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INFORMATION SHEET

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Supplement to South African Architectural Record

May 1954

Thermal Conditions in Lowcost Housing with Galvanised Iron and Asbestos Cement Roofs without Ceilings

154 Q. Are indoor thermal and ventilation conditions likely to be any different if galvanised iron is used instead of asbestos cement for the roof of an unceiled building?

A. In a comparative study made of the thermal conditions in two small unceiled buildings in Pretoria, which are similar in all respects except for the material used for the roof skin, it was found that conditions in the building having an unpainted galvanised iron roof were nearly always slightly warmer than in the building fitted with an asbestos cement roof. This was generally found to be the case during night-time or day-time, for hot weather in summer, or cold weather in winter.

Indoor air temperatures, for example, differed by from 2° to 4° F., depending on the time of day and the ventilation arrangements. Usually, the temperature difference tended to be smaller during the warmest part of the day (afternoon hours) than during the coolest part of the day (early morning hours) and it also tended to be smaller when the occasional ventilation opening (windows, etc.) were arranged to permit higher ventilation rates.

On hot summer afternoons, the temperature of the underside of the galvanised iron roof was found to be from 20° to 30° F. more than the temperature of the underside of the asbestos cement roof, while for winter afternoons the difference in roof temperature was usually of the order of 10° F. At night, in summer or winter, the underside of the asbestos cement roof was usually about 2° to 3° F. lower in temperature in comparison with the other roof.

Ventilation rates were also found to differ in these two buildings, particularly when all external windows and doors were kept closed, as is the common custom in practice during cold winter weather. Under these circumstances, it was found that the ventilation rate was generally about 50 per cent. higher in the structure with the asbestos cement roof, due, no doubt, to the comparatively larger openings at the joints between the roofing sheets. With windows open, on the other hand, there was little relative difference in the respective ventilation rates.

It should be pointed out that the temperature differences found in the two buildings are not very significant when considered from the point of view of thermal comfort. Thermal conditions in both buildings tended to be rather warm on hot afternoons and quite cold during night-time in winter. On the other hand, comparison with the conditions found, at the same time, in a third similar building containing a ceiling, indicates that the inclusion of a ceiling has a profound effect in making indoor thermal conditions more conducive to comfort.

Lintel Construction

155 Q. What are the comparative merits of common types of lintel construction?

A. Until quite recently it has been common practice to use a reinforced concrete beam as the lintel over a door or window opening. Among the advantages claimed for this type of construction are :—

(1) Adequate strength can be obtained with reasonable depth.

(2) The strength properties of reinforced concrete are widely known and it is easy to design for large spans and/or heavy loading.

(3) Spans of usual size can be precast and lifted into position: thus no shuttering is required on the job and no time need be spent in waiting for the concrete to harden; therefore, bricklaying need not be interrupted.

(4) The small builder has had experience in the construction of such beams and therefore uses them with confidence.

The disadvantages are :—

(1) Reinforced concrete beams are prone to the development of unsightly temperature and shrinkage cracks at their junction with the brickwork.

(2) They require special treatment when used in face brickwork.

A method of overcoming these disadvantages is to reinforce the brickwork over the opening so as to act as a beam. Since the lintel is now of the same material as the walls, there is no tendency for it to develop cracking due to shrinkage or temperature changes. Reinforced brick lintels are also very suitable for face brickwork.

Lintels in reinforced brickwork have generally been restricted to short spans, but there seems to be no reason why openings of up to 15 feet could not be spanned with this type of construction. Careful attention must, however, be paid to workmanship, especially the bonding of the reinforcement to the surrounding mortar. Cement mortar must be used, and joints must be completely filled.

Another type of reinforced lintel recently introduced in South Africa, involves the use of prestressed tile beams or "planks." The tile units are of burnt clay and are thus similar in composition to the brickwork. The units are 12 inches long, $2\frac{3}{8}$ inches high, and are made in varying widths. Deep grooves in the upper surface are provided to receive the reinforcing wires. The tile units are laid end to end on a pre-stressing bed, high tensile steel wires are placed in position and tensioned against end anchorages. The grooves are then filled with high-grade mortar. When this has hardened, the resulting pre-stressed plank may be cut to the desired lengths. The pre-stressed plank is used as the tensile reinforcement in a lintel, while the brickwork above it resists the compressive stresses due to bending.

This type of construction has all the advantages of normal reinforced brick lintels. In addition, soffit shutters are not required, except as props for spans longer than five feet. The most important part of the construction, namely the embedding of the reinforcing wires in the mortar, is done at the factory. Tests carried out at the National Building Research Institute indicate that, with normal care in the laying of the brickwork, the bond between the brickwork and the pre-stressed plank is adequate and they act together as a single beam.

Effect of Size of Footings on Settlement of a Building

156 Q. Does the size of the individual footings under a building have any effect on the amount of settlement due to the consolidation of a layer of compressible soil below the building?

A. The consolidation of a layer of compressible soil is caused by the vertical pressure distributed under the building. Thus, for any particular set of soil conditions, the amount of settlement will depend on the vertical pressure distribution in the soil.

The "spread" of load below a footing is assumed to take place at a slope of $\frac{1}{2}$ to 1, a normally accepted approximate condition. Fig. 1 (*a*) shows the vertical pressure distribution under a single square footing of breadth b. At a depth d, the loaded area is $(b+d)^2$ and the vertical pressure intensity is $\frac{P}{(b+d)^2}$, where P is the load on the footing.

It can thus be seen that increasing the size of the footing will decrease the vertical pressure intensity, but that this effect will be greater at the shallower depths.

Consider now the case of a building resting on a number of footings. Once more the zones of influence for the individual footings may be drawn, as shown in Fig. 1 (*b*). From this figure it can be seen that the loaded areas for the different footings begin to overlap at a depth d_c. Above this depth the pressure distribution is based on the individual footings and below this depth the group of footings may be considered to be equivalent to a single footing, or raft, of dimension B, where B is the external dimension of the whole group of footings. If there are no footings along the side of the building considered, then at the critical depth $(B+d_c) = n\,(b+d_c)$. The broader the individual footings, the shallower will be the critical depth and, similarly, for any particular depth, there will be a maximum size of individual footings above which the size of the individual footings will not affect the pressure distribution below that depth.

The effect of the size of the individual footings on settlement, therefore, depends on the position of the compressible layer. If the layer, or portion of it, is above the critical depth, the size of the individual footings will affect the amount of settlement. In this case, enlarging the footings will decrease the amount of settlement. Such an increase in size of footings will, of course, also alter the critical depth d_c. If, however, the compressible layer is situated below the critical depth, only the external total dimensions of the group of footings will influence the pressure distribution and hence the amount of settlement.

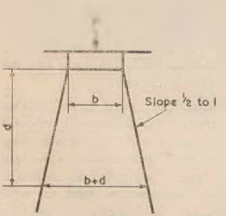


Fig. 1 (a)

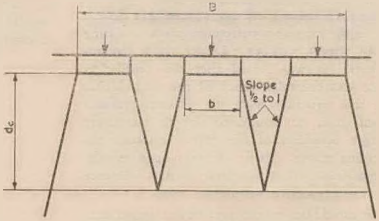


Fig. 1 (b)

RESIDENCE KAHN
ROOSEVELT PARK

JACQUES & RIVA MORGENSTERN
AA.R.I.B.A. MM.I.A. ARCHITECTS

THE PROGRAMME

A five roomed house, costing between three and three and a half thousand pounds, to accommodate a family of four.

