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OF SOUTH AFRICAN ARCHITECTS AND THE CHAPTER OF SOUTH AFRICAN QUANTITY SURVEYORS

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E D I T O R VOLUME 36

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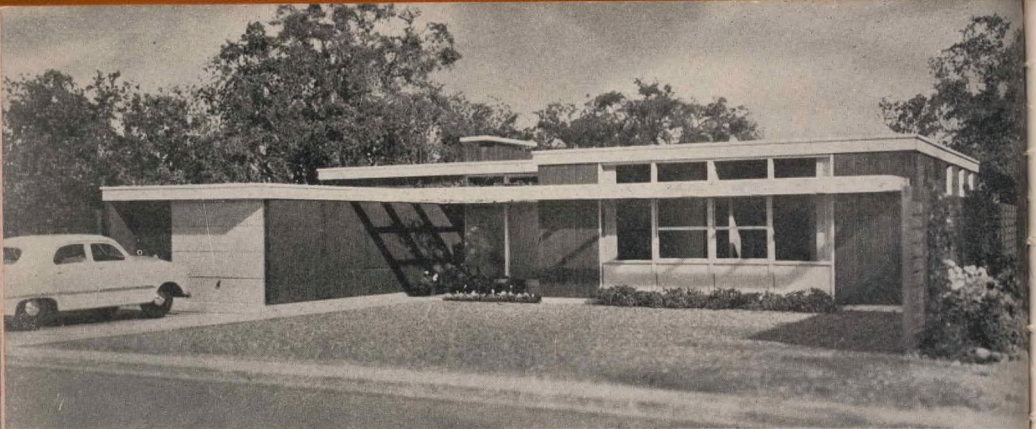


Photo by: Louis Cheek

EXHIBITION HOUSE

GREGORY AIN, ARCHITECT

THE MUSEUM OF MODERN ART WOMAN'S HOME COMPANION

J. Johnson and A. Day Collaborating

INTRODUCTION

It is not easy to make bricks without straw; nor is it easy to achieve great architecture on a utility basis. It is significant that the reputations of those famous architects who have practised in the domestic field have been based largely on what is, by everyday standards, work in the luxury class, work that has been lavish in the use of material, or in the use of space, or both. There is Mies's Tugendat house, with its electrically operated windows, and Corby's Villa Savoy, with its space-consuming ramps. There is the opulence of Lloyd Wright's house at Bear Run and Leutra's Desert House.

But in a world of economic difficulties and material shortages, the everyday man is not concerned with luxury. Even in the upper income brackets, super tax is fast making "conspicuous waste" a philosophy of the past. The ordinary man to-day is in a permanent state of financial embarrassment, and the pattern of the ordinary home—and it is the cumulative effect of average homes which forms the bulk of our physical urban environment—is to-day largely dictated by economy: economy of initial cost, and economy of maintenance. Maintenance, it must be understood, means not only paint for the walls and repairs to the roof, but also cost of servants; and I venture to predict that, with the ever-growing competition of industry for labour, the servant problem is going to hit South Africa in the not too distant future, much as it has already hit Europe and the United States.

These social and economic trends lead to an urgent need for economy in building: economy in the methods and techniques of building, and economy in space and material. It is because architects have, in the past, not made the necessity

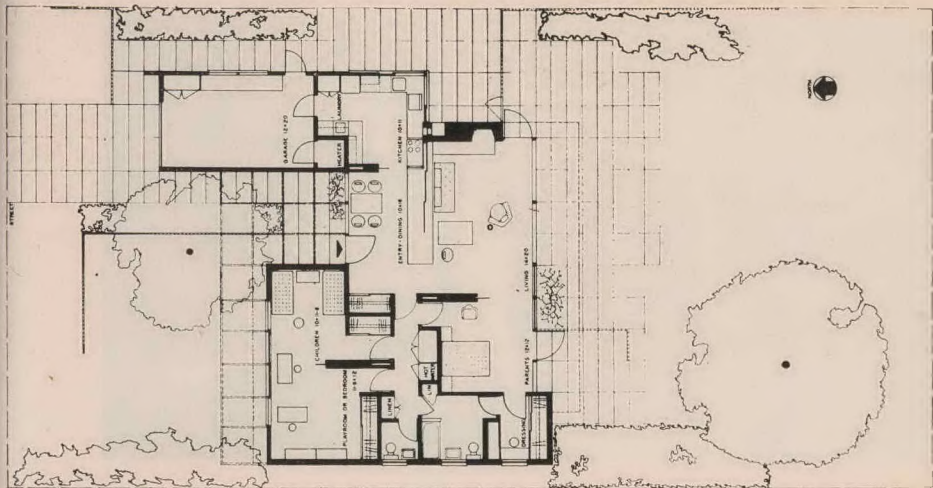
for economy one of their major concerns, that the field of small-house building, which constitutes, I imagine, some 90 per cent. of all residential building in South Africa, has remained largely outside their field of activity. The predominant voice in the fashioning of our environment has been allocated to the real estate agent and the speculative builder, and in thus handing over to other hands this vast area of activity, it is not too harsh to say that the architect has been guilty of gross dereliction of duty.

We must make the small house our concern. Not only must we come to realise its economic necessity, but as architects we must learn to make its smaller space pleasantly livable. We must learn to employ the techniques of free-planning and flexibility in order to make more out of less. And, in addition, both architects and clients must be prepared to make some adjustments in their conception of a minimum desirable "lebensraum." The sacrifice of space must be made: we must accept the fact that it is possible to sleep quite soundly in a bedroom that is less than 20 feet by 15.

Not only must we accept the small home as a social and economic necessity (in addition, of course, to flats and terrace housing), but we must see in the small house, not a defeat, but an opportunity—an a minor scale individually, but on an incredibly wide scale collectively—for fine design.

The Ain house presented here is, by South African standards, a small house. But in its fine handling and in its clever use of space, a piece of architecture is created, and a home where an eminently civilised life may be lived. It shows what can be done in the field of the small house.

GILBERT HERBERT.



PLAN

In order to show that good modern architectural design is possible in the field of speculative building, the Museum of Modern Art asked Gregory Ain, of Los Angeles, to design a house that could be built, with only slight variations, in any section of the country. Gregory Ain is one of the few modern American architects with experience in designing developments for speculative builders. One of his notable contributions to this field is the development of the Mar Vista section of Los Angeles, which consists of houses similar to the one in the Museum garden.

Mr. Ain's solution is a practical one. The plan is compact, and yet it conveys an illusion of spaciousness rarely found in real estate developments in the past. He uses traditional construction methods, which, for economic and technical reasons, are still more practical in to-day's building market than the experimental methods of prefabrication. And, finally, he applies many of the aesthetic achievements which modern architects have demonstrated in more expensive residences, to a medium-cost solution for suburban dwelling under existing economic conditions. These conditions frequently result in subdivision of land into small lots, and Mr. Ain's house was designed to fit such a lot. Needless to say, neither the Museum of Modern Art nor Mr. Ain feels that this type of subdivision is the only answer to our planning problems, or even a desirable answer. However, since subdivisions are a fact throughout this country, both felt that a good solution should be found within the existing limits. The Museum of Modern Art believes that Mr. Ain has found such a solution in his exhibition house.

THE SITE PLAN

Although the house Mr. Ain has designed is a single unit, it can be combined with similar houses to form a development. Such an arrangement is suggested by the site plan and by the photograph of a row of houses in the Mar Vista project in Los Angeles. The street facade of the exhibition house, with its irregular set-backs and two-level roof, avoids the usual dull flatness of development houses.

The house was designed for a lot approximately 60 ft. x 120 ft. in size. Since in developments of this kind, houses overlook each other closely along lot lines, Mr. Ain has planned the rooms so that no major windows face the neighbouring houses, and that, instead, the most important views are directed toward the gardens. A system of exterior screens helps to create areas of privacy in the gardens and to relate some of the exterior space to adjoining interior areas.

In all his work in designing real estate developments, Mr. Ain has avoided the extreme of the dull rows of boxes that were once so popular, as well as the other extreme of miniature ranches that are now in vogue. Instead, he has managed to create variety and interest within each dwelling unit, without sacrificing an overall concept of order. His work shows a fine regard for urban arrangement, varied to avoid monotony, and formal enough to bring a badly needed sense of unity into the town pattern.



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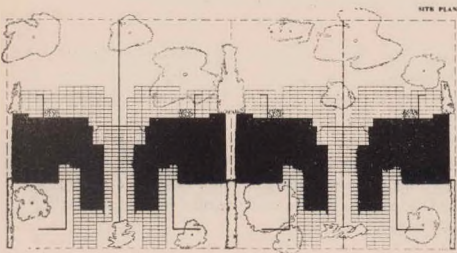
1. Garden Facade. 2. View of dining area looking towards kitchen.
3. Children's room, showing large sliding door between play room and bedroom.



2



3



5

View of living room looking towards main bedroom.



Text by Museum of Modern Art

photography by: Ezra Stoller, Piclor.

THE PLAN

The outstanding characteristic of the plan is its spatial flexibility, which is achieved by the use of several sliding walls and panels. The living room, dining area, parents' bedroom (or study-guest room) and the kitchen can all be thrown together to form one living area, or they can be sub-divided for privacy. Similarly, the children's rooms can be used as one large bedroom, as two bedrooms, or as a bedroom and a playroom, depending on the age of the children. The sliding wall between the rooms can be left either permanently open or permanently closed, to suit each family's particular requirements. The children's rooms are separated from the rest of the house by a corridor, lined on both sides with storage closets. This corridor serves also as an effective sound baffle.

The unusual ceiling height of 9 ft. emphasises the airiness of the interior and is strikingly apparent on entering the front door from under a low trellis. The illusion of spaciousness is further stressed by the standardised use of materials: one flooring material throughout the house, one ceiling treatment (except in the bathrooms) and one type of wall panelling in each area.

The paved terrace on the garden side and the wide overhang above, which are visual extensions of the living room, contribute to the sense of continuous space. While all rooms and living areas are characterised by this openness, the storage and service areas are compactly planned and tightly grouped together for economy of construction.

MATERIALS OF CONSTRUCTION

The house is built on a concrete floor slab, designed for the coils of a radiant heating system. The frame is of standard

wood construction, except for the steel beam that supports the joists which span the living-dining area.

It might be called a plywood house, for the exterior siding, the sheathing and all interior wall surfaces are of plywood, in one form or another; striated Douglas fir plywood for the siding, plain Douglas fir plywood for the sheathing and other structural uses, walnut veneer for the walls of the living area, pre-finished oak strip panels for the children's rooms and paint-grade plywood for the dressing room, bathrooms and kitchen. Gypsum board panels have been used for the ceilings throughout.

The dry-wall construction is protected by a fibre-reinforced sheathing paper on the outside and insulated with a reflective material, which also acts as a vapour barrier on the inside. The roof is further insulated against the sun by white granite pebbles on top of the composition roofing material.

The chimney in the exhibition house, which is one of its principal design features, has been faced with Roman brick, laid in block bond, and its raised hearth has been built of soapstone. However, the effectiveness of the design would not suffer if common brick and a reinforced concrete hearth were substituted.

Most of the glass in the house is fixed in position, but in each room there is also an operating sash for ventilation purposes. Obscure glass is used for privacy in several areas. The plumbing fixtures, the bathroom accessories and the hardware throughout the house have been selected for their efficiency, simple design and moderate cost. All of the painted wall surfaces have been standardised to a single colour. This helps to unify the design of a small house.



THE INSTITUTE OF SOUTH AFRICAN ARCHITECTS THE CHAPTER OF SOUTH AFRICAN QUANTITY SURVEYORS FIFTH CONGRESS

HELD IN THE GREAT HALL, UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG, ON TUESDAY AND WEDNESDAY, MAY 1st AND 2nd, 1951

CONGRESS PUBLIC SESSION

THE PRESIDENT-IN-CHIEF: Ladies and Gentlemen, Congress will resume. I have pleasure in calling upon Mr. N. I. Hanson, the Institute's representative on the National Housing and Planning Commission, to read his paper.

NATIONAL HOUSING IN SOUTH AFRICA

MR. N. I. HANSON: Mr. President-in-Chief, Ladies and Gentlemen: at the last Congress of Architects held in Durban in 1947, I addressed the Congress on "The Architect in relation to Housing." I find that the intervening years have not served to release me from the onus of dealing with the subject of Housing — though I would not have it thought that that is my only architectural interest.

I have been induced to speak again on National Housing because, in the first place, the Professions of Architecture and Quantity Surveying are still making a substantial contribution in the solution (or at least the easing) of this perennial problem; and in the second place, because, having been so immersed in the practical field, I welcome the opportunity to think of the subject on broad lines once more.

