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SOUTH AFRICAN ARCHITECTURAL RECORD

THE OFFICIAL JOURNAL OF THE INSTITUTE OF SOUTH AFRICAN ARCHITECTS, INCLUDING THE CAPE, NATAL, ORANGE FREE STATE AND TRANSVAAL PROVINCIAL INSTITUTES AND THE CHAPTER OF SOUTH AFRICAN QUANTITY SURVEYORS

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INFORMATION SHEET

ISSUED BY THE NATIONAL BUILDING RESEARCH INSTITUTE
OF THE SOUTH AFRICAN COUNCIL FOR SCIENTIFIC
AND INDUSTRIAL RESEARCH.

Attic Ventilation

126 Q: Does ventilation of the attic space in houses effectively contribute to greater thermal comfort?

A: With no ventilation, the air in the space between the roof and the ceiling may, on a hot summer's day, be heated to a temperature well above that of the outside air. This applies particularly where the roofing is of such materials as galvanised iron or asbestos cement. Many people claim, therefore, that ventilation of the attic space can add substantially to indoor comfort in summer.

Theoretical considerations indicate that any improvement brought about by attic ventilation is likely to be very small, since observations have shown that the heat transferred by radiation exchange between roof and ceiling accounts for a considerable amount of the total heat transfer through the ceiling, whereas conduction and convection from the attic air in a sealed attic is responsible for a comparatively small portion of the total heat transfer. This view has been supported by tests carried out on two unoccupied houses in Vereeniging, identical in plan, orientation and construction, the one with a sealed attic and the other with excessive rates of ventilation produced by a fan. During a fairly warm summer's day the indoor air temperature in the house with attic ventilation was never more than about 1° F. cooler, while the difference between ceiling surface temperatures in the two houses was always much less than 1° F. Although its effect may only be small, attic ventilation is altogether undesirable during cold winter nights.

Deep-Sounding Apparatus

127 Q: What is the purpose of the deep-sounding apparatus being used fairly extensively in South Africa?

A: The deep-sounding apparatus is essentially a small-scale bearing test apparatus, so designed that one can obtain the bearing capacity of the soil, at any point in a soil profile, to a reasonable depth. It was developed mainly in Holland and Belgium, countries distinguished by high water table conditions, and is only applicable where conditions of saturation exist. The usefulness of this tool is, therefore, confined in South Africa to the coastal areas and some river banks, where conditions of saturation exist within a reasonable depth of ground surface. Interpretation of results from such equipment, under conditions of semi-saturation such as exist over the major portions of South Africa, may be misleading and should be treated with the utmost caution.

Foundations in Expansive Soils

128 Q: What soil testing methods are recommended for designing foundations in expansive soils?

A: Three conditions are necessary for potentially dangerous heaving in a soil profile, viz. an active clay profile, a lower water table, and a condition of desiccation in the soil. If any one of these three conditions is absent, no heaving will occur. Of the three conditions, the latter two can only be recognised by visual inspection in the field, while the activity or otherwise of the clay can be established within reasonable limits by laboratory tests (see article in N.R.B.I. Bulletin No. 9). These tests, however, do not determine the best depth at which to found. At this stage, this depth can only be determined by a combination of the results of laboratory tests and visual inspection of trial holes.

The determination of allowable bearing pressures presents a more complex problem, as no equipment has as yet been proved to be adequately effective under semi-saturated conditions.

High Tensile Steel in Pre-stressed Concrete

129 Q: Why is it necessary to use high tensile steel in pre-stressed concrete?

A: In pre-stressed concrete, a loss of tension in the steel occurs due to the shrinkage, elastic yield and creep of the concrete and, to a small degree, due to the creep in the steel. Also, in the post-tensioning method, a slight slip at the anchorages is liable to

Supplement to
South African Architectural Record.

March 1953.

occur. For the same total applied pre-stress force, the amount of the loss in pre-stress is of the same order, whether high tensile or mild steel has been used. Because of the smaller forces which may be applied when mild steel is used, this loss may easily be equal to the pre-stress applied, so that after a period no pre-stress is left. An example may illustrate this more clearly.

Consider a beam 50 ft. long which is to be pre-stressed by the post-tensioning method. If mild steel is used, at a stress of 18,000 lb./in.², (the maximum permissible) the total elongation given to the steel will be about ·36 in. If high tensile wire is used, at a permissible stress of 120,000 lb./in.², the total elongation will be about 2·4 ins. After the pre-stress is applied, shrinkage in the concrete will continue and, as the concrete is now under compression, elastic deformation and creep will take place in it, resulting in a shortening in the length between the anchorages. Slipping at the anchorages will further reduce the tension in the steel. The total amount of the shortening that will take place in the steel will depend on the quality of the concrete but, for the general case, will easily amount to ·36 in. after a period of time: i.e. all the pre-stress will be lost if mild steel has been used. However, the loss in pre-stress if high tensile steel has been used will only be about 15%, or the beam will still remain pre-stressed.

Another advantage of using the high tensile steel is that at these stresses its cross-sectional area will be only 15% of that of the mild steel, enabling a much smaller beam to be used to provide the requisite strength.

Prevention of Fire in Thatched Roofs

130 Q: How can the risk of fire in a thatched roof be reduced?

A: The thatch can itself be rendered fire retardant by treating it with certain chemicals, but since thatch is essentially a combustible material it can never be rendered completely fireproof. Moreover, such chemicals, being more or less soluble in water, are generally leached out by rain so that the treatment gradually loses much of its effectiveness. The best treatment is considered to be that in which the thatch is soaked in a solution of one pound of monammonium phosphate to each gallon of water with about 0·1% of wetting agent. The dry grass should be soaked by complete immersion for 15–20 minutes in this solution, allowed to dry and used in the normal way.

As a fire precaution, much can be achieved by attention to design. Flues and chimneys should be so arranged that they do not become hot where they pass through the thatch and should, where possible, be on the lee side of the house to prevent prevailing winds blowing sparks onto the thatch. Close attention should be paid to electric wiring which should all be in conduit and the whole system should be effectively earthed.

Thatched roofs should be fully protected from lightning. The installation of effective lightning conductors is essential and suitably treated string rather than wire should be used in binding the thatch. In general it is strongly recommended that the S.A. Bureau of Standards Code for Protection of Buildings from Lightning, S.A.B.S.–03 1947 be followed.

Copies of this sheet may be obtained on application to the Director, National Building Research Institute — P.O. Box 395, Pretoria.

W.P.—9142—5/2/53

DECIDUOUS FRUIT BOARD BUILDING

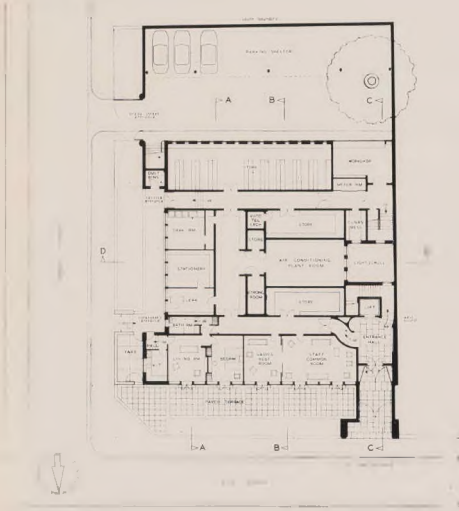
MILL STREET, CAPE TOWN



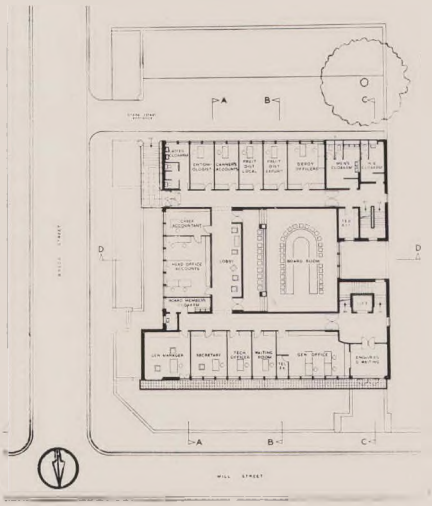
Architects: THORNTON-WHITE, PRICE-LEWIS, STURROCK

ABOVE: View looking down passage on the first floor showing metal doors and partitions to offices. RIGHT: General view of the building from Breda Street looking towards Mill Street, showing the South and East Elevations.

LOWER GROUND FLOOR PLAN



UPPER GROUND FLOOR PLAN



The site of the building, measuring 105 feet wide and 153 feet deep, with a 10 feet fall from back to front, is situated at the corner of Mill Street and Breda Street, in the Gardens, Cape Town, within easy walking distance of the Government Avenue.

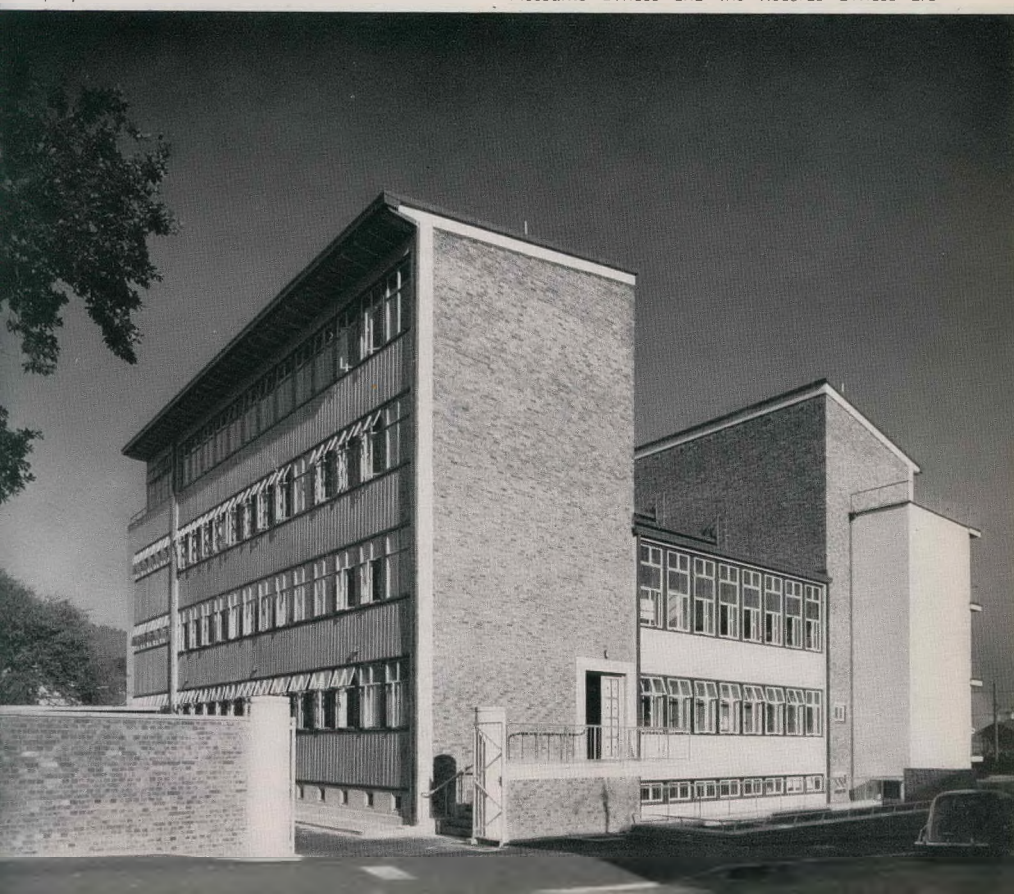
In Mill Street, which is a comparatively narrow and busy thoroughfare, it was decided to set back the main frontage of the building by 20 feet to give the offices greater privacy and to provide a terrace for the use of the staff. The Breda Street frontage is set back 10 feet under the Municipal Town Planning Scheme.