SITE

The site is 68 c. ft. by 149 c. ft. in extent and faces west on to Milner Avenue. Neighbouring sites are all built up and the only worthwhile view is that of Northcliff Hill in the distance, seen to the north-west across Milner Avenue.

PLANNING

Both the limitation of a narrow site and the advantage of a distant view supplementing the small garden vista have determined the placing of the living room, which faces north onto its own garden and has a protected west window to the view. The dining room is merely an extension of the living area; and in a further attempt to enlarge the living portion of the house, a glazed wall has been designed as the only barrier between indoor and outdoor living.

Two out of the three bedrooms face north and onto the private portion of the garden reserved for the children, while the third faces east.

The services have been grouped on the south to form a compact, economical plumbing unit.

Economy further dictated the plan shape, aiming at a simple roof, minimum external walling and a short passage.

CONSTRUCTION

The house was built in stock bricks, with a low pitched corrugated iron roof affording wide overhanging eaves. The shallow roof pitch gave rise to two problems:—

1. The necessity for heat insulation, which was provided by means of a two inch layer of exfoliated vermiculite over the ceilings;
2. The placing within the roof of the water tank, which was positioned on the 7 ft. high R.C. slab above the shower.

FINISHES

External finishes consist of fairfaced stocks, limewhited. Horizontal joints are deeply ruled.

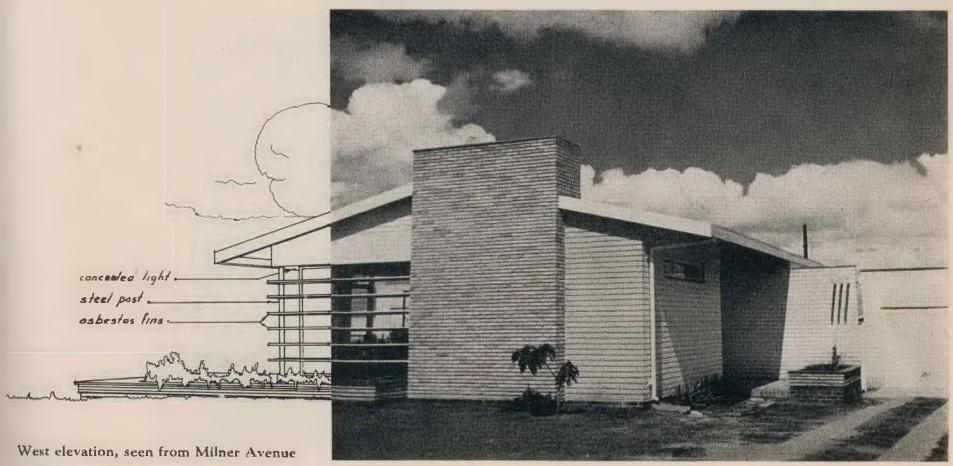
Two inch "Rusticated iron-spots" to chimney breast and flower boxes; quarry tile copings and sills.

The horizontal asbestos fins which provide sun protection to the west are supported longitudinally on centrally-placed T-brackets, to prevent sagging.

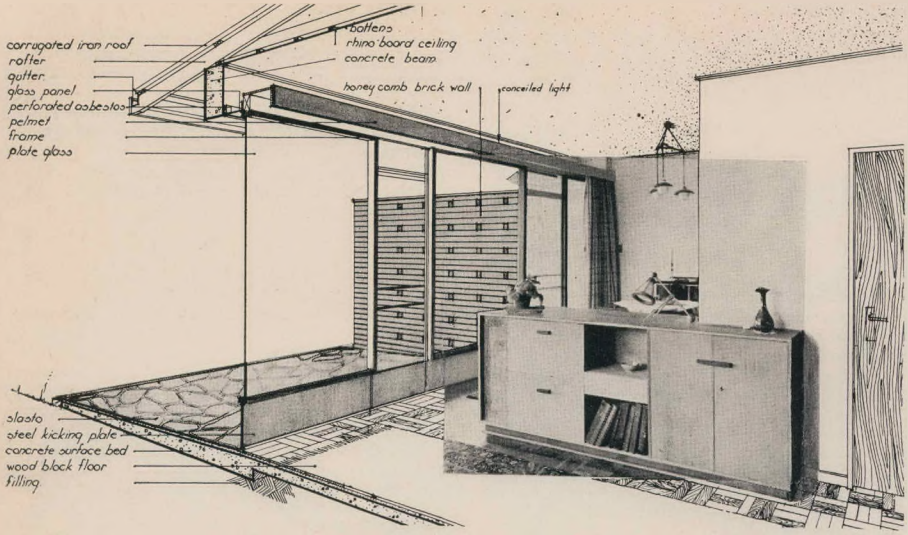
Internal finishes are conventional, the walls being plastered and oilpainted with white glazed tiled dadoes to kitchen and bathroom, woodblock floors throughout, except in children's bedroom which has a linoleum floor, and asphaltic tiles in service rooms.

SIZE AND COST

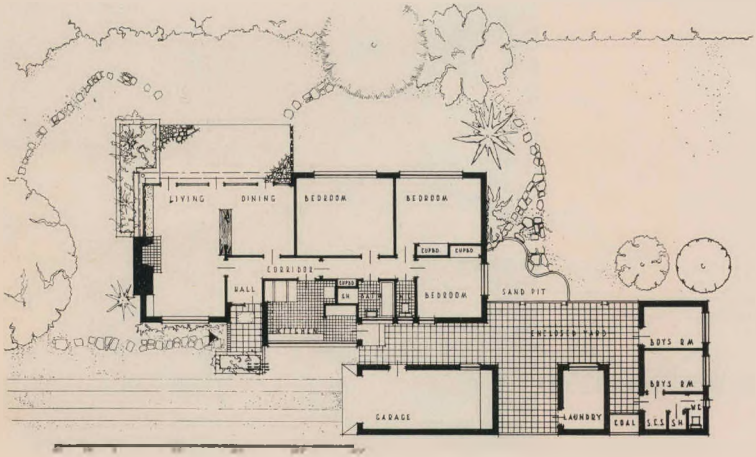
The size of the house, exclusive of outbuildings, is 1,560 sq. ft., the total final cost was £3,290. The contractor was Mr. Henk de Haan.

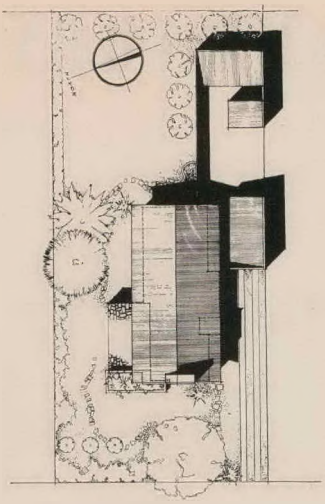


West elevation, seen from Milner Avenue



SECTIONAL DETAIL, SHOWING FLUORESCENT TUBING CONCEALED BEHING PELMET. LIGHT IS ALSO THROWN ONTO TERRACE THROUGH PERFORATED ASBESTOS BOTTOM ON THE OUTSIDE OF THE GLASS WALL.





Above: Living Room from Dining Room

At left: Site plan.

Below: Living Room looking towards Terrace.

