

# SOUTH AFRICAN ARCHITECTURAL RECORD

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

611, KELVIN HOUSE, 75, MARSHALL STREET, JOHANNESBURG.  
PHONE 34-2921 VOLUME TWENTY EIGHT. NUMBER TWO

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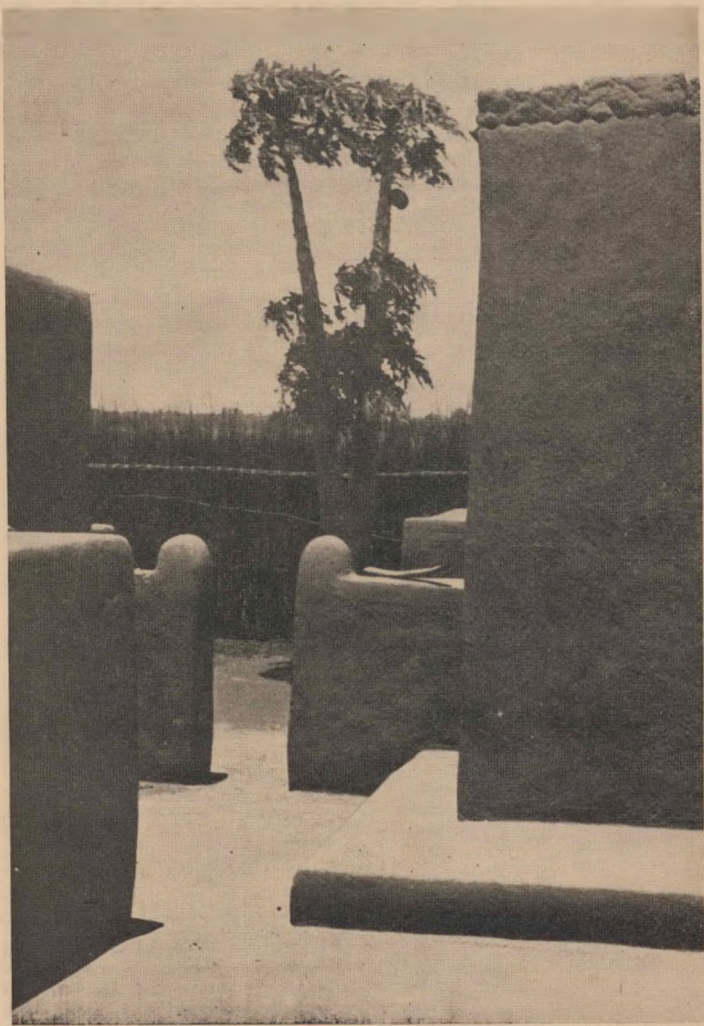
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THE COURTYARD

# THE PROBLEM OF THE LOCATION

## A REPORT ON HOUSING CONDITIONS IN TEN TRANSVAAL LOCATIONS

By Betty Spence, B.Arch.

### INTRODUCTION.

It is only since the Industrial Revolution that attention has been paid to any form of "housing" or "living conditions." This great social change in one fell swoop created conditions for the factory hand which far transgressed the worst ever before recorded and, at the same time, gave scientific knowledge which would solve all housing problems. Unfortunately the appalling conditions were very easily created but nearly a century's hard agitation from individual social reformers and charitable organizations was necessary before scientific knowledge was brought to bear on the problem. The first results were in the form of alleviation rather than cure. The installation of a bath into an existing tenement rather than the building of a new house. Indeed, it was not till after the last war, when the extreme housing shortage due to four years of inactivity forced the governments of most countries to take responsibility that a more progressive policy was formed. Particularly during the 1920's a mushroom growth of housing schemes appeared throughout Europe. The first attempts produced nothing but a monotony of twelve to the acre houses, with, no doubt, a bath and other requirements considered necessary for decency but with little to recommend them otherwise. Complaints against them were many. A family would skimp and save to move into the longed for house only to find that on arrival rent was so high that the already meagre diet had to be still further reduced and that distances of travel were often so great that anything up to three or four hours a day would be spent in going to and from the place of work. The house work, too, for a self-contained house and small garden is twice as exacting as for a flat. Since these first experiments carried out on Ebenezer Howard's plan of a garden suburb great strides have been taken. A large housing scheme has ceased to be just a mass of houses or stark tenement blocks standing on an otherwise unwanted site and has become in fact, a small self contained town depending only for major requirements on its mother town. Within its limits are facilities for a full and healthy life—recreation areas, amusement parks, shops, cinemas, schools, library, hall, church and other such necessities as laundry, incinerator, power station. The place of work is close at hand. The large neighbouring town lends a richness to what would otherwise be a village life.

From the thrill of great things achieved in Europe we turn idealistically to wondering what can be done in this country. A new country in which there is only to build up and nothing to break down. For the Natives, those who would benefit most from an organised housing policy, the advantages are obviously vast. Not only would they gain the health and happiness given by congenial surroundings but for them, the degeneration of the slum stage of industrial development would be by-passed. By making the community life of the housing scheme a living, conscious thing it might also be possible to prevent the spreading of the individualistic selfishness of our civilization. It seems a pity that the very excellent trait of moral responsibility inculcated by the community life of the *kraal* should be allowed to disappear so easily into the creed of each for himself and devil take the hindmost. There is no doubt that the impact of our civilization is shattering the original form of Native life and, unless some acceptable substitute is provided, there is no foretelling the consequences. The present indecision between the policy of complete segregation and the compromise necessary for industrial development has the disastrous effect of presenting the location in a temporary rather than permanent capacity—a state of affairs which does nothing to stabilise the already uprooted Native population.

That present Native living conditions are appalling no one in their senses will deny. In the Reserves the people live a healthy outdoor life which minimises the effects of bad housing, but the average location natives, both men and women, spend their day under the roof of some European employer. Sooner or later the indoor life, combined with malnutrition will inevitably cause ill health. Their complete ignorance of matters of health and hygiene combined with their incapacity to spend a penny on the construction of their houses greatly hinders progress. The resulting hovels constructed almost entirely from materials costing nothing are often more like rabbit warrens than human habitations.

Already housing schemes in this country have been undertaken but as yet they are very immature attempts—rather the collection of houses found unsatisfactory in early European experiments. The problem is by no means an easy one to solve. The fully equipped European house or flat block is not only too expensive to be practical but also too sophisticated for the Native mind in general at its present stage of

development. On the other hand to build down to (what one imagines to be) the native intelligence is the way to produce future slums. Owing to the wide difference between our two cultures it is almost impossible for the European to understand the Native outlook and therefore equally impossible for him to build houses for the Native people to live in. So far those which have been built have not been very popular. The Native is aware that they comprise only the very minimum demanded by decency, he senses that they are given rather as a charity than as a necessity of life to which he has a right. Thus springs up the farcical state of affairs that the same Native who complains bitterly of a municipal house will construct for himself some equally bad "suburban" monstrosity or one-roomed hovel and regard it with overwhelming pride.

Admitting, then, that whatever solution is finally reached it must be a compromise between our two cultures I set out to learn as much as I could of the Native living conditions in the existing locations and to get some idea of the origins from which they spring. I purposely avoided the larger towns where some form of municipal relief is usually in progress and concentrated only on small town locations where conditions are primitive and the Local Authority has funds too small for adequate attention.

On practical grounds it was found necessary to confine the field of research to one province, the Transvaal. As a limit of size I chose only such towns as have a European population of less than 5,000. Of these there are 78 if such towns as Hercules which are very close to industrial centres are excluded. At first it was intended to study as many of the 78 as possible, but as the work progressed it became apparent that conditions in all towns were much the same and that the best results would be gained by a more intensive study of a few. The work was thus limited to the following ten:

|                |             |
|----------------|-------------|
| Machadodorp    | Warmbaths   |
| Middelburg     | Meyerton    |
| Nylstroom      | Vereeniging |
| Potgietersrust | Witbank     |
| Standerton     | Pietersburg |

In the following report I have set down my findings.

In conclusion I have put forward some suggestions for improvement. I must, however, make it clear that these are only making the best of a very bad job. Given the fact that the Native cannot spend more than a few pounds on the construction of his house the two sketches shown are the best solutions that I can suggest. This does not alter the fact that a mud hut is to-day an unsuitable abode for any human being.

## THE DEVELOPMENT OF THE LOCATION

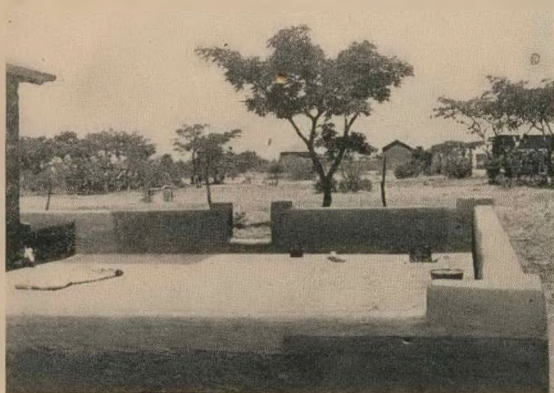
It was through force of circumstances and with much reluctance that the Europeans set aside land for their urban Native employees. It was fondly imagined that the Natives

permanent and irrevocable home was in the Reserve, from where he came to work, to return after a period of months. This laissez faire attitude continued till a plague epidemic in Johannesburg caused investigations which proved that the women were following the men, that permanent families were living in the towns, and, what was worse, living amongst the Europeans, in sheds, in back yards, or in any available corner.

Thus the first location on record in Johannesburg, Klipspruit, now called Pimville, was laid out in 1904. For some time after this nothing concrete was done but a series of reports were drawn up showing the increasingly bad conditions until in 1920 an act was passed establishing the Housing Board and enabling local authorities to borrow money for the construction of dwellings. No subsidies were introduced as this was considered to be "subsidising the employers" who should in fact give high enough wages to enable their employees to pay an economic rent. With regard to Natives this Act had very little effect and in 1923 it was found necessary to pass another making it compulsory for an authority to provide housing of some sort for Natives employed within its area. From this date the majority of Native locations as we know them to-day were formed—that is to say the local authority provided the Natives with an area of land divided into plots, supplied the minimum of amenities and left the Natives to do the rest.