The site is one which falls partly within a business zone and partly within a residential zone. For this reason approximately one-third of the area at the back of the site could not be used for building purposes. These limitations determined the overall coverage of the building and its position on the site.

The placing of the building affords unrestricted light and air on three frontages, namely, North, East and South, and, from the upper floors, excellent views to the North over the City and to the South of Table Mountain. The open area, described as zoned for residential purposes, has been employed as a car park for 12 to 15 vehicles.

GENERAL PLANNING

The building is planned to house the headquarters offices and Board Room of the Deciduous Fruit Board, together with ancillary accommodation, and a reserve of space to allow for the future expansion of offices. The principal departments, consisting of General Offices with Board Room, the Accounts Offices and the Records Offices are



situated on the upper ground, first and second floors respectively. For ease of working it was required that each of these departments should be planned on one floor level only.

Private and section offices within the departments are arranged along the North and South frontages in the case of the first and second floors, and along the North, South and East frontages in the case of the upper ground floor. The large Accounts Office on the first floor runs from North to South along the East Frontage, and is adjacent to the central files situated in the core of the plan. The large Records Office occupies a similar position on the second floor, but is set back over the central files to allow light and air to penetrate into the heart of the plan.

The Board Room becomes the core of the plan on the upper ground floor, in which position it is well protected against the noise of traffic in Mill Street. The position has been further justified on the grounds that Air Conditioning was to be obligatory and also that the room was unlikely to be used as frequently as the Offices. The Air Conditioning chamber, which is immediately underneath, has been reduced in height to increase the section of the Board Room. It was thought advisable to provide a minimum area of window into a light well for emergency use in the event of a power failure.

The lower ground floor becomes a semi-basement towards the back of the site.

The third floor of the building, similar in arrangement to the second floor, has been planned for the future expansion of Office space.

The limited coverage of the site coupled with the need to obtain the maximum amount of floor area on the upper ground, first and second floors precluded the use of a court yard plan or the more open "L" or "U" shaped type of plans. As a result the interior of the plan above the Board Room level required some special method of lighting and ventilation.

After considering several forms of roof lighting it was decided to set back the centre section of the East elevation above first floor level and to introduce two sets of windows, one above the other, at a level calculated to cast sufficient light into the core of the plan occupied by the Central Files on the first floor and the Records Office on the second floor.

These windows span over a distance of 38 feet, and, together with the flat roof construction, are supported by a pair of vierendeel trusses formed out of 6" x 6" box shaped steel sections with the vertical members matching the pattern of the windows

FLEXIBILITY OF OFFICES

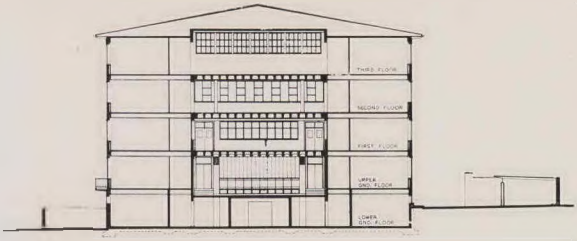
After the main elements of the plan had been settled, it was considered essential that the smaller sub-divisions should be capable of alteration to meet changes in office organisation, without seriously dislocating the normal use of the building.

Flexibility has been obtained in the first instance by spacing the columns in the outer walls at 4ft. 8in. centres, and the shallow beams, supporting 2in. floor slabs, at 2ft. 4in. centres. An office compartment 17 feet deep, can be built up in multiples of the standard unit, namely 9ft. 4in., 14ft., 18ft. 8in., etc., and in each case the ceiling pattern remains the same. Form work for the construction of the floors consisted of simple steel troughs which could be removed independently of the props for re-use after the initial set of the concrete had taken place. Secondly, by the employment of standard prefabricated steel and glass partition units bolted together and secured to permanent wooden grounds applied on beams and columns.

In contrast to the close spacing of columns and beams on the perimeter of the plan the structural spine enclosing the large elements in the core of the plan has been reduced to the minimum number of components. The whole floor area on the first floor is broken only by eight columns, and these are reduced to four on the second floor and two on the third floor.

The idea of flexibility has been taken one stage further in the arrangement of electric light fittings. Single fluorescent lighting tubes are spaced at 2ft. 4in. centres, between the floor beams already described, and these are controlled in groups from switch positions situated in the passageways. In this way a very even distribution of light is obtained which is not affected when office partitions are re-planned.

A similar system applies to the low temperature tubular electric heaters—there is a single tube under each window. The tubes are controlled in pairs from switches in the individual offices, allowing each occupant to adjust the amount of heating received. Wiring for power plugs, G.P.O. and intercommunication telephones is carried in a horizontal duct under the windows and concealed by removable laminated wood panels. Connections may be made at spacing of not less than 4ft. 8in. centres.



SECTION



SECOND FLOOR PLAN

BELOW : General view of building from Mill Street, with Breda Street on left, showing East and North Elevations.



For neatness of appearance the tubular heaters, power plugs and telephone connections have been designed into a single anodised aluminium panel.

SPECIAL FEATURES.

Standard details and finishes have been employed for the offices on all floors for practical reasons, but each floor has some special feature which gives it character and effectively overcomes any sense of monotony.

On the lower ground floor there is the entrance way from Mill Street which is marked by a pair of robust pillars of Paarl granite. The same material is used for the quoins and copings of the flanking walls, in contrast to the deep purple to blue of the klompje infilling bricks. Painted steel gates are hinged to fold back into recesses in the walls. There are inner and outer entrance doors arranged in the orthodox way, and giving access to a small hall, lined from floor to cornice in a pale shade of Namaqualand marble.

The suite of offices on the upper ground floor is centered around the Board Room which by contrast is rich in colour and finish. The walls are lined with laminated wood panels of Australian Walnut and the solid trimmings for skirtings, architraves and cornices are matched in American Walnut. The floor is close carpeted in a shade of turquoise.

On the first and second floors there are no variations in the use of materials but each is dominated by the large central offices for the Accounts and Records, with the special form of natural lighting, previously described.

COMPOSITION AND ELEVATIONAL TREATMENT.

The setting back of the central portion of the East elevation has not only given light to the interior but also a lightness of appearance to the outside geometry of the building as seen from the main points of vantage in Mill Street and Breda Street.

Although the greater bulk, up to and including the first floor, is square in form the actual appearance is of two tall almost slab-like blocks arranged side by side, with a lower interconnecting section between them. The effect is heightened by the unbroken face-brick surfaces of the gable end walls and their returns into the central area of the plan, in contrast to the framed and intricately patterned surface on the North and South elevations, and the lower central portion of the East elevation.

The North and South elevations are defined by broad concrete frames and are clad in sheet metal. The window-sills, heads and mullions have been pressed out of bronze sheets, a material which was available in Cape Town at a reasonable price when steel was scarce. The windows themselves are of galvanised steel set in mastic within the bronze surrounds, and the panels below the windows are of anodised aluminium sheets, ribbed at approximately 9in. centres for additional strength. The bronze and aluminium components are insulated from one another to avoid electronic action.

The face of the window glass is flush with the face of the aluminium panels and the projection of heads, sills and mullions have been kept as light as possible. This has been done deliberately to emphasise the fact that the facing is an impervious skin drawn across the elevation as a protection from the weather. On all elevations metal facings are stopped short of the ground line and the base of the building is protected by a shallow dressed granite plinth.

The eaves projection on the North and South, while protecting the elevation serves as a stop to the vertical movement created by the close spacing of the window mullions and by the vertical ribs in the panels under the windows. In mid-summer the eaves cast a very considerable shadow over the North elevation, but the orientation and setting of the building are such that outside window louvres are not warranted. The penetration of the sun into the building during the winter months is regulated by venetian blinds.

COLOUR.

Painted surfaces on the outside of the building are limited to the steel window frames, the undersides of the eaves, the soffits of balconies and the overall concrete frames of the principal elevations.

The facing materials that cover the greater surface of the elevations have integral colour, chosen in each case from that segment of the colour circle between yellow-orange and orange-red. Although the colour range is limited the range of tones extends from the off-white shade of the surrounding concrete frames, through the varied buffs and browns of the brickwork to the deep tone of the burnished bronze surrounds to the windows.

The tone sequences are arranged in such a way that a general effect of harmony is achieved, but contrast is introduced between the light oyster shade of the painted steel windows and the deep tone of the bronze surrounds, and between the general wall surfaces and the surrounding concrete frames defining the principal elevations.

1.—View of the main entrance way from Mill Street. The flanking walls are of klompje bricks with granite quoins and copings. The entrance doors are of anodised aluminium. 2.—A general view looking across the large Accounts Office on the first floor, showing the special form of daylighting, and the relationship of the smaller private office on either side. 3.—A general view of the Board Room. The wall panelling is walnut and the floor has close carpeting of turquoise colour. The fluorescent lighting tubes are recessed in troughs fitted with "egg crate" diffusers.



1



2



3

GENERAL CONTRACTOR :

R. Lea & Sons

SUB-CONTRACTORS :

Reinforcing Steel Company
Cape Steel Construction Company
Chubb and Maxwell
United States Air Conditioning Corporation
Edward A Shaw and Co.
Crittall-Hope Metal Windows (S.A.) Ltd.
Jamieson, Macfarlane and McKillops Ltd
Arderne Scott Timbers Ltd.
Waygood-Otis
S. A. Phillips Ltd.
Hamilton and Smith
Joseph Sankey and Co. Ltd.
S.A. Light Metal Works
Gypsum Industries
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Cape Town Shipwrights
H. G. Stephens and Son
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Marble Lime and Associated Industries Ltd.
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Romeo (Pty.) Ltd.
Crawfords Ltd.
Dowson and Dobson
Cape Ornamental Iron Works
North British Rubber Co. Ltd.
Plywoods Ltd.
S. Michaels and Co.