Photography:
A. A. Gordon.

HOUSE IN EMMARENTIA

GILBERT HERBERT - A.R.I.B.A. M.I.A. - ARCHITECT

The house is built upon an internal, west-facing site, measuring some 125 feet wide by 165 feet deep. From the south-east the site falls at a fairly even rate towards the street, the total change in level being about fifteen feet. To the north-west, across the road, lie the grassy banks, the fields of cosmos, the willows and the shimmering waters of the Geldenhuys Dam.

Built as an investment, it was anticipated by the owners that the house would probably be let or resold on completion. The uncertainty as to its use dictated that a conservative approach to planning and materials be adopted, and the architect was accordingly instructed. In an area of intense activity on the part of the speculative builder, the occasional investor is at a disadvantage: and it was wisely decided that the only level upon which it was possible to compete with the "spec." builder was upon the basis of quality of planning and design.

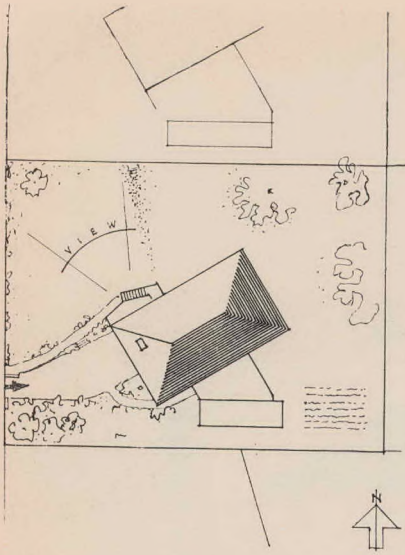
The determining factors in planning the house were economy of construction and space utilization, coupled with an optimum exploitation of orientation and view. To accomplish these ends the house was planned compactly under a simple rectangular roof. The fall of the site enabled two storeys to be built at the N.W. end as against a single storey at the S.E. To capitalize on the view the entire house was kept at the upper level, while the lower level was utilized for two garages and a workshop-cum-storeroom. The structure was thus adapted to the appreciable fall with a minimum amount of cutting and filling. The living room wing was zoned above the garages, which was the optimum position in relation to the view. The terrace was separated from the garden except for an external stair link, and became in effect a viewing platform. The need for an open railing—to provide no visual interruption—and the waters of the lake suggested a "deck" character as most appropriate. The present owners appreciate this nautical atmosphere, and have enhanced it by slinging a hammock between two of the steel columns supporting the roof.

The house is angled on the site, and is a good neighbour to the adjacent houses, all eager to face the view. The living room and three bedrooms make the most of the coincidence of a northern aspect and a fine vista, and are equipped with a generous expanse of glass. The dining room has a small picture window which gives at least the head of the household a view across the side terrace towards the lake. The remaining bedroom faces east, while the compartmentalized bathroom (separate bathroom, w.c., wash basin, and shower with drying space) and the kitchen, grouped to facilitate plumbing, are on the south. A wide range of built-in storage facilities, a breakfast nook, and a telephone recess complete the amenities of the house.

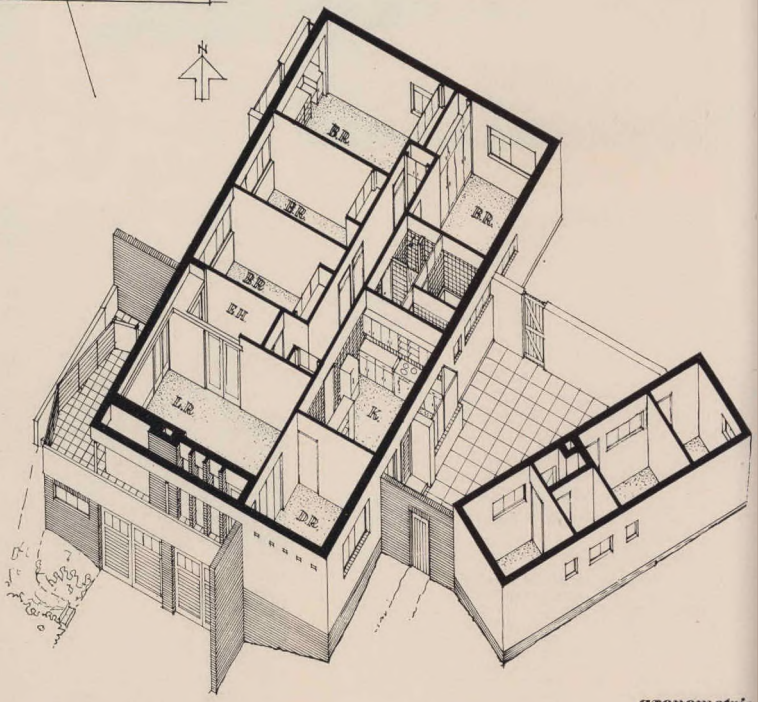
In building this house for resale, the owners had faith that the employment of an architect would, by enhancing the inherent quality of the product, more than repay the extra costs incurred for professional fees. Economic planning in fact did bring the house, including fees, to a cost level where it could successfully compete with "spec." building, and the owners' faith was justified when the house was sold even before completion.

Photography: A. A. Gordon

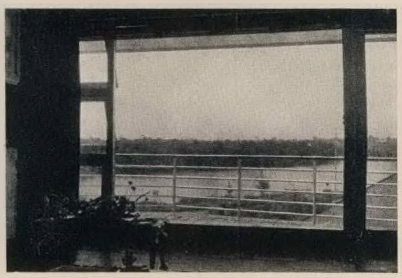
Above: View of the house from the garden, showing the large expanse of window facing the view. The horizontal treatment is marked with a dark blue facebrick plinth, a whitewashed brick superstructure, and wide overhanging eaves. The railings echo this horizontality. Right: The terrace, looking towards the entrance porch, and showing the view window to the Living Room.

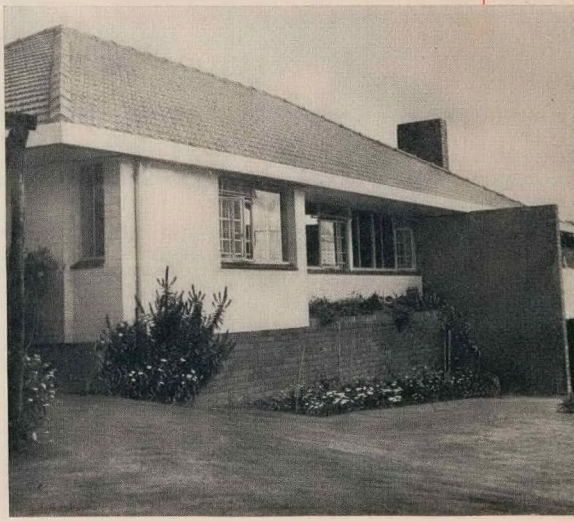


site plan



axonometric





Top: Relaxation on the deck
Centre: Livingroom Picture window
Bottom: Bedroom wing, from the garden

FOREWORD

During the course of last year the Public Relations Committee of the Transvaal Provincial Institute of Architects spent many months discussing the effect on building organization, and therefore building costs, of the preparation of complete documents prior to the commencement of work on the building site.