It is unnecessary for me to stress again the essential contribution of the Architect in Housing. I would, however, direct attention to the fact that in the technique of Housing it is the team-work of engineer, town-planner and architect which, in the end, produces the results. And in that team-work it is the schooled and disciplined imagination — or, if you will, the creative faculty — of the Architect which raises Housing from the drab, monotonous and tedious, to the level of community planning and building.

I may mention also that the Quantity Surveyor is beginning to play a more positive role in Housing. Here I would like to refer to the Committee which has been set up by the Building Research Institute, at the request of the Housing and Planning Commission which is investigating costs of Housing, and at the head of that Committee is our friend Mr. Toby Louw. That signifies, I think, that the Quantity Surveyor is at last fulfilling his proper function in the Building Industry in its relation to the community.

THE FIELD

In complex South Africa, good housing gives a partial answer to many problems. The diversification of our population alone lends Housing an unusual importance and scope. The policy of planning communities for the various racial groups is, I submit, virtually non-controversial, being both realistic and equitable. I stress the word "community" because Housing which falls below that level is no more than a partial answer, socially, and economically wasteful.

In its broadest aspect, Housing, that is, the building of communities, has regional implications. I mention this in passing just to show that the importance of Housing stretches very far indeed. The problem must first be looked at regionally, a fact becoming increasingly apparent in the main urban and peri-urban areas of the Union. As an immediate

example, I refer to the Witwatersrand, where it is necessary to look at the problem as a whole, and not in terms of city boundaries.

FACTORS IN HOUSING

At this stage I shall touch very briefly on various factors which make up the problem of Housing and which influence the solution of that problem.

The first is the economic factor. Housing must be built for people of definite income levels and standards of living, and these income levels and standards of living are interwoven with the costs of Housing. I consider that the economic objective is to make the community self-supporting, but that objective can only be reached through a combination of sufficient income, agreed standards, and attainable costs.

Then there is the social factor. The broad objective, in social terms, is the creation of a good environment; an environment which is commensurate with the stage of development and the future progress of the community in question. A fundamental social factor is the family. The family is the foundation of all housing, and that foundation should give the possibility of developing human capacity to its fullest expression, in terms, shall we say, of family life, privacy, promotion and care of health, recreation and community life.

A third factor is the planning factor, the planning objective, which I would say is the best use of available resources in terms of capital, labour, materials and land, in the interests of a given group of people. The planning objective, too, involves the relationship of people to one another, to their group, and to the wider environment of the city; and in that wider environment we have such questions as places of work, relationship with the town centre, cultural activities and recreation.

Now good planning takes in the historic and the present factors, and makes some provision for the foreseeable future. The unit, that is, the house, provides for the family according to the stage of development of that family; in racial terms, in accordance with its customs, and, not least, in accordance with its budget. Planning in its final sense, in its detailed sense, means the arrangement of available space in the most compact, convenient and interesting manner.

The fourth factor is the technical one, and it arises primarily out of the programme of the previously stated requirements. To translate this programme into reality, standards of space and cost are pre-requisites. Within the framework so established, materials, building methods and organization of building have to be determined. It seems to be the technician's unenviable task to make the glove which fits and which can in the process be pulled over the awkward thumb of costs. The house must stand, be durable, weather-proof, quick to construct, and lie within the ability of the most conservative industry to produce economically.

With trepidation I mention another factor, and that is the aesthetic factor. I imagine that only an architect would have the temerity to bring in such a factor, but it is one which is too easily brushed aside by laymen and technicians alike. Yet it is the architect's contention that the severity of even the simplest structure can be aesthetically pleasing or depressingly dull, according to the skill of the

designer. If you ally skill in layout, that is, landscape design, with skill in house design, which I should like to be termed architecture, then the basis of an environment, good in human terms, has been laid. It is a fact that the architect's ingenuity and inventiveness have often brought about major savings in cost, standardising of parts, simplifying building operations and devising rational planning.

PROGRESS REPORT

Having broadly covered these factors in Housing, what then is the present position? How far has the demand for housing been met, quantitatively and qualitatively, and what means exist to satisfy the demand? In terms of the aspects of Housing outlined above, a measure of success, and, of course, failures, is to be recorded. The best housing in South Africa — I generalise — is that which follows a racial pattern, comes closest to the economic limits, encourages social development, and is technically sound.

Conversely, mixed areas, exploiting and usually absentee landlordism, social neglect, and lack of planning in the technical sense, mark the black spots and the slums of South Africa. We know that there are creditable schemes in Port Elizabeth, Cape Town, Bloemfontein, Pietermaritzburg, Pretoria, Johannesburg, Benoni, and several other towns in the Union; and these schemes show all the advantages and benefits of good housing. The black spots are to be found in almost every one of the same towns. I would mention Cala Manor in Durban, and Sophiatown and Newclare in Johannesburg; and even in Port Elizabeth itself, the stronghold of Housing, having Mr. Schauder there, such black spots are to be found.

I think it is undeniable that the achievements have been massive, and they almost always spring from local effort, to which the State has lent aid. But the gaps are still enormous — gaps between good and bad, and with the accelerated development of the Union, to which Dr. Du Toit referred last night, these gaps are probably increasing with the years.

The shortfall has been measured in hundreds of thousands, and certainly the tempo of construction will have to be stepped up considerably if current demands, apart from the backlog, are to be met. What means exist to meet these needs and to produce Housing?

Well, firstly, there is the private citizen. Large numbers of our citizens can and do help themselves, building out of their savings or by raising loans to build; loans from Building Societies and from the State, either through Local Authorities or direct. These loans, which are made by the Commission directly, are designed to assist those who have limited means. There are certain limits laid down, with which I shall not bore you. There is also the direct citizen contribution which can also be, and is, effective by collective effort. I refer to the formation of Utility Companies, founded on the initiative of a number of public-spirited persons who, by banding together, obtain recognition of themselves as a properly constituted body, as a Utility Company. By this means the poorer sections of a community can be helped, even if the scheme be on an economic basis. The leading example of such a company is the Citizens' Housing League Utility Company of Cape Town, which company has constructed thousands of houses and whose efforts in this respect are most commendable. Perhaps you know that assistance is given to such companies by the State on terms similar to those offered to Local Authorities. In fact several Local Authorities complain that the terms are rather more favourable.

Secondly, there are the Local Authorities. We know that Housing can be substantially furthered through the agency of the Local Authorities, and that the great bulk of Housing for the lower income groups has been carried out by Local Authorities. In State-financed economic housing, Local Authorities have constructed, according to my reading of the figures, about 25,000 dwellings since 1920, which saw the initiation of the scheme; and of these 25,000, 50 per cent. has been for Europeans and 50 per cent. for non-Europeans. This figure refers only to economic housing schemes but does not refer to houses built for individuals through the agency of the Local Authorities or through the State.

In regard to assisted housing, about 56,000 houses have been constructed since 1930, of which one-eighth has been for Europeans and seven-eighths for non-Europeans. Altogether, therefore, there is a total of about 80,000 dwellings which have been erected directly through the initiative of Local Authorities; although I think the total would more closely approximate the 100,000 mark.

It seems to me that the local body is best qualified to assess local needs, to relate housing with the general planning needs of the community as a whole, and to hold a balance between all sections. Generally, pressure is more effective than goodwill or benevolence. By "pressure" I mean the crisis which is created by traffic and transport, by industrial growth, and by Public Health needs. All these various crises enforce

action by the Local Authority, but perhaps I should put the value of the top of the list of pressure sources.

Nevertheless, progress in Housing depends greatly on the work of men and women of good will; and the greatest progress has been made where such good will has been found.

Local Authorities as a rule borrow money from the State through their respective Provincial Administrations. There is economic housing and there is State-assisted housing. The burden of financial loss in assisted housing is borne for the greater part by the State; but the initiative, the attendant problems of building houses and subsequent administration, rest with the Local Authority. So that we can say that the foundations of a Housing Programme, its success or failure, is laid in the willingness and ability of Local Authorities to undertake the required work.

State assistance is certainly not confined to finance. Research, advice and guidance — sometimes exercised with a paternal severity; correlation of effort and policy, are the additional and the proper functions of the State.

The third agency through which Housing can be produced is the State, which in its turn assumes an over-all responsibility. It operates through the National Housing and Planning Commission, whose distinguished Chairman is with us today; and I would add that we have in him a friend of our two professions.

Although the Commission has been in existence about seven years, it is still in its formative process. Post-war development in the Union, which is not yet in historical perspective, has necessitated growth and change in every direction, Housing policy included. As an example of change in policy, I mention that the day of passive assistance, based on the low earning capacity of the bulk of the population, is passing.

The Commission deals with applications by Local Authorities to carry out economic and assisted Housing Schemes for the various sections of our heterogeneous population. It operates in the Cape Province, Transvaal and the O.F.S., and it has, through the Minister of Health, same authority, even in Natal, in assisted housing. It sifts, controls and advises and keeps within the financial limits which are set by Parliament. It also sees to it that all sections receive consideration, and, in the post-war emergency, was given powers to intervene directly and to build for those for whom no provision or effort is being made. Hence the Commission's own building programme, which is designed for the lower-middle income groups of the European population: in the first place for ex-Servicemen who had been handicapped by their absence in obtaining houses; and now for the community as a whole.

This undertaking has, I think, proved of immense value in the development of Housing in South Africa. Though it has been limited in scope, it has provided first-hand experience to the Commission, and in its direction and execution has brought about an understanding of housing needs and the methods of meeting those needs.

Co-operation between the professions (that is, architects and quantity surveyors), the Building Industry and the Commission, has produced results which have profoundly influenced house design. It has influenced as well the organisation of building contracts and the economics of house building. In fact the Commission's work has influenced building costs in the right direction. The Commission together with other public bodies is in a position to do what was discussed yesterday; that is, by collective action, examine the design programme with the greatest care and eliminate the unnecessary so as to be able to build at the lowest possible cost at any given time.

The policy of the Commission has changed with the years. Fast production was the first objective; and in that, the Commission had no great success, though what it did was of value. Today the accent is rather on cheap buildings, to acceptable minimum standards; leading, in addition, wherever possible, to home ownership.

Now between these two ends was a period of experimentation, and that period influenced particularly the building of economic housing for letting by Local Authorities. Moreover, a new phase was introduced into Housing in South Africa. Research on a scientific basis was embarked upon through the agency of the National Building Research Institute, whose Director will follow me this morning. Collaboration between the Commission and the Building Research Institute has been close and fruitful, and will be felt at all levels of Housing in the course of time.

When I addressed the 1947 Congress, the first period — that is, the one of haste — was virtually at an end; and some 2,200 houses had been built or were under construction. Today, four years later, the number of houses built is 5,600, the building cost of which has been in the neighbourhood of 9,000,000; 66 housing schemes, large and small, have been spread throughout South Africa and include housing types

which range from the small individual house through many varieties of "combined dwellings" to blocks of flats.

As foreseen four years ago, the Commission has spread its activities, following the growth of our towns and the development of new areas. In the Free State alone, where the Commission's activity was negligible four years ago, nearly 800 houses have been or are being built. I cannot say now, as I did then, that there is "a lack of integration between site planning and architecture." Some of the larger schemes show progress in this respect, though, here again, we are on the brink only of significant advances.

I have laid some stress on these phases of Housing because this effort of the Commission's represents the closest collaboration to date of Government, the Building Industry and the Professions. The original target, which was talked of in 1944 and 1945, of 6,000 houses or units, has almost been reached, and I do not think that, with the strengthening of the technical section, which has been long-awaited, of the Commission, that collaboration in the old sense will continue.

It is time, then, to take stock. Broadly, the production of houses, under the direction of the Commission, of architectural merit and built at the most favourable cost levels obtaining in the Union, has been the most notable achievement. There have been some failures, but, by and large, a contribution of importance and lasting value has been made to Housing, and the imprint of the professions will remain. For my own part, I should like to see the flow of ideas from extra-governmental sources remain, as I believe that the freshness of approach, the vision and the initiative of the private practitioner are necessary spurs to progress and development.

PROGRAMME FOR THE FUTURE

If, then, we have reached the end of a phase on the Housing front, what are the discernible trends? And what is needed to consolidate and enlarge our gains?

As I see it, the most far-reaching development is the trend towards self-support. State assistance is to be, or should be, directed towards ultimate self-support by the individual, by the family unit. That such a goal is not reached quickly, or perhaps ever completely, is obvious; but the effort towards that end is of the greatest social value, not least in complex South Africa. I hope my colleague, Mr. Bührmann — even though he may have left the subject open for me to deal with — will engage on the theme.

Paradoxically, the lessening of direct State assistance entails strengthened State organisation in Housing. A greater measure of co-ordination, a more exact definition of programme and method, and a more efficient and wide-spread service, are the pre-requisites of success for such a new policy. In this effort experiment and research are fundamental and should receive their due encouragement. But to formulate a realistic programme, and to act effectively, more than a theoretical statement is required. Co-operation and agreement at all levels, from the citizen to the State, are needed to set the wheels in motion. And, in the end, it is the Building Industry with its professional arm which must produce the houses we need, at a cost which we can afford.