Special mention is due to Alan Williams, Senior Assistant Architect; R. S. Archer, Clerk of Works; V. R. Pfeil, General Foreman for Messrs. Robert Lea and Sons; E. Gutenkunst, of the South African Light Metal Company, whose knowledge, enthusiasm and good team work have contributed so substantially to the successful realisation of this building. L.S.

Photography by ROBIN SUMMERS

GARDEN CITIES

A NEW APPROACH TO OUR HOUSING DIFFICULTIES

By S.B. MYERS, B.Sc. (Eng.), A.M.I. MUN.E., A.M.I.C.E.

A paper read to the Institution of Municipal Engineers, South African District, on the occasion of their Thirty-first Annual Conference, 1952.

I.—ORIGIN AND GROWTH.

For many years, and more particularly since 1944, considerable attention has been focussed by this Institution on what is generally called "The Housing Problem." There is no "problem" in South Africa with regard to housing—an acute shortage, yes, caused not by technical, material or know-how deficiences, but by the universal fundamental—lack of money.

Our Institution's proceedings contain many valuable contributions on overcoming the shortage and reducing the cost of houses. In the main, however, these have been confined to the purely technical sphere dealing with such aspects as Mass Production, No-Fines and Precast Concrete, Pise-de-Terre, Prefabrication, and so on.

As the title of this paper reads "Garden Cities —A New Approach to our Housing Difficulties," the author proposes to adopt a completely different approach to this question by suggesting, in the course of these few pages, ways and means by which, through the establishment of Garden Cities or Garden City organisations in the Union, far greater progress can be made in housing the people.

Although the formation of the Garden City movement dates back to the end of the Nineteenth Century, it is still comparatively unknown ; for this reason, in order to understand what is meant by a Garden City and how it functions, it is essential to delve into the origin and growth of this movement and to trace its subsequent development in South Africa.

EARLY IDEAS.

In every city of the world the results of the Industrial Revolution led to appalling living conditions — overcrowding and squalor, crime and disease. Men of conscience groped in the dark for a practical answer to this new situation, but it was not until the publication of works by social reformers such as Charles Fourier, Robert Owen, James Buckingham, Edward Bellamy and Henry George, to name but a few, that the revolutionary idea of creating new towns and controlling their development was envisaged as a possible solution.

EBENEZER HOWARD.

Unfortunately these solutions were Utopian in concept as well as impractical in execution, and by 1895 when a young man named Ebenezer Howard crystallised his ideas on the subject and began campaigning throughout Great Britain for the establishment of Garden Cities, living conditions had deteriorated. Howard's logical deductions and dynamic personality, coupled with his sincere social awareness, impressed his audiences, overcame the sceptics and gained him rapid support from all sections. This campaigning culminated in the publication in 1898 of his now famous book "Garden Cities of Tomorrow," in which he lucidly set out the details for creating a new type of city based on scientific and economic principles.

THE GARDEN CITY IDEA.

He defined the Garden City as a "Town designed for healthy living and industry, of a size that makes possible a full measure of social life, but not larger ; surrounded by a rural belt ; the whole of the land being in public ownership or held in trust for the community."

It is not intended to elaborate on the details of Howard's scheme ; suffice to say that it did include all the essential constants in town planning ; housing density, zoning, open spaces, boulevards, ring roads, architectural standards, etc., and above

all the conception of the city as an organic entity linked closely to the surrounding green belt.

He proposed the purchase of a large tract of land at agricultural value and the building of a city of limited size and population on its centre. The city would be served by some six neighbourhood units and the whole surrounded by permanent agricultural holdings to form a green belt, thus precluding any possible sprawl of one urban area into another.

The revenue of the garden city was to be obtained from a ground rent or land rate levied differentially on the residential, commercial and agricultural areas—the increased land rates resulting from the inevitable appreciation of urban land values would also be used for the benefit of the inhabitants in providing additional amenities.

THE FIRST GARDEN CITY.

In 1899, shortly after the publication of "Garden Cities of Tomorrow," "The Garden City Organisation" was formed to promote discussion on Howard's project and ultimately to build a garden city. To achieve this object a company was duly registered, and in 1903 the first garden city, called Letchworth, was established adjacent to the town of Hitchin and some 35 miles from London.

The sudden activity in this quiet rural area evoked much interest and even more doubt, this is very characteristically portrayed from a quotation by George Bernard Shaw, an early and staunch supporter of the movement :—

> "Broadbent : 'Have you ever heard of a Garden City?'
> Tim (doubtfully) : 'D'ye mane Heaven?'
> Broadbent : 'Heaven, no; it's near Hitchin.'"
> (John Bull's Other Island, 1904.)

GROWTH OF THE MOVEMENT.

Letchworth was an unquestionable success and stimulated the formation of garden city associations in many other parts of the world ; ultimately the International Garden City Association was formed, to which the various associations affiliated. In 1909 the British Association was renamed "The Garden Cities and Town Planning Association," and by 1941, when the science of Town Planning had become firmly established and was controlling the pattern of the Nation's development, the name again changed, this time to "The Town and Country Planning Association," by which it is known to this day.

Following upon the establishment of Letchworth, garden cities were founded in many other countries although not necessarily in the form as outlined by Howard. He himself anticipated that with the efflux of time modifications would have to be made and in fact would be desirable.

Thus the conception and growth of the Garden City movement is without doubt the source from which we have obtained and developed our contemporary town planning knowledge and legislation, accepted today as an integral part of Local and Central Government Administration.

II.—THE MOVEMENT IN SOUTH AFRICA.

Fascinated by the writings of Howard and the phenomenal growth of the garden city movement, the late Richard Stuttaford, who for many years was a member of the Union Cabinet, took the opportunity whilst on a visit to Great Britain in 1917, of seeing Letchworth and discussing the project with Howard and his colleagues. He returned to the Union firmly resolved to start the movement here, and when the dreaded inflenza epidemic had taken toll of thousands of lives he became more convinced that better housing and living conditions might have saved many of them.

His ideas and approach to the problem at the time are best explained in his own words :

"During the final years of the Great War, rents increased so much as to create hardship for the poorer and middle classes, and the high level of prices for building materials prevented the erection of houses which could be rented at a reasonable sum. In this crisis, the Government passed a Rents Act preventing exploitation of the public, but whilst this helped those already in occupation of houses, it failed to help those who were homeless.

"I recognised that the Rents Act was only a palliative, and that the only real remedy was the supply of houses sufficient to meet the demand. I also recognised that in the hurry to get houses built it was only too probable that inferior houses would be run up by speculative builders in ugly blocks, and in congested areas which would soon deteriorate and result in an increase of the slum problem, which was then, and still is, a disgrace to Cape Town, in common with all the large cities of the Empire. I hoped that in the new outlook at the end of the War it might be possible to inaugurate a new policy in providing homes for the people.

"My policy differs fundamentally from the ordinary policy pursued in the development of land for building purposes. The old method is that the land is cut up and developed with the single aim of bringing the utmost return to the original owner

within the shortest space of time ; the results, as seen all over the world, are crowded dwellings, the narrow streets allowed by the Local Authority, want of air space and recreation space, and sometimes no provision even is made for the proper making of the roads.

" I maintain that from the public point of view that is economically unsound. In the future it costs vast sums in widening streets and in sanitary and other control, but, what is more important, it all tends to fill our hospitals with sickly children and physically-unfit adults, and creates breeding spaces for infectious diseases. It also necessitates many other additional costs, such as police control, etc.

" For these reasons, I consider an entirely opposite policy of land development should be followed. I believe that with reasonable intelligence and foresight on the part of Local Authorities, and the grant to them of the right to purchase land on their borders, in addition to the more sparsely-populated districts within their area, it is possible to develop land in such a manner that, while realising a fair price for the land, the area can be laid out solely in the interests of the future inhabitants and of the town generally. If the community also retains for its own benefit a considerable portion of the income derivable from commercial sites, that will supply the necessary money for the provision of sites for recreation and similar purposes.

" Garden Cities have been given this opportunity and it is the Directors' duty and privilege to prove that my ideal can be carried out in practice, is beneficial to the community and is economically sound, and, having done this, to induce other Local Bodies to adopt the same principle, placing the results of our experience at their disposal and, where advisable, undertaking the development of further areas of land."

These prophetic words, written some 33 years ago, are poignant and as true as ever—all too often we see the effects of bad planning and lack of foresight.

THE GARDEN CITIES TRUST.

Richard Stuttaford placed his scheme before the Acting Prime Minister, the Rt. Hon. F. S. Malan, and in January, 1919, the Union House of Assembly approved the formation of the " Garden Cities Trust " and donated to this body, in terms of a Trust Deed, some 400 morgen of the Uitvlught Forest Reserve, on which to establish Pinelands—South Africa's first garden city. The Trust Deed stated :

> ". . . . . The main purpose of the Trust is to provide better housing and social conditions for the people, the latter purpose to be construed in its widest sense All monies derived from these operations shall be devoted solely to the purpose of the Trust."

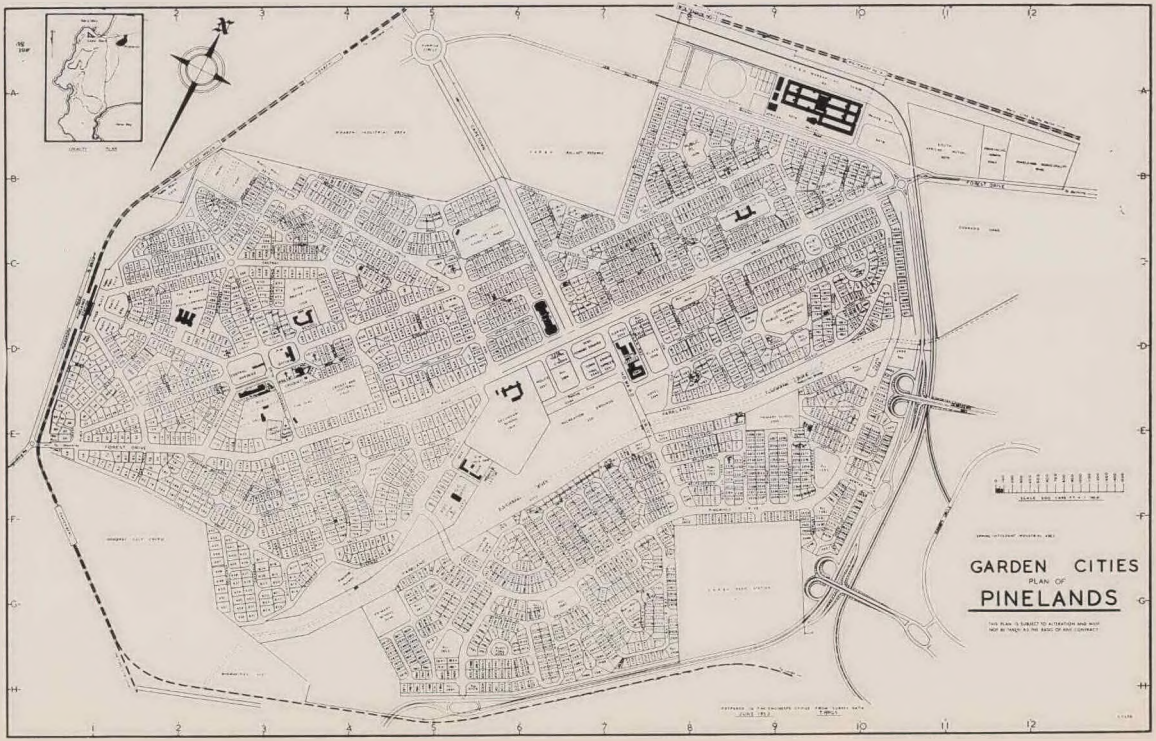
The powers and privileges invested in the Trustees by the Government are extremely wide and far-reaching—in fact, considerably greater than those exercised by any Local Authority. They can buy, sell or lease land, operate and control any type of business, erect structures for any purpose deemed necessary and make or alter bye-laws for the conduct of their business or for effecting the purposes of the Trust, provided of course such bye-laws are not inconsistent with the provisions of the Trust Deed.

