilation and gas (£2·59 per sq ft); and special services (£2·16 per sq ft) which include the all important lift work. The external wall treatment of bush hammered 11in reinforced concrete walls at a unit rate of £8·00 per sq yd is remarkably economic, but the wall/floor ratio is 1:1·94.

The services costs however, although reasonably allocated to the tower, could be expressed over the total floor area of the scheme to note the overall effect. For example heating

	Area sq ft	Cost per sq ft	Cost
Service tower	22 630	£2·59	£58 611
Block A	151 221	£0·40	£60 488
Block B	38 894	£0·61	£23 725
Overall	212 745	£0·67	£142 824

The average cost of £0·67 per sq ft could therefore be considered as the figure for comparison with similar housing projects*.

The 31-storey residential tower is also interesting in the regularity of its design in plan and elevation, which undoubtably contributes to an economic solution. The external wall is again the dominant feature, being a composite element including solid structural walls and windows, with wall/floor ratio of 1:0·60 at a cost of £1·28 per sq ft of floor area. The internal divisions element at £0·40 per sq ft, split between the structural walls of reinforced concrete at the various unit rates stated and the economic 3in and 6in block walling to give a combined division/floor ratio of 1:1·21, reflects the ingenuity of division within the regular overall space between structural walls.

The smaller seven-storey block has similar constructional treatment with almost identical unit rates, different quantity factors being expressed in varied elemental costs per sq ft.

Internal finishes at total £0·66 per sq ft for Trellick Tower as analysed provide a remarkable cost contrast to the structure, with very low elemental costs—wall finishes £0·16, floor £0·28, ceiling £0·06 and decoration £0·16 per sq ft including the plastic compound finish to ceilings.

Foundation elemental costs appear high for all the blocks, but include a considerable amount of accommodation for cars and other service rooms below ground level. Construction also includes deep piling necessary in any case on account of site conditions.

On the contract side the costs all relate to tender dated October 1967 and do not include contract variations. Final costs are not yet available but will have to include fluctuations up to the completion date in August 1972—a five-year period of high rise in costs.

It is perhaps interesting to note that this scheme has a twin (Rowlett Street), previously completed at the northern end of the Blackwall Tunnel, and executed by the same contractor.

*But note heating equipment is sized to supply block C (14 896 sq ft) and future block E (19 644 sq ft).

AJ Insurance Handbook

Section 4 Staff insurance

Insurance study 7 Employees

CI/SfB (A9s)

AJ Insurance Handbook
Section 4: Staff insurance

How much insurance cover can an employer reasonably be expected to provide for his staff? The answer to this difficult question will depend on individual circumstances and for this reason MICHAEL COHEN takes the various schemes in order of cost rather than desirability.

1 Types of benefit

1.01 This study is primarily to show those areas where an employer may provide for his staff but should also help those considering their own cover. The information is double-edged, showing the employer what he can do and the staff what they may be able to induce their employer to do on their behalf. But remember that fringe benefits cost money, and nice as the 'womb to tomb' insurance concept may be, the relative economics must be weighed. The economics are vital to both employer and employee if either are to prosper and the assistant who wants, in addition to his high salary (and of course profit sharing), every conceivable extra from luncheon vouchers to subsidised mortgages is probably ensuring the non-continuance of his firm. However there is a lot which can and should be done. The problem is how much?

1.02 This is a difficult question to answer. Presumably the ideal is that every individual should know that if he is unable to work owing to accident or sickness, his salary will continue, if necessary until retirement. On retirement he should be able to maintain his standard of living and on his death make some 'basic provision' for any dependants. The idea has theoretical attractions, but in practice an employer could not reasonably be expected to provide for all these things. To take an extreme example—a firm employs a young man who travelling to his first day at work suffers an accident so severe as to make him unlikely to work again. Should the employers be liable to pay him three-fourths salary for the next 42 years followed by a pension for the rest of his life? Should