Some years ago attempts were made by a special Sub-Committee of the Transvaal Provincial Institute of Architects to determine a reasonable time for the preparation of working drawings, details and specifications so that adequate documentation could be effected. These attempts failed, as it soon became apparent that every building had to be treated on its merits and considerable research into the subject was required.

Fresh stimulus was given to this general trend of thought by the publication of booklets by:—

(1) The Anglo American Council on Productivity, dealing with "Building".

(2) The Ministry of Works, "Working Party on Building".

(3) The Royal Institute of Chartered Surveyors, "The Planning of Building Operations".

A Sub-Committee of the Public Relations Committee, Mr. G. Herbert and Mr. M. Siew, has been through these documents and prepared an excellent and informative resumé that should be of great use to all Architects and should also convince the Building Public that time spent in planning is well spent.

The emphasis in all these reports is on the necessity of pre-planning, and the avoidance of variations once a contract has been placed. The main body of the document prepared by the Sub-Committee deals with American practice. It is accepted that in America speed, competition and efficiency are the keynote, and therefore lessons learnt there, are of value to less industrialised countries.

It is most significant that factor No. 1 in the opinion of the Anglo American Council on Productivity leading to efficient and economical building is:—

"The Complete Pre-planning of the building by the Building Owner, Architect and Contractor."

Many South African building owners say that they are prepared to accept an increase in the construction cost of their building, provided that they can obtain the building (or the high renting areas thereof) sooner than if they devoted their time to pre-planning. Paragraph 22 of the Anglo American Council of Productivity comments on this as follows:—

"The American building owner is as anxious as his counterpart in Britain to see his building begun and finished, so that it may become revenue-producing. The American architect has been able to convince him, however, by practical experience, that thoroughness and completeness in the preparatory stages result in savings both in time and in cost. It would be unthinkable in America for a contractor to be instructed to send half-a-dozen labourers to a site to start

THE NEED FOR PRE-PLANNING

PRODUCTIVITY TEAM REPORT —"BUILDING"— ANGLO-AMERICAN COUNCIL ON PRODUCTIVITY

In 1948 the Anglo-American Council on Productivity was formed, composed of representatives of management and labour both in the United Kingdom and the U.S.A. Under the auspices of this council, a British Building Productivity Team visited the U.S.A. in 1949. The Team was composed of representatives of the R.I.B.A., the Royal Institution of Chartered Surveyors, the National Federation of Building Trade Employers, The Scottish National Building Trade Federation, The Federation of Associations of Specialists and Subcontractors, and the National Federation of Building Trades Operatives. The representatives of the R.I.B.A. were the then President, Mr. M. T. Waterhouse and Mr. R. H. Matthew, architect to the London County Council.

excavating, at a time when the final designs were no more than half sketched out in the architect's office, merely to satisfy the owner's desire to see work in progress."

Surely South African Architects can convince South African building owners in similar terms.

I have known of a job in Johannesburg where the Owner, Architect and Contractor met on the site and the Architect finally said "Dig here" and rushed back to his office to start the sketch schemes. The ultimate, I think, in lack of pre-planning! The moral I draw from this is that the Architect must resist any attempt on the part of the building owner to force him through to the construction stage before those documents which the Architect considers necessary are complete.

Admittedly South Africa is not industrialised to the extent of the United States, but probably because of this very fact, pre-planning is more essential here and should lead to greater relative economies as the limited industrial output of the country will then be fully used. Bottlenecks and shortages will then be discovered in the planning stage and not in the construction stage with highly paid and scarce building personnel standing idle on the site.

The other fact that must be brought home to the building public is "avoid variations during construction". Architects are aware of the far reaching effects of variations, not only in the sheer physical changes in construction, but also, often overlooked, the discouragement of the workmen and their unconscious adoption of the attitude "It doesn't matter. He'll change his mind anyway". This attitude is most difficult to deal with, and impossible to cost.

In my opinion, in the context of this article, building needs re-organising in the following manner:

(1) Architects must insist on complete documentation of jobs prior to going to tender.
(2) Architects, Quantity Surveyors and Contractors must convince the building public of the economy of pre-planning building projects.
(3) The Building Contractor and Artisan must play their part in increasing productivity. The Anglo American Report on Productivity comments on incentive to production produced by "the nation-wide stimulus of the American industrial climate, which has a great effect on the output of every individual, and which is shared by all members of the building industry".

It is essential for South Africa to improve its building practice so that the vast programme of building facing us can be approached with confidence. This will need the co-operation of everyone from the Owner through the Professions and Contractors down to the lowliest unskilled labourer.

I can recommend to my colleagues the three works referred to in this article and hope that a study of these documents will lead to improved building practice in South Africa.

C. M. SINCLAIR

AND COMPLETE DOCUMENTATION

"The Team's enquiries in the United States were directed, in the first place, to ascertaining whether the American building industry is organised and conducted more efficiently and economically than the British building industry, and, if so, in what respects, to what extent and for what reasons.

"Secondly, it was necessary to consider whether the conditions which enable the American building industry to operate more effectively could be reproduced, or even approximately reached, in Britain in the immediate future. Finally, what practicable steps could be recommended to enable the British building industry to draw closer to American standards of performance."

In the Productivity Team Report published in 1950, the Team concludes that "the output per man-hour on similar site operations is approximately 50 per cent higher in America than it is in Britain".

In the "Conclusions and Recommendations" the Team states: "The great speed of American constructional jobs and their low cost—in relation to the average rate of wages—must make an extremely strong impression upon any observer, and in this Report we have examined the main psychological, organisational and technical differences between the British and American building industries with the object of isolating the factors which make for high productivity in the United States. In our opinion, the most important, but not the only, factors are

(i) the complete pre-planning of the job by

building owner, architect and contractor;

(ii) the proper co-ordination of sub-contractors' work and the effective collaboration between them and the general contractor;

(iii) the adequacy of supplies of labour and materials and the absence of restricting controls;

(iv) the general availability and use of mechanical aids;

(v) the recognition of the importance of continuous research into the production of materials and into building techniques; and

(vi) the nation-wide stimulus of the American industrial climate, which has a great effect on the output of every individual, and which is shared by all members of the building industry."

On its examination of architectural office practice in the U.S.A., the Team had observed that:

"As tenders are submitted on the basis of drawings and specifications, and bills of quantities are not provided, the drawings and specifications must necessarily be clear, definite and precise."

"The working drawings for any substantial building are considerably more numerous and more detailed than is customary in Britain."

"Whenever possible, and certainly in all cases in which a lump-sum bid is required, all the working drawings, specifications and schedules are completed in respect of the work of every trade and specialist service *before tenders are invited*. Sets of the full drawings and specifications, including all relevant facts from the information supplied by the client to the architect, are issued to each tenderer, who, with full knowledge of the requirements of each trade, can tender more accurately."

"The contractor knows . . . that, once work is begun, it will not be held up, possibly for weeks or months, by delay in receipt of the necessary drawings or instructions. When his tender has been accepted, the contractor can and does make arrangements for the purchase of all materials and fittings, and can place all his sub-contracts to enable the sub-contractors to do the same, before work starts on the site. Full time and progress schedules can be prepared. In short the contractor is given by the architect every item of information requisite for the complete and proper organisation of the job at the earliest possible stage."