MANAGEMENT OF THE TRUST.

The Trustees numbered seven, of which four—the founder, Richard Stuttaford, and three well-known South Africans who had closely identified themselves with the movement—were appointed for life ; and three others—the Secretary for Lands, Secretary for Public Works and the Chief Conservator of Forests—were appointed by the Government acting through the Minister of Lands. This arrangement enabled the Government to participate and actively assist in the experiment of creating a new town.

The Trust Deed made provision for four further Trustees to be elected by the occupiers on the basis of one Trustee when 200 residences had been occupied, two when 500 and four when 2,000 residences had been occupied. Ultimately there would be eleven Trustees to manage and control the affairs of the proposed garden cities ; in this way the four elected Trustees, together with the three appointed by the Government, would ensure fair and equitable representation of the inhabitants. The Trustees, or Directors, as they are now termed, receive no remuneration whatsoever for their services and administrate the provisions of the Trust Deed acting through their officials.

Capital was required to launch this new undertaking and Mr. Stuttaford generously donated the sum of £10,000 to the Trust to serve as a self-renewing capital. From its inception the Garden Cities Trust was envisaged as a non-profit Utility Organisation ; this is a principle from which it has never departed.


GARDEN CITIES
PLAN OF
PINELANDS

COMMENCEMENT OF PINELANDS.

South Africa had very little experience in the science of town planning and, as the Trust was anxious to initiate the scheme on the most modern lines possible, it brought out and appointed in 1920 the internationally-known planning expert, A J. Thompson. His task was to prepare and advise on a layout for Pinelands—in all probability the first town-planning scheme in the Union. No time was lost in preparing this scheme, but the actual development was undertaken in sections to enable the planners to take cognisance of and incorporate any advances made in town-planning practice.

In 1941 a further 300 morgen of land contiguous to the original grant was acquired from the Government and the two areas were planned as a composite unit. It is not intended to present the detailed history of Pinelands and its achievements, although it can be said that apart from the small band of early enthusiasts of the Garden City movement, the vast majority of the people in the Cape Peninsula did not hold out much hope for its success.

Today Pinelands is a self-contained, virile community having just over 2,000 homes and a rateable value of £6,000,000. Within the next five years this experiment will come to an end as there now remain only 650 residential erven, apart from a small number reserved for commercial and public purposes. It may be of interest to place on record the ultimate overall percentages of " land use."

Residential	52 %
Public Buildings, Schools, etc.	5 %
Recreational and Open Spaces	15 %
Commercial	1.5%
Estate and Arterial Roads	26.5%

FUNCTIONS OF BOARD OF GARDEN CITIES.

When the Trust was established it was understood that it would carry out the functions and duties of a local authority, but as the Housing Act of 1920 made no provision for an organisation such as Garden Cities to be able to receive the benefit of Government Housing Loan funds, a Local Board was brought into being in 1921 for this purpose. With the rapid development that took place from the '30's onwards, the Administrator in 1939 suggested that the status of the local authority be changed to that of a Municipality. It was not, however, until 1948 that this change came about.

The Board, in addition to its town planning responsibilities, undertakes departmentally the construction of all roads with premix macadam surface, the installation of storm water drainage schemes, footpaths, certain bridges and recreational areas. On completion of an area these installations are handed over gratis to the local authority which then assumes responsibility for their maintenance.

The expenditure on this work, including costs of administration, is recovered through the sale of land ; the present selling price per quarter acre erf is £380, and no erf is sold until all services have been installed. In view of the comparatively low cost of land and resultant demand for building sites, the principle of one person one erf has been rigidly enforced to prevent any possible land speculation.

The Board requires the plans of all new buildings to be approved in accordance with its own building regulations ; except for alterations and additions, plans of all new buildings must be prepared by a registered architect. In this way, since its inception, Garden Cities has exercised and maintained strict control over the aesthetic and structural aspects of all buildings.

Desirous of promoting the well-being of its residents, Garden Cities has made substantial material and financial contributions to the local authority as well as to the social, cultural and recreational bodies of the township. Further, it has financed and provided all buildings required for commercial undertakings in Pinelands, and these, with the exception of the Nursery and Service Station, are leased to and run by private enterprise. It was always the desire of the founder that any profit or surplus derived from the operation or lease of business premises should revert to the people. Consequently, to implement this intention, the Board sets aside all monies obtained from this source for the provision of additional amenities.

THE PINELANDS DEVELOPMENT COMPANY.

In the early days of Pinelands the maximum Government Housing Loan advance was 80% of the total cost of house and ground. The remaining 20%, however, being in most cases beyond the reach of the salaried man, had the effect of seriously retarding the progress of Pinelands—created for that very group of persons. Mr. Stuttaford, realising and appreciating this hardship, established the Pinelands Development Company in 1930, whose function would be to raise sufficient capital to assist the home-owner with a further

15% of the total cost, requiring him therefore to find a cash deposit of only 5%.

In addition to rendering financial assistance in this form, the Company engaged private contractors to erect a small number of houses each year which, on completion, were sold at cost. At the close of the last World War the housing shortage became more acute and as the desired rate of progress could not be met by these contractors, the Company decided to undertake departmentally the construction of all its houses.

Garden Cities immediately made available some 300 building sites, and with the support of the National Housing and Planning Commission, the Company lost no time in commencing operations. Since then hundreds more homes have been built with economic housing monies, varying in size from four to five rooms, single and double storey, at costs of 2s. 6d. to 3s. 6d. less per square foot compared with the private contractor building to the same specification.

To avoid the stamp of uniformity generally associated with housing schemes, various firms of architects are engaged to design these homes with the result that no two are similar in appearance.

The Pinelands Development Company, which operates in close co-operation with Garden Cities—having in certain cases joint personnel—has, on behalf of Garden Cities, erected all commercial and most of the public buildings in Pinelands. There is no doubt that their activities are one of the most important contributing factors to the success and rapid growth of the township ; an organisation of this nature being a prerequisite to the implementation of the proposals made later in this paper. The Board of this Company consists of four Directors who, like the Directors of Garden Cities, receive no remuneration for their services.

FUTURE POLICY AND PLANNING.

Thus today, with the development of the first Garden City nearing completion, the Board is fully aware of the need of continuing and extending the scope of its activities. With this aim in view, investigations and preliminary surveys have been made on numerous sites, both large and small, for possible use as future townships. Acting in co-operation with the Divisional Council of the Cape, Garden Cities purchased a tract of land adjacent to the existing Bergvliet township. This area, which is now called " Meadowridge " and on which preliminary work has commenced, will link up with Bergvliet to form a complete neighbourhood unit of approximately 7,000 persons.

Not unmindful of the urgent needs of the Non-European peoples, negotiations are at present being conducted for the acquisition of suitable land on which to build a township providing ample facilities for full social, cultural and recreational interests, and with possible Non-European autonomous local government control. The Garden City envisaged would have a population of roughly 15,000 and would contain economic as well as sub-economic housing schemes. It is the intention of the Board to control and assist the development of this township, and of any others that may be formed, as carefully as that of Pinelands.

III.—THE PRESENT AND FUTURE.

From what has been said on the development and operation of South Africa's first garden city, it becomes apparent that Pinelands cannot be considered a true garden city as defined by the founder. A garden suburb would perhaps be a more appropriate definition, but for the purpose of this contribution the meaning of the term " garden city " or " new town " must be construed in its widest sense to include such variations as satellite town, greenbelt cities, dormitory suburbs and so on. Irrespective of the correct definition of Pinelands, there is no doubt as to the success of this experiment in creating a new town , that which has been achieved on a small scale in what was a remote part of the Cape Peninsula could be vastly improved upon and repeated over and over again throughout the Union.

There are today other organisations with similar objects to Garden Cities' but unfortunately their number is still far too small. Of these the best known is the Citizens' Housing League Utility Company which is making a magnificent contribution in the way of economic and sub-economic townships. The formation of new towns has been carried a stage further by the establishment of so-called "company towns," particularly in the Transvaal and O.F.S., in which again notable accomplishments in housing can be observed. However, it must be admitted that the main aim or purpose, which is quite reasonable from the Company's point of view, is to ensure the success of their undertaking and not the solution of our housing difficulties.

EXISTING LEGISLATION.

The formation of further garden city or new town organisations need not necessarily present

RECENT ACOUSTIC DEVELOPMENTS IN SOUTH AFRICA

By W. S. ARMSTRONG, B.A., B.A.I., A.M.I.E.T.

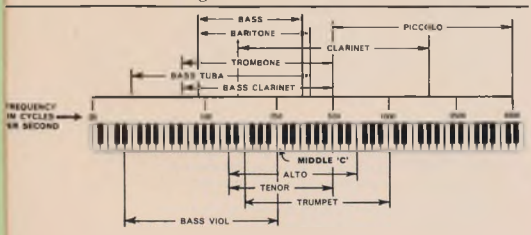
A further development in the use of Hardwood was evident at the Rand Show exhibit in the form of acoustic materials. These consisted of two types, a perforated hardboard acting on the more recently developed damped-resonator principle and an absorbent tile of the more conventional type manufactured from the new ½" thick pine board.

Both of these acoustic materials go under the name of "Fibra-coust" and are produced at the Johannesburg factory of Messrs. Fibrous Plaster Ceilings (Pty.) Ltd. A panel of "Fibra-coust" hardboard measuring 8′ by 4′ was installed in the kitchen of the Masonite house and the high degree of absorption over the voice frequency range provided by this was most remarkable, whilst the decorative appearance was also most attractive.