It was not till 1930 that sub-economic housing was introduced and then with the express exclusion of native locations. This, however, was amended in 1934, and many municipally constructed dwellings have since appeared in the locations. It is the intention of the Government to provide municipal housing throughout the country, but progress is inevitably slow and war-time conditions are in no way beneficial. Thus if the present policy of municipal construction is to be rigidly followed as the only solution to the native housing problem it will be many years before the end is in sight. As an example of the conditions to-day I give figures for the 78 towns within the range of this report:

The total Native population in 1936 amounted to 110,600. On December 31st, 1940, according to the Housing Board Report for that year, 890 municipal dwellings had been constructed under both economic and sub-economic schemes. Of these 843 were houses, 19 hostels and 47 single rooms. The hostels, housing say an average of 50 people, take 950, the single rooms say 150 in all—1,100 are housed in hostels and rooms together. If the average number of persons per house is taken at 6 the total housed by municipalities amounts to 6,158. This leave 104,422 Natives, that is well over 90 per cent. still living in the primitive buildings they have themselves put up. This is without considering the increase of population in the four years between 1936-1940. Although one may admit (which I do not) that the present type of municipally erected housing is the ideal solution to the problem it seems short sighted in the extreme not to provide temporary amelioration of some sort.



Above: In spite of living in a completely "suburban" type of house, the owner has constructed this enclosure at the back.



Right: The charm of Native architecture which should not be lost in any solution to the problem.

## ADMINISTRATION

A location is managed almost entirely by the superintendent. The local authority is expected to take an interest, but in practice it is the superintendent, who in the small towns is more often than not also town clerk or ranger, who is in sole charge. It is his duty to keep a register of inhabitants, issue site and lodging permits, interview prospective inhabitants, regulate visitors, collect rents, keep a register of stock, prohibit the holding of entertainments which he thinks unfit, supervise building operations, approve building materials and an infinity of other duties not the least of which is the preparation of a three monthly report to the local authority on the health and management of the location. In almost every paragraph of any list of location regulations is reference to the instructions or approval of the superintendent or the committee (which is represented by the superintendent). Thus within these wide limitations his word is law. To fulfil such responsibilities fairly and thoroughly he must be able to assess the character of each Native, to guess what is not said: he must have at his finger tips knowledge of the status and family of each individual. This type of work takes much skill and care and it is obvious that even if the quantity of the superintendent's duties does not completely eliminate any possibility of attention to individual cases, it should be the job of a highly trained psychologist. In such circumstances it is nothing short of a scandal that no special qualifications are required for the post, no administrative capacity or special understanding of the Native problem, and that the salary offered is in the vicinity of £20 per month.

To assist the superintendent is a group of Natives, the Advisory Board, partly elected by the people, partly appointed by the local authority—that is, of course, by the superintendent himself. In many cases the Advisory Board members are elected or chosen, from each block of houses. Each is then in charge of his individual block. As a rule they are clergymen, teachers and a few of the more wealthy householders—the most responsible members of the community. The Board has no official powers but acts as the mouth piece of the population. The superintendent may take its recommendations or not according to his discretion.

In every town the European and Native accounts must be kept separate. By this method it is intended to make each location run on its own resources and to prevent any misuse of Native funds. An effort is made to maintain upkeep of roads and other services, to pay the salaries of location police, etc., out of the money collected in rents. This is almost an impossibility and, unless the revenue can be supplemented in any way, it must be subsidised by town monies. The beer hall has been found a most successful method of drawing money from Natives apparently already upon the threshold of starvation.

The "rent" so called is not as we understand it but includes rates for the use of the public water supply, sanitary services, etc., and a fee for medical services where they exist. Generally an extra charge of about 1/6 a month is made for service to private sanitary conveniences. Grazing on the surrounding town lands is sometimes free or a small



A cooking space in the corner of a court yard.

monthly fee per head may be charged. Often there is an additional penny or so for compulsory dipping. Out of this money laboriously collected and paid into the Native Revenue Account a lump sum must be paid to the local authority for water, light (if any), sanitary service and sometimes the salaries of doctor and midwives. So it will be seen that after maintenance there is little over for improvement.

The site of the location and other particulars must be submitted to the Native Affairs Department for approval. It is hoped in this way to prevent the rather natural but deplorable tendency to set aside the most useless area of town lands for the location. There are no minimum requirements which must be satisfied but vague provisos are laid down to the effect that the water supply must be adequate and that sewerage facilities shall be considered. The responsibility falls upon inspectors appointed by Native Affairs to supervise this work. The physical conception of a location is based on our suburb. It is laid out on the same rigid grid iron plan with blocks two sites deep so that, if one row of houses face North the other must necessarily face South.

Outside the Reserves the Native is not allowed to own the land on which he builds his house. This gives the local authority, the landlord, a very strong hand. Any Native may, for instance, be turned off his land if he is unable to pay his rent, or if it is thought he is in any way a disruptive influence upon his fellows. It is true that this very seldom happens but the knowledge that it can does not create a feeling of security. There are other obvious disadvantages such as the difficulty of transference. It is not very easy to remove a house once built, which means that it must be sold to the newcomer who may very well want to build his own house at a cheaper rate. The legal position is apparently causing trouble. Lastly, the Natives feel very sorely that the European is insulting them by refusing them the ownership of this necessity of life.

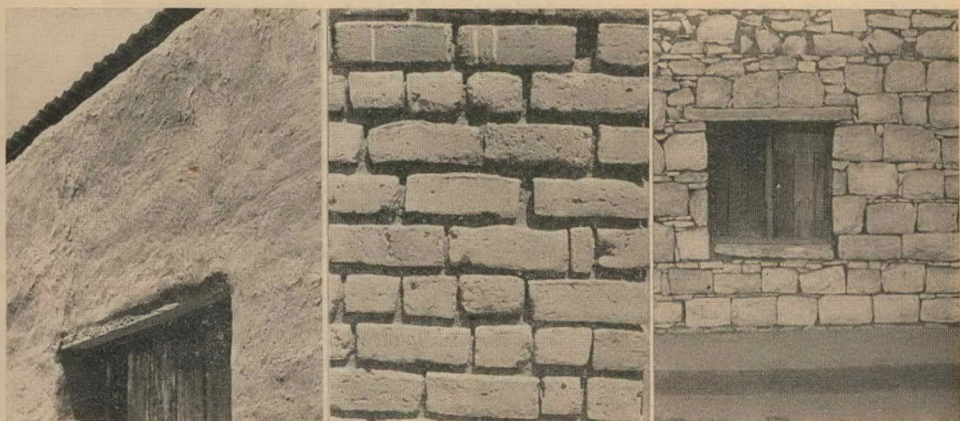
All the same there is much to be said for the other side of the question. In certain areas—of which Alexandra, outside Johannesburg, and New Pietersburg, outside Pietersburg, are examples—Natives may own land.

Here there is a very noticeable tendency for the rich Natives to exploit their poor compatriots. A man will buy a bit of land, erect on it some deplorable shacks and let them at exorbitant rates to those not fortunate enough to have money to buy.

## NATIVE BUILDING PLANS, CONSTRUCTION AND METHODS

The arrangement of a Native site is a very arbitrary affair. Apart from the fact that the closet must be situated on the back fence for clearing purposes there is nothing to unify the planning of each plot. (In certain locations where there are no sanitary lanes the latrines must be placed on the front fence but this was not the case in any of the examples studied.) Occasionally such stipulations as a minimum distance from boundaries are made but this does little in assisting uniformity. As a rule the house is situated roughly in the middle of the site with irregular planting of crops, fruit trees and sometimes flowers about it, mostly to the back. Occasionally stock kraals and chicken coops are indiscriminately included in the layout.

With regard to the house plan it must be remembered that the ideal which all natives wish to attain is the one we set for them—in other words the suburban house. The extent to which they are able to fulfil their desire is of necessity dependent upon the money which each individual can spend on materials and labour but in every location the influence of the European house has left a strong mark. (This is probably as often due to the direct influence of town engineers and location superintendents as to the desires of the builder himself.) Most conspicuous is the complete absence of the traditional circular hut. A house may well be a cluster of separate buildings but they will be square buildings. Even this type has given place almost entirely to the single building type. This is not necessarily an advantage for native people ignore all laws of cross ventilation with the bliss of the ignorant. I discovered innumerable rooms, well buried, with only one minute window, as often as not facing onto a covered verandah. In some cases there were no windows at all—only doors. This sort of thing is not so likely to happen where there are four walls in which windows can be placed. Bad ventilation is one of the worst evils of the native house. Windows are made small because of the expense of glass and because of the difficulty of making large openings in mud walls. For example a Middelburg kitchen of 12 feet by 12 feet had a 1 foot 3 inches by 2 feet window (that is just over 1 per cent of floor area as against our stipulated minimum of 10 per cent.).



1. A typical detail of mud plaster. Leaks result from the inadequate eaves.
2. Detail of brickwork built into house at Potgietersrust.
3. A detail of stone-work set in mud mortar in a house at Vereeniging.

But to return to the plan. This usually starts as a row of two or three rooms with kitchen at the back. Later on one or two rooms will be added next to the kitchen making a complete mass. Then a verandah is often built in the front so that the house is virtually three rows deep. There may be a mud plastered native yard at the back with perhaps a store built off it—or lodgers' rooms. The plan will become more elaborate as the owner becomes more wealthy until it is like any suburban house including such items as passages, larders, etc., with, of course, the one exception of the bathroom as water is not laid on. Quite a lot of houses have a Europeanised sitting room, passage and bedroom in the front but trail away to nativeness at the back. Analysed, the front area is of plastered brickwork, a pitched roof with a ceiling, a linoleum covered floor; the back has a lean-to roof, mud plastered, uneven walls, a floor a foot or so lower than the other, often below ground level.