I believe that a successful start has been made. The end, though not in sight, is at least attainable. [Applause.]

* * *

THE PRESIDENT-IN-CHIEF: Thank you, Mr. Hanson, for your very interesting and helpful paper. Ladies and Gentlemen, we are indeed honoured this morning by having with us Mr. Bührmann, the Chairman of the National Housing and Planning Commission. I will now ask Mr. Bührmann to address you.

MR. W. BÜHRMANN (speaking in Afrikaans): Mr. President, Ladies and Gentlemen, I thank you for this opportunity to say a few words on this very important subject of National Housing. May I say, at the outset, that I was impressed by what Mr. Todd said last night about the importance of utilising the services of your professions. On that point, I am glad to refer to the assistance we have had from your colleague, Mr. Hanson.

It can also say, speaking for the Housing Commission, that I do not know what we would have done without the assistance of your professions. I refer not only to their technical knowledge, but to their willingness to assist. The Commission is fully aware of how much it has relied upon, and how much assistance it has had from, your professions.

Naturally I approached the problem of Housing from a different aspect to that adopted by Mr. Hanson. My approach is that of a layman, and I am especially concerned with the financial aspect. The intention of the Housing Act of 1920 was that there should be very limited interference by the State in the matter of Housing. The intention was, I feel, only to assist those who could not themselves afford to

build. But after thirty years we find that a completely different picture presents itself. In these thirty years the financial assistance required has grown to the tremendous figure of R65,000,000, in respect of Economic Housing, R35,000,000, and in respect of Sub-Economic Housing, R30,000,000. The State is now becoming difficult, even stubborn, in the amount it is willing to spend annually on Housing.

That brings me to the position of Local Authorities in regard to Housing. I agree with what Mr. Hanson said about the part played by Local Authorities. First of all, there is the provision of a direct loan to the individual in conjunction with Building Societies. In addition, there are large amounts which are lent to Local Authorities for Housing on an economic basis; not only to assist Europeans, but non-Europeans also.

The shortage of Housing in South Africa has been estimated at 200,000 units, of which about 150,000 apply to non-Europeans. That is only in respect of five years; and the figure is still growing. If I mention that in the past year one-and-a-quarter million pounds have already been spent, but that this only touches the fringe of the problem, you will realise how serious the problem is. It means that we have to triple, or even quadruple, that figure.

It is the non-European who causes our sub-economic housing problem. The earning capacity of the non-European is, I feel, never sufficiently taken into account. When I repeat that 150,000 housing units are still urgently required, and that, because of our recent industrial development, which is still continuing, the demand for Housing will grow, you will more readily appreciate the seriousness and the magnitude of the problem.

This means that the subsidy system will inevitably grow. Here I must point out that one of the limiting factors is the loss that the taxpayer will have to bear. If these losses on sub-economic housing continue, how long will the taxpayer submit to this burden? This difficulty is now more serious than ever, with the Local Authorities refusing to bear these losses. The attitude of the Local Authorities is that the Central Government should accept this responsibility; but if the Government does so, then there is reason to believe that the taxpayers will strongly object.

A heavy responsibility thus rests on the professions and the National Housing Commission to find a way out. As Mr. Hanson has indicated, we are aiming at Housing on an economic basis, but on a much larger scale. But even Housing on an economic basis involves the State in certain losses. Our problem, therefore, is, what is the maximum use we can make of the limited funds that are available?

In that regard, we are completely dependent on the professional services of architects and quantity surveyors. We have laid down certain standards; we have provided a type of Housing on a rather high level, with the result that a small section of the population is reasonably well housed.

Because of the limited funds available, we have been faced with the problem of improving building methods so as to produce a house that the lower-income groups can afford, without incurring the State in further loss. I am glad to be able to say that work is being done in that direction. A sum of money has been made available to the C.S.I.R. to investigate this problem, and there we have the co-operation of all the professional and technical services involved.

* * *

I must point out that we are continuously faced with the criticism — in some cases well founded — that the State cannot afford what we are doing. Are we therefore to curtail or to stop our endeavours, and leave the masses to themselves? I feel that, even with the limited assistance available, we must do all that is possible to bring relief to the people who require it.

There are, of course, cases where Natives have been housed economically. There is the outstanding example of Benoni, where houses have been built for letting to what may be called the higher income group of Natives. I think the monthly rental is a little over R2. I believe Benoni has asked for another loan with which to erect another 700 houses on that basis.

The point I wish to make there is that, if Benoni can do it, I think other Local Authorities should be able to attempt it.

We realise of course that it will not be possible to house the whole of the Native population economically, and that a very considerable proportion of such housing will have to be subsidised, for the reason that so many Natives — and Europeans, too — simply do not earn enough to afford a house on an economic basis.

From that point of view we are trying to evolve a type of bare housing unit which will not contain so many "extras." And even with that type of house I think the architectural profession will be able to help us to design something that will be reasonably aesthetic. Speaking as a layman, I know how Natives, in the rural areas, lived happily and well

in the randeval type of hut; and there was nothing unpleasant about it. That is a direction in which architects can be of great assistance to the Commission.

Mr. President, I must apologise for having deviated from the financial aspect, which is what I intended to stress. But, I can only repeat, the problem is so serious that frankly I do not think that the solution is easily found.

On the question of the extent to which the State should interfere in the provision of Housing, I feel that we should not weaken or destroy the independence and the creative urge of the individual, of whatever race. With the average individual, his house is the thing that is nearest to him; it is something that should be a source of great pleasure to him. From that point of view, are we not perhaps, by introducing uniform housing schemes, creating a great number of dissatisfied people? Everything that an individual does, or creates, for himself, is a source of deep, psychological pleasure. I feel that, where we attend to the physical welfare of the people, it should not be at the expense of their spiritual welfare.

Finally, Mr. President, I can only indicate the problem to you; and as I have said, I do not know what the solution is. But I do want to express the hope that your professions will be able to help us. (Applause.)

THE PRESIDENT-IN-CHIEF: Thank you very much, Mr. Bührmann. What you have said is of very great interest and importance to the Professions and will receive their very careful consideration. Now, Ladies and Gentlemen, we are fortunate in having with us Dr. Baldacci, Chief Technical Adviser to the National Housing and Planning Commission. Although this is not on the agenda, I have invited Dr. Baldacci to say a few words to you.

DR. N. BALDOCCI: Mr. President-in-Chief, Ladies and Gentlemen: I would not get up, as the third man of the National Housing and Planning Commission, to speak to you, if it was not for the fact that I feel I can give you a perspective, from a new viewpoint, on the problem we have been discussing. From Mr. Hanson's paper, and particularly from Mr. Bührmann's address, you have had the point of view of members of the Commission. Allow me to give you the technician's point of view, which is, I feel, very near to your professional activity.

As you know, the Commission spends, and assists Local Authorities in spending, 82-millions per annum on Housing for all races. This represents some 9,500 to 10,000 houses per annum. Now this learned body may consider Native Housing a minor architectural problem, but I would say it is a fascinating problem of rationality, particularly when all the elements of the plan, from the window to the door-opening, have to be analysed and studied in terms of minimum standards.

But, to come to a more elevated form of Architecture, that of European economic schemes, which is in the form of Domestic Architecture and is therefore of direct interest to you, the Commission itself, as you have heard, builds some 1,000 houses per year. The Commission is therefore, I should say, a fairly good client of both the Professions and of the Building Trades. We have heard in the discussion yesterday the points of view of the professional people and the Builders: therefore it might be of interest to see the point of view of a client.

I was very interested to listen to the discussion on the papers yesterday, as the problems concerned me very much. In the matter of costing, I dare say the Commission has shown the way in bringing costs down. This was achieved both with and without the direct assistance of the private practitioner.

The question which I am sure you would like to have a reply on, is which of the two forms I have found most successful. My reply is, they have both been difficult to handle.

Remarks were made yesterday on the possible thirty per cent. fee to be applied on variations in contracts, due to variations in the mind of the client. From this aspect, I dare say the National Housing and Planning Commission would be, to the Professions, the ideal client, because the Commission directly does not interfere with the carrying out of the work. It only intervenes afterwards, to see what has been done. That it intervenes so little is perhaps due to a lack of initiative on the part of my staff. But here we have a case in which the Architect is the sole arbitrator of the contract, and therefore there should be no variations. But I must say that the cases in which there are no variations on contracts, even in these ideal circumstances, are very few.

The variations are carried out by the Architect; then the Quantity Surveyor sends in his final account; and then I have to face the Commission. My fun starts when accounts for professional fees are rendered. And here again is a theme on variations on the interpretation of the Scale of Fees. Such difficulties, however, are always settled amicably through the splendid co-operation of both the Institute and the Chapter.

I know that the thirty per cent. "big stick" of the fees for variations was proposed in a humorous mood yesterday. Similarly, Sir, I would like you to consider, as one of the means of bringing down building costs, professional fees in an inverse ratio to the extras encountered on a job. (Laughter.) This question of extras has — even with professional assistance — been a burning question throughout the history of human achievement. The Architects of ancient times were undoubtedly good architects. We still admire their work. Yet in one of the pre-literate cities of Asia Minor, Ephesus, some six-hundred years before Christ, a law was passed which ruled that if a job was supervised by an Architect, and the final cost exceeded the estimate given by him, then the extras would be borne by the Architect. (Laughter.)

Architects must therefore have been doing very well on their fees even then, if they were expected to have funds to pay the extras on their jobs. (Renewed laughter.)

But there is a more serious aspect to the Architect's professional activity, on which I would like briefly to touch. This links up directly with Professor Fossler's masterly paper that we heard yesterday. He complained of one stage that there was too little passion, too little ardour, in the flame of inspiring Modern Architecture in South Africa; that there was not enough discussion: that one region did not know what the other was doing.

I would like to add that the public do not know enough of what we are doing professionally. We are too detached from them; too abstract; perhaps because we discuss our problems only in the circle of professional societies. We do not go to the public, as is done in Europe, where the daily Press is frequently made use of to educate the public, to carry them with the evolution of thought in Art and Science. Leading Continental papers in Europe always contain articles on subjects of Art, Architecture and Science, written by authorities, but in a simple form which can be assimilated by the layman.

I would like to give you an example of this detachment between our ideals and the public's lacking, shall we say, in taste and ideas, from my practical experience. In designing small houses, members of the Architectural Profession conceive them as simple modern structures. One of the tendencies of Modern Architecture is the flat barn type of mono-pitch roof. I was interested to see in the March issue of "The Architectural Forum" that every single project presented for the National Housing Design Competition embraced a flat or a gable-end roof. But when we came to National Housing this modern feature finds a formidable joint opposition on the part of the public, on the part of the Local Authorities, on the part of the Commission, and, worst of all, on the part of my worthy Chairman. (Laughter.)

They say that we build houses that look like stables, because they lack a few Dutch gables or at least some hips and valleys.

Well, we know that, whatever the Stale does, it does wrong. But in spite of all the criticism, I make bold to say that we are proud of our Housing Schemes. We have at least got away from the bugbear of monotony, which is a "killer" in Housing Schemes.

I remember visiting, in 1946, a large scheme near London. I was told it was the largest Housing Scheme in the world, 7,000 Houses were built in one period, and it was amazing. But to me the most amazing thing was that there was only one plan. What a saving in architectural fees! (Laughter.) I had to ask how a poor man knew on a dark, foggy evening that he was really entering his own home, and he was not by chance visiting his neighbour's wife! The reply I got was that the particular squeak on the gate, or the silhouette of the rosebush, would tell the man that he was in the right part. Thank God, we need not have excuses of that sort! Thank you. (Applause.)

THE PRESIDENT-IN-CHIEF: Thank you, Dr. Baldacci, for your address to us. I very much regret, Ladies and Gentlemen, owing to circumstances quite beyond my control, and not being able to refer the next item forward, I shall have to eliminate the item of discussion on these papers. I apologise. I know you are all very anxious to break a lance with Dr. Baldacci particularly. I'm afraid the best I can do for you in this matter is to make him pay for his own tea. (Laughter.) Ladies and Gentlemen, we shall now adjourn for tea.

BUILDING RESEARCH IN RELATION TO THE ARCHITECT AND THE QUANTITY SURVEYOR

Paper by J. E. JENNINGS, Esq., Director of National Building Research Institute.

Mr. President-in-Chief, Ladies and Gentlemen: I consider it a great honour to my Institute that you should have invited me to address you today.

The theme of my talk will be that Science is the basis of much of our present development and will be the foundation of the greater part of our future progress. Considering the very many changes that have taken place in the building professions even in the last 50 years, who can predict what developments lie in the future? Most of these changes have been due to the influence that Science is exerting over the whole of modern life, and it is this life which is being portrayed in the great contemporary buildings.

For the word "architect" my dictionary gives the derivation from the Greek, as from "arkhi" meaning "chief", and "tecton" meaning "builder". Consequently, the "architecton" was the chief builder. Architecture probably developed some time before the Greeks, but very early in man's progress it must have become apparent that certain builders had a better understanding of these procedures and could be far better employed in advising their comrades. Consequently, we find the development of the architect very much as we understand him today.

Similarly, let us go back to the origins of the engineer. The original engineer had very little to do with wheeled apparatus, but was rather a military man, concerned with the engines of war, such as catapults and other implements for battering down fortifications. One can well imagine how, at some stage in their development, the architect found that the engineer possessed information which could be of use in his architecture. The engineer probably knew much about the basic strength of timber catapult arms, and the architect found it advisable to consult with the engineer about the strength of his timber beams.

It was many years before the engineer was demobilised from the military forces to become a civil engineer, and time has witnessed a gradual expansion into many specialist fields. In the last 50 years this specialisation has been accelerated and the process has applied in all professional fields. Consequently, in dealing with the march of Science and its relation to building, it is not only to architects or quantity surveyors that my remarks should be addressed today, but rather to the broad group which makes a specialised study of the building sciences.

Scientific progress is a tide which will be arrested only by a collapse of our civilisation. The applications of Science will be more and more felt and the only logical viewpoint is to accept Science as a tool which can aid us to greater achievements in our daily work. Accepting this, I shall attempt to show how we in South Africa are trying, in a small way, to apply Science in a manner which will be of direct benefit to all practitioners in the Building Industry.

One of the objects of research in building science is to express, in an intelligible, practical form, processes which hitherto have been the prerogative of men with great intuition, be these intuitions born in genius or in experience. Inspired intuition will always belong to really great leaders of men, these are the men who feel things to be right, long before scientific data have proved them so. Unfortunately, such inspired leaders are very few and, for the smaller men who do not possess this highly developed gift of intuition, reliance must be placed on processes of reasoning from trained precepts. This is where Science can lend assistance.

Second to intuition, experience is the other great characteristic which raises man above his fellows. But is experience not a teacher born of failure, or observation of the failure of others? It is the task of Science to say why some things succeed, and others fail. Science should try to find a logical reasoning background, and this process of reasoning, based on training, enables the professional man to deal with unfamiliar situations. Science must also help point the way towards future successes based on scientific reasoning and prediction. One cannot expect that Science will always be right, but it is fair to expect that it will more generally be right than intuition, particularly when the average intuition of individuals is taken as the measure. But one thing is certain, progress based on scientific reasoning must be more speedy than any other.

At the outset, in any discussion on the relation of Science to building it is important to clarify our problem and to state clearly what we

expect from our structures. These requirements may be broadly classified as follows:

- (a) The structures must serve their purpose.
- (b) They must be strong enough to withstand the elements or any other functions we may require.
- (c) They must please our feelings.
- (d) They must be sufficiently economical for us to afford to build and maintain them.

These four criteria are the foundation of our professions and consequently must also be the basis of our approach to Building Research. I will deal with each individually and, later, will show how the work of our National Building Research Institute is framed around these four basic requirements.

(a) Structures must serve their purpose.

The primary function of any structure, be it a bridge, dam, office building, house or sewer, is that it must satisfy the needs for which it was required. A bridge must carry its traffic without undue stress. A building must house its occupants and allow them to execute freely those functions required of the design; alternatively, the building must satisfy the human requirements of the people it houses. These people must be able to carry out their daily pursuits without inconvenience and with a reasonable modicum of bodily comfort; the building must provide shelter from the elements, particularly where these are very hot, very cold, or otherwise unkind.

(b) Structures must be strong.

This may seem a platitude because, fortunately, we are rarely faced with collapsed buildings, bridges or other structures; but even within the last decade failures of this nature have taken place in South Africa. We must, however, watch that we are not making the structures too strong, which process may be a progressive development, born of the fear of failure. We are all familiar with buildings which stand, despite our convictions that any such constructions should long ago have fallen to the ground. The question arises, as a result of these observations: are we not making our buildings too strong? Are we not over-afraid of failure, and has the ever-present, tendency not been, "When in doubt, make a little stronger"? Has this process not gone forward in a progressive manner until our structures today are very much stronger than they really need to be?

(c) Structures must please our feelings.

This is a matter which is of the greatest importance, but one on which I shall not dwell, since we are at present doing little research in this field of aesthetics, which is probably the most difficult in which to organise research. I would, however, like to quote from Oscar Niemeyer. "Architecture must express the spirit of the technical and social forces that are predominant in a given epoch; but when such forces are not balanced, resulting conflict is prejudicial to the content of the work and to the work as a whole." These seem very wise and appropriate words for a discussion on the influence of research on building science. Buildings express the outlook of a generation, and the designers are only tools in the hands of a wider aesthetic movement.

(d) Buildings must be sufficiently economical.

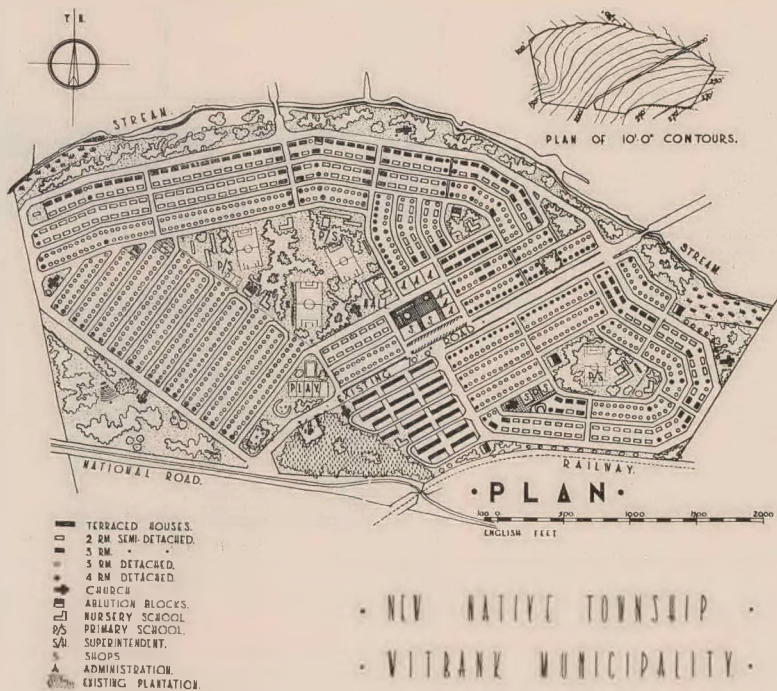
We must be able to afford our buildings, both in their first cost and in their maintenance. This may also be a platitude—otherwise we would never erect such buildings. But does the matter not take on an entirely different complexion when one considers the position of Native Housing today? Later I will show how a considerable research programme is devoted to this subject.

This, then, is also the basis of our organisation in the National Building Research Institute which has been built on the example of the older Building Research Station in England, with the notable difference, however, that we had, from the outset, an Architectural Division. This was not the case in England, although the position has recently been corrected with the incorporation of the work started by the Ministry of Works.

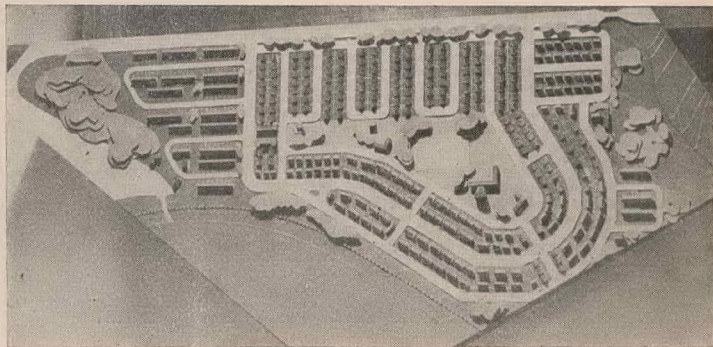
Our Institute is divided into three major sections. The first is the Architectural Section, whose task is to study and define the needs of man in his buildings. It is primarily concerned with the relation of building to the living pattern of the occupants.

The second is the Functional Efficiency Section, which deals with the study and definition of those needs of man which depend on the reactions of his body to the conditions created inside the building he occupies. Physiological sensations of heat and cold, and of visual and audio comfort, are studied for the range of environments encountered in the buildings. The field of work automatically embraces the relationship of indoor environment to outside climate.

The Engineering Section is the third major group and, because of its very wide technical field, is the largest. It is subdivided into a



MODEL OF THE EASTERN SECTION OF THE TOWNSHIP DEVELOPED EARLY IN THE DESIGN STAGE



(Fig. 1 and 2.)

Structural Engineering Division, a Materials Division, and a Soil Mechanics Division.

The overall object of the Engineering Section is to provide a structure which will house the architectural and physiological requirements, previously defined, in a safe and economic structure.

I propose to deal with each of these broad divisions in more detail, giving you a few glimpses of the work which they are handling.

THE ARCHITECTURAL DIVISION

The Architectural Division is the smallest division in the Institute, due principally to the difficulty of recruiting architects with the research temperament. I would very much like to attach architects to all the researches, but staffing difficulties have resulted in our employing the limited number we have in the fields where they can make the most significant contribution. Consequently the work of our Architectural Division is limited to those strictly architectural problems where no specialists can be found from allied professions.

The main task of this Division is Native Housing, which is probably the largest and the most pressing building problem existing in South Africa. It is also one which has been the most neglected by the architectural profession. I do not believe this is entirely due to a lack of interest. The architectural imperatives of Native Housing are so great that they serve to discourage any professional man who attempts to make a contribution in the field. These imperatives are mainly socio-economic and financial, resulting from the limited amount of money available for this type of housing.

We are attempting to elucidate some of these problems and at the same time to bring the costs of Native Housing down to a figure more within the reach of the people to be housed. We have a happy team of architects, sociologists, and their work is becoming increasingly inter-dependent, both in the lay-outs of Native townships and in the development of designs of houses to meet the individual requirements demanded by the pattern of living of the occupants. Work is also being undertaken to ascertain the capacity of the Native peoples to pay rents, and to determine the proportion of those who are capable of being housed either in economic housing schemes or under some system of "ownership".

With the very great emphasis on costs, we are paying much attention to the question of reducing costs of services, and this has taken us into the field of townplanning research. It is obvious that the condition where the services are costing one-half, or more, of the cost of the building itself is untenable; in addition, the urban sprawl at present taking place in South Africa is restricting the development of our towns, and unless it is checked we will soon find ourselves with unmanageable communities.

As a basis, we must accept that we are developing towards an industrial economy, and consequently we must be less wasteful in our ground usage for urban development. The first task, therefore, appears to be one of increasing the density of development in Native townships; this will probably involve innovations such as row housing or even multi-storey units, and it seems best that any such introductions are made in a stage-by-stage process. We consequently expect that a series of experimental towns will be designed and built, each with an increasing density. The first such town is the Native village for the Witbank Municipality; and the second, for the Springs Municipality, is already in hand. (Fig. 1 and 2.)

Another task of this Division is the study of the house plan and its relation to the pattern of family life which will be carried on inside these dwellings. Native housing probably presents some of the most glaring examples of ill-considered planning that can be found anywhere in South Africa. Circulation in the buildings has frequently been entirely overlooked, and furnishing have often been forgotten. (Fig. 3.)

Working with the National Housing and Planning Commission, type plans are at present being evolved, and, within the economic limitations, these have been very fully considered. It is hoped that an authoritative undertaking will be given that these type plans will remain unaltered for a reasonably long period, and that the proponents of alternative methods will gain by the knowledge that they can safely proceed with the manufacture of standard forms, with a reasonable chance of recovering the cost over a number of years. During this time, however, further studies must be conducted into the requirements of these buildings.

Up to the present, we have been designing Native houses on our own ideas of how the Natives should live. Have we really studied what their actual requirements are? And what steps have we taken to meet these needs?

It is our belief that housing is not a technical problem only, but that very great social effects, bearing on the development of our country, must also be considered. Good houses, correctly positioned in good layouts, can go a long way towards eliminating crime and other mal-

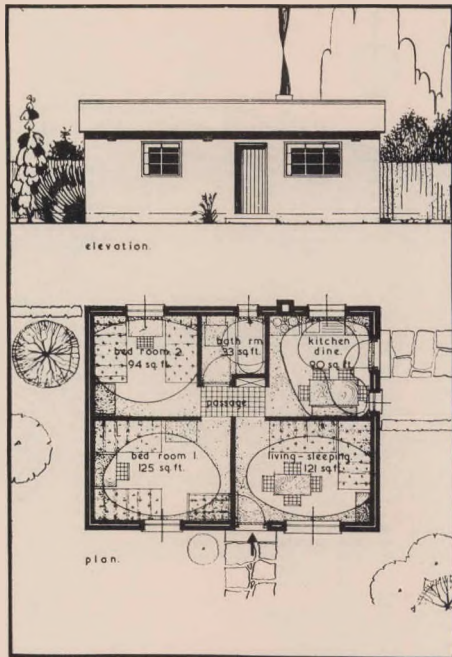


Fig. 3. Proposed type of Native house showing daylighting and furniture analysis.

practices at present found in our Native townships. This may constitute a vital part of our whole social stability and every effort should be made to induce a contented family life in these urban Native towns.

In addition to these specialised researches, the Architectural Division is continually called upon to assist other Divisions in the application of their work, and examples of papers recently published under the joint authorship of an architect and an engineer illustrate how we are trying to bring information of a technical nature before the practitioners.

On the problems of European housing, we are at present doing little specific work. Many of our findings in the Native housing field will, however, be applicable to European housing, since many of the problems are similar. However, we have no monopoly of research and will always welcome approaches of this type from the practising architects themselves.

THE FUNCTIONAL EFFICIENCY DIVISION

The work of this Division is sometimes called the physics of buildings. It concerns itself with such matters as heat flow in and out of buildings, and, contrary to experience in Europe, we find that in South Africa our problem may generally be regarded as one of summer cooling rather than one of winter heating. This leads us to consider whether by following overseas practice we are not perhaps building for conditions that do not apply? Significant developments on these lines have taken place in South African architecture over the last 30 years, such as the introduction of wide eaves or other sun shields, but we may be able to arrive at a logical development of a building more suitable to our climate by starting with a conscious effort to make most of our buildings in South Africa provide mainly for cooling against summer heat. (Fig. 4.)

Our work shows that under climatic conditions such as apply in South Africa, with high diurnal range of temperature and high intensity

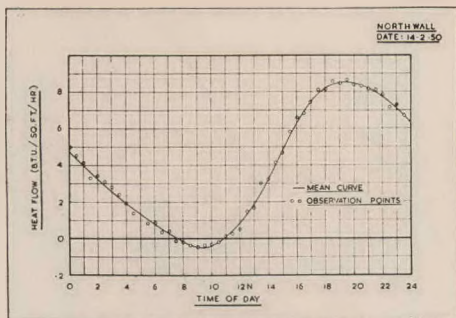


Fig. 4. Heat transfer through a 9" brick wall in summer in Pretoria.

of solar radiation, a theory of periodic heat flow must replace the static heat flow basis used in Europe for assessing the heat transfer between the outside and the inside environment. This is amply illustrated by the fact that, while an inside air temperature may be approximately constant at 80°, it is possible for our corrugated iron roofs to reach temperatures of the order of 155°F. Under these conditions, a low temperature radiator is established over our heads, with the resulting sensation of severe discomfort.

This Division is paying a great deal of attention to the thermal requirements of Native housing. The questions of definitions of bodily comfort are also being considered. We have all been accustomed to the comfort scales which attempt to relate air-temperature and humidity, but most of such scales do not take account of the air movement around the body or of the mean radiant condition of the environment. These four factors determine the degree of thermal comfort of the human body and the corrected effective temperature scale (illustrated) which has been developed in England, shows one way of combining them. (Fig. 5.)

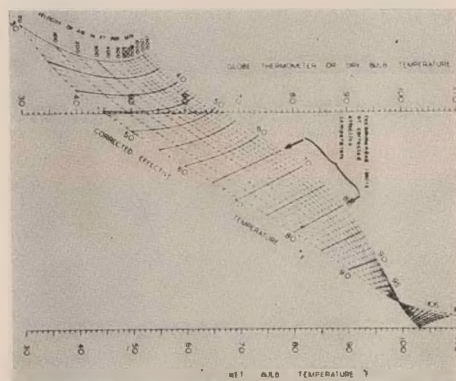


Fig. 5. Chart showing normal scale of corrected effective temperature for subjects wearing light indoor clothing and engaged in light work. From Environmental Warmth and its Measurement, by T. Bedford, Medical Research Council War Memorandum No. 17, 1946.

The question arises, though: are we sure that these overseas results will take into account the acclimatisation to a more severe climate such as exists in South Africa? We hope that the work of testing the reactions of persons under various conditions of exposure will shortly be undertaken in South Africa, with the object of determining, under our conditions, the physical requirements for thermal comfort. Such work is very specialised and requires the very detailed attention of the physiologist, psychologist, physicist and engineer. In its initial stages the Architect is not fully qualified to play a leading part, and it is only later, when the work is reaching conclusion, that the architect can take over such results and apply them to buildings.

The Division is also dealing with visual comfort, and work is in hand on daylighting, glare and sun penetration in buildings. Certain rules have already been put forward for the distribution of windows in dwelling houses. Here, instead of working on the old rule of 10% floor area, the intensity of lighting is used as the basis for calculating window sizes. This results in better lighting in kitchens and in living-rooms, and a lesser amount in the bedrooms. The net overall result for the whole building is that the window area provided in both cases is approximately equivalent to what it was under the old rules. (Fig. 6.)

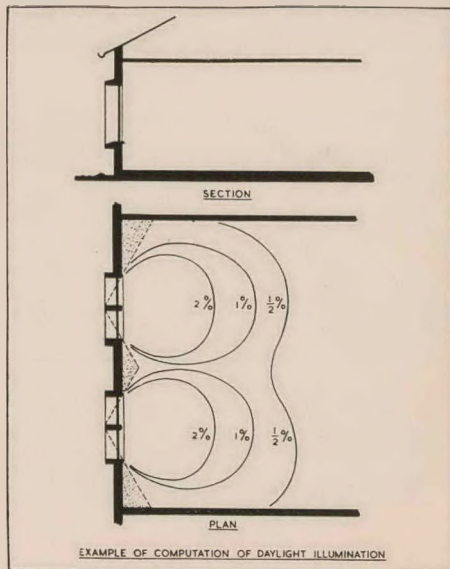


Fig. 6.

Acoustic comfort is also being handled by this Division, and studies of inter-unit noise and auditorium acoustics are being undertaken, and practical applications carried out. A Mobile Laboratory is available for testing of actual buildings and halls. Design service is also provided so that a specialised attempt can be made in advance to meet the acoustic requirements of buildings. This unit has already attracted much attention, and as it becomes better known I am confident that it will be in full demand where such specialised services are required. (Fig. 7.)

THE ENGINEERING DIVISION

There is really not a very clear definition between the functions of the various sections which compose the Engineering Division.

(a) The Structural Engineering Division has the responsibility of providing a safe and sound structure for the building. Here research is being conducted on Italian hollow-tile floors, of which so much was heard about two years ago. Work is also in progress on the reinforcement of brick walls in the attempt to build rigid, box-like structures which



Fig. 7 Instrument Panel of the C.S.I.R. Mobile Acoustic Laboratory.

will withstand foundation movements without cracking. Work will also be undertaken on deformed high tensile reinforcing bars, in an attempt to save steel and reduce costs of the building. Work is also in hand in attempting to find the structural requirements of Native housing. (Fig. 8 and 9.)

(b) The Materials Section deals with the behaviour of building materials in the structure and particular attention is being paid to problems associated with the use of limes and cements in South Africa. South Africa is relatively poor in high calcium limestones, but rich in limestones containing a fair proportion of magnesia. These find their way into the building industry as plaster and building limes, and there is a great need for good highly plastic materials of this nature. Failures of materials of this type are only too well known, but I am pleased to be able to say that the day may not be far distant when high-quality plastic limes will be produced in South Africa. (Fig. 10)

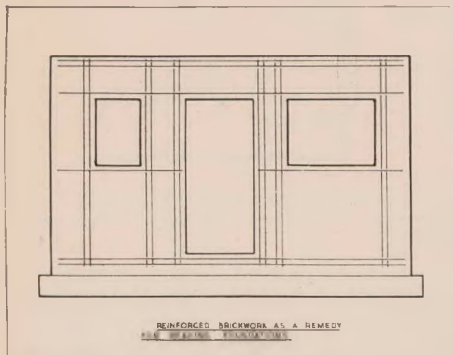


Fig. 9.

Work has also been conducted by this Division on the termite proofing of buildings, and a report on revised procedures, designed to meet the habits of the peculiar types of termite encountered in this country, is now available. This study was a good example of how local research has provided an answer to suit a local need, since it was found that our termites are of a different species and of different habits from those in the areas where the normal sheet-iron anti-guards were

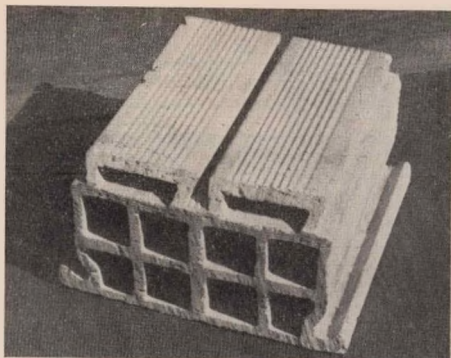


Fig. 8. Example of Italian type Hollow tile, made in South Africa, for suspended floors.

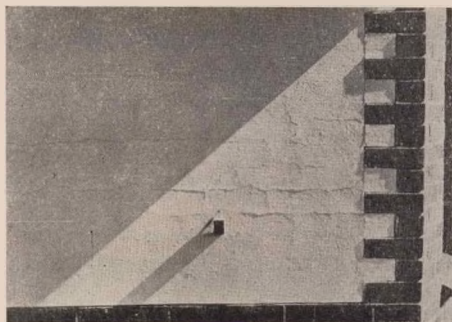


Fig. 10. Expansive mortar failure in brickwork.

Fig. 11. Nest of *Termes Badius* in open unventilated air space below a suspended floor.



developed. Our termites can surmount the sheet-iron anti-guards, and consequently these guards are not of much use in South Africa (Fig. 11.)

(c) The Soil Mechanics Section deals with the foundations of structures. There are two broad groups of foundation soils. The first relates to recent estuarine, fluvial or lakastrian deposits with high water tables, such as are encountered around our sea coasts, as in Durban. A very great foundation problem faces Durban, and the solution of this particular problem may determine the future development of this city. A visit to Durban will show that good housing development area on the Berea slope is being used for factory development, while the flat land lying between the Berea and the Bluff, particularly around Clairwood, is being left to market gardens. The logical development seems that this area should be used for industrial sites, but this will depend upon the solution of the foundation difficulties with these sites. (Fig. 12.)

The second group of problems is found on the Highveld, where

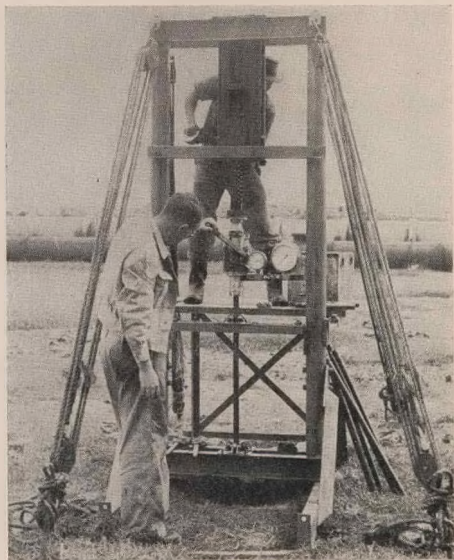


Fig. 12. The dutch deep-sounding apparatus for foundation exploration.

we have encountered a new foundation problem in that, instead of buildings settling after construction, they tend to rise upwards, with the greatest differential movement at the centre. This is a problem which is of very great importance in our Highveld development, particularly in bad clay areas such as the Orange Free State goldfields. Heaving foundations appear to be associated with low water tables in clay soils, and the difficulties are very much accentuated if the clay soil profile is desiccated at some depth below the surface. This desiccation is generally shown by a very shaltered nature of the clay in the profile. (Fig. 13 and 14.)

Mr. President, it is unfortunate that the limitation on my time has made the description of our work rather sketchy, but the Institute is established to help answer these imperponderable questions of buildings. It is in effect, your Institute, and its progress must play its part in the future development of our professions. (Applause.)

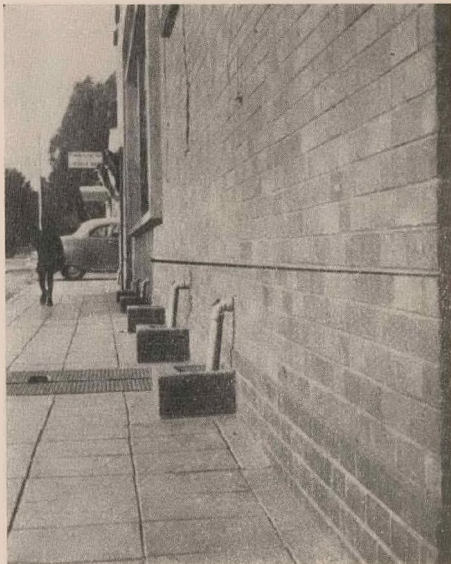


Fig. 13. Heaving of a building at Odendaalsrus.

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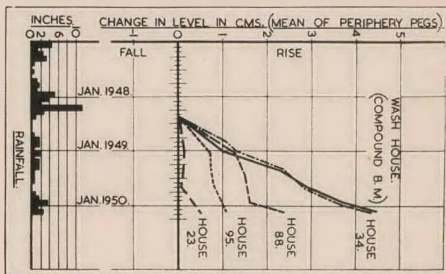


Fig. 14. Measure of heaving of buildings at St. Helena Mine.

SOUTH AFRICAN BUREAU OF STANDARDS WITH SPECIAL REFERENCE TO ARCHITECTS AND QUANTITY SURVEYORS

By J. W. SWARDT, B.Sc. (Eng.)

Mr. President, Ladies and Gentlemen:

Since the establishment of the Bureau of Standards in 1946, with a nucleus staff of 2, it has grown to 241 staff members and comprises 19 sections.

The rapid growth of the Bureau is a clear indication of the need there has been for such an organization. Established under the Standards Act of 1945, the objects of the Bureau can be briefly summarized as follows:

- (a) to promote standardization in Industry and Commerce, and prepare standards and codes of practice;
- (b) to test and calibrate instruments and scientific apparatus;
- (c) to test materials and commodities;
- (d) to control, in accordance with the provision of the Standards Act, the use of standardization marks.

Most of us have a clear idea of what we mean by standardization, but it is not so easy to define the term. A standard may be regarded as the crystallization of the best current practice as regards sizes, dimensions and qualities, forming a criterion for gauging any commodity or product. A code of practice is the crystallization of the best current practice as regards methods of operation, procedure or installation.

The Bureau's activities embrace today a very wide field. It has sections on foodstuffs, textiles, paper, paints, oils, timber, electrical, appliances, refractory materials, building materials, engineering, etc., to mention only a few major ones.

PROCEDURE OF PREPARATION:

The preparation of standards or codes of practice is a matter which must have its initiation by some responsible organization or person. If an application for a standard or code is approved by the Standards Council, a committee is formed of manufacturers, consumers and various persons representing institutions or organizations who are able to contribute towards the work. After the draft document has been prepared by the committee, it is circulated widely in this country, and to 32 countries overseas, inviting comment and criticism on the proposed standard or code. After the comments have been considered by the committee, the specification or code is approved and published by the Standards Council.

In the early days when the Bureau first started, request for standards and codes had to be encouraged; but today there is a flood, and requests have to be carefully screened on their merits. So far approximately one hundred and forty specifications and codes of practice have been completed, while committees are busy with the preparation of over two hundred more. Most of the requests have come from Industry, with consumers next, and Commerce last. A standard may cost from £250 to £1,000 to prepare, the average cost being about £350. The time taken in preparation varies from six months to two years, depending on the information available and the amount of test work to be done.

Practically all standards are administered on a voluntary basis, but where health and safety or gross adulteration are concerned, compulsory adoption is now being considered. Such compulsory adoption concerns the safety requirements of electrical appliances and minimum requirements for certain types of footwear.

The specifications concerning building materials that will no doubt be of interest to you, may be briefly referred to. One of the important building materials is wood. It is not generally realised, but practically all timber imported into South Africa has undergone careful grading overseas. During the last war, when this country had to turn to its own resources, some unpleasant and expensive experiences were encountered in the building industry. The result was that the South African timber industry fell into disrepute in many ways. A careful investigation has revealed that the lack of grading and facilities to treat timber properly were the fundamental reasons for these unfortunate experiences.

In 1949 the Standards Council published a specification, "Graded South African Softwood Timber", which, if extensively adopted by the timber millers and the building industry, would bring South African timber much overdue recognition. Other specifications published or in the course of publication are "Burnt Clay Building Bricks", "Metal Tiles for Cavity Walls", "Portland Cement", "Gypsum Blocks", "Stainless Steel Sinks", "Water Taps", "Asphaltic Roofing Felts", etc.

The building industry ranks as one of the major industries in South Africa, yet it is remarkable how little use it makes of standard specifications. It is evident that this industry is as yet very little conscious of the importance of clearly defined and tested functional requirements of building materials.

STANDARDIZATION MARKS:

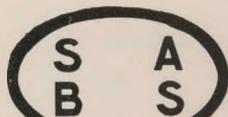
It is often claimed by a manufacturer that an article is made to a certain standard. Such a claim may receive official recognition from the Bureau by means of the standardization mark which is actually a certification mark.

Permission to apply the mark is only given to bona fide manufacturers whose factories have the proper facilities to maintain the quality of products uniformly by proper factory controls, testing facilities, and maintaining adequate records of tests. After the initial tests of the products at the Bureau, and the manufacturer has been granted permission to apply the mark, samples of the marked products are taken from the factory or bought on the open market and tested by the Bureau to maintain a check on the manufacturers for adherence to the standard.

The mark most used on commodities and foodstuffs which, I think, it will be agreed, now take the lead, is the ellipse. We have several other marks. For instance, gold jewellery that complies with the requirements of the specification would have this mark of the springbok's head in the letter U. That is to ensure that when you buy 18 carat jewellery it is not 16.8 or 17, as has sometimes happened in the past. Incidentally, quite a number of jewellers in all parts of the country, particularly in the larger cities, now sell jewellery that has this mark.

The same applies to silver, in which case the lion's head inside the letter N is used.

A special mark, embodying the letters S.P. within an equal frame is used for packages so that the consumer is not confused. If the ellipse mark were used to certify the quality of the package, consumers might erroneously deduce that it referred to the contents. Incidentally, again, in this case our friends the S.A.R. would have difficulty in proving that the package was defective, when probably their handling could have been a little more delicate.



For the use of the standardization mark the manufacturer pays a small royalty, which is usually of the order of one-quarter per cent of the cost of the article and is levied to cover the cost of the check-testing and factory inspection undertaken from time to time.

With the progress of consumer education, these standardization marks are becoming more popular and are beginning to serve industry and the public more and more in its two-fold role of giving recognition to claims of the manufacturer and protection to the buyer against doubtful claims.

CODES OF PRACTICE:

Amongst codes of practice published that may be mentioned are "Protection of Buildings Against Lightning", "Application of Timber Preservatives", "Colour Code for Workshops and Factories". In regard to the code for lightning protection it should be mentioned that the Bureau provides an advisory service in which the site is visited and examined and a suitable protection system is designed. I am pleased to mention that architects have from time to time availed themselves of this service.

A particular form of code of practice with which the Bureau has been busy for some time is that of preparing a set of Model Building Regulations. The main object of this work is to achieve uniformity,

throughout the country, of those regulations which at times can be so stultifying and irritating in planning a building. Due to topographic differences it is obvious that complete uniformity in every respect is not desirable in a country as widespread as ours.

Many of your Institute's members are well aware of this work and I will merely outline briefly its general scope. The set of Model Building Regulations will cover the full field of regulations and will include chapters on Administrative Requirements, Loads, Excavations and Foundations, Concrete, Masonry, Structural Steel, Timber, Lightning and Ventilation, Drainage, Fire Protection, Health and Safety, Urban Aesthetics, and Advertising.

A committee was formed for practically every one of these chapters. Your Institute is represented on many of the committees, and the Bureau is greatly indebted to those of your members who have voluntarily given — and still do give — so much time to this work of national interest. It has been a task of no mean proportions, particularly bearing in mind the small population of so large a country and particularly so in respect of technical and professional persons. I am pleased to say, however, that more than half of these chapters of the regulations will be available by the end of this year.

Generally, the nature of the work on Building Regulations consisted of examining all available Building Byelaws, both local and overseas, and bringing about uniformity and modernisation, wherever possible, with particular regard to South African conditions. It was found, for instance, that sewage drains in the Cape and the Reef could quite safely have the same slope; there was no need to have differing capacities of sanitary cisterns; the same tensile stress for steel could be used in similar building designs, etc. These were comparatively simple issues, but in modernising other aspects a much bolder approach was needed. Some information in this respect will no doubt be of interest to you.

The work of the Committee on Fire Protection was a difficult one.

Initially the committee tried to work on the basis of existing local by-laws. After a few meetings it soon became apparent that this basis would merely propagate unscientific customs. The Bureau investigated overseas regulations, and a proposal to switch to the latest code produced by the American National Board of Fire Underwriters was accepted. The approach now being used is therefore based on ideas which have long been accepted overseas as the only true conception of fire protection as applied to building by-laws, viz, the principle that every construction should be classified according to its strength and ability to withstand fire. It is thus essential that some means such as a standard test be stipulated. And so we come to the idea of ascribing fire resistance ratings to various forms of construction. Ratings vary from 1 to 4 hours in the standard test, depending on the ability of the structure to withstand exposure to a standard time temperature curve. A construction given a 4-hour rating would, when loaded to 1½ times structural design load, withstand a steady temperature rise going up to over 2,000°F in 4 hours, without collapse, without undue increase of temperature on the unexposed face, or development of flame penetrating cracks.

This, then, is the criterion for deciding whether a construction is suitable in a fire-resistant building. The mere fact that the material does not burn in a fire is of little consequence. A steel column, for instance, although non-combustible would withstand the standard time temperature curve exposure for barely 20 minutes. The fire fighters' stream of water might cause its collapse sooner. For interest's sake, a fact worth reporting, too, is that for a structural steel having an ultimate tensile strength of 50,000 lb. per sq. in. at normal temperatures, the same steel, although acquiring greater strength with initial temperature rise, drops eventually in strength until at a temperature of 1,500°F it can barely withstand 8,000 lb. per sq. in. The latter temperature is usually exceeded in a fire of any magnitude. The answer to the problem is to raise steel members to the required degree of fire protection by encasing them in concrete, brick, gypsum or vermiculite plaster or some similar material. The figures in regard to aluminium are even more startling. A fire can attain 600°F in a matter of minutes. At this temperature the ultimate tensile strength of aluminium will have dropped from its normal 45,000 lb. per sq. in. to 3,500 lb. per sq. in. It melts incidentally at just over 1,200°F.

Contrast with this our present by-laws in South Africa that stress only the non-combustibility of the structural members, which on its own is quite useless! Non-combustibility is a very small aspect of the complete picture necessary to judge the probable behaviour of any construction during fire.

Another chapter of the regulations in which you will no doubt be very interested, is that on Natural and Artificial Lighting. Mr. Jennings in his paper referred to the introduction of the daylight factor. Well, the Committee that deals with Natural and Artificial Lighting has found that that is the only sound basis on which to base its regulations. Admittedly in the past the idea of 15 or 20 per cent of window area to floor area,

was a good criterion, but it doesn't help very much if the building is a long narrow one, in contrast to the usual thing where it is a square building. Once again the committee's approach has been fundamentally different to that adopted in present South African by-laws. Indeed it may well be stated that this committee is doing pioneering work in this field. The empirical rule which lays down the window area in terms of a percentage of the floor area has been employed in by-laws throughout the world. Unfortunately, as our buildings tend to go skywards, and our site valuations do likewise, the old order must of necessity change. So we must naturally take the logical step of saying that in any area, each building and each room, where the occupancy requires it, should be entitled to a fair share of the total natural lighting available. This is the essence of the sky-factor system. Its use has been recommended in the Holden and Halford Report on the Reconstruction of the City of London. The definition of "sky-factor" reveals the method, viz, "That percentage of daylight illumination received from the sky at a particular point compared to the outdoors illumination under an unobstructive hemisphere of sky of uniform brightness". It is quite apparent that this approach, while difficult to translate into the form of simple building by-laws, is in the end bound to prevail. I might add that several architects have said to us, "We agree that the sky-factor method is the right one, but feel that it is too complicated for use by the Building Inspection Division of a Municipality." We hope to get the answer shortly when this chapter will be circulated for comment to all Local Authorities, that is, within the next few months. And I may mention, in parenthesis, we hope that we will be agreeably surprised by the answer.

One of the chapters which, it is hoped, will shortly be published is concerned with Urban Aesthetics. This aspect has of late enjoyed a fair amount of the limelight, and many Municipalities have already taken active steps to safeguard their interests in this direction. The subject is one which is, of course, extremely contentious in character. A project which may appear to one panel of architects to be harmonious and in keeping with its surroundings may strike another less favourably. This is the handicap which is always inherent in any scheme of aesthetic control. But the advantages to be gained by having an independent committee specialising in the examination of projects for their aesthetic merit, far outweigh the alternative method of leaving the Town Engineer to make such decisions and bring on himself a hornet's nest of architects and their clients, some of whom may be councillors!

Another chapter devoted to Public Amenities deals with advertising signs. I need not dwell on any of the eye-tearing, eye-searing, monstrous signs which disgrace so many of our South African cities of today. It is self-evident that this menace is growing and that some of our peaceful, beautiful villages, such as abound in the Western Province, are losing their identity and character behind a shallow facade of modern advertising signs, girt with chromium, gloss, sparkle and slickness. The only solution to the problem lies in the promulgation of by-laws which will arrest and control this development within reasonable bounds. This is the intent of this chapter of the model regulations. A draft was recently issued for comment and it is expected that the chapter will be published during this year. We still hope to publish it before the end of this year.

The Bureau realises that after these regulations have been published, practical application and progress will call for amendments from time to time. This is inevitable, however expert any particular committee may be. To provide for these possibilities, it has been agreed that Revision Committees be formed when sufficient information has been collected by the Bureau.

TESTING LABORATORIES:

Testing facilities for all types of commodities and products have made great progress, and the Bureau's laboratories are amongst the best in the southern hemisphere. In these laboratories the Bureau is able to do a comprehensive range of tests on a wide variety of commodities. I shall, however, describe only those laboratories which are of direct interest to you.

All architects know how building materials such as sand, stone, bricks and roofing tiles, vary in suitability from place to place in our country. The Bureau's testing facilities can remove all doubt from the architect's mind by testing. He merely has to write, setting out the issues involved, and ask for covering tests to be conducted. It is the policy of the Bureau to conduct these tests preferably in accordance with recognized specifications. South African specifications are primarily for our conditions, but in the absence of such specifications, British standards, or any other standards that may be applicable, are used. The test sponsor is naturally free to decide what test method he wishes to have employed. In the civil engineering laboratory it has now grown into a continuous process to perform tests on concrete blocks reflecting the quality

of concrete used in various building operations. For testing concrete cubes prepared at the Bureau, a specially designed concrete mixer is used and the cubes are cured in temperature and humidity controlled chambers. At the conclusion of all test work a test report is issued, giving a full factual statement of the work done.

PUBLICITY:

It is not always appreciated, what work is being done, and what facilities there are at the Bureau. For that purpose a certain amount of publicity has to be given to such work.

In order to keep the public and all interested persons and organizations informed of the activities of the Bureau, it publishes monthly the Standards Bulletin. The Bulletin contains a few articles on various phases of work of the Bureau or some subject of interest to standardization. It also contains lists of specifications and codes published and the progress of work on specifications and codes in the course of preparation. Films

have also been made from time to time — the latest film having only been released last Easter.

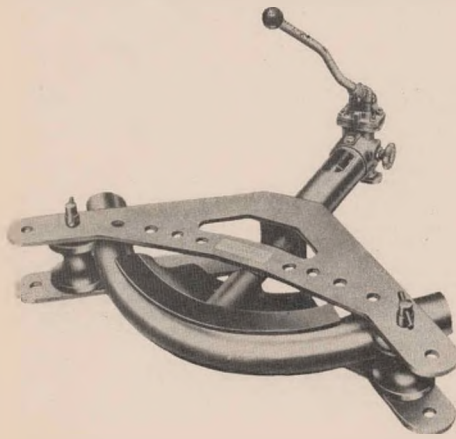
Interested persons can of course always visit the Bureau and so make personal contacts.

As President, I cannot conclude without making reference to the excellent co-operation that has been received from your Institute. As the number of documents issued by the Bureau for comments and criticisms increased, your Institute found it necessary to establish a Standards Liaison Committee to effectively give attention to these documents. This is a most commendable form of co-operation, which has proved most valuable.

Finally, the Bureau of Standards has been established to give service to Institutes like your own, to individual practising members, to Industry, to Commerce, to consumers and to the public in general. Its facilities are at your disposal (Applause).

TRADE NOTES AND NEWS

THE 'STAFFA' SENIOR FORMER HEAD



This accessory has been designed and is marketed by Chamberlain Industries Ltd., Staffa Road, Leyton, London E10 for users of their popular 2 stage Hydraulic Tube Bending Machine. Its purpose is to extend the range of this model to deal with 2½ and 3 in. nominal bore steam and gas tubes of all classes. Thus, by the provision of the accessory, the 2 Stage Machine may be employed for steam and gas tubes of 3/8in., 1/2in., 3/4in., 1in., 1 1/4in., 1 1/2in., 2 in., 2 1/2in., and 3in. tubes.

The Senior Former Head is manufactured from mild steel, accurately fabricated, and is supplied complete with end formers, end former pins, 2½in. and 3in. centre formers, 2 x 6in. and 1 x 9in. extension rams (the last-named items for increasing the angle of bend from 90 deg. to 160 deg.).

2" MOTORISED HYDRAULIC TUBE BENDING MACHINE

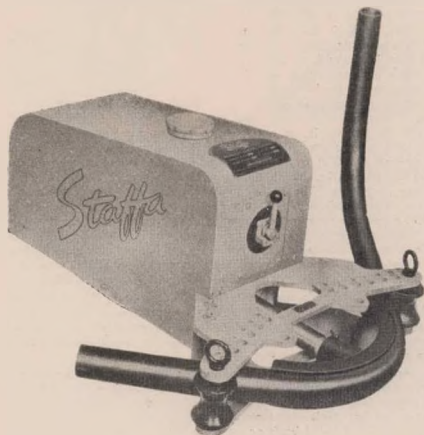
In addition to the already well established "Staffa" 4" Motorised Hydraulic Tube Bending Machine, Messrs. Chamberlain Industries Ltd.,

of Staffa Road, Leyton, London, E.10., can now offer a redesigned 2" machine incorporating the noteworthy features of its parent model.

The new machine (with overall dimensions of 3'-1" x 2'-1½" x 1'-7") is a neat, compact and entirely self-contained unit, which requires no hydraulic accumulator or airline as the pump is mounted in its own reservoir of specially selected "Shell Tellus" 27 Hydraulic Oil.

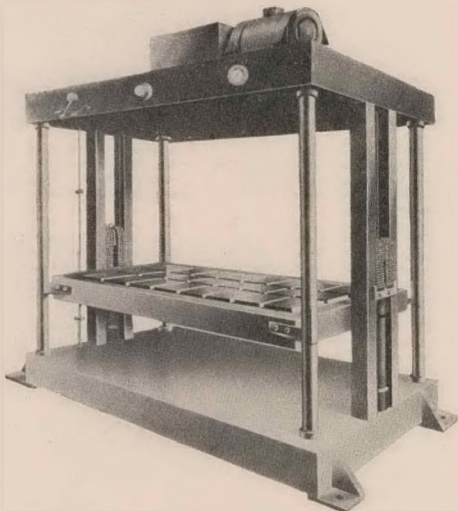
The all steel body forming part of the machine's construction has been especially designed to ensure maximum strength. The neat design reduces the floor space to a minimum and gives the operator the distinct advantage of being able to walk around the machine without the interruption of extraneous fittings such as outside cylinder, hose, etc. Thus, from the front of the machine an uninterrupted view is afforded of the work of the "bending head."

This "Staffa" Tube Bending Machine—which is specially designed for hard wear and continuous work—will be found particularly profitable by those concerned with lighting, heating, sanitation, chemical and ventilation work, as it saves both time and cost and avoids operating fatigue. A further time-saving feature is provided by castors which give the machine complete mobility, enabling it to be taken to the work instead of the work being brought to the machine. It has ample power to bend, cold and unloaded, all classes of steel tubes to B.S.S. 1387:1947 and also electrical conduit tubing from ½ in. to 2 in. It is designed to perform by hydraulic power, under fingertip control, operations which hitherto have been carried on by continued physical effort.



'STAFFA' 20-TON HYDRAULIC BALING MACHINE

The "STAFFA" Hydraulic Baling Machine manufactured by Chamberlain Industries Limited of Leyton, London, E.10, has been designed to meet all types of requirements and is essential for the safe, speedy and economical pressure baling of skins, leather, cardboard, wool, rags, salvage etc. and reducing the size of packages of soft goods where baling boxes are not required. The robust construction from steel sections ensures complete rigidity and lasting performance, coupled with ease of operation. With this model, the necessity for excavating a mounting pit is dispensed with and the space thus saved added to the effective vertical working distance.



The load and movement are provided by two hydraulic up-stroke single action rams and cylinder units. By the incorporation of chain multiplication, the ram stroke is increased from 20 inches to 40 inches. The employment of a hydraulic action eliminates the necessity for applying power to lower the table after pressure has been applied. It is only necessary to open the release valve causing the cylinders to exhaust, the weight of the table and load being sufficient to discharge the oil and return the table to the loading-unloading position.

* * *

The power to operate the rams on the upward stroke is supplied by a high and low pressure swash plate pump, driven by a 2 h.p. electric motor (suitable for 400/440 volts 50 cycle A.C. 3-phase supply). At low pressure a rapid approach to the work is obtained, the changeover to high pressure for working being automatic. Where only a light pressure is required, this can be achieved by means of the variable relief valve, the pressure being checked on the gauge mounted at the front of the machine. At the end of each full stroke during normal high pressure working, the control lever is automatically returned to the neutral position, thus eliminating any possibility of over-travel by the table.

Full protection of operators is ensured by the provision of adequate guards covering all external moving parts, which also prevent any baling material from becoming caught in the mechanism.

'STAFFA' HAND BENDING MACHINE

The "TRUSET" Hand Bending Machine is the latest of the "Staffa" range and the direct result of heavy demand for a competitive machine capable of giving close-set precision bends.

The machine consists of two main components, namely the base and bending arm. The base is circular and carries lugs suitable for universal mounting on either a bench, vice, or bending stand. Equipped around the base are holes for a stop-pin, which, when used in conjunction with an additional stop screw on the bending arm, allows infinite adjustment to any angle of bend position for repetition work. The bending arm, rotating about a centre-pin fitted to the base, consists of two high tensile steel bars carrying an infinitely adjustable bending pin, fitted into the head block at one end, and the handle block at the other, this design, rendering an extremely robust arm. A feature of the machine is the special pin restricting the movement of the bending arm and automatically ensuring a correct angle of lead; a factor of the utmost importance when bending copper and light gauge tubing.

A light steel fabricated bending stand can also be supplied with the machine, and has been carefully designed to be neat in appearance, light and capable of withstanding the most severe usage. The principle of this stand is that it becomes complete only when fitted to the machine, eliminating any unnecessarily large locating plates, and when dismantled, becomes merely two tubular legs of extreme portability.

The tube formers, which are readily fitted to the machine, carry their own improved and patented back-stops, ensuring perfect gripping of the tube and distortion-free bends. With the use of these formers any tube sizes up to a maximum of 2 in. diameter in gas tube and 1½ in. diameter in copper and light gauge tube can be handled cold and unloaded.

The complete and unique design of both the machine and the formers allows rapid and efficient left and right-hand bending through any angle up to 180 deg. latter allowing for spring in material with the minimum of straight adjoining the bend.



PERMABOND

PERMABOND is the registered trade name in South Africa of a bituminous mastic successfully used overseas for the past ten years in laying parquet or wood block flooring on either a cement screed or over old wood floors.

The name PERMABOND is self explanatory of the material itself — PERMANENT BOND. A short summary of the advantages of this mastic is noted hereunder:—

1. AN EASY AND CLEAN APPLICATION.

PERMABOND is presently supplied in steel drums containing 34 gallons. Floor layers using a common type of powerful primus stove heads on a compression tank can with four heads melt the mastic to a water thin liquid in about 15 hours. The mastic may be removed from the drum as soon as it has reached suitable liquidity even though the entire contents may not have melted. It is then poured on to the floor and smoothed over with a suitable type of comb or rake similar to the type used with Asphaltic floor tiles. A layer of mastic, about 1/16" thick, remains on the floor. The material coats in about 20 minutes to a glossy surface.

2. EASY AND FAST FLOOR LAYING.

PERMABOND's glossy finish enables the layer to slide a floor block across the surface easily and place in the desired position. Within a few moments the wood block begins to adhere to the mastic. In the hands of a specialist 150 to 250 square yards can be laid depending on the size of the particular floor surface.

3. ECONOMY IN LABOUR AND MATERIAL.

PERMABOND, in addition to effecting saving in floor layers' time, saves time in sanding and also in the quantity of coarse sandpaper used. The even laying of PERMABOND allows for a more level top floor surface and therefore the first or rough sandpapering is completed quickly and with the use of less sandpaper.

4. PERMABOND RETAINS ITS MASTICITY.

The action of PERMABOND is continuous. IT DOES NOT BECOME BRITTLE. PERMABOND consistently spreads and adheres to the underside

of the block until the whole surface securely adheres to the floor. PERMABOND WILL RE-BOND ITSELF if for any reason the original bond is broken. Therefore, if a block becomes loose it will itself adhere to the mastic without further attention unless some foreign substance, e.g. dust, is interposed between the block and the mastic. No damage is done if there is traffic across the floors shortly after laying, in fact this assists adhesion of the blocks to the floor.

EVERITE'S 10th BIRTHDAY CELEBRATIONS

A huge birthday party and celebration was recently held for a 'Ten year old' who is becoming well known in many circles for rapid development.

To celebrate the fact that 'EVERITE' in South Africa has now reached its tenth birthday EVERITE (PTY.) LIMITED, Kliprivier, Transvaal manufacturers of Asbestos-Cement products, incorporated as a Company on the 22nd April 1941, staged a birthday party extending over three days.

The party was held at the Kliprivier factory 18 miles from Johannesburg. Friends associated with development of the Company, principals of Companies, Architects, Engineers, Builders, Quantity Surveyors and members of many other professions, were invited and hundreds attended.

On the 25th of April the afternoon was devoted to the EVERITE Staff party at which Awards for long service were made after an address by the Company Chairman, Mr. E. J. Schmidheiny. A reply to this address was made by Mr. S. D. Metz, Divisional Inspector of Labour, Johannesburg.

Only one Award for 10 years' service was made. This was to Mr. H. R. Bencke, General Manager and first employee of EVERITE (PTY.) LTD. Other Awards were made — twenty-five of which were for 5 years' service with the Company. Among the apprentices in many trades at EVERITE seven received Awards of tools or technical books for having reached standards of efficiency set by the Company.

The growth of EVERITE (PTY.) LIMITED in ten years has been such that today the Company is the largest enterprise of its kind in Southern Africa.

Happy crowds of visitors were taken on a tour of the factory and shown a full colour documentary film on the mining of asbestos, manufacture of cement and some of the many applications of the adaptable and versatile EVERITE material.

Special invitations were issued, booklets on a 'Visit to EVERITE' were also prepared and issued by the Company and given to the visitors to mark the occasion.

Travel the length and breadth of Southern Africa and one cannot miss the clean grey colour of EVERITE products. From the most humble structure, a lean-to shed or shelter, to the largest of the Union's enterprises, Power Stations, Engineering Workshops, and manufacturing plants, EVERITE products play a part. The wide range of EVERITE products, each an example of simple design and practical foresight based on years of research, offer freedom of design, savings in the structural work and erection time, giving a lifetime of permanent service without maintenance. No other enterprise has taken the development of Southern Africa further than "TEN YEARS OF EVERITE."

Part of the crowd of workers and friends gathered at EVERITE (PTY.) LTD. Social Club.

Photograph: Industrial Photography.



CORRESPONDENCE

The Editor,
S.A. Architectural Record,

Dear Sir,

I have always been puzzled to note the lack of critical comment, both readers' and editorial, in your professional journal and would like to suggest that something of this kind might stimulate interest and discussion.

Purely as an example chosen at random, take the Residence Buch reported in your February issue: you state that "The tortuous T-shaped passage was unavoidable," as direct access was required from Bedroom No. 1 to study, bathroom and closet. Now, retaining the same total square footage, push Bedroom 1 in 3 ft. and push Bedroom 2 out 3 ft., as shown on the enclosed alternative plan.

Pro: Simpler plumbing;
Cupboards no longer excessively deep;
Study is 5 or 6 square feet larger;
Bedroom 1 is over 30 square feet larger;
No "tortuous T-shaped passage."

Con: Bathroom smaller, but still big enough for most normal activities. There is probably more in this than meets the outsider's casual eye: I think your readers might be as interested as myself to hear the whole story from the architects concerned.

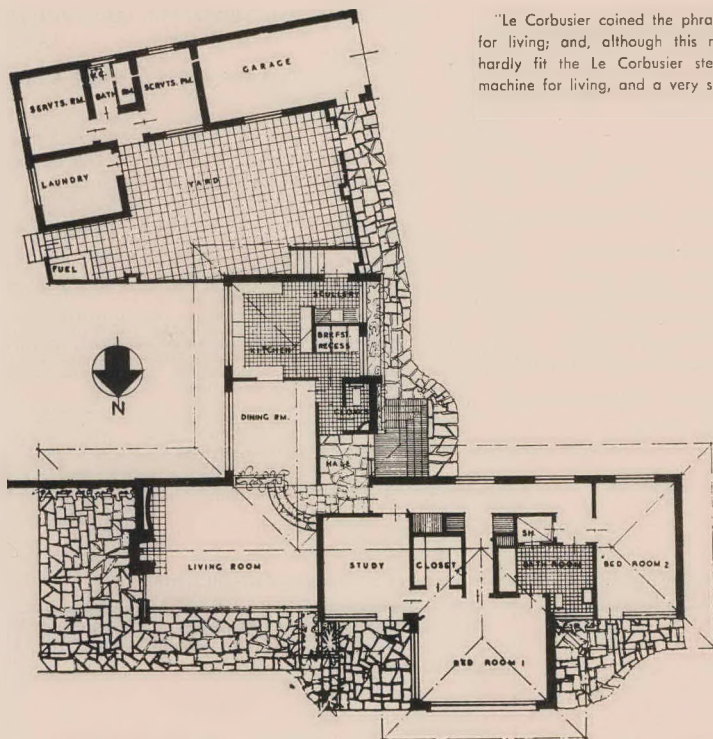
Yours faithfully,

K.H. GARDNER, B.Arch., A.R.I.B.A., M.I.A.

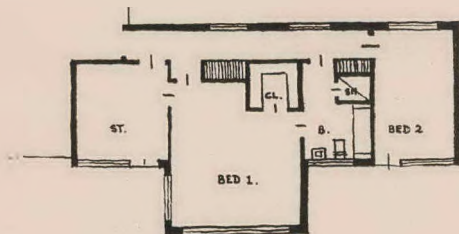
P.S.—The opening paragraph of the article on the same house might pass muster in, say, a woman's weekly, but in a professional journal—Please!

The description relating to Residence Buch was written by the author of the design and not by the Editorial Staff. — Editor.

"Le Corbusier coined the phrase that a house is a machine for living; and, although this residence in Oakland would hardly fit the Le Corbusier stereotype, it is nevertheless a machine for living, and a very sound one at that."



EXISTING PLAN



READERS' ALTERNATIVE

NOTES AND NEWS

TRANSVAAL PROVINCIAL INSTITUTE

New Registrations:

Salaried: I. B. Sive, A. R. Lipman, J. Boyd, L. Roodt, J. D. McCallum.

Practising: P. Nussbaum, A. Drewes, N. L. Heiman, S. Victor.

Transfers from one class of membership to another:

From Salaried to Absentee Salaried: Miss F. Schnitke.

From Salaried to Practising: C. A. Stoloff, W. T. Greening.

From Absentee Salaried to Salaried: N. F. Duncan.

From Practising to Absentee Practising: E. B. Youldon.

From Practising to Salaried: A. E. Gerhardt, J. C. van Wijk.

Transfers from this Institute, to another Provincial Institute:

To Cape Provincial Institute: R. C. Jefferson.

Deceased:

D. A. F. Smuts, W. Leers and S. C. Dowsett.

PROVINCIAL WORK

LIST OF ACCEPTED TENDERS FOR PROVINCIAL SERVICES FOR QUARTER ENDING 30th JUNE, 1951.

| No. | SERVICE | ARCHITECTS | QUANTITY SURVEYORS | CONTRACTORS | AMOUNT |
|-----|--|--|--|--|---------------|
| 1. | Erection of Second High School Vereeniging. | 1) Mr. E. Todd 2) Mr. R. Robb 3) Mr. C. van Berg | Messrs. J. W. Cowling & Son | Messrs. van Heerden & Johnson | £56,948 0 0 |
| 2. | Sandringham Primary School: Erection. | Messrs. A. Fair & Partners | Mr. L. V. Vivian | Messrs. K. H. Schutte & Co., (Pty.) Ltd. | £35,417 0 0 |
| 3. | Amsterdam Primary School: Erection of New Hostel. | Mr. W. Mussman | Messrs. Hickman, Bjorkman & Hope-Jones | Messrs. R. Kirkpatrick & Son | £61,636 0 0 |
| 4. | Erection of new Emmarentia School. | 1) Mr. J. M. Shunn 2) Messrs. Liknaitzky & Kaplan | Messrs. Sinclair, Boyer & Close | Mr. B. D. Bouwer | £35,531 14 7 |
| 5. | Highlands North High School: Additions. | 1) Messrs. Harris & Fels 2) Mr. G. Condiates | Mr. L. J. Millard | Messrs. Protea Construction (Pty.) Ltd. | £35,950 0 0 |
| 6. | Erection of Sunnyridge School. | 1) Mr. B. Boal 2) Mr. H. E. Bock | Mr. S. D. van der Merwe | Mr. B. D. Bouwer | £26,488 11 11 |
| 7. | Erection of Robertsham School. | Departmental | Departmental | Mr. L. Westly | £32,750 0 0 |
| 8. | Lydenburg High School: Hostel Additions and Alterations. | Mr. P. Nel | Messrs. Hodge & Beveridge | Messrs. Balbyl & Schep (Pty.) Ltd. | £49,900 0 0 |
| 9. | Komallpoort: New School | Mr. S. A. G. Ellis | Departmental | Messrs. Bouvenotte (Pty.) Ltd. | £20,074 0 0 |

CHAPTER OF S.A. QUANTITY SURVEYORS

New Registrations:

E. J. Watson, C. S. Bender, G. A. Clayton, R. Burns, P. A. Dore, A. R. Hunt, N. G. Mossop.

Partnerships:

Mr. W. A. Wickens has joined the partnership of J. W. Cowling and Son, now known as Cowling & Wickens.

JOURNAL

"EDILIZIA MODERNA" No. 46

No. 46 of the periodical "Edilizia Moderna", dedicated to several recent Italian achievements, has been published.

From the new Termini Railway Station in Rome to the Experimental Quarters of the Milan Triennial Exhibition (GT8), from the head offices of the F.A.O. to an ample and detailed documentation of the Piano INA-Casa, the periodical offers a view which proves the vitality of the country and the aims that have been reached, together with the remarkable intervention, of the State, in the field of reconstruction.

The latter aspect has been particularly stressed by the Minister of Labour, On. Maraszo, who in his introductory article has reviewed the various State enterprises, intended to solve the housing problem and the problem of unemployment, closely connected with the farmer, analyzing the comforting results.

The articles, signed by well-known professional men, are equipped with a vast photographic documentation in black and in colours.

PUBLICATIONS OF THE NATIONAL BUILDING RESEARCH INSTITUTE

Attention is drawn to research publications of an engineering character which are being issued by the National Building Research Institute, Pretoria. These reports fall into three groups, namely, "Information Sheets," which are primarily to serve the practising builder, "Bulletins," which contain fuller articles of greatest use to the practising engineer and architect, and finally "Research Reports," which are much more detailed in character and are generally of most use to the specialist.

Sixteen such "Information Sheets" have already been published and these give information in the form of questions and answers. A typical example is Question No. 19, reading: "For what purpose may solar energy be utilised in South Africa?" A brief answer is given and readers are invited to solicit further information.

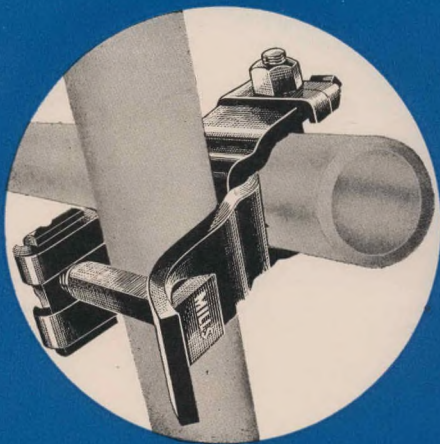
Five Bulletins have been issued at approximately six-monthly intervals and a typical article appearing in Bulletin No. 2 is entitled "The Use of Soil Cement Bricks as a Building Material." These articles are usually very much condensed and it is suggested that specialists write in for further details if these are required.

The "Research Reports," of which six have already been published, deal with subjects such as "Termites, Wood-Borers and Fungi in Buildings" and "Periodic Heat Flow Through Building Components." These are full reports of completed researches.

In addition to the above, roneoed reports with a more restricted circulation are also produced. Reprints of papers submitted by the Institute's officers to the Technical press are also available. Further information on these publications may be obtained by application to the Director of the Building Research Institute, P.O. Box 395, Pretoria.

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SALISBURY: Auckland & Paisley Roads, Industrial Estates, Phone 22904. BULAWAYO: 201 Glynn Buildings

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