The Fibra-coust panel resonator type of absorbent consists of ⅛" or 3/16" hardboard perforated with 5/16" holes at 1" centres and backed with a soft absorbent material, and patents for this new system of acoustic panelling have recently been applied for in South Africa, the Rhodesias, Australia, Great Britain and other parts. The great technical advantage of this system over most of the more conventional types is that it is most efficient in providing a high degree of absorption over the lower and middle frequencies which have long since been recognised by acoustical engineers as the most difficult with which to deal. It is this lower frequency band which is receiving a great deal of attention in present times due to the necessity of absorbing machinery and traffic noises and the noises produced by modern office equipment which is being ever more increasingly employed.

In addition, it is readily noticeable that when efficient absorption is extended to the lower frequencies the peculiar hollow sound or "boominess" often experienced in a room treated with some of the more conventional materials (due to over-damping of the high frequencies) disappears and more comfort results.

This new system has passed the most stringent tests and the rather amazing figures of absorption given in the following table are the result of tests carried out by and reproduced by kind permission of the National Physical Laboratory in Pretoria.



Distance of Fibra-Coust From wall	Absorption co-efficients frequency in cycles per second					
	125	250	500	1000	2000	4000
4½ inches	·53	·84	·88	·70	·55	·55
3 inches	·45	·80	·86	·79	·55	·47
2½ inches	·33	·62	·85	·80	·63	·63
1½ inches	·25	·43	·80	·87	·58	·33
½ inch	·16	·16	·32	·80	·80	·49

It is evident from the above table that the degree of absorption varies according to the spacing of the material from the walls or ceiling, being fixed to timber grounds or brandering at 12" centres, the minimum spacing from walls or ceiling for efficient results being approximately ¾". Various spacings may be employed to obtain any required effects over the entire frequency band. This effect has been referred to as "tuning" the hall, or room, and was employed in the acoustic design of the Royal Festival Hall in London. Other great advantages of this type of panelling are that it can be supplied in 4 ft. wide sheets up to 16 ft. in length, it is entirely workable and may be cut to any individual size or to free-shaped designs if required. It is most durable and may readily be painted without loss of effect.

Where highly specialised treatment is required further effects may be obtained by the incorporation of other materials such as glasswool behind the panels. The manufacturers run a special technical department under the supervision of a qualified acoustics engineer to deal with various types of problems encountered and architects and others have readily availed themselves of and expressed appreciation of this facility.

Many installations have been carried out with this material most prominent of which have recently been Regional Court "L" of the Johannesburg Magistrates' Courts and the Feathermarket Hall in Port Elizabeth. Many recreation halls for multi-purpose use, bioscopes, banking halls and machine rooms, hotels, canteens and restaurants, telephone and record-playing booths and private houses have also been treated.

The other material produced from ½" thick insulation board is in the form of a tile of conventional type, size 18" square and compares most favourably with similar products of this type. Authorized test figures for this tile are available from the manufacturers and these tiles may be obtained in a standard cream colour or in various shades to order depending upon the quantity required.

For the convenience of readers, a table showing the relation of frequency to the human voice and various musical instruments is illustrated at left:—

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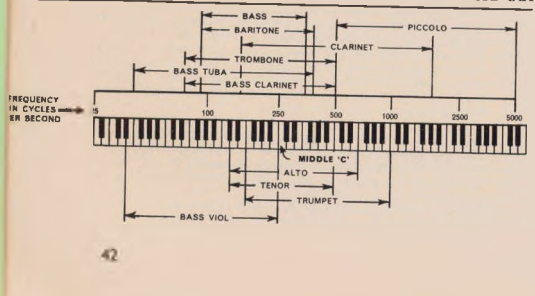

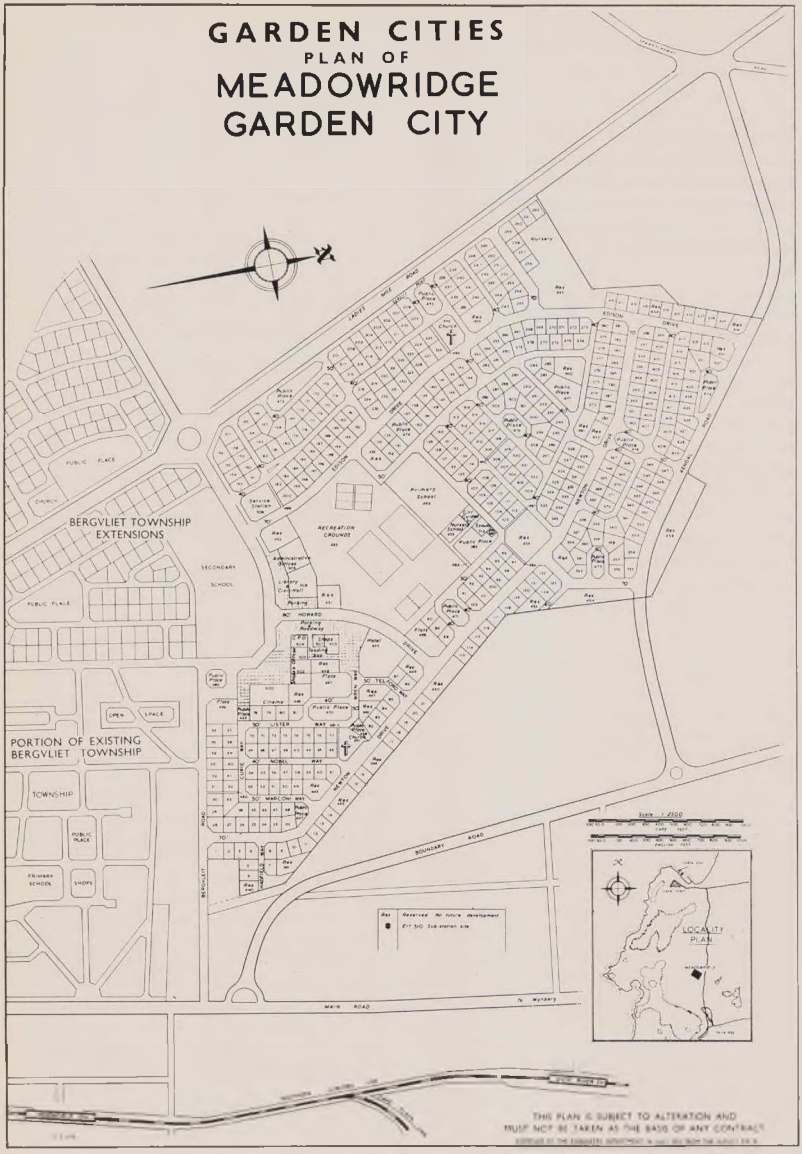
GARDEN CITIES
PLAN OF
MEADOWRIDGE
GARDEN CITY
BERGVLIET TOWNSHIP
EXTENSIONS
PORTION OF EXISTING
BERGVLIET TOWNSHIP
RECREATION
GROUNDS
SECONDARY
SCHOOL
PUBLIC PLACE
CHURCH
OPEN SPACE
TOWNSHIP
PRIMARY
SCHOOL
SHOPS
HOWARD
ROAD
BOUNDARY ROAD
MAIN ROAD
LOCALITY
PLAN
THIS PLAN IS SUBJECT TO ALTERATION AND
MUST NOT BE TAKEN AS THE BASIS OF ANY CONTRACT

any serious difficulty ; on the contrary, there exist certain important legislative measures which to a large extent facilitate the creation of such organisations, and further, enable them to receive direct and indirect assistance in fulfilling their functions. The three principal legislative measures which could be used or applied in the formation of new town organisations, together with a brief outline of the relative sections, are set out hereunder :

(a) Natural Resources Development Act 51/1947 ;
(b) Housing Act, 35/1920, and 45/1945 (as amended) ;
(c) Provincial Townships Ordinances (as amended).

(a) Natural Resources Development Act

The Act provides for the appointment by the Governor-General of a Council whose function would be to plan and promote the better and more effectively co-ordinated exploitation, development and use of the natural resources of the Union. The Council is empowered to investigate and prepare schemes in conjunction with other bodies, for the use of any such resources including the use to which land could best be allocated, to collate and correlate information regarding town planning, housing and allied matters, and to advise and assist these bodies in the establishment of new townships. Such schemes must be submitted to the Minister of Economic Development and thereafter to the Governor-General for final approval. If approved, the scheme can be put into effect by the authority as directed.

The Natural Resources Council is therefore primarily an investigating and advisory body covering an almost unlimited sphere.

(b) Housing Act.

This Act authorises the Minister of Health to create a Commission which is vested with extremely wide powers to act in all matters pertaining to housing. The Commission, inter alia, can carry out investigations and research on all aspects of housing, plan and prepare details for housing schemes and if necessary undertake the construction thereof. It can advance monies to individuals, approved organisations, companies and statutory authorities and advise the Minister on the use and disposal of all materials.

Further, the Governor-General may grant Crown land to any of the above-mentioned bodies for the purpose of carrying out a housing scheme and local authorities may, subject to Ministerial consent, themselves expropriate land for housing purposes.

In terms of the Act, an approved organisation or company is one which must have in its Articles of Association or Constitution a clause forbidding it to declare a dividend or otherwise divide profits amongst or for the benefit of its members at a percentage higher than that prescribed by the Administrator, before it can receive any monies or be granted land.

(c) Provincial Townships Ordinances.

The terms of these Ordinances vary from one Province to another, but basically all provide for the setting up of Townships Boards whose duties are to enquire into any proposed sub-division, and after full consideration thereof, make recommendations to the Administrator regarding its approval or otherwise. From the point of view of establishing new town organisations, the most important clause in the Ordinance is the one providing for the setting up of Joint Town Planning Committees with power to prepare regional planning and zoning schemes.

Any organisation wishing to proceed with or undertake a scheme would derive the benefit of the Committee's expert knowledge and research and at the same time would be protected from any contiguous development that may be detrimental or unsuitable. A regional planning scheme would ensure a permanent green belt between one such town or neighbourhood unit and another.

These statutory bodies have undertaken considerable research into the technical aspects of housing and have produced many reports[1] of inestimable value, of which some are listed below.

WHY FURTHER ORGANISATIONS ?

By virtue of the provision and powers contained in the above legislation, it would at first sight appear that the formation of additional utility companies or new town organisations to assist and overcome the country's housing difficulties would be unnecessary and superfluous. However, from an economic point of view, this may be the case where minor housing projects are contemplated within a local authority area as a new or an extension to an existing scheme, but consideration is being given only to the question of major schemes and new towns where the position is vastly different.

There is a growing tendency in South Africa towards centralisation and in many instances this trend may be desirable, but the author is of the firm belief that the creation of new towns or housing estates as envisaged by this legislation , of a size that will permit of a minimum of social and recreational facilities, must be evolved as a living

organism, developed and controlled as such from within, and not from Pretoria or any other centre.

Centralised control would defeat the object and spirit of new town development, and hinder the establishment of those intimate and harmonious relations with the public which are so essential to its success. All too often we see in South Africa well-planned and well-built townships rapidly deteriorate and in some cases become neo-slums due to the lack of continuous local control and supervision and of aesthetic values.

ORGANISATIONS AND LOCAL AUTHORITY.

It may be argued that any new scheme should be undertaken entirely by a local authority. In the case of new towns there would of course be no local authority and where a new township or major housing scheme is envisaged within a local area it is not even suggested that the establishing company should usurp its functions. Democratic local government in its present form is an essential prerequisite for healthy organic development.

The housing situation is a matter of urgency, and despite all efforts will continue to be so for many years to come. A local authority, however, is itself subject to higher authority and has not the freedom of action or the practical means which a utility company could have in proceeding quickly and expeditiously with the diverse problems of a major housing scheme or new town.

The operation of a utility company within a local authority area should not present any difficulty, provided there is goodwill and understanding on both sides. As we have seen in the case of Pinelands, the Authority came into being one year after the formation of Garden Cities and the two bodies have for over thirty years worked together in the interests of the residents. As a matter of interest, for many years certain of their executive officials were jointly employed. Each has fulfilled all its obligations and when within a few years the development of Pinelands will come to an end, Garden Cities will exercise an insignificant role in the affairs of the township.

Economic conditions in the future may be less favourable than those obtaining at present, and consequently the organisations envisaged may not be in a position to install some of the essential services and donate these to the local authority as has been the case in Pinelands. In this respect difficulties may arise, but there is no reason why an equitable formula cannot be found to provide at some stage of the development for fair and reasonable compensation where such expenditure has been incurred.

From the foregoing observations the author submits that the most suitable agency to undertake a housing or new town scheme would be a form of utility corporation or garden city association operating on a non-profit basis and which would be in accord with the definition of an "approved company" in terms of the Housing Act. It is further submitted that organisations of this nature with their greater freedom of action and directed by persons motivated by a sense of urgency and social awareness will be able to speed up and supplement the efforts of other bodies, and contribute still more towards alleviating the housing shortage.

This view is becoming more universally accepted and in general terms was a conclusion arrived at, after thorough investigation and research, in the report of the New Towns Committe of Great Britain[2], and subsequently provided for in the New Towns Act[3]. Socio-economic and ethnological problems differ in each country and this particular Act —although it is a model piece of legislation—cannot be adopted in its entirety in this country. As mentioned earlier, our existing legislation appears to be adequate in so far as utility companies are concerned, and we can and should proceed with schemes for all sections of the population without further delay.

However, at some later stage it may be advisable to set up a similar committee in South Africa for the purpose of investigating the whole question of new towns and their developing agencies, with particular reference to Central and Local Government relationships and to the possibility of their receiving greater financial responsibility.

FORMING THE ORGANISATION.

In order to give a better idea of the proposed organisation, certain principles are submitted to serve as a basis.

The Company should be formed either on the initiative of the local authority, welfare body, or by a group of persons genuinely interested in the social aspects of housing. Such a Company should be registered in terms of the Companies' Act 1926 (as amended), and in the case of organisations which do not pay dividends or rewards to its members, registration should be made under Section 21 of the above Act. The governing body should consist of approximately eight members who among them should have some experience of land develop-

ment, economic and social conditions, in business and local government affairs, and one member should be a representative of a statutory authority. The field of choice should be further widened to include at least one woman and possibly a young person with drive and imagination.

POWERS.

The Company should have, inter alia, full powers to plan, lay out and undertake all development works, to provide and construct departmentally public buildings in addition to those required for residential purposes. Subject to the provisions of any legislation, the Company should be able to buy, sell, use or dispose of land for any purpose deemed necessary, to operate any business and to use its funds in accordance with its aims and objects.

FINANCE.

Capital may be obtained as a loan from the Housing Commission or from a local authority, by the issue of shares or from private sources. The payment of a dividend would be prohibited in the case of a Company incorporated under Section 21 of the Act. With the effluxion of time and progressive development there will be a considerable appreciation in land values and when any such land is used or disposed of for commercial and industrial purposes, capital will become available. This premise as emphasised by Howard is fundamental to the success of the project, and has been the source from which Garden Cities has obtained funds for development works and amenities in Pinelands.

SELECTION OF SITE.

Advice should first be obtained from one or more of the earlier mentioned statutory bodies as to the most suitable site and where possible as to its relation within any regional planning scheme. Thorough investigation should of course first be made as to whether a need exists in the particular area for such a scheme or new town.

ACQUISITION OF LAND.

Land can be obtained as a donation either from the Governor-General in terms of the Housing Act or from a statutory authority. It could also be acquired by expropriation on behalf of the Company or by outright purchase.

CONCLUSION.

The author states that the views expressed and the criticisms at times made in this paper are his own, and hopes that they will be accepted as an earnest desire to contribute to and stimulate interest in a new approach to our housing difficulties. He also wishes to express his thanks to the Board of Garden Cities for permission to present this paper and to his colleagues on their staff for the suggestions and assistance which have been given him.

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PROGRESSIVE ARCHITECTURE. AUGUST, 1952. pp. 63-67.
A 12-story apartment located in one of the most beautiful residential areas of Sao Paulo. Raised from the ground on pilotis, the entrance level is reached from the street by ramps. The resultant open-gallery effect gives a lightness of appearance not found in buildings with walls to the ground. Each floor of flats contain four luxury flats. Architect, Rino Levi.

PROGRESSIVE ARCHITECTURE. NOV., 1952. pp. 69-80.
Apartment Houses. Four different apartment houses are illustrated and an article on apartment house construction methods is included.

ARCHITECTURE

L'ARCHITECTURE D'AUJOURD'HUI. AUGUST, 1952.
Brazil. This complete issue is devoted to recent work of architects in Brazil. Extremely well illustrated by means of large photographs, many in colour, plans and sections. The following types of buildings are included : Domestic, Hotels, Apartments, Colleges and Hospitals, and amongst numerous architects are the following well-known figures : O. Niemeyer, M. M. and M. Roberts, Rino Levi, A. F. Reidy and S. Bernardes.

L'ARCHITECTURE D'AUJOURD'HUI. JUNE, 1952.
Italy. Italy's contribution to contemporary architecture is discussed and the history and development of modern architecture is traced from as far back as 1914 to the present. Apartments and villas are mainly illustrated ; work of architects Figini and Pollini, di Belgioioso, Peressutti and Rogers, and Luccichenti and Monaco. A special section in devoted to gardens and furniture. As usual, the issue is superbly illustrated by means of black and white and colour photographs, plans and sections of buildings.

ARCHITECTURAL REVIEW. AUGUST, 1952. pp. 73-80, 109-116.
1.—New Buildings at Oxford and Cambridge, by J. M. Richards. Continuing his series of critical articles on Contemporary Architecture in Britain, J. M. Richards surveys the post-war buildings of Oxford and Cambridge Universities. He discovers that apart from the Health Centre and the new Engineering Laboratories at Cambridge there is very little built in straightforward modern form. The problems attendant upon the juxtaposition of new and old have not yet been solved.
2.—Change of Level, by Gordon Cullen and Peter Prangnell. The art of manufacturing levels is a large part of the art of Townscape, and changes of level should be exploited for the sake of their psychological effects as much as for their functional potentialities. This article deals with changes of level as they occur in the street and smaller urban space.

ARCHITECTURAL REVIEW. JUNE, 1952. pp. 388-392.
Roundabouts, by Kenneth Browne. The Roundabout or Traffic Island in the form generally given to it is one of the most disruptive devices of the visual unity of the town that motor traffic has brought in its train. Raised high above the road and often surrounded by a pavement which is unusable, it flouts all the rule of Townscape about preserving continuity of floor surface. The author, after examining a number of existing islands and roundabouts makes some specific suggestions which would have the effect of keeping the floor flat and continuous, and of making the central space usable.

ARCHITECTURAL REVIEW. JULY, 1952. pp. 3-4, 21-29.
1.—Gropius, 1952, by W. G. Holford. In June, 1953, Walter Gropius retires from his position as Professor of Architecture at Harvard University. In this essay W. G. Holford takes the opportunity of assessing his continuing contribution to Architecture as he approaches his retirement from teaching and pays tribute to the integrity of a great architect.
2.—Pedestrian Network, by D. Mills. A pedestrian system is just as necessary for the health and proper functioning of any town as a planned traffic system. Nearly every town has a potential pedestrian system, to be had for the knocking down of a few walls, the unlocking of a few doors, and for the keeping of cars out of a few streets. Even when the threads have been joined up there are numerous things to be attended to if the system is to have the character proper to it—such things as the provision of incident, of objects to induce the pedestrian mood, the maintenance of the pedestrian scale and the avoidance of backyard squalor. In this article D. Mills tries to show what that character should be and how it may be cultivated.

ARCHITECTURAL REVIEW. NOV., 1952. pp. 295-302.
The Wall, by Gordon Cullen. Walls may serve to indicate architectural style which places a building in a period, they may also reveal the influence of local materials or regional idiom. Furthermore, they may be used to close a vista, act as incident or merely observe the proprieties. In this article Gordon Cullen tries to emphasise a different quality, how a wall may be made to bring out its inherent qualities of texture and also meet the challenge of its own empty spaces as by applying pattern to blank areas of plaster.

COMMERCIAL

PROGRESSIVE ARCHITECTURE. AUGUST, 1952. pp. 79-86.
An interesting department store in Beverley Hills, California, for J. W. Robinson Company. Pereira and Luckman, Charles Matcham, Architects.

PROGRESSIVE ARCHITECTURE. OCTOBER, 1952. pp. 79-84, 87-95.
1.—Jaycee Headquarters in Tulsa, Oklahoma. This building, designed by J. Luders, H. Sasaki and J. Edsall, winners of a limited competition, illustrates progressive work. The programme called for a fireproof, air-conditioned building to serve as the national headquarters for the U.S. Junior Chamber of Commerce.
2.—Bank Planning. Four banks are illustrated in this issue, all on the small side and designed by the following architects : Conrad, Hays, Simpson and Ruth, Pereira and Luckman, office of Harkness and Geddes, Ed. Varney-Associates.

DOMESTIC

PROGRESSIVE ARCHITECTURE. AUGUST, 1952. pp. 95-102.
This house in Locust Valley, New York, serves both home and studio for the architect and his wife, is a notable experiment in space use. "The design makes use of the square as a basic shape," the architect comments, "and Golden Mean relationships were established wherever possible so as to unify the whole. Le Corbusier's Modulor was applied in the dimensions of the new wing." Architect, Jose Luis Sert.

HOUSE AND HOME. OCTOBER, 1952. pp. 98-103, 118-123.
1.—Architect Kenneth Welch handles the siting, design, lighting and ventilation of his own house in Grand Rapids with great analytical detail.
2.—Architect K. Lind designs a one-storey house in Pacific Palisades, California, on stilts in order to command an otherwise invisible ocean. A jungle of flowers and eucalyptus trees contrasts with the austere geometry of the house.

ARCHITECTURAL REVIEW. NOV., 1952. pp. 309-314.
Port Phillip Idiom, by Robin Boyd. Recent houses in the Melbourne region are illustrated. In recent years a distinct local accent has been discernible in suburban houses erected near Melbourne. A local demand, almost exclusively for one-

family houses, has combined with the peculiar state of the building industry and local climatology to require an idiom or school whose characteristic phraseology is easily recognisable.

HOUSE AND HOME. AUGUST, 1952. pp. 74-78, 88-93, 112-115.

1.—Richard Neutra builds a lavish house designed around a multi-purpose family room in California. The setting is spectacular and the plan makes most of the views, contours, planting and breezes. This house goes even further in that it is also related to a waterscape.

2.—A contemporary house on Cape Cod, designed by the Architects Collaborative.

3.—Seven-hundred square-foot house by V. Steinbrueck in Seattle, achieves privacy and livability using ordinary everyday materials, and shows imaginative handling of a difficult site.

HOSPITALS

PROGRESSIVE ARCHITECTURE. NOV., 1952. pp. 85-101.

Hospitals: The following are illustrated:—

1.—Construction for Medical Care, by E. M. Bluestone;

2.—Hospital: Greenwich, Connecticut, designed by Skidmore, Owings and Merrill. This interesting hospital is designed to supersede an old hospital that its community had outgrown. The new 210-bed hospital adjoins the old structure by means of enclosed passages on ground and first-floor levels;

3.—Fifty-eight-bed hospital in Weston, California, designed by J. B. Parkin, associate;

4.—Thirty-seven-bed hospital in Escondido, California, designed by L. Dixon and L. Kline.

INTERIOR DESIGN

PROGRESSIVE ARCHITECTURE. AUG., 1952. pp. 113-121.

Interior Design Data: Bath-Dressing Areas, by Suzanne Sekey.

ARCHITECTURAL REVIEW. NOV., 1952. pp. 315-322.

Light Fittings, by Dewar Mills. The promotion of light fittings to the status of decorative objects in their own right rather than just a means of achieving the right quota of lumens has, until recently, been a source of frustration to the architect when economy frequently forced them to buy them ready-made and over the counter. Since the war Scandinavia, and then Italy, have shown that lamps can be practical, contemporary and decorative. In England, since the Festival, a few manufacturers have begun to produce frankly contempory fittings. A large number of ceiling, wall and standard fittings are illustrated.

PROGRESSIVE ARCHITECTURE. NOV., 1952. pp. 119-126.

Lobbies, by Page Beauchamp. As an introduction to a building the lobby should make an impression. Three examples are illustrated: the lobbies of a hospital, a business concern, and an apartment house, each interesting in its own way.

LANDSCAPE AND TOWNPLANNING

HOUSE AND HOME. OCTOBER, 1952. pp. 126-133.

Mexico's Pedregal Gardens. A pictorial impression of the fabulous subdivision of Mount Xitle's lava waste. In 1945 Luis Barragan, architect, decided to build a house in the lava bed itself, surrounded by soft pepper trees, cacti, succulents and lichens feeding on soil deposits in the rocks. Twenty square miles were developed as a residential area and a vigorous visual discipline was maintained over streets and open views.

SCHOOLS AND COLLEGES

PROGRESSIVE ARCHITECTURE. AUG., 1952. pp. 105-107.

Displacement Caissons. The Franki Pile-Driving Methods. Illustrated.

PROGRESSIVE ARCHITECTURE. NOV., 1952. pp. 108-111.

Curtain Wall of Steel, by J. G. Terry. Outstanding examples of Curtain Wall Construction, appearing with increasing frequency, illustrate that steel is one of the most versatile mediums for freedom of architectural expression in the design of contemporay structures.

MATERIALS AND METHODS

ARCHITECTURAL REVIEW. NOV., 1952. pp. 323-330.

Preview: University City of Tucuman, North Argentina. Designed by Architect H. Caminos. The Tucuman University was founded in 1914 to serve a large area of North Argentina. Recent growth, both the city and the university, increasing traffic congestion, and the humid climate, have all combined to make conditions suitable for academic study unattainable. The entire university is therefore being moved to the San Javier mountains nearby. The entire scheme, which involves creating a sizable town on a bare hill-top, solving problems of water supply, forestry, communications and specialised functional requirements, is regarded in Argentina as a major town-planning experiment. The university city comprises the following units: Gymnasium, offices, faculty buildings, social centre, large hostel, open-air stadium for 40,000 spectators, and a number of Quonset huts and patio houses.

ARCHITECTURAL REVIEW. JUNE, 1952. pp. 367-387.

The Hertfordshire Achievement, by R. Davies and J. Weeks. The authors of this article consider the schools as works of architecture, and discuss the special problems which confront the architect designing with prefabricated units. While the high standard of architecture maintained in the Hertfordshire schools is acknowledged, they point out that the architects have been hampered by the large modular dimensions of 8ft. 3in. adopted; how much, they say, is shown by the experimental school buildings carried out by the same architects on the new 3ft. 4in. grid. Following the article four Hertfordshire schools are illustrated. Architect: C. H. Aslin.

ARCHITECTURAL REVIEW. JULY, 1952. pp. 16-20, 30-38.

1.—Gymnasium and Primary School in Rio de Janeiro, Brazil. The school, which stands on poles, is approached by a ramp providing a covered playground below and space for a canteen. This interesting school provides accommodation for 200 pupils. A. Reidy, architect.

2.—Schools at Putney and Hammersmith, designed by Erno Goldfinger, architect. Two interesting prefabricated reinforced concrete schools. Well illustrated and with notes on the precast concrete structural system and methods of erection.

MELBOURNE OLYMPIC GAMES STADIUM FOR 1956 GAMES

By John Loughlin

At the time of going to press news reports indicate some difficulties regarding finance and venue for the Games, which may affect the designs illustrated overleaf.—Editors.

Winning design in the Australia-wide competition to select an architect for Melbourne's 1956 Olympic Games stadium was announced in Melbourne on October 20 by Mr. Arthur W. Coles, Games organising chief. The stadium will be built on the site of the Carlton oval in a parklands region at the northern approach to the city. It will cost £A1,100,000 and is expected to take two years to build.

Mr. Frank Heath, 44-year-old Melbourne archi-

tect and town planner, submitted the winning design. He described it as a co-operative effort by himself and his small team of architects. It was unanimously recommended by a panel a assessors nominated by the Royal Australian Institute of Architects.

Mr. Heath has been commissioned to develop full working drawings and specifications, and tenders for the construction of the stadium will be let before the middle of 1953.

After looking over the designs of the six finalists in the contest, Mr. Coles, who is chairman of the 1956 Games Control Committee, said, " For beauty of design and general utility, this stadium will be years ahead of anything else in Australia." The winning design is not necessarily the last word on the stadium. It may be modified by features selected from some of the other five finalists—each of whom won a £A500 prize.

Imposing in its dignity and simple clean-cut lines, Heath's design provides for a stadium accommodating 125,000 spectators—50,000 seated and 75,000 standing, with most of the spectators under shelter. It will be built of reinforced concrete, with an upper tier of seats completely surrounding the oval and extending out 30 feet over the lower tier. Cantilever roofing extending out 100 feet will cover much of the upper tier and could be extended to cover the whole of it without great expense.

The system of exits and entrances will enable the whole of the 125,000 spectators to be cleared in 10 minutes. Normal provision will be made for 200 Press representatives, but it will be designed to be expanded to provide office space for up to 1,500, with facilities for radio, television and photographers. Four dressing rooms each about 2,500 square feet in area, with showers, baths, massage baths and brine baths, will provide for about 4,000 competitors on the opening day. Dressing-room accommodation will be built both in the stands and outside the stadium.

The oval-shaped arena will be 615 feet by 490 feet. The shape is dictated by the requirements of cricket and Australian national football, for which the stadium will be used after the Games. The design envisages a restaurant seating 1,500 detached from the main stadium. It provides for a 250 feet concrete Olympic tower. Two 20-passenger lifts will carry visitors to the top to enjoy the magnificent view of Melbourne and Port Phillip Bay.

A suggestion by the architects is that the Olympic torch, after being lit on the arena, should be carried to the top of the tower and left burning there for the duration of the Games. Melbourne's other main Olympic project will be the construction of an Olympic village of 600 houses to accommodate officials and contestants. Estimated to cost £A1,500,000, it will be designed to house 6,000. Like Helsinki's Olympic village, it will be turned over to the community for private housing after the Games. Besides accommodation at the Olympic village, space for another 1,200 to 1,500 contestants and officials will be made available by the University of Melbourne, handy to the main stadium.

Winning design for Melbourne's 1956 Olympic Games Stadium which was won by Frank Heath, of Melbourne.



Architects who produced the winning design and secured the Architectural Commission for the Stadium. They are, from left, Messrs. J. McColl, E. Parry-Fielder, Frenk Heath, G. Hirsch, J. Millott and G. Ingram.



NOTES AND NEWS

LE CORBUSIER

Some time ago Le Corbusier, architect of the famous Marseilles " Radiant City," was sued for 20,000,000 francs damages by the " Society for General Aestheticism of France " because this group contended that " Radiant City " is contrary to the French style and morally unfortunate in its lack of scale and intimacy, narrow stairs, little furniture and a complete shopping centre in the building which " caused residents to become cloistered in their buildings."

It is interesting to note that the latest report regarding " Radiant City " is that the building has at last been officially approved. The building was opened recently by the French Minister of Reconstruction and Le Corbusier has been made an Officer of the Legion of Honour. It appears that the court action pending against him for offending the " Society for General Aestheticism of France " is unlikely to develop into anything serious.

U.N.E.S.C.O.

The architects, M. Breuer and B. Zehrfuss, have tried to design Unesco headquarters to represent the trends of a living architecture and the building will receive its main character from the visual effect created by the verticality and horizontality of its two principal elements. Any form or expression which might quickly be outdated has been avoided.

The different elements of the project comprise :

Northern Sector : The main entrance reached by crossing a large piazza ;

Central Building : This contains the Library, the Bar, Restaurant and Cafeteria, all of which opens on to the Central Patio, the Delegates' Lounge, Press Office, Committee Rooms, Commission Rooms, Executive Board Rooms and Conference Secretariat ;

Plenary Hall ; This is accessible either directly through the lounge or by a broad stairway, or via the South Entrance ;

Circulation : Cars may enter at each end of the grounds. There is outdoor parking for 106 cars and underground parking for 107 cars accessible by two ramps ;

WALTER GROPIUS.

Recently Walter Gropius resigned as Head of the Department of Architecture at Harvard School of Design. His own reason for resigning was : " The large reduction in the staff and budget of the Department of Architecture calls for a drastic reorganisation which I believe would be more effective if entrusted to my successor as head of the department." As a temporary arrangement the course called Architecture 2 d is being managed by Hugh Stubbins, an associate professor in the department.

Lack of financial support to enable Gropius to carry out his ideas has been a worry since the foundation of the original Bauhaus in Germany in 1919. However, Harvard has had an influence on a dozen design schools in America, particularly in the field of team work.

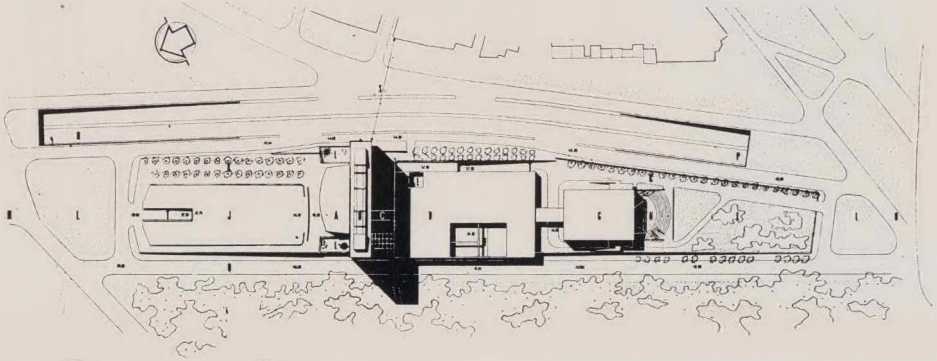
Gropius is now devoting his time to the work of the Architects' Collaborative, which was founded by him in 1946, in Cambridge, with an office close to Harvard Square, but at the moment continual visits to Paris in connection with the U.N.E.S.C.O. building keep him in Europe almost as much as in America.



Discussing the U.N.E.S.C.O. problem are : Left to right, standing, Ernesto Rogers (Italian architect), Bernard Zehrfuso, Benjamin Werniel (Unesco official) ; seated, left to right, Walter Gropius, Le Corbusier, Marcel Breuer and Sven Markelius (Swedish architect).

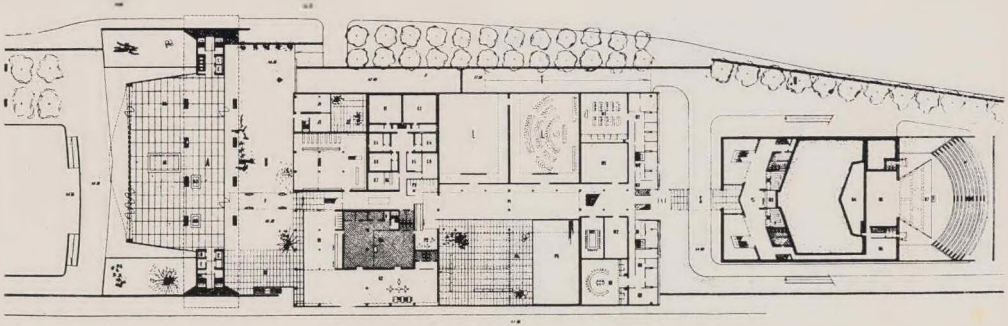
BLOCK PLAN

A. Main Lobby
B. Office Building
C. Central Patio
D. Central Building
E. Small Patio
F. Delegates' Patio
G. Plenary Hall
H. Open Air Theatre
J. Piazza
K. Parking, 106 cars —outside only
L. Gardens
M. Porte Maillot
O. Porte Dauphine
R. Bois de Boulogne



GROUND FLOOR

A. Main Lobby
B. Central Patio
C. Elevators
D. Freight Elevator
E. Mechanical Sub-station
F. Covered Passage
G. Restaurants
H. Library
J. Nursery School
K. Department of Mass Communi-cations
L. Commission Rooms
M. Committee Rooms
N. Executive Board Rooms
P. Delegates' Lounge

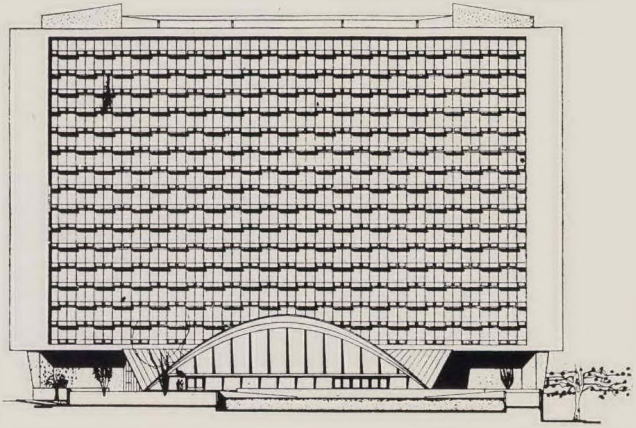


Structure : The office building is carried on eight V-shaped supports in order to keep the utmost openness on the ground. Reinforced concrete construction is used throughout, and on the upper floors columns are spaced at regular 20-foot intervals. Floor slabs are reinforced by an arrangement of " isostatic " beams on the Nervi-Bartoli-Arcangeli system.

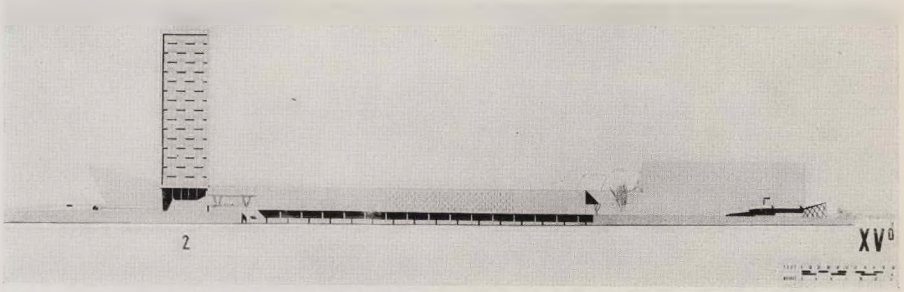
The estimated cost is 7,700,000 dollars, and construction is expected to take two years.

ACKNOWLEDGMENTS :
Plans and Elevation from " The Architect and Building News," October 23, 1952. London.

NORTH ELEVATION



WEST ELEVATION



COMPETITION.

Hospital at Doha, Persian Gulf.

The Government of Qatar, Persian Gulf, invite architects to submit designs for a 100-bed hospital, complete with staff quarters, at Doha.

Assessor : Mr. Alexander S. Gray, FF.R.I.B.A , of Messrs. W. H. Watkins, Gray and Partners.

Premium : £1,250, £1,000, £750.

Last day for submitting designs : 15th August, 1953.

Last day for questions : 31st March, 1953.

Conditions may be obtained on application to :
Captain J. E. Stone, C.B.E., M.C., F.S.A.A.,
Hon. Secretary and Treasurer,
International Hospital Federation,
10, Old Jewry, London, E.C.3.

Envelopes to be marked " Doha Competition."

Conditions will not be available until after the 30th January.

Deposit : Three guineas

BOOK REVIEW

High Paddington—a project for a town for 8,000 people, designed by Sergei Kadleigh, assisted by Patrick Horsbragh, published by "The Architect and Building News," London. 7/6. 40 pages, 20 photographs, 16 plans, size $8\frac{1}{2}$" x $11\frac{3}{8}$".

The idea behind this project arises firstly from the need for housing in Paddington, and secondly from the alarm with which the increasing demands that housing is making on agricultural land is being viewed.

High Paddington is sited on the existing goods yards of Paddington Railway Station, some 18 acres in extent. It is a project for the building of a vertical town with accepted standards of amenity and open spaces, including houses, gardens and church, schools, shops, commerce and light industry, places of entertainment, recreation, sport and leisure. Fundamentally the scheme requires no new land nor does it require the displacement of population during its construction. On the contrary, land would be reclaimed and developed as park and open spaces.

It consists, broadly, of a base or podium rising about 100 feet and containing floors for commercial and industrial property, including the existing goods yard, above which rise the vertical blocks of dwellings. The top of the podium forms the town centre with about 16 acres of open space, from which the dwellings rise to a further height of some 340 feet.

The dwellings are two-storey units, planned with a flexibility that caters for sizes of from two to six rooms. Access to these dwellings is by lift and horizontal thoroughfares.

Roof space above the dwellings accommodates the primary schools, a clinic, hotel and restaurants, public garden space and the church.

While the principles are not new, the project is in startling contrast to the horizontal urban congestion of its environs.

Vertical building is not new, nor is its introduction novel in areas of metropolitan congestion, but what is novel and questionable is the concentration of vertical building on this scale and to this height in such violent contrast to the English urban scene.

Furthermore, an obvious question is posed as to whether 8,000 people will find in this town a better way of life, or in fact could be induced to try, when it demands so radical a reorientation of concept and environment. Few in England have ever lived far from the ground and fewer still have experienced life in a 400-foot structure.

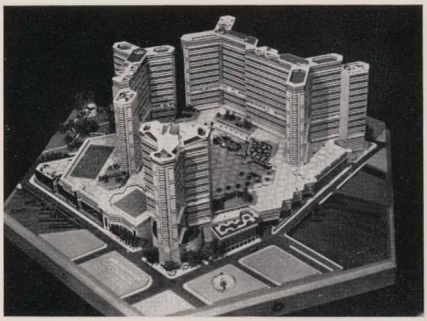
The very size of a project of this nature and its vigorous punctuation of the urban scene will throw heavy emphasis on the quality of its architecture, a fact which the architect must obviously have had in mind. Yet the tall blocks of dwellings exhibit compositional relationships which appear quite arbitrary in spite of the over-riding discipline imposed by the hexagon as a generic shape.

Clearly the hexagon or modifications thereof has been adopted as the basic shape on which the planning has been built up, and this same motif spreads across the elevations of the dwelling blocks, drawing perhaps, unintentional attention to the beehive aspects of the project.

Variations on the hexagon theme give to the elevation a rhythmic modulation clearly enhancing the distant prospect of the scheme, but when seen in relation to the human scale, the units appear too large, to the obvious detriment of a true sense of scale of the project as a whole. Coupled with the uncomfortable and in parts quite arbitrary relationship with the more conventional rectangular character of the podium, the aesthetic contribution of this motif is suspect and questionable. On the other hand, the project has been considered to a remarkable degree of detail, and the publication is well illustrated with the several plans, sections, elevations, and by means of photographs of the very well made model.

W. D. HOWIE

General view of the model of High Paddington.



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