The living rooms and kitchen are, on the whole, larger than the normal 12 feet by 12 feet of municipal housing schemes. The bedrooms on the other hand tend to be small, often about 7 feet by 12 feet. Unfortunately the average number of people sleeping in each is from three to four. The most unsatisfactory dimension throughout, however, is the height of the roof. Only an average of about 7 feet is reached and, as ceilings are very few and far between, the rooms are hot. A further disadvantage arising from the stinting of wall height is the lowness of the floors. It is remarkable how often one must step down six inches into a native house. When I asked the reason for this I was told that it was economy in construction—if one digs six inches into the ground six inches can be left off the surrounding walls. Whatever the cause,

it leads to most elaborate methods of drainage and cannot fail to encourage damp.

As regards building materials they are of the simplest. Foundations, as a rule, are non-existent but, if stone is available, a plinth may be built up of this. The walls are most frequently of Kimberley Bricks or mud blocks. Wattle and daub is found in some places but this is not very general—also a few examples of pize de terre. This method, used extensively and most successfully in early European farm houses, has been introduced by missionaries. Unfortunately the difficulty of obtaining suitable wood shuttering and the slipshodness of unsupervised native labour combine to make the results unsatisfactory. Stone is, of course, used where it is available.

The roofs are of thatch or corrugated iron. Thatch, the traditional material, is found in the country locations where it can be gathered from surrounding fields though, often enough, it must be bought from farmers. The shape of such a roof is, of course, a pitch, often gable ended. Sometimes a thatched steep at a lesser pitch spreads in front as a lean-to. Corrugated iron, the material imported by civilization, has to a large extent supplanted thatch, especially in the big locations where thatch is prohibited for reasons of fire. Corrugated iron is employed in all manner of ways. In the first place it may be at a slight lean-to, held on, very probably, by stones or sods of earth; or it may be pitched and gable ended as with thatch. The most popular roof is a combination of both lean-to and pitch, the central part pitched while the front steep and back kitchen are under a lean-to. There are occasional suburban houses with completely pitched roof, guttering, etc.

The inside of the house is scantily finished. The floors are

of mud and daga of the same mixture as the wall plaster. Scraps of lino sometimes form a heterogeneous carpet. The walls after their coating of mud plaster may be painted with some local clay. These clays are of delightful colours, clear and fresh, quite as effective as our colour washes. A ceiling is a rare luxury.

Doors and windows are either bought second hand or more frequently knocked together from bits of fire wood. Glass windows are still very rare. The main difficulty, apart from the expense, is their fragility. They appear to be such a delightful target for the stones of children. Thus those existing are made to open inward to give some protection. Generally, however, glass is not used and the window hole is filled with a wooden shutter also opening inward. There is a second reason for this. Window stays are an unnecessary expenditure and their absence is less inconvenient if the window opens into the house where it is out of the wind and where it can be easily propped against something inside the room.

The disadvantages of the Native construction are ants, damp, dirt and heat. Nothing can be found to prevent white ants from exploring mud walls and eventually reaching the roof which, if thatch, they will soon destroy. They shorten the life of walls and roof by half. Damp enters through the mud walls or the nail holes in second hand corrugated iron or, more directly, over the eills of doors into the well of the floor. Most elaborate Heath Robinson methods of drainage are invented to counteract this flow, but the obvious one of raising the floor does not seem to be considered. Dirt and germs accumulate in the irregularities of walls and floor which tend to decompose if thoroughly wiped down. As for heat, this is due partly to bad ventilation but mostly to the extreme lowness of the tin roofs.

The advantages of Native construction, if you can call them that, are purely comparative. In the first place the more native is the method used (i.e., thatch, mud, etc.), the cheaper is the house—a most important item in the light of the native wage. Secondly, thatch and mud walls can be repaired by the owner himself, while the more sophisticated materials require the attention of skilled labour.

The method of building Native houses varies between the agricultural and industrial locations. In the smaller locations the work is usually done by the owner himself with the assistance of his family and friends. The men erect the structural part of walls and roof while the women plaster and paint the interior. In the industrial towns native labour is often hired either to build the whole house or to help. The builder will undertake the construction of the house for a round sum while materials are supplied by the owner. Even where employed labour is used the family still lend a hand, the women particularly doing the interior finishing. These native builders are not trained workmen as the Unions will not allow them to become skilled tradesmen, but they have picked up their trade from working on European jobs or possibly from industrial school instruction. Their work is not good but it is better than that of the house-holder himself.

No description of Native houses can be complete without mention of the furnishing, which is similar to that of a lower middle-class English home of forty years ago—that is to say the living room is. The bedrooms being less important must frequently do with only one bed and no other furniture. I do not think I entered one house that had not tables, chairs and dresser in the living room. In my ignorance I was surprised that the town Native had progressed so far from the kraal. The sitting rooms are remarkably neat and tidy, obviously kept only for entertaining purposes. The kitchen is the real living room. This, unfortunately, is liable to be dirty and untidy, pervaded with smells of food and sweat. Bedrooms—well, much the same. Often very dark with shut windows at late hours of the morning and with bedding of no clean appearance lying all over the floor. There is a horrible dislike of fresh air which keeps the few existing windows shut and revolts my healthy British soul. There are none of our amenities. Light is given by lamps or candles, cooking is done on a coal stove or a brazier either in the kitchen or in the back yard, a little water to supplement the municipal supply is sometimes collected from a tin roof.

Here I should like to make special mention of Potgietersrust where the high standard of Native houses was immediately apparent. The windows were large, the height from floor to roof 8 feet 6 inches at least. The walls, of burnt brick, square and regular, and joy of joys, a concrete plinth with a floor of earth filled up to the same level. For the first time in my travels, too, except perhaps in Pietersburg, damp proof courses were in evidence. Many of the houses were not finished, lacking doors or windows, and almost all were unplastered. These would be added as the money was earned. I enquired costs—a local native builder charged £10 for the labour to construct a two-roomed house, £20 for a three-roomed house. Bricks were £1 5s. a thousand from nearby native brickfields. It was, unfortunately, Sunday so my usual source of information, the superintendent, was unavailable. My Native guide said that a European told them how to build their houses. He did not know who it was but it was not the superintendent. Afterwards I wrote and asked and received the following answer:—

"The Council's Town Engineer directs building operations in the location, that is, the native builds according to plan and ventilation plus room space is watched per person in terms of the Council's Health Regulations," and

"The natives are given a free permit to make bricks for their own use on the location boundary."

Here, then, is the reason—a conscientious town engineer and a not-too-expensive building material. It is true that the results are not very beautiful, far less picturesque than the irregularities of thatch and wattle-and-daub, but in place of this is a house kept fresh with light and air, free of ants, easy to clean and comparatively cool; one in which a civilized European could live a healthy life. The important point is that such good results can be obtained merely by supervision. Is it so neces-

## TYPES OF NATIVE HOUSES



The mud plastered house with thatched roof. In this example the kitchen is in the separate building. Note the canopy over the unglazed window.



A mud plastered house with lean-to room roof at Standerton location. This house has glazed windows in front but the one next door has its wooden shutters.



Lodging rooms at Vereeniging Location built in stone, quite a pleasing effect, but in an overcrowded yard.

An example of Native brick construction, illustrating too, the favourite form of gate.



sary for the authorities to spend vast sums on European constructed housing schemes which will take many years to supply the demand when natives themselves can produce liveable houses with so much less trouble all round?

## THE AGRICULTURAL LOCATION

Every dorp, however small, provided that it boasts a governing body, even Health Committee or Village Council, has a location tucked away off the beaten track a mile or so from the European houses. It is nothing but a cluster of a few hundred hovels, Broddingnagian ant heaps thrown up from the earth's surface. On closer inspection their arrangement is seen to approximate roughly to a gridiron layout, house sites back to back, occasionally separated by a sanitary lane. Houses here are of the home made type, regular rabbit warrens of mud and thatch with second-hand windows and doors visibly ashamed of the depths to which they have sunk. Conspicuous by its better construction and solidier appearance is the location office, most frequently standing on the approach road. A few other buildings, the school, a church or so, stand out as above the average—the rest fall away into obscurity. Scattered undecidely in the environs are grazing lands, stock camps, playing fields, public lavatories, rubbish heaps, stone quarries, brick stacks.

This type of location attached to the small, non-industrialized, agricultural centres, is far the most common. Its inhabitants are employed in the town. The demand for labour is small, change is slow, the result is a pleasantly leisurely population. Wages are very poor, about 30/- monthly, but most of the Natives are under the individual employ of a householder who will give them a meal a day and occasional bunches of old clothes. In addition, too, the location is not pressed for space and the larger sites 75 by 75 feet or 100 by 100 feet allow room for a mealie patch and vegetable garden to supplement the diet. The matter of stock, is, for the same reason, more easily solved. Unfortunately all Natives do not take advantage of these possibilities.

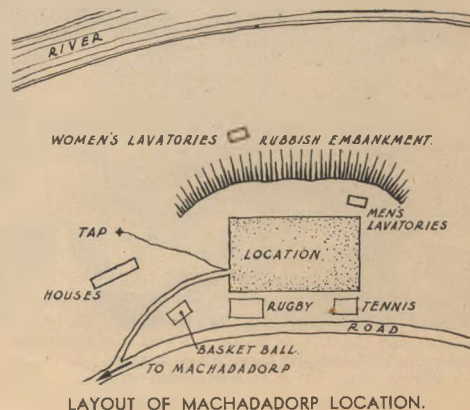
Against the advantages of an as yet leisurely, comparatively contented if ignorant existence must be set the evils which arise from water shortage, bad sewerage systems, lack of provision for rubbish disposal. Water is often enough provided in only one tap, sanitation is public and the provision for rubbish is that it shall be deposited in a place indicated by the superintendent. Electric light is, of course, out of the question. These conditions can only lead to uncleanness and ill-health. To take only one example: Machadadorp Location situated on a slope a mile from the town has a population of 350 odd. Its water supply consists of but one tap placed some hundred feet outside the location and of this flow is acknowledged to be weak. To the lower side of the houses is an embankment of rubbish, old tins, shoes, ash, rags, stretching the whole length of the location. This, a result of the regulation that states that "it shall be the duty of the superintendent . . .

to point out from time to time a place or places where rubbish, filth or litter of any kind may be deposited." One block of lavatories is on the top of this, the other below it so that to be reached the rubbish must be crossed.

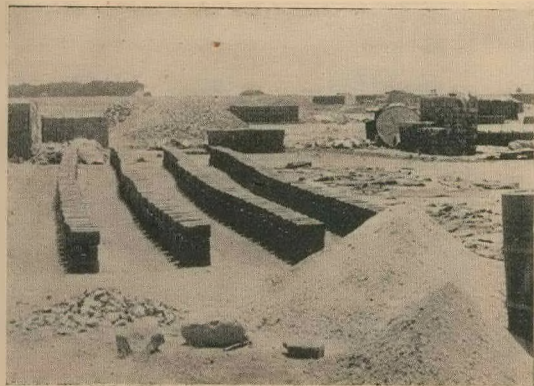
## THE INDUSTRIAL LOCATION

The industrial location, in contrast to the haphazardness of the agricultural location, is an organized, official affair. In the first place its boundaries are in most cases firmly defined by a high wire fence, within which is a closely packed mass of houses. This wire fence might almost be taken as the mark of difference between an agricultural and an industrial location. It indicates a tightening of control which is symbolic of the factory. Apparently there is quite often trouble in these locations, fights and other disturbances, which are easier to prevent if troublesome natives can be kept away. Whatever the reason for their presence they are horrible affairs, often as high as 7 feet. They are of chicken wire or some other closely woven mesh—quite impossible to penetrate. The general effect is unquestionably reminiscent of a place of detention.

Situated at or near the entrance gate in order to exercise control over incomings and outgoings is the location office. Here the full time superintendent spends his day and here the administrative work of the location is done. In one of the locations which we visited I heard a story which rather pleased me. The office had been moved from its previous position a couple of hundred yards within the location to a site by the gate. On enquiry we discovered that this was due to a Native who had been charged with entering without permission. His plea was that he could not find the office and while looking for it he had been arrested. He won the case and the office was moved to its present position.



LAYOUT OF MACHADADORP LOCATION.



The Native brickfields near Meyerton  
Location where burnt bricks are made.



The Kimberley brick, a wood moulded, sun-dried  
clay brick, measuring  $13\frac{1}{2}$  in. x 9 in. x 5 in.

Another item which has its appointed site is the sports area, consisting of a couple of moth-eaten tennis courts and a rugby field. This must be on the outskirts of the location preferably outside the fence, in order to prevent visiting teams of natives from penetrating too deeply. Apart from these two features other units such as churches, schools and shops fit as best they can into the rigid road system. In certain locations there is a central open space, presumably marked park on plan. Sometimes a tennis court has strayed from the outskirts and taken up its position there, but as a rule it is completely desolate and useless.

The houses are fairly well constructed, more European than Native. Thatch is often prohibited for reasons of fire so corrugated iron comes into its own as the only possible roofing material. In comparison with the agricultural location there are more glazed windows and stock doors bought from the second-hand dealer. The factory worker after a long day has no time or energy to set to and build himself a house but his higher wage, £3—£5 monthly, allows him to employ a Native builder as well as to buy better materials.

In the industrial town there is a perpetually increasing demand for labour. The Native, ever anxious to better his position, will migrate to such centres from farm and village and rapidly disappear into factory or mine. The location, originally the casual type described in the last chapter, is ill able to support this colossal influx. First the sites are decreased in size, then the quantity of lodgers increases beyond all control. The problem of lodgers is extremely serious, particularly in the industrial locations. Sometimes they are just single men and women who do not need a house but often whole families unable to afford the considerable expense of building for themselves will crush into one room on another's site. The authorities also are often to blame in not providing

enough land so that even those who may have money to build cannot rent a site. From one source I heard that in Vereeniging as many as thirty families are living on one stand, here 50 feet by 50 feet. It is obvious that in such a location there is little or no space for the growing of crops. Also the other supplement to the diet of natives in the agricultural areas, the perquisites of private servants, are no longer forthcoming. The slightly higher wage must be the compensation. On the other hand the amenities are greatly improved. Water is supplied by frequent stand pipes, rubbish collected regularly either from private bins or public dumps, private sanitation the rule rather than the exception. In Witbank waterborne sewerage has been installed, and in Middelburg preparation is being made for it, though progress is held up by the war. The government intervened on the side of progress in Witbank, refusing to grant a loan for the installation of waterborne sewerage to the European town unless it was also laid on to the location. In many of the industrial locations the streets are lighted and householders can have electricity laid on at an extra cost.

Vereeniging, a perfect example of the evils of this type of location, is now so far out of hand that, in desperation, the authorities are planning a completely new location. According to the 1936 census returns it has a population of 13,414 natives to the 4,718 Europeans in the mother town. To-day there are 6,000 lodgers and, though it is probable that the total population has increased, the lodgers must remain a large proportion of the whole. No further building sites are available, which creates a marvellous opportunity for existing stand holders to profiteer. Rent for one room is 10/- to 15/- against a stand rent of 8/- (30 families at 10/- brings in £15 minus 8/- for rent is £14 12s., quite a nice monthly income). Like many slums it is not unpicturesque in appearance. The closely

packed houses produce architectural combinations unknown in more scattered areas. The majority of houses are constructed of a very pleasing sand stone from the municipal quarry. The stone is free but the cost of working it brings the price of the average four-roomed house to a sum of about £50. The work is done by Native labourers employed by the stand holders. A point of interest is the wide belt of firs which surrounds this location (inside the inevitable fence). It is pleasing in appearance and greatly reduces the usual bareness, but in practice it has been found that it affords excellent shelter for the "skelms" who are so troublesome.

In pleasant contrast is the location of Meyerton. Started privately in 1933 to provide accommodation for natives working at Vereeniging or in the Springfield Collieries, it has the advantages of both types of location. Stands are large, 70 feet by 70 feet, and there is ample space for expansion. On the other hand the municipal services are the best seen anywhere. Private sanitation now laid on to over 100 houses, is provided free on the erection of a concrete floored cubicle. Rubbish is collected regularly from individual bins, stand pipes are comparatively numerous and the streets are lighted. These improvements have all taken place since 1937, when the location was taken over by the town. It is also intended to rebuild the original public lavatories as wash houses and bathrooms which seems an excellent idea. At the moment household washing must be done in the neighbouring river (incidentally part of Johannesburg's water supply). An eye is also kept on the Native builders. They are encouraged to follow a plan—a simple three-roomed type, one room in front and two at the back and preferably a verandah to fill in the fourth corner. Most houses are built of Kimberley or oven burnt brick made in the native brick fields over the road.

### TOWN LOCATIONS NEAR RESERVES.

The third type of location is really a modification of the agricultural type, or rather, it is a location with the disadvantages of both previous types. The overcrowding of the reserves causes numbers of natives to leave in search of work. They swarm into the nearest towns, disorganising location life, and overcrowding lodging rooms, staying with friends, lodging and sleeping where and as they can. The European town, being only a dorp pays dorp wages, provides dorp amenities and is quite unable to cope with the situation. Pietersburg, the one town of this type studied, demonstrates the position clearly. Wages are low, £2 a month, but rents are high, 10/- for a 50 feet by 50 feet stand, municipal houses 19/- to £1 8s. (the usual is 12/- to 16/-). The building regulations are very strict. (I was told that they were the same as for Europeans but in that case Pietersburg's regulations are not the same as those of Johannesburg.) The result is visible in the type of house constructed. This is intended to prevent the influx from the reserves, but it does not seem very satisfactory and it is a little hard on the poorer members of the community who must rent a room at 12/6 from their wealthy compatriots.

This location was the most well-to-do that I saw. Considering the low wages I can only assume that the wealthy inhabitants of the Reserves had town houses there and incidentally made a little profit by building lodging rooms. Due to this strain on the capacity of the location proper and the pressing necessity of providing an overflow the village of New Pietersburg sprang into existence. As has been previously mentioned this is one of the few places outside the Reserves where Natives may own land.

The natives much prefer to live here where they feel that they are their own masters although the amenities are practically non-existent.

### MUNICIPAL HOUSING

Originally I did not mean to have anything to do with municipal housing. My idea was to find, if possible, some palliatives to the deplorable conditions of native built houses rather than to criticise what has already been done. Inevitably, however, I explored the municipal houses in each location and bit by bit I formed opinions which I will record here for what they are worth.

The usual municipal house is three-roomed. Generally two rooms are in front and the kitchen is at the back though many new examples are built with all the rooms in a row under one roof. The general practice is to build walls and roof including external doors and windows leaving all interior finishing, i.e., doors, floor filling, wall plastering, to the tenant. The construction is almost invariably of brick and corrugated iron though some experiments in pre-cast concrete roofing slabs have been carried out, and the houses at Warmbaths location were of a breeze block.

Whenever possible I enquired for Native opinion on these houses. The loudest cry was against unplastered walls and unceiled roofs—rather a cry of indignation against the European attitude that "anything is good enough for a Native" than a justifiable complaint. Many of them said that the individual rooms and the houses as a whole were too small and that they would dearly like a verandah. Here they were on sounder ground. Of the three rooms one must necessarily be a living room, another kitchen, leaving only one for sleeping. This will house at most mother, father and two small children. As the family becomes larger and the children older one or other of the remaining two rooms must be utilized for sleeping at night. This will almost certainly be the kitchen, not the cleanest or freshest of rooms in any house. As the family becomes still larger and there are children of both sexes over puberty the problem is still further complicated.

The complaint against room sizes, generally 12 feet by 12 feet, is again valid, specially with regard to the living room. The absolute necessities of dresser, dining table and chairs completely fill up this space leaving no room for any other furniture. The room always looks a bit cramped.



The incorporation of lodgers rooms has caused overcrowding in Pietersburg Location, where, however, the houses are well built.

The verandah? Well, it is not vital, but is very useful as an additional living space, certainly more important than plaster or a ceiling and if physically possible I think one should be included though great care should be taken to see that it does not hinder ventilation.

The most interesting examples I encountered were at Middelburg where 50 per cent. of the houses, a remarkably high percentage for such a small town, are municipally constructed. There are three types, one about twenty years old of wood and iron, now in the process of demolition, and two very recent examples. Both are constructed on a rectangular plan very similar in size. The first has a living room, two bedrooms, a verandah, and a rather small kitchen. The entrance is from the verandah into the living room. Bedrooms are on either side with a fourth door into the small kitchen which has also an external door. The second type built after the previous example, has a living room in which the cooking stove is placed, two bedrooms, a sort of back pantry and no verandah. The entrance is into a minute lobby opening directly into one bedroom and the living room, from which the pantry and other bedroom lead off as in the previous example. The tenants in the latter type complained bitterly in the first place that it was not right to have one's cooking stove in the living room, secondly that it was not decent to enter into a bedroom and—where was their beloved verandah?

The reason for this change for the worse was the appointment of a new town engineer.

Although the plan of the second example is unsatisfactory the construction is more enterprising. In the first place the floors are concrete to be finished in some type of rubber. This will stop the entrance of the indefatigable ant. Secondly, the roof is of pre-cast concrete slabs which, though they leaked in this particular case, have been proved satisfactory

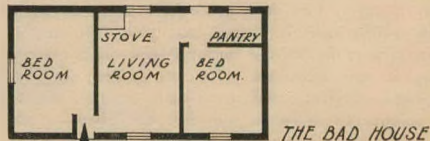
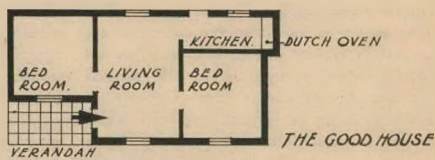


Municipal houses at Warmbaths Location constructed of breeze concrete blocks.

with good workmanship in other examples. The advantage of concrete is in insulation and appearance. No ceiling is necessary. The natives do not appear to like it, say it is too cold, but it is quite possible that this is prejudice. In any case its value needs investigation.

The cost of these houses, by far in a way the best I encountered, was £75 for a tin roof and filled floor, and £95 for concrete roof and concrete floor as against the cost of £113 for a four-roomed house in Bloemfontein, and £130 for a two-roomed house in Port Elizabeth—quite remarkably cheap.

Surveying municipal housing as a whole I think it lacks much, not the least of which is in appearance. The individual house is certainly not constructed with an eye to looks and the result of extensive municipal construction is undiluted monotony—Orlando. I do not mean to belittle the very valuable work which has been done and the difficult ground which has been broken but I do feel strongly that a Native location is a Native town and that as such its civic centre of



MUNICIPAL HOUSING, MIDDELBURG

hall, library and churches, its recreation area, its shopping area, schools, etc., are of major importance and that the houses should be placed subordinate to these; not as at present a mass of individual houses with public buildings hidden amongst them.

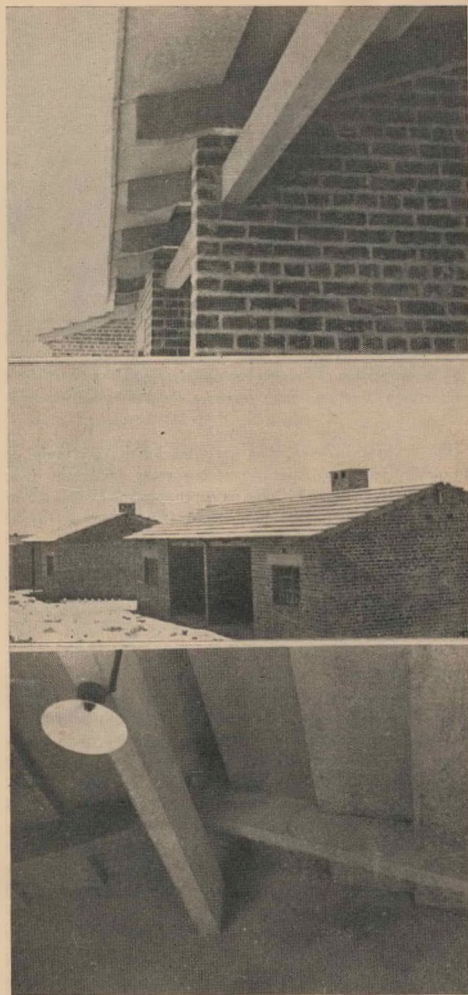
## SUMMING UP AND PROPOSALS

It must by now be obvious to anyone that the natives in locations are living under deplorable conditions, the worst of which is the inadequacy of the water supply. Such other municipal services as the disposal of rubbish and the provision of sufficient latrines are also neglected. The native houses are difficult to clean, ill lit and ill ventilated, too small to accommodate the number of people who must live in them. The primitive method of construction is a bad insulation against the heat, bad protection against the damp, and needs frequent repair. To provide proper living conditions for these people would be the life work of hundreds of people, but, in my opinion, there is much which could be done immediately which would alleviate the present bad conditions. The following is a list of renovations which would help matters considerably:

- (1) The provision of a stand tap to each stand.
- (2) A regulation enforcing private latrines constructed either by the natives themselves under supervision or by the local authority.
- (3) Regular bi-weekly rubbish removal from each stand.
- (4) Regulations laying down the minimum accommodation to prevent overcrowding.
- (5) Building regulations ensuring good ventilation, high roofs, floors above ground level.
- (6) Provision of plans of suitable houses to natives—in such a manner that they can understand them.
- (7) The appointment of inspectors to help the natives with the carrying out of the above three stipulations.

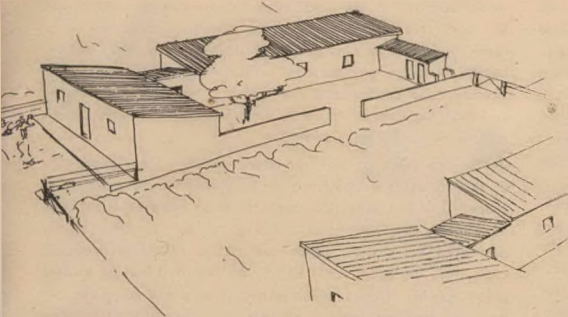
In the above I have been very careful to lay down nothing which will entail great expense to the native people because any such scheme would be doomed to failure. The extra cost of a better water supply, sewerage system, rubbish disposal, and the salaries of inspectors fall upon the local authority. I have carefully avoided making any regulations with regard to building materials, partly due to the expense inevitably entailed but also because in comparison with the above I consider it a minor item—something, anyhow which can be dealt with at a later date. It has occurred to me, however, that it might be possible for the local authority to raise a subsidy to supply such items as doors, windows, corrugated iron for roofing, malthoid, cement, locks, stays, nails, etc., at a nominal price to the native in much the same way as municipal housing is now subsidised. The sum would be almost negligible in comparison with the amounts raised for the complete construction of houses with European labour—a thing which is done by an increasing number of towns.

To illustrate my proposals I have sketched two house plans



Municipal Housing, Attridgeville, showing details of the construction of pre-cast concrete roofing.

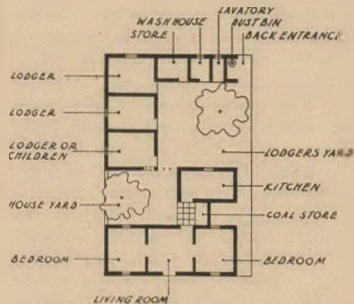
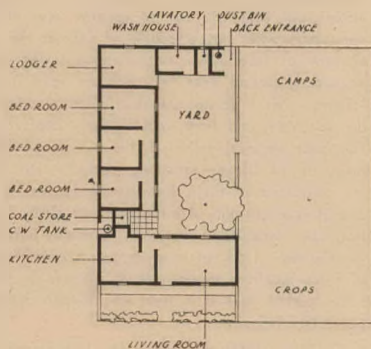
which might be provided to the natives under suggestion 6. One on the larger site of the agricultural location is planned to 75 feet by 75 feet, the other on the average 60 feet by 40 feet site of the industrial town. In each case the municipal services stipulated in 1, 2, 3, approach from the sanitary



EXAMPLE No. 1  
HOUSE DESIGNED FOR A 75 ft. x 75 ft. SITE OF AN  
AGRICULTURAL LOCATION.



EXAMPLE No. 2  
HOUSE DESIGNED FOR A 60 ft. x 40 ft. SITE OF AN  
INDUSTRIAL LOCATION.



Plans show the final stages of development.



Key plans showing stages of development.

lane. Thus the more instantaneous functions of the house are relegated to the back fence away from the living area. Here is a room into which the tap can be built, preferably also a shower, possibly even a bath, where baths can be taken and washing done; here also is a lavatory, with either night soil or waterborne sewerage, and here is a space for the dust bin. As water will get spilt and rubbish overflow on to the floor I should like to see it with an impervious surface. This matter would come under the duties of the inspector in proposal 7. The houses have been designed so that they can first be built as a nucleus of kitchen and large living room for the newly married couple, gradually extending room by room as the family increases. The maximum taken is a three-roomed house, one room for the mother and father, one for boys and one for girls, this being the least permissible for any large family. The best position for lodger's rooms has also been shown. The houses have been planned not as a compact mass but in several units or strings of rooms so that each room can be ventilated from both the back and the front. The kitchen is cut off from the bedrooms and living area for reasons of hygiene and to minimise the danger of fire. The necessary open spaces created by this planning are treated as secondary living areas taking the place of the verandah. I omitted this popular item on grounds of good ventilation. In the yard a sturdy tree (provided by the local authority) will give adequate shade with more space and a more pleasant appearance. A high wall on the open side provides uninterrupted privacy.

It is assumed that the materials will be those which can be easily obtained, stone plinth, unburnt or native burnt brick walls, thatched roof. Corrugated iron is almost impossible to obtain under war-time conditions which, from the point of view of appearance is possibly a blessing. (Incidentally it occurs to me that where it has been used at a flat pitch it might be greatly improved by a layer of veld turf. This would act as an insulator against heat and cold and lessen the deafening noise of a hailstorm.) I have tried to keep down the number of such things as doors and windows, and to simplify roof construction in order to limit the expense. Internal doors are not a necessity so each house has but a back and a front door. This is the reason for the passage in the first example. It would depend on the decision of the inspector as to whether this was left open with doors to each room, certainly the best solution, or whether for reasons of cost, it was closed in with only one external door.

It would be the business of the inspector to explain the plan to the native builder, to make him understand it and to see that it was correctly carried out. It would be his duty to investigate the number of people who intended to live in the house and to see that there was enough accommodation for them. The matter of materials and construction would come under his control. He would see that the foundations were dug, that a sound material was laid well above ground level for flooring, that damp proof courses were incorporated; he

would approve of the windows and doors and pass the height of roof. He would see that all possible precautions were taken against white ants and other destructive or dirty insects. Lastly, he would pay periodic visits to the houses which had already been constructed, see that they were in good repair and that the number of inhabitants had not increased sufficiently to necessitate any additions.

The two plans do not vary very greatly. The larger site of the agricultural location provides space for the growing of crops. This is to the side and acts as an open area between each house in a row. Here, also on the sanitary lanes, is the best spot for chicken coops and camps for other livestock. Here, too, the house is set slightly off the road leaving a small place for the flowers which native people like to grow. In the town location there is no space for such luxuries but the almost inevitable lodgers suggests a separate yard for their private use. This is so approached as to be completely segregated from the householding family.

So much for the houses.

With regard to the location as a whole, things which we are accustomed to such as street lights and good roads are absent but these do not so greatly inconvenience a small community with only a couple of cars at the outside. The absence of trees is a disappointment. The authorities are apparently afraid that they will be used to harbour the 'skelms,' but I do not see that a few standing alone could do any harm and they would greatly improve appearances. The most displeasing thing is the wire fence which surrounds many of the bigger locations. I know that the authorities are convinced of their necessity for reasons of safety but I cannot reconcile this attitude with any kindly feeling towards the native inhabitants who must inevitably hate the man who has the key. I do not know enough about the administration of these locations to be able to suggest an alternative, but I am certain that it is time we stopped treating them as potential criminals.

In all the locations I visited the layouts were bad. In so small a community this is a matter of psychological rather than practical importance but, as it takes no more time to lay out a good location than it does to lay out a bad one, one might as well lay out a good one. The authorities have made the mistake of regarding a location merely a collection of houses completely ignoring other buildings which are a necessary part of any community scheme. The location has thus been divided into sites suitable only for houses while such buildings as schools, shops, churches, and halls have to take pot-luck with the rest. They are inconspicuous and difficult to find and the opportunity of giving a focal point to the scattered mass of houses has been lost. If they had been considered in the first place a suitable central site could have been arranged for them where they would have formed a community centre and lent some dignity to the location.

# C H A R T

ANALYSIS OF THE CONDITIONS  
OBTAINING IN THE NATIVE LOCATIONS  
OF TEN TRANSVAAL TOWNS

SOLD.

## AGRICULTURAL LOCATIONS

## INDUSTRIAL LOCATIONS

## NEAR RESERVE

| GENERAL        |                     |                                                |               |                                            | AMENITIES                        |                                                               |                                                                                                                                                               |                                                                                 |                     | NATIVE BUILT HOUSES                                                                                                     |              |          |                                                                                                                                                                                                                                                                        |                   | MUNICIPAL HOUSES                                                                                                  |                                                                                                                                                         |                      |                                                                                                                              |  |
|----------------|---------------------|------------------------------------------------|---------------|--------------------------------------------|----------------------------------|---------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|---------------------|-------------------------------------------------------------------------------------------------------------------------|--------------|----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|-------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|------------------------------------------------------------------------------------------------------------------------------|--|
| TOWN.          | European Population | Native Population                              | Average Wage  | Stand Size                                 | Rent                             | WATER SUPPLY.                                                 | SANITATION.                                                                                                                                                   | RUBBISH.                                                                        | LIGHTING            | STOCK.                                                                                                                  | AVERAGE COST | BUILDER  | CONSTRUCTION.                                                                                                                                                                                                                                                          | NUMBER            | ACCOMMODATION.                                                                                                    | CONSTRUCTION.                                                                                                                                           | RENT                 |                                                                                                                              |  |
| MACHADODORP    | 419*                | 360                                            | 47/6          | 50ft. x 100ft.                             | 5/-                              | One tap—weak flow.                                            | Public night soil.                                                                                                                                            | Dumped on outskirts.                                                            | Nil                 | Kept in camps on outskirts.                                                                                             | —            | Owner    | Walls often stone. Stone used between sappings as for Wattle and Daub, then plastered. Roofs—pitched tin or thatch. Windows—small, wood shutters.                                                                                                                      | 12 of A<br>3 of B | A—two rooms and kitchen.<br>B—three rooms and kitchen.                                                            | Walls—unplastered brick. Roofs—lean-to tin.<br>Similar.                                                                                                 | 12/6<br>15/-         | Walls now being plastered. Two front rooms thatched.                                                                         |  |
| MIDDELBURG     | 2,901*              | 3,000<br>Increasing though location is full up | 45/-          | 75ft. x 100 ft.<br>or<br>100 ft. x 100 ft. | 4/6                              | Laid on in occasional stand taps.                             | Public night soil. Private water borne to be laid on after the war.                                                                                           | In concrete bins on main road.                                                  | After War           | Camps allowed to stand.                                                                                                 | —            | —        | Walls—Kimberley brick or native burnt. Roofs—thatch or tin. A poor type with not enough windows and too low ceiling.                                                                                                                                                   | About 50%         | A—one room and kitchen. B—living room and two bedrooms. C—living room with stove in it, bedroom and pantry.       | Wood and corrugated iron. Earth floor, brick walls, corrugated iron roof, cost £75.<br>Concrete floor finished with rubber, brick walls, concrete roof. | —                    | 20 years old, being d Good plan but small. Arts come through floor. Store in living room, bedroom, and absence and a dilted. |  |
| NYSTROOM       | 1,099*              | 1,100                                          | 30/-          | 50ft. x 50ft. minimum                      | 2/6                              | Two taps.                                                     | Public night soil. Charge of £85 per annum to native revenue account.                                                                                         | Dumped — mostly near river at bottom of location.                               | Nil                 | Grazing 1/- per head per annum for large stock 1d. per head for fortnightly dipping.                                    | —            | —        | Walls—of burnt brick or mud which is not good here. Roofs—mostly pitched of tin or thatch reads and grass available in neighbourhood.                                                                                                                                  | None              | —                                                                                                                 | —                                                                                                                                                       | —                    | —                                                                                                                            |  |
| POTGIETERSBURG | 1,926*              | 1,342*<br>651 families including tenants       | 30/- to 40/-  | 50ft. x 75ft.                              | 6/6                              | Four taps.                                                    | Private pits lasting five years. Hut of wood and iron supplied free of charge by Municipality.                                                                | Rubbish also in open individual pits.                                           | Nil                 | Kept and grazed free on town lands outside location. Dipping 1d. per head.                                              | £10 to £20   | Employed | Walls of brick made near occasion at 25/- a thousand. Roofs—pitched tin. Of special interest owing to good construction due to supervision. Foundation of concrete, floors 6 in. above ground level, high ceiling, big windows, often D.P.C. The houses are too small. | —                 | Single quarters for Municipal employees.                                                                          | —                                                                                                                                                       | —                    | —                                                                                                                            |  |
| STANDERTON     | 2,350*              | 2,805*                                         | —             | —                                          | —                                | Occasional taps.                                              | Bucket system.                                                                                                                                                | —                                                                               | Nil                 | —                                                                                                                       | £16          | —        | Walls—of mud brick plastered with mud. Some good stone houses. Roofs—flat, of tin held on with stones.                                                                                                                                                                 | None              | —                                                                                                                 | —                                                                                                                                                       | —                    | —                                                                                                                            |  |
| WARMBATHS      | 664*                | 767*                                           | 60/-          | Large                                      | 5/-                              | One tap whose supply is drawn from well.                      | Bucket system. Some private latrines.                                                                                                                         | —                                                                               | Nil                 | —                                                                                                                       | —            | —        | Walls—of Kimberley or burnt brick, plastered. Roofs—some tin but quite a number thatch.                                                                                                                                                                                | 14                | Two 12 ft. x 12 ft. rooms and kitchen with Dutch ovens.                                                           | Breeze block, cement floor, uncatted, tin roof, steel windows.                                                                                          | 13/6                 | Not bad.                                                                                                                     |  |
| MEYERTON       | 112*                | 1,381*<br>750 houses                           | 60/- to 100/- | 60ft. x 80ft. minimum                      | 8/6                              | Occasional stand taps. Washing must be done in near by river. | Public night soil. Change to private latrines in progress. This free to native on erection, but a charge of 2/6 to Native Revenue Account, 160 already exist. | Collected once or twice weekly from individual bins provided by owners.         | Sheet lighting      | Camp not allowed in localities. Grazing charged monthly.—Donkeys and Cows 6d. Sheep and Goats 3d. Horses and Mules 1/-. | —            | Employed | Walls—Kimberley or burnt bricks from nearby native brick fields mostly. A pie of ash is also satisfactorily employed. Roofs—tin.                                                                                                                                       | None              | —                                                                                                                 | —                                                                                                                                                       | —                    | A simple 3-room commended to one room in the back with verandah to 1 corner.                                                 |  |
| VEREENIGING    | 4,718*              | 13,414*<br>6,000 lodgers                       | 60/- to 100/- | 50ft. x 50ft.                              | 8/- lodgers charged 10/- to 15/- | Occasional taps.                                              | Night soil. Many private latrines.                                                                                                                            | —                                                                               | Sheet lighting      | —                                                                                                                       | £50          | Employed | Walls—of stone from local quarries. Use of quarries free but cost of labour of native masons brings up expenses. Roofs—lean-to tin.                                                                                                                                    | 52 houses etc.    | —                                                                                                                 | —                                                                                                                                                       | —                    | Did not see 1 alleviation, housing put location to 1                                                                         |  |
| WITBANK        | 2,772*              | 5,294*<br>400 families                         | —             | 50ft. x 50ft. 60ft. x 40ft. minimum        | 6/6                              | Occasional taps.                                              | Night soil. Preparation being made for water borne.                                                                                                           | Bins to each house provided by the Municipality.                                | To Municipal houses | Grazed and kept outside location.                                                                                       | —            | —        | Walls—of sophisticated brick work. Roofs—pitched tin.                                                                                                                                                                                                                  | Many              | A—rondavels about 15 ft. dia. Some 4-roomed, some 3-roomed. B—small rondavels. C—extended rondavels with 3 rooms. | Brick walls, roof of thatch or cement on reeds, concrete floor. Brick and thatch as above except one roof of concrete as experiment.                    | 15/-<br>12/6<br>16/- | —                                                                                                                            |  |
| PIETERSBURG    | 4,240*              | 1,000†                                         | 40/-          | 50ft. x 50ft. and larger                   | 10/-                             | Occasional taps.                                              | Public night soil or 1/8 monthly for private attention.                                                                                                       | Public bins to native built houses. Municipal houses have individual attention. | Some streets lit    | St head free                                                                                                            | —            | —        | Walls—of stone built in accordance with Regulation 15 of 1912. Roofs—tin.                                                                                                                                                                                              | Many              | A—two 12 ft. x 12 ft. rooms and a kitchen. B—two rooms or one 4-room.                                             | tin roof, steel windows.                                                                                                                                | 19/-                 | Quite                                                                                                                        |  |

\* Figures from 1936 Census Returns.

† Figure from Location only.

A stand tap in Vereniging.



A paving of crown corks to take drips from a thatched roof.



An ingenious method of drainage that has to be resorted to on account of the step down into the house.



# REPORT ON STRUCTURAL STRENGTH OF GUM POLES

In the course of investigations by the Institute's Sub-Committee on A.R.P., the query was raised by members regarding the structural strength of gum poles of varying dimensions. The Secretary of the South African Standards Institution, to whom the application for this information was made, has submitted a report concerning this matter kindly furnished by Mr. Nils B. Eckbo, Chairman of the Timber Sub-Committee of that Institution, which we publish by permission, for the information of members.

I would advise you that the breaking load of gum poles varies so considerably according to species and age that it is impossible to quote a general value to cover all species. It would be too confusing to quote values for individual species, and accordingly I have grouped them into 3 classes A, B and C as indicated in the accompanying tables, and in Table I, reflect the average value obtained from 25 tests on the weakest species in each group. You will notice that the widely grown *E. saligna* falls in the lowest class. This is not irrevocable as later tests on poles of this species from the Zululand Coast disclosed values appropriate to class B. I hesitate to place it there at present, however, until more information regarding the cause and the distribution of the weaker poles have been obtained by actual test.

In Table II the values reflected in Table I have been converted to breaking loads applicable to beams of varying diameter.

In regard to unsawn timber used as columns the position is aggravated by the impossibility of loading such a column truly axially. Even if axial loading could be ensured, the load would vary beyond certain limits of the ratio between length and least diameter. A crook of one inch in opposite directions in each of two planes in a three foot length, moreover,

would more or less reduce the effective cross-section of a 3 inch pole to nil, and any nominally compressive load applied to it would therefore be converted into a transverse load. When this occurs, the weakening effect of knots, which in truly axial loading of compressive stresses is negligible, on the convex side of the bend greatly aggravated the position and inherent strength may be reduced 5 times or more. The bracing interval also affects the load which a column will support. For these reasons absolute unit compressive stresses cannot be effectively applied to unsawn timber.

The Architects' problem seems to be one for discussion with their Institute's consulting engineer, to whom the relative values reflected below may be of some guidance:

## UNIT END COMPRESSIVE STRESSES AND MODULUS OF ELASTICITY IN BENDING OF GUM AND OTHER TIMBER, AIR DRY.

| Species.                  | Pounds per square inch.    |                        |
|---------------------------|----------------------------|------------------------|
|                           | Maximum crushing strength. | Modulus of Elasticity. |
| Gum (Group A) .....       | 15,000                     | 3,000,000              |
| Gum (Group B and C) ..... | 7,000                      | 2,000,000              |
| Pitch Pine .....          | 8,200                      | 2,000,000              |
| Deal .....                | 6,000                      | 1,500,000              |

Note.—Above values are derived from tests on small clear specimens.

Trusting the above information will prove of some use.

Yours sincerely,

(Sgd.) NILS B. ECKBO,

Chief Forest Products Officer.

TABLE I.  
STRENGTH CLASSES OF AIR-DRY GUM POLES

|                                               |              |                                 |                                                                                                                                                    |                                         |                |                                                                        |           |       |                                |
|-----------------------------------------------|--------------|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|----------------|------------------------------------------------------------------------|-----------|-------|--------------------------------|
| Class A: <i>E. paniculata</i>                 |              |                                 | Class B: <i>E. cloeziana</i><br><i>globulus</i><br><i>maculata</i><br><i>maideni</i><br><i>microcorys</i><br><i>pilularis</i><br><i>resinifera</i> |                                         |                | Class C: <i>E. fraxinoides</i><br><i>muelleriana</i><br><i>saligna</i> |           |       |                                |
| BREAKING LOADS. Load applied 2 feet from tip. |              |                                 |                                                                                                                                                    |                                         |                |                                                                        |           |       |                                |
| Item.                                         | Length Feet. | Assumed depth of planting Feet. | Minimum top diameter Inches.                                                                                                                       | Minimum diameter 4 ft. 6 in. from butt. | Volume Cu. ft. | Breaking load in undermentioned groups.                                |           |       | Pounds per inch of deflection. |
|                                               |              |                                 |                                                                                                                                                    |                                         |                | A                                                                      | Pounds. B | C     |                                |
| 1                                             | 24           | 5                               | 4                                                                                                                                                  | 5½                                      | 3.6            | 1,170                                                                  | 780       | 580   | 10                             |
| 2                                             |              | 5                               | 5                                                                                                                                                  | 6½                                      | 4.4            | 1,990                                                                  | 1,320     | 980   | 20                             |
| 3                                             | 27           | 5½                              | 4                                                                                                                                                  | 5½                                      | 4.3            | 1,160                                                                  | 780       | 580   | 8                              |
| 4                                             |              | 5½                              | 5                                                                                                                                                  | 6½                                      | 6.0            | 1,930                                                                  | 1,280     | 950   | 16                             |
| 5                                             | 30           | 5½                              | 4                                                                                                                                                  | 5½                                      | 5.0            | 1,000                                                                  | 660       | 500   | 5                              |
| 6                                             |              | 5½                              | 5                                                                                                                                                  | 6½                                      | 6.9            | 1,670                                                                  | 1,110     | 820   | 11                             |
| 7                                             | 35           | 6                               | 4                                                                                                                                                  | 6                                       | 6.1            | 1,070                                                                  | 710       | 530   | 5                              |
| 8                                             |              | 6                               | 5                                                                                                                                                  | 7                                       | 8.5            | 1,720                                                                  | 1,140     | 850   | 8                              |
| 9                                             | 40           | 6½                              | 5                                                                                                                                                  | 7½                                      | 10.3           | 1,630                                                                  | 1,080     | 800   | 6                              |
| 10                                            |              | 6½                              | 6                                                                                                                                                  | 8½                                      | 14.4           | 2,400                                                                  | 1,600     | 1,190 | 10                             |
| 11                                            | 45           | 6½                              | 5                                                                                                                                                  | 7½                                      | 12.0           | 1,540                                                                  | 1,020     | 760   | 4                              |
| 12                                            |              | 6½                              | 6                                                                                                                                                  | 8½                                      | 16.0           | 2,260                                                                  | 1,500     | 1,120 | 7                              |

This table represents breaking loads of cantilevers with load centred at a fixed distance below the tips. Where the load is applied elsewhere the scheduled breaking load should be multiplied by the factor:

$$\frac{L-(P+Q)}{L-(P+2)}$$

Where

L=total length.

P=assumed depth of planting.

Q=distance between tip and load point, all measured in feet.

TABLE II.  
BREAKING LOADS FOR GUM POLES SUPPORTED AT BOTH ENDS. LOADS CONCENTRATED AT CENTRE OF SPAN.

| Least diameter inches. | Maximum load in pounds for one foot of span in respect of undermentioned groups. |         |         |
|------------------------|----------------------------------------------------------------------------------|---------|---------|
|                        | A                                                                                | B       | C       |
| 3                      | 15,200                                                                           | 10,000  | 7,600   |
| 3½                     | 24,200                                                                           | 15,900  | 12,000  |
| 4                      | 36,000                                                                           | 23,700  | 17,800  |
| 4½                     | 50,000                                                                           | 33,700  | 25,000  |
| 5                      | 70,500                                                                           | 46,400  | 34,800  |
| 5½                     | 93,500                                                                           | 61,500  | 46,200  |
| 6                      | 122,000                                                                          | 80,200  | 60,500  |
| 6½                     | 155,000                                                                          | 102,000 | 76,600  |
| 7                      | 196,000                                                                          | 127,000 | 96,000  |
| 7½                     | 238,000                                                                          | 156,000 | 118,000 |
| 8                      | 288,000                                                                          | 190,000 | 142,000 |

Note.—The values shown in Table II divided by the number of feet in unsupported span will yield breaking load for span concerned. For uniformly distributed loads, values may be doubled.

Values indicated are average breaking loads for poles of the weakest species included in each of the groups A, B and C. Safety factors ranging from 4 to 10 according to degree of exposure to moisture, ease of replacement, and risk to human life involved should be applied.

# O B I T U A R Y

## PROFESSOR H. BELL-JOHN, M.C.

We deeply regret to record the death of Professor H. Bell-John, one of the kindest and most lovable of men. Harry Bell-John was born in England in April 1874, and was articled to a firm of Architects and Quantity Surveyors in Cardiff. After qualifying as a Professional Associate of the Surveyors' Institute, he gained experience in various offices in the north and south of England. Later he became a Fellow of the Surveyors' Institute. He obtained an appointment with the London County Council and worked on the planning and execution of some of their suburban schemes. He was appointed, on the recommendation of the late Sir Aston Webb, and under Lord Milner's regime, as Quantity Surveyor to the Public Works Department, Pretoria, in 1902.

Early in 1905 he convened a meeting of Quantity Surveyors and Architects, taking out their own quantities, to discuss the formation of a Society of Quantity Surveyors. This meeting was held in the offices of the Public Works Department, Winchester House, Johannesburg, and, as a result the Transvaal Society of Quantity Surveyors was founded under Ordinance No. 56 of 1905. At the first General Meeting Mr. Bell-John was elected President.

In 1907 it was decided to form a South African Association and a year later the Society was amalgamated in the South African Institute of Quantity Surveyors.

Mr. Bell-John was transferred to Potchefstroom in 1908 as Assistant Engineer and later to Bloemfontein for a short period.

He was appointed District Engineer, Pretoria, in 1911, and served in that capacity until the outbreak of war in 1914.

He joined the S.A.S.C. as a Lieutenant and saw service in East Africa, where he was promoted to the rank of Captain. He was awarded the Military Cross in 1917. On his recall to South Africa in 1917, he was appointed District Engineer in Johannesburg, and in 1927 became Chief Engineer to the Public Works Department until his retirement in 1929.

He was elected a Licentiate of the Royal Institute of British Architects in 1925.

He played an active part in the establishment of classes in Architecture and Quantity Surveying at the University of Pretoria, in 1939, and was appointed part-time Professor of Architecture and Quantity Surveying shortly afterwards.

He also became a part-time lecturer in Quantity Surveying at the University of the Witwatersrand and held both these appointments until his death.

With the passing of the Architects' and Quantity Surveyors' Private Act in 1927, the South African Institute of Quantity Surveyors was amalgamated as a Chapter of Quantity Surveyors with the Institute of South African Architects.

Professor Bell-John held office as President of the Chapter in 1932-33.

His interests, apart from his profession, were chiefly scientific. His love of astronomy was inherited from his father, and, although he did no practical work in this subject, he read widely on the theoretical side. This interest gave him a broad outlook on life, as well as being one of his greatest pleasures.

He devoted himself, with the greatest enthusiasm to teaching and was most anxious that Quantity Surveyors should have a liberal professional education, and that cordial relations should always be maintained between the professions of Architecture and Quantity Surveying. He felt, strongly, that students in the two professions, working together in the same University would foster this good feeling. To those of us who were closely associated with him, it was a privilege to know a man whose example was an inspiration to his colleagues in both professions.

Many of the younger practitioners in both Architecture and Quantity Surveying will benefit by his teaching and advice.

In spite of ill health he continued with his academic work, and his death on Christmas Eve, 1942, after a short illness, came as a shock to his many admirers and friends.

To his widow and two daughters we extend our heartfelt sympathy in their sad loss.

G.E.P.

## LIEUTENANT RONALD ARMSTRONG ROBERTS

The death of Lieutenant Ronald Armstrong Roberts occurred on the 13th November, 1942, as the result of an air collision near Cape Town.

Lieut. Roberts, who was the youngest son of Mr. and Mrs. Arthur Roberts, was born in September, 1918, at Cradock, and was educated at St. Andrew's College, Grahamstown, and at the Witwatersrand University, where he was studying architecture when the war broke out. Volunteering soon after, he joined the South African Air Force and underwent his training at Kimberley and at Roberts Heights; after which he went through the Abyssinian campaign and for a considerable time took part in operational work over the Western Desert. Returning to the Union, he had been engaged on coastal patrol work for some time, when he met his death in an air collision in which seven airmen were killed.

"Ronnie" Roberts was an outstanding young man and a general favourite with all who knew him. His artistic bent soon developed and decided the choice of architecture as his profession. His early life was marked by a love of out-

door pursuits which naturally found in him a keen sportsman. He will always be remembered for his unaffected sincerity and loyalty to his friends.

We extend our sincere sympathy to the parents, brothers and sisters in their sad loss.

With acknowledgments to "The Midland News," Cradock.

#### LIEUTENANT CHARLES FRANCIS DRAKE



Photo: Alfred Davis, Germiston.

We regret to announce the death of Lieutenant Charles Francis Drake, of the South African Air Force, who was killed at Bir-el-Barheirai, on June 2nd, 1942.

Lieutenant Drake was the husband of Mrs. "Bobby" Drake, of Parkhill Road, Klippoortjie, Germiston, and son of the late Mr. J. B. Drake, principal of the High School at Klippoortjie, and Mrs. Drake. He commenced his studies in architecture at the University of the Witwatersrand in 1929, and graduated in 1934. He was a keen and popular student and was always interested in aviation. His thesis on "The Design and Construction of Airports" was published during 1935 in the "South African Architectural Record," in the April to September issues.

He was a member of the Institute of South African Architects and was employed in the Town Engineer's Department, Germiston Municipality, prior to the war.

To his widow and his mother we extend our sincere sympathy.

#### LIEUTENANT THEODORE VAN NIEKERK

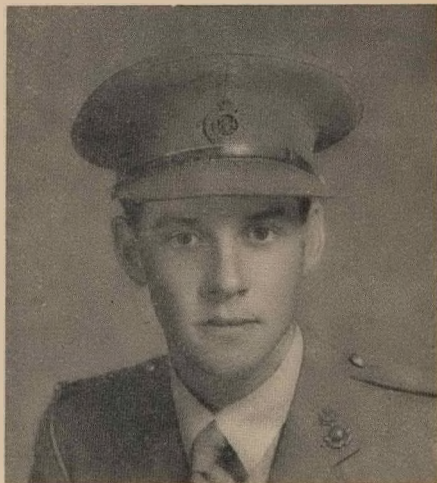


Photo: Ann Ley, Durban.

The death of Lieutenant Theodore van Niekerk, late of the 8th Field Company, S.A.E.C., took place on the 19th December, 1942, whilst on duty.

Lieutenant van Niekerk was the son of Dr. and Mrs. J. A. van Niekerk, of Pretoria, and was born at Ermelo, in August, 1920. He entered Christian Brothers College, Pretoria, in 1934, and in that year obtained a First Class with distinctions in the Junior Certificate Examinations. In 1935 he came third in the British Empire in the Senior Grade of the College of Preceptors Examination, and as a result, was awarded the Hodgson Memorial Prize. He matriculated in 1936, again obtaining a First Class Pass with distinctions. He was a keen sportsman and represented the college in rugby. He commenced his studies in architecture as a part-time student of the University of Pretoria in 1937, and in 1939 he changed to the Degree Course at the University of the Witwatersrand. He graduated in February, 1941, and immediately after joined the South African Engineer Corps.

We extend our deepest sympathy to his family in their sad bereavement.

#### A TRIBUTE.

The death of Lieutenant Theo. van Niekerk, late of the S.A.E.C., has left a gap in the ranks of the younger architects which it will be difficult to fill. He had that vision and creative ability which is the hall mark of the young architect. He was essentially a student, never tiring in his search for further knowledge and fresh fields of thoughts. But he was

much more than this, for above all he was in the truest and best sense one of nature's gentlemen. Kind of heart, considerate for others, unselfish, with a winning smile and a kindly voice he endeared himself to all who knew him. Deeply as we may mourn his loss, we can remember with pleasure and gratitude the greatness of the life he lived amongst us. Words written at the time of the death of the great Duke of Wellington might well have been written as his epitaph:

"... and as the greatest only are,  
In his simplicity sublime."

D.S.M.

## J. C. HUMPHREYS

We record, with much regret, the death in December, 1942, of J. C. Humphreys, who joined the Institute in 1927, while in the employ, of the S.A.R. & H. He commenced private practice in Johannesburg in 1934 and later moved to Vereeniging.

# PROFESSIONAL NOTES AND NEWS

## UNIVERSITY OF PRETORIA: SENIOR LECTURER:

The University of Pretoria invites applications for the post of Senior Lecturer in the Department of Architecture and Quantity Surveying on the salary scale of £500 x 25-£700. The successful applicant will be responsible for courses in Quantity Surveying and may be allowed to undertake a limited amount of approved, private work accessible to and in the interests of the students.

Applicants should state specifically whether they are able to teach the subject in both official languages and also whether they are members of the Chapter. Duties should, if possible, be assumed on April 1st, 1943.

Applications, accompanied by copies of testimonials and particulars about qualifications, experience and age, should reach the Registrar of the University of Pretoria not later than March 1st, 1943.

## AN APPEAL

Although the Department of Architecture and Quantity Surveying at the University of the Witwatersrand has made application for the importation of Drawing Instruments, there is a likelihood of these not being obtainable and hence there will be a shortage for students commencing their studies this year.

An appeal, therefore, is made to all Architects and Quantity Surveyors, who may have instruments they can spare, particularly pen and pencil compasses and ruling pens, to assist by lending or selling these to the Department.

We might add that the position is such that any usable instrument of this nature is acceptable and urgently required.

## DECORATION FOR LIEUTENANT JOHN SHAW

We take this opportunity of congratulating Lieutenant John Shaw on the award of the Military Cross. Lieutenant Shaw, who has been on active service since 1939, was previously a practising member of the Transvaal Provincial Institute.

## EDITORIAL NOTE

Now that the first issue of the journal for 1943 has appeared, members will have noticed several changes in both bulk and typography. Changes were initiated as far back as 1940 in order to conform with the restrictions imposed by the Paper Controller, but this is the first occasion on which the individual copies have been seriously affected.

War conditions have now rendered it necessary to use locally made "Super Calendered" paper in place of the "art" paper formerly employed, with the slight but noticeable loss in the quality of half tone illustrations.

The total quantity of paper, used in each issue, has been reduced by reason of the increase of the amount of text per page and the general reduction of the size of illustrations. While these variations are inevitable under present conditions, it is hoped that the journal will be able to revert, at a not too distant date, to the former generous character by which it has become so well known in this country and overseas, and, in the meantime, to maintain as high a standard of production as circumstances permit.

We are grateful to those advertisers whose generous support has enabled the journal to continue publication on a sound basis, and we look forward to the time when those advertisers, who have not found it possible at present to continue their advertisements, will again appear in these pages.

M. Joffe, of 48, Buxton Street, Doornfontein, who has passed the Matriculation Examination, seeks a position in an Architect's office.

***Journal of the SA Architectural Institute***

***PUBLISHER:***

University of the Witwatersrand, Johannesburg

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