"It was emphasised to the Team in the strongest terms by both architects and contractors that *the early supply of complete and detailed information is a fundamental factor in securing speed of construction*. The time required by the architect to assemble and prepare the necessary documents is more than made up by the rapid progress the contractor is able to make when the work begins. After the contract is placed it is possible for the site works to be started in a comparatively short time because the contractor has all the necessary information in his possession from the time the tender documents are issued."

"The American building owner is as anxious as his counterpart in Britain to see his building begun and finished, so that it may become revenue-producing. The American architect has been able to convince him, however, by practical experience, that thoroughness and completeness in the preparatory stages result in savings both in time and in cost. It would be unthinkable in America for a contractor to be instructed to send half-a-dozen labourers to a site to start excavating, at a time when the final designs were no more than half sketched out in the architect's office, merely to satisfy the owner's desire to see work in progress."

"Complaints by British contractors of delays in receiving architect's drawings and instructions are so widespread that the superiority of the American procedure cannot be emphasised too strongly. It is, moreover, one of the factors which, to a large extent, is in the hands of the architect."

"*Variations of the work during the progress of the job are discouraged by all parties 'as a source of delay, annoyance and loss'*, and are not made to anything like the same extent as in Britain. This is due, no doubt, both to the extra time and care given to settling the client's requirements at the pre-contract stage and to the fact that cost may be disproportionately high."

"The provision by the architect of full details of the work of every trade makes it possible for the sub-contractors to begin work at a much earlier stage than in Britain. Plumbing, electric wiring, heating, staircases, elevators, air-conditioning, and the minor services having all been fully covered in the working drawings, the sub-contractors concerned can come on the job shortly after the steel erection or reinforced concrete frame has been started. The mechanical services are frequently installed on bare floors, walls and ceilings, sometimes even before the outer walls are built. Chasing and cutting away for pipes, etc., is thus almost entirely avoided, the partitions and walls, etc., being built round them."

The Team concluded that—"apart from the adequacy of supplies of materials, all the influences towards higher productivity mentioned above can be developed in the British building industry by its own efforts. We believe that the prosperity and efficiency of the industry can be increased, its costs lowered and the earnings of its operatives raised, if the responsible industrial organisations, the Government departments concerned, individual building owners (private and public) and, above all, the individual members of the industry give due consideration to the picture which we have drawn and if all strive to give effect to the recommendations we now make. Each one in his *individual capacity* must simultaneously make the necessary effort—architects, to plan better; contractors, to organise better; sub-contractors, to

co-operate better; and operatives, to produce more."

The Team made the following recommendations to architects: "Proper pre-planning being such a determining factor, the attention of all building owners and the architectural profession must be drawn to the importance of the following guiding principles:

"(*a*) the establishment of full confidence between architect and client on a business basis and the definite settlement at an early stage of the client's requirements —the latter being particularly necessary in the case of Government departments—so that costly and time-wasting variations in the work are eliminated and the speedier final settlement of accounts facilitated;

"(*b*) the preparation of designs which have regard to ease of construction and saving of cost by the avoidance of unnecessary cutting to waste, chasing etc., and are based, as far as possible, on standard dimensions. Designs must take into account also the types of materials and equipment available;

"(*c*) the completion, before the tender stage, of all essential working drawings, specifications and schedules, and the issue to tenderers of such drawings and other details as are necessary to enable them to price the job quickly and accurately;

"(*d*) the issue to the main contractor of all information necessary for letting sub-contracts—nominated or otherwise—and for the placing of orders with nominated suppliers immediately upon the acceptance of his tender. Any separate contracts let direct by the architect should be entered into at this stage;

"(*e*) the more careful selection and the better training and payment of clerks of works."

2 WORKING PARTY REPORT—"BUILDING"

Shortly before the British Building Productivity Team was instituted, the British Ministry of Works appointed a "Working Party on Building Operations" to inquire into

"(*a*) the organisation and efficiency of building operations in this country, including those of the specialist and sub-contracting trades;

"(*b*) the position of the professions in relation thereto;

"(*c*) the arrangements for financing operations; and

"(*d*) the types of contract in general use, and to make recommendations."

The Working Party was composed of representatives of all important bodies making up the building industry. The R.I.B.A. was represented by Sir Lancelot Keay. The Working Party had kept in touch with the Productivity Team and was aware of its findings. The Working Party Report—"Building" was published in 1950. It, too, lays great stress on the need for pre-planning:

"We think that the highest degree of efficiency cannot be achieved in any building operation of considerable size unless it is planned in detail before work is commenced. It is only in this way that the substantial economies to be derived from the proper phasing and programming of the work can be realised. Moreover, the delays and disorganisation due to inadequate pre-planning not only add to the immediate cost, but tend to undermine the general morale and so to have an influence extending much beyond the particular job."

"The primary duty of the architect to ensure that the details and drawings are available may be hampered by the incompleteness of the instructions given him by his client . . . The numerous variations and alterations so often introduced in the course of construction add to the cost of building. We hope therefore that both clients and architects—as business men realising the effect upon the cost of work as well as the efficiency of the industry—will strive mutually to remedy it."

"The first requirement for efficient management (of building operations) is that the builder should know clearly and in detail the operation he is going to undertake. He should have complete working drawings before he prepares his programme. It is the architect's responsibility to see that these are if prepared and, necessary, to impress on his client the advisability of not starting work until they are ready."

In the "Summary of Conclusions and Recommendations" it states:

"Building operations of any size must be completely pre-planned."

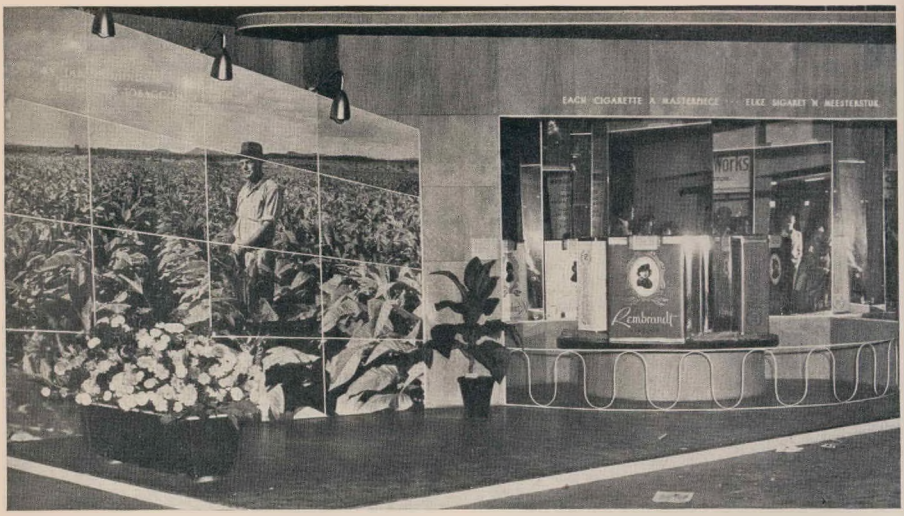
3 R.I.B.A. AND R.I.C.S. DOCUMENTS

Following on the two reports the R.I.B.A. and the National Federation of Building Trades Employers issued a joint statement—"**The Building Owner and Planning in Advance**"—which was addressed primarily to building owners. The joint statement summarised the findings of the two reports with regard to pre-planning and urged the building owners to supply the fullest information about their requirements to the architects at the earliest possible stage. It also urged building owners to desist from variations.

The Royal Institution of Chartered Surveyors next issued a memorandum by The Quantity Surveyors Committee entitled "**The Planning of Building Operations**." The memorandum issued in 1953 gives the following "Reasons for Pre-Planning" in the Summary:

"(1) To avoid delay in the completion of contracts.
(2) To promote proper competitive tendering.
(3) To avoid waste of manpower and materials.
(4) To enable final accounts to be settled quickly.
(5) To avoid unnecessary variations and so obviate unproductive quantity surveying services and the payment of additional fees."

RAND SHOW 1954



1

REMBRANDT TOBACCO CORPORATION

Designed by V. Meyer, of Meyer Displays, in conjunction with W. Morkel, Art Director of the Rembrandt Corporation

2

3

ISRAEL INDUSTRIES

Designed by H. H. le Roith M.I.A. in conjunction with Ernest Ullman

2

4

5

3 METAL CONTAINERS (S.A.) PTY. LTD.

This exhibit, constructed of tubular metal and canvas, and exploiting gaily painted metal containers as a decorative feature, was awarded the "Buy Empire Goods" Perpetual Challenge Trophy at the 1954 Rand Show. This award is given for the best, most attractive and most complete exhibit of goods manufactured in the Commonwealth.

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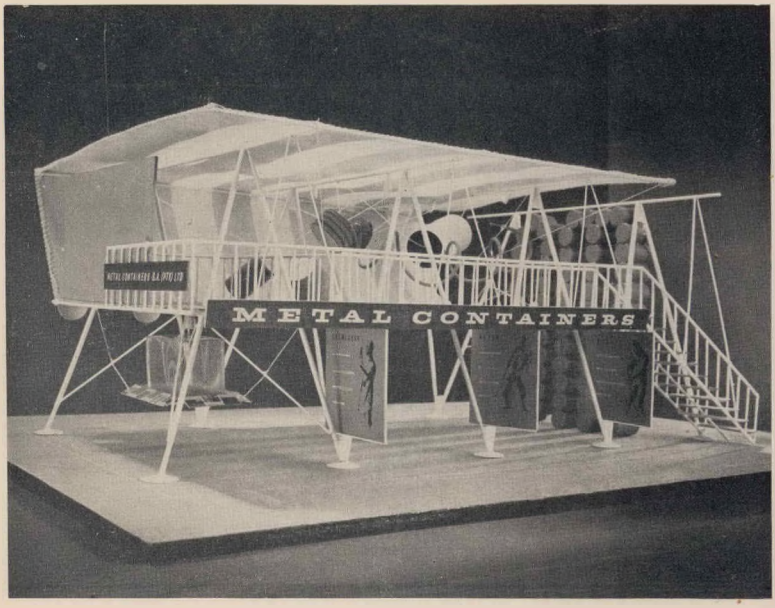
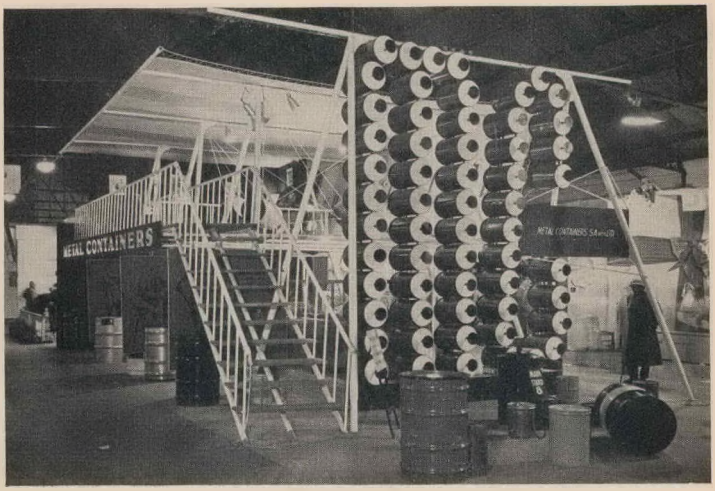
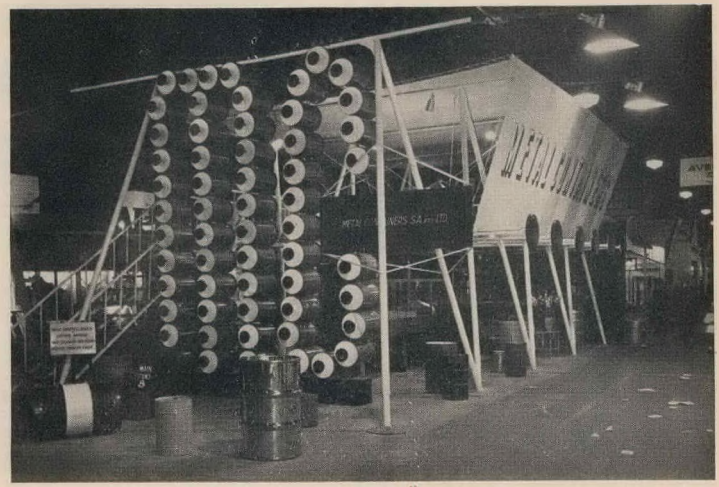


Designed by Ronald Armstrong of Exhibition Construction Co (Pty.) Ltd.





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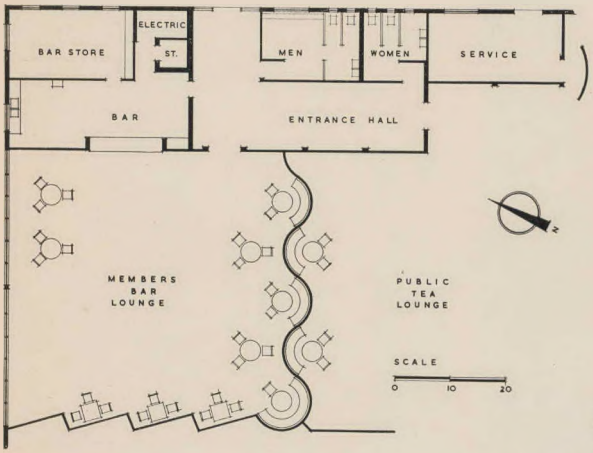
4

EXHIBITORS CLUB - RAND SHOW

Fleming and Cooke MM. I. A. - Architects



EXHIBITORS CLUB

Economy is the keynote of this latest addition to the Show's amenities. Colours are gay—yellow, white, grey, blue and terracotta. Walls are half brick in thickness, and derive stability from the splayed and curved forms.

10

5 PERMANENT EXHIBITION BUILDING - RAND SHOW

Fleming and Cooke M.M.I.A. - Architects

11

12

Above:
General View, showing Cantilevered Stair.

Right:
Detail—Bar Entrance

Exhibition Building
The Serpentine Balcony

Photography, Rand Show Section:
1.
2, 3. E. Robinow
4, 5. Henry Jacobs
6, 8, 9. S.A. Press Services
7. Walt Verwey
10, 11. Derrick Bridge
12, 13. B. S. Cooke.

13

NEW PROFESSIONAL PRACTICE REQUIREMENTS OF THE R.I.B.A. AS APPLICABLE TO RECOGNISED SCHOOLS IN S.A.

A. FULL TIME DEGREE STUDENTS (and in the case of Cape Town, full-time Diploma Students).

(1) The additional examination in Professional Practice is *not* required from a candidate for Associateship who qualified by examination before September 18th, 1951, or who passed all but two of the subjects of his final examination before September 18th, 1951, and passed those two subjects before July 31st, 1952.

(2) The additional examination in Professional Practice can be taken without the lapse of a year and without the Certificate of Practical Experience as such—(but provided that some evidence of practical experience can be shown, which is *ipso facto* the case in South African Universities, viz., the fourth-year)—by candidates who commenced their architectural training before November 1st, 1949. That is, the additional Professional Practice examination can be taken immediately following their passing the present final exempting examination.

(*N.B. The above exemptions cease on November 1st, 1955.*)

(3) All other full-time students must comply with the R.I.B.A. regulations concerning its Examination in Professional Practice.

That is, the examination to be taken twelve months after passing the Degree examination. Twelve months' practical experience must be gained in an Architect's office or in a recognised Architectural Department or on bulding work in the course of construction.

Except as stated above, there are no exemptions from this Examintion. The Certificate of Practical Building Experience is to be furnished with applications to sit for the Examination.

B. PART-TIME STUDENTS (Diploma and Certificate.)

(1) A (1) above applies
A (2) above applies.
A (3) applies when in the five or six years' Diploma or Certificate Course the first year is full-time and the candidate completes this course in the minimum time.

(2) They may sit the additional Professional Practice Examination after six years' practical experience in an Architect's office or in a recognised Architectural Department or on building work in the course of construction. That is, not necessarily twelve months after qualifying by University examination.
This, by virtue of A (1) and (2), only applies to students who commenced their architectural training *after* November 1st, 1949.

SUMMARISING, THEREFORE:

(*a*) All persons qualified in South African Universities (with R.I.B.A. recognition) before September 18th, 1951 (with the proviso of two subjects carried forward and completed by July 31st, 1952) do not require to sit the additional Professional Practice Examination.
(*Note. Important.* The Board of Education is to consider the question of the application of the "Additional Design Requirements" for part-time students, to the above.)

(*b*) All persons qualified or qualifying in South African Universities who commenced their courses before November 1st, 1949, must take the additional Professional Practice Examination but may take it immediately after completion of the University course.

(*c*) All persons qualifying in South African Universities who commenced their course after November 1st, 1949, must obtain twelve months' practical experience after completion of the University course, furnish the Certificate of Practical Experience, and pass the Professional Practice Examination, in accordance with the R.I.B.A. syllabus.

(*d*) Part-time students who have six years' practical experience in an Architect's office may take the Professional Practice Examination immediately after qualifying by University examination, irrespective of all the above.

(*Very Important.*
Students of Schools of Architecture recognised for exemption from the R.I.B.A. Examinations, who are entitled to exemption from the R.I.B.A. Final Examination, are required to apply for election as Associates within two years after passing the Examination in Professional Practice. Students who do not apply for election within these two years *may* be required to pass the R.I.B.A. Final Examination in the usual way, if they wish to qualify for candidature as Associates.)

TWO DOCTORATES IN ARCHITECTURE

At a recent graduation ceremony at the University of the Witwatersrand the degree of Doctor of Architecture was conferred upon D. M. Calderwood, and an Honorary Doctorate in Architecture upon Professor G. E. Pearse.

In publishing the citations which accompanied the presentation of these degrees, the *Record* wishes to accord the distinguished recipients its warm congratulations. Both new doctors are well known to the *Record*, Dr. Calderwood as a contributor to our pages, and Dr. Pearse as a former editor over a long period of years.

DOUGLAS McGAVIN CALDERWOOD

Douglas McGavin Calderwood was educated at King Edward VII School, Johannesburg, and matriculated in 1936. He selected architecture as a career and entered the University of the Witwatersrand in 1938. The Degree of Bachelor of Architecture was conferred on him in March, 1942. Thereafter he joined the Armed Forces and served as a commissioned officer with the South African Engineering Corps in Palestine, North Africa, and Italy, until the end of the war. On his return from active service he attended the University of the Witwatersrand's Post Graduate Course for the Diploma in Town Planning, which he obtained in 1950.

Mr. Calderwood joined the staff of the National Building Research Institute, Pretoria, and began a research programme into native housing. At this time he was also interested in the theory and practice of landscape design. Mr. Calderwood successfully submitted a thesis on the subject of landscape design for the Degree of Master of Architecture, which was conferred upon him in 1952. Thereafter he recorded his researches into native housing in a thesis which he submitted last year for the Degree of Doctor of Architecture. This thesis is undoubtedly the most comprehensive study of the subject that has so far been undertaken, and is a work of national importance. Professor Sir William Holford, of London University, a world authority on Town Planning, who was one of his examiners, stated that "the thesis should certainly be made available, if at all possible, in a published form". It has in his opinion, "a direct value for everyone interested in housing in tropical and sub-tropical countries, the colonies and under-developed areas".

GEOFFREY EASTCOTT PEARSE

Geoffrey Eastcott Pearse was born near Verulam, Natal, on February 16th, 1885. He came to Johannesburg in 1893, was educated at Marist Brothers School and the Weenen County College, Natal. His training as an architect commenced in 1903, when he was articled to Messrs. Brown & Cottrill, a firm of architects practising in this city. In 1907 he travelled to London where he worked until 1911, and qualified as an Associate of the Royal Institute of British Architects. Returning to Johannesburg, he joined the late Sir Herbert Baker's staff, and worked on the Union Buildings, Pretoria. He was successful in winning three Competitions and commenced to practise in Johannesburg in 1913.

On the outbreak of the First Great War he returned to England in 1915, enlisted in the Middlesex Regiment, was later transferred to the Royal Engineers and commissioned in 1916.

Active service in Mesopotamia followed until the end of the war. He was mentioned in despatches. Remaining in India, he participated in the Afghan Campaign, returning to South Africa in 1920, when he resumed practice in Johannesburg, and commenced to lecture in Architecture at the University College.

In 1921 Geoffrey Eastcott Pearse was appointed first Professor of Architecture at this University, and occupied the Chair until his retirement in 1948. He rapidly established the requisite courses of study, and within a few years laid the foundations of a Department, whose influence on the shaping of our South African urban environment has spread far beyond the confines of the Witwatersrand. His policy was a liberal one, and under his direction, the Department kept in step with changes in practice and architectural outlook. Professor Pearse dedicated himself completely to this work. Some time later he established a Department of Fine Arts, and also helped the University of Pretoria to improve its own training facilities in Architecture.

Professor Pearse served as Dean of the Faculty of Engineering; for many years he was Dean of the Men's Residences, and Dean of the Faculty of Architecture.

In 1931, a Carnegie Grant enabled him to visit the United States of America, and Northern Europe, to study architectural education. During the Second World War he played an active part in the formation of the Rand University Training Corps. He was Second in Command under Colonel Raikes, but eventually assumed command of the Corps.

During his years of office, Professor Pearse contributed papers to many technical and scientific journals, and was Editor of the *South African Architectural Record*. His "Eighteenth Century Architecture at the Cape", published in 1932, has become an important standard work on the subject, and is now a rarity much prized by Collectors of Africana. A companion volume on Eighteenth Century Furniture is to follow shortly, together with a survey of social life at the Cape of Good Hope between 1652 and 1830.

An important development which he initiated in his later years, was the establishment of a Post Graduate Diploma in Town Planning. This is still the only course of its kind in the Union, and is growing in importance.

In the professional sphere, Professor Pearse is a past President of the Association of Transvaal Architects, the Transvaal Provincial Institute of South African Architects, the Transvaal Town Planning Association, and the Associated Scientific and Technical Societies of South Africa.

On his retirement he was appointed the University's Architect. He was responsible, together with his colleagues on the staff of the Department, for the layout of the grounds of the University, the design of the swimming bath, library, the Great Hall and extensions to the Central Block, the Bernard Price Institute of Geophysical Research, the Hillman Block, Douglas Smit House, the first and second Dental Hospitals, extensions to the Medical School and the Women's Residence. Outside the University his buildings include Escom House, a Diamond Research Laboratory, the Polio Research Laboratory, St. John Opthalmic Hospital, and the O.F.S. University Library.

From this review of Professor Pearse's career, it is clear that he has been responsible for sound pioneering work in architectural education, Fine Arts and Town Planning, that he has played an important role in the development of this University, that he instilled the highest ideals in his students, and further, that he never failed to stimulate enthusiasm in those about him for the charm and character of our historic South African tradition.

TRADE NOTES AND NEWS

TWO NEW FLOORS

Vinadux Tiles

PLASTIC vinyl floor tiles are now being manufactured by the recently established firm of Vinadux Tiles (Pty.) Ltd., at Edenvale.

Resinthetic Jointless Flooring

H. ALERS HANKEY announce that they have been appointed sole selling agents for Resinthetic Jointless Flooring (Pty.) Ltd. A factory has been established in Johannesburg for the manufacture of Resinthetic Flooring. Plant has been imported from Germany, and, until local artisans are fully trained, laying will be carried out by imported staff.

* * *

A CHUBB EVENT

Recently the organisation of Chubb and Son's Lock and Safe Co. (S.A.) (Pty.) Ltd. held a "factory warming" to mark the opening of their new factory at Wadeville, Germiston. Visitors were treated to an interesting series of lectures and demonstrations on the materials and methods of the Chubb security systems.

Their anti-blowpipe alloy was the subject of major interest in the demonstrations, and is the material used in the manufacture of safe and strongroom doors.

The Hon. George Chubb in his address to the Royal Society of Arts in 1952 in discussing this aspect of security said, "To combat the oxy-acetylene blowpipe, manufacturers incorporate alloys which offer great resistance, not only to drills and cutting tools, but also to the blowpipe . . . These alloys, though they differ from manufacturer to manufacturer, have, one would guess, the common quality of chrome content and also a very high oxidising point. It is axiomatic that 'anything one can make, one can break—*in time*', but it is possible, though naturally at some cost, by increasing these refractory alloys, to give almost unlimited protection. It is indeed this element of time that is a primary consideration in the safe manufacturers' work, together with faithful observation of the maxim that 'the strength of the chain is in its weakest link' . . ."

This anti-blowpipe alloy was subjected to drilling and blowpipe tests and gave convincing visual proof of its remarkable toughness.

In a spectacular attempt to blow up a safe which concluded the day, the complete security offered by their anti-explosive device was demonstrated. This device, which is entirely independent of the locks, is capable of retaining the bolts of a door in the fully thrown position. The device is automatic in its operation and is proof against attempts to blow the locking mechanism, furthermore it comes into operation on the application of heat of any form.

The illustration on the left shows a plate of mild steel being cut with an oxy-acetylene torch. On the right the same torch is being used on a block of CHUBB anti-blowpipe alloy. While the mild steel is cut through without difficulty, no impression can be made on the alloy.

NOTES AND NEWS

INSTITUTE COMMITTEES 1954 - 1955

TRANSVAAL PROVINCIAL COMMITTEE

C. M. Sinclair, A.R.I.B.A. (President)
M. L. Bryer, A.R.I.B.A. (Junior Vice-President)
Dr. D. M. Calderwood, A.R.I.B.A.
G. Candiotes, A.R.I.B.A.
J. N. Cowin, A.R.I.B.A.
B. S. Cooke, A.R.I.B.A.
A. C. Fair
D. S. Haddon, A.R.I.B.A.
N. L. Hanson, A.R.I.B.A.
W. D. Howie, A.R.I.B.A.
M. D. Ringrose (co-opted)
H. G. Summerley, A.R.I.B.A., A.M.T.P.I. (Senior Vice-President)
C. E. Todd, O.B.E., M.C., A.R.I.B.A.

THE CAPE PROVINCIAL COMMITTEE

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H. A. P. Kent, A.R.I.B.A. (Vice-President)
E. D. Andrews, A.R.I.B.A.
R. L. de Wet, A.R.I.B.A.
H. C. Floyd, A.R.I.B.A.
O. Pryce Lewis, F.R.I.B.A.
D. F. H. Naude, A.R.I.B.A.
H. L. Roberts, F.R.I.B.A.
M. P. Taute, A.R.I.B.A.

O.F.S. PROVINCIAL COMMITTEE

K. E. Bull (Vice-President)
C. G. Cassells (Hon. Secretary)
H. de Bie (Hon. Treasurer)
J. T. du Toit, A.R.I.B.A.
F. Joubert
E. M. Pincus
P. Visser (President)

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R. F. Bell (Junior Vice-President)
E. F. Allen
L. C. Austin
A. A. Bjorkman
W. J. Clyde
Fred C. Harris
C. J. Leigh-Hunt
T. H. Louw
P. S. McDonald
J. B. Sutherland
O. C. Venn

TRANSVAAL PROVINCIAL INSTITUTE

Transfers of class membership:

CAPLAN, Theo (Mrs.), Johannesburg, from practising to salaried.
MYLES, David, Bulawayo, from salaried to practising.
PITT, A. A. (Mr.), Johannesburg, from Practising to Absentee Practising, having taken up a permanent appointment in Southern Rhodesia.

Provincial Transfer:

BLACHER, Harry E., (now of Kroonstad): Salaried: to O.F.S. Provincial Institute.
BOYD, J. (Mr.), Germiston: Salaried: to Cape Provincial Institute.
WILLIAMS, E. O. (Mr.), Johannesburg: Practising: to O.F.S. Provincial Institute.

Partnership:

Mr. I. Benjamin and Mr. D. Crofton respectively (Johannesburg Practising Members) have entered into partnership as "Crofton and Benjamin" at 2250, Marine Drive, Brighton Beach, Durban.

NATAL PROVINCIAL INSTITUTE

Change of Address:

As from 1st April, 1954, Messrs. F. C. Lee and D. W. Golding will change their office address to 104/5 Piccadilly House, Aliwal Street, Durban.

Partnership:

The title of the firm Clement R. Fridjohn, M.I.A., has been changed to Clement R. Fridjohn & Fulford. The names of the partners are as before—Clement R. Fridjohn and Ronald G. Fulford.

New Members:

COLLINGWOOD, A. J. (Practising), Durban.
CUNNINGHAM, June (Miss) (Salaried), Durban.
HENRY, C. T. G. (Salaried), Durban.
HOWES, C. D. H. (Salaried), Durban.

18th CENTURY ARCHITECTURE AT THE CAPE

Mr. L. H. Fleming, of Fleming and Cooke, Balgownie House, will be indeed grateful if the Architect who borrowed his copy of "18th Century Architecture at the Cape" by Professor G. E. Pearse, would let him have it back.

MR. J. W. S. CASTLETON
New President of the Chapter of Quantity Surveyors.