

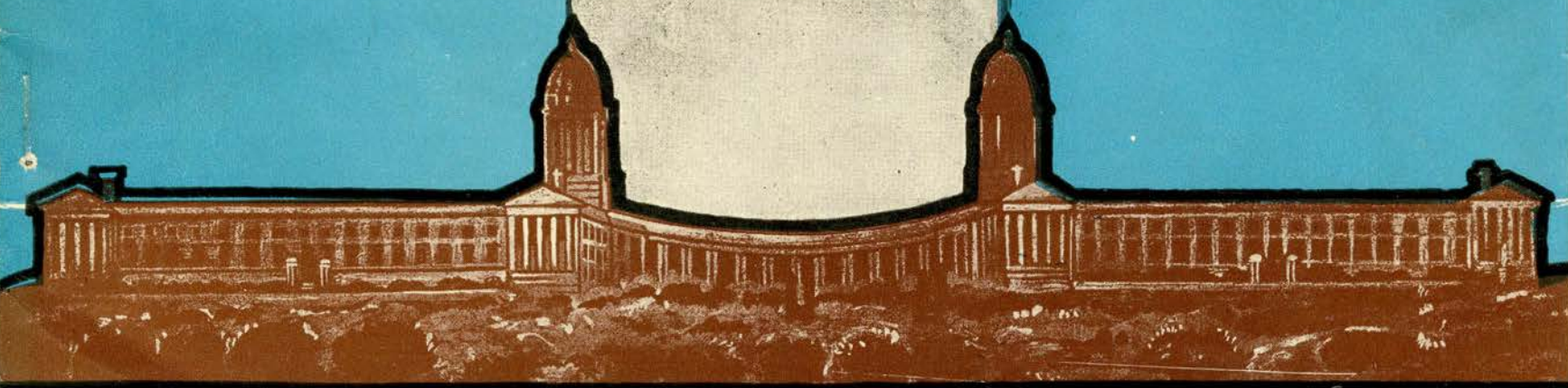
Vol. VII.

No. 37.

NOVEMBER : 1941.

69(68)
PWS 7/37

PUBLIC WORKS OF SOUTH AFRICA



*Registered at the General Post Office as
a Newspaper.*

Price per Copy : 2/-

Subscription : £1 1/- per annum.

PARTHENON PRODUCTS

Scote Again



When prominent buildings such as these are redecorated, the veterans of paints, Parthenon Products, are always used. They are effective. They are RELIABLE. The following products were used:—

O.K. BAZAARS

Interior: Parflat, Kwick
Enamel. Exterior: Navy
XX, Gnudek.

PARAMOUNT STORES

Interior: Calcite,
Parflat, Meloglaze.
Exterior: Navy
XX, Gnudek.



HERBERT EVANS & Co. (Pty.) Ltd.

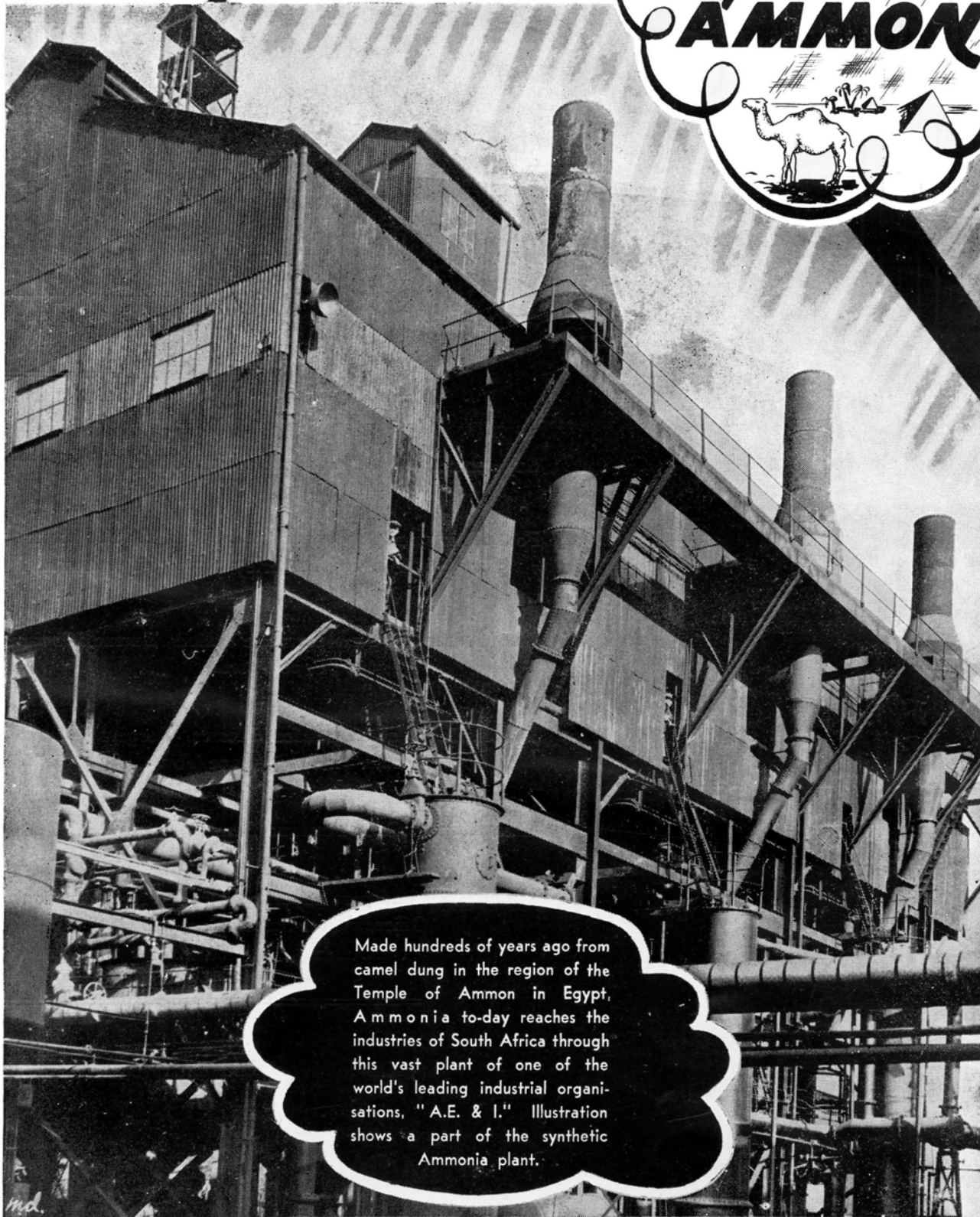
88, PRITCHARD STREET, JOHANNESBURG. 362, PRETORIUS STREET, PRETORIA.

FACTORY AT 208 GALE STREET, CONGELLA, DURBAN.

Established for over 50 years. Support the Governor-General's National War Fund.

Agents: BLOEMFONTEIN: G. A. Fichardt (Pty.) Ltd.; EAST LONDON: Werner Bros.; GEORGE & MOSSEL BAY: Alex Comay & Sons; KNYSNA: Thesen & Co.; PORT ELIZABETH: Fryer Bros.; DURBAN: Atkinson & Son; A Blaikie & Co. Ltd.; E. Snell & Co. Ltd.; CAPE TOWN: Sam Newman Ltd.; QUEENSTOWN: R. Clarke & Co.; BULAWAYO: J. Mann & Co. Ltd.; SALISBURY: J. Mann & Co. Ltd.; N'DOLA: J. Mann & Co. Ltd.; and Stockists in other centres throughout South Africa.

South Africa's modern temple of **AMMON**



Made hundreds of years ago from camel dung in the region of the Temple of Ammon in Egypt, Ammonia to-day reaches the industries of South Africa through this vast plant of one of the world's leading industrial organisations, "A.E. & I." Illustration shows a part of the synthetic Ammonia plant.

Issued by **AFRICAN EXPLOSIVES AND INDUSTRIES LTD.**
P.O. Box 1122. :: 14 HOLLARD STREET, JOHANNESBURG. :: Telephone 33-6101.
FACTORY MODDERFONTEIN, TRANSVAAL.

NORMAN KENNEDY

(PTY.) LTD.

ENGINEERING & BUILDING CONTRACTORS

Superstructure for New General Post Office, Cape Town.



Foundations and Superstructure for New Dutch Reformed
Church Chambers, Adderley Street, Cape Town.



Foundations for New Revenue Offices, Barrack Square,
Cape Town.



Wholesale Warehouse for Messrs. Bergers Limited,
Keerom Street, Cape Town.



Extensions to Cape Portland Cement Factory, De Hoek.



Foundations and part Superstructure for New Provincial
Offices, Wale Street, Cape Town.

Office, Workshop and Stores:

99 MAIN ROAD

MOWBRAY, CAPE

Telephone 6-2154

Affiliated Member to the National Federation of Building Trade Employers in South Africa.

Public Works of South Africa

PROPRIETORS:
PUBLIC SERVICES PUBLICITY (PTY.), LTD.

EDITOR : ERIK TODD.

EDITORIAL OFFICES
P.O. Box 1113,
PRETORIA.

NOVEMBER,
1941.

PUBLICITY DEPARTMENT :
FIRST FLOOR,
92 MAIN ST., JOHANNESBURG

“PUBLIC WORKS OF SOUTH AFRICA,” which is published monthly, is intended to keep the public up-to-date in regard to projects of the Public Works Departments of South Africa, Union, Provincial and Local Government, giving expression to the activities of each of these departments of service.

★ CONTENTS ★

	Page.
THE GREAT TREK LIVES ON	4
THE DISCOVERY OF THE ORIGINAL DIAS CROSS	5
DECORATIVE TREATMENT BY MEANS OF COLOURED CEMENTS	7
DESIGN FOR NEW EUROPEAN HOSPITAL AT POTCHEFSTROOM	8
THREE SMALL PROPOSED PUBLIC WORKS DEPARTMENT UNDERTAKINGS	10



The Great Trek lives on



THE year is drawing to its close; another year is about to dawn; but the rays of the rising sun, that in the days of peace cheered the world, are thwarted by the heavy mists that lie thick upon the homes of our ancestors in Europe. In South Africa it is different; the sun of the New Year will shine forth upon our world, our veld, with its untold possibilities. The future may hold forebodings in some sort for us, though they are cast aside by every man and woman of spirit. To trek over unknown country, where tempting horizons become the gateways of hope, is an adventure that beckons to all who are determined to reach the light and peace of the rich pastures of new veld, veld untrodden before by their kind.

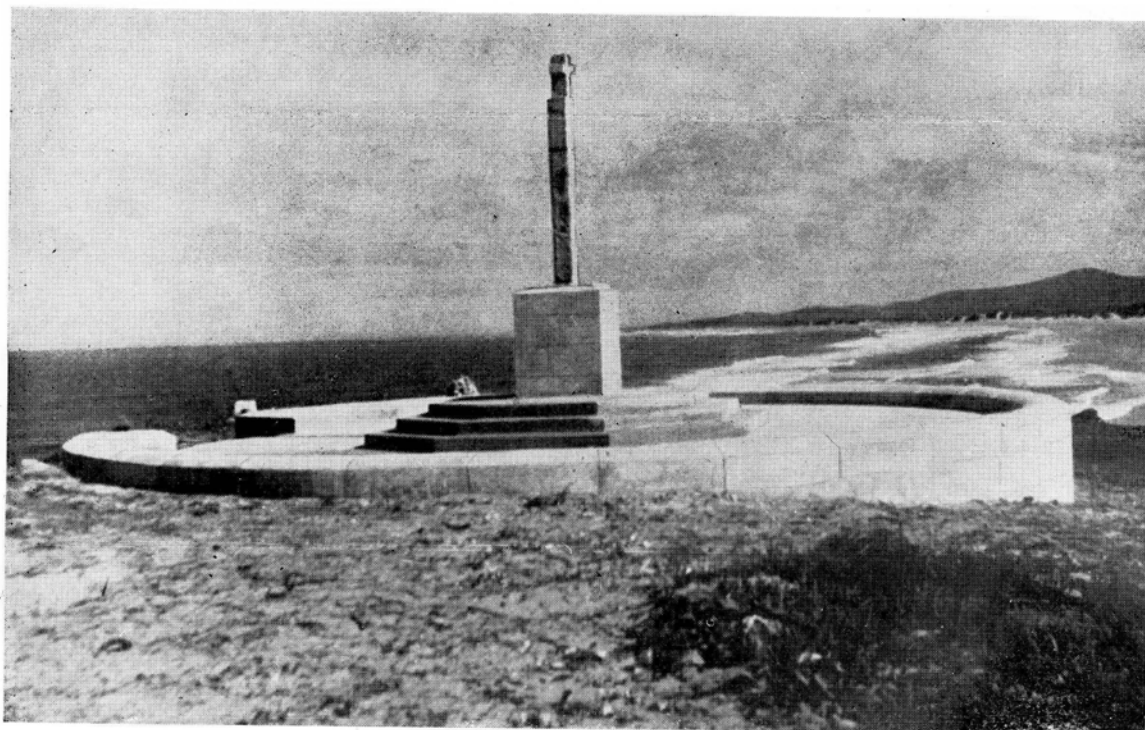
There is a symbolic significance of abiding worth in the Great Trek of the forebears of South Africa—using these terms to include all the pioneers who, in the raw days of our history, fathered our present people. And, whilst this, to the discerning, has been apparent in the material and spiritual progress of our nation over the gradually lengthening years, the coming of the World War has brought this significance to the fore, each month and year of strife and turmoil bringing added strength, greater resolution, steadier momentum and surer endeavour in the Great Trek that, although our forebears have passed away, ever lives on and is ever invested with the dauntless courage and steadfastness that was theirs.

Let us, at the threshold of the New Year, look towards the veiled future with that same courage and steadfastness, and with the cheerfulness of our seasonal festivities lighting our hopes of fruitful enterprise and victorious adventures in the fields of culture and utility that are being so ably expressed in the sphere of public works. For every new undertaking—public building, bridge, viaduct—is an inviting adventure for the enterprising architect, engineer and designer of today, whose works may well long outlive him as shapely stones in the Temple that is the cultural basis of a nation's spiritual life.

And in that spirit we wish everyone alles van die beste in the New Year!

THE EDITOR.

The Discovery of the Original Dias Cross



The illustration above shows the replica of the Dias Padrao erected at Kwaaihoek, District of Alexandria, on the exact site of the original. The replica was made in Johannesburg. It was cast in white cement in a gelatine mould taken from the original. The base and surrounds were constructed on the site with local materials. Cement for the purpose was transported to the site by ox-wagon. Bronze explanatory plaques in English, Afrikaans and Portuguese have been fixed to the monument.

THE discovery of the Cross or Padrao erected by the intrepid Portuguese explorer, Bartolomeu Dias, in the year 1488 on a promontory at what is now known as Kwaaihoek, in the district of Alexandria, its salvage and its reconstruction by experts of the Witwatersrand University, Johannesburg, forms one of the romances of our times. Happenings such as this bring flutters of excitement into the austere precincts of the learned and shed a glow of popular interest on subjects which the average man is too inclined to regard as extremely dull. Thus it was that Bartolomeu Dias came into the news again after a lapse of over four and a half centuries.

As a replica of the Dias Cross has recently been erected on the site of the original, it is fitting to recall the story of the Cross and its discovery. It is only a year or two ago that the details of this story were told by Dr. Eric Axelson of the Department of History at the Witwatersrand University.

The Vanished Padrao:

ONE of the most important personalities in this story is Bartolomeu Dias himself, for he provided the mystery by planting his padrao on a site, the whereabouts of which nobody in modern times could at all be sure until Dr. Axelson's discovery. Bartolomeu Dias apparently did not anticipate the opening up of Southern Africa or that posterity in the centuries to

come would be at all concerned to find the little stone Padrao which he had transported all the way from Portugal. He built his Cross on the sand which in time engulfed it. All that was left to indicate the spot were a few obscure descriptions which Dr. Axelson found, after much scholarly industry, in the archives and libraries of Europe.

The immediate concern of Bartolomeu Dias on that day, March 12th, 1488, was to erect the Padrao to proclaim the sovereignty of Portugal over the coasts he had discovered, to inform subsequent travellers that he, Bartolomeu Dias, had been there before them and to provide proof positive of his claims of discovery to the explorers of rival nations.

The erection of the Padrao was probably hurried, for, much against his inclination, Bartolomeu Dias had been persuaded to turn back by his crew who were wearied of their struggles against the sea. They were suffering from scurvy; and the fear was upon them that their provisions would not be sufficient to last them until they reached their supply ship which had been anchored in what is now known as Luderitz Bay in South-West Africa. The Padrao was erected on the sand-covered knoll of a promontory and was held in an upright position by boulders carried up the cliff from the rocky beach below.

As the centuries passed the Dias Cross sank lower

and lower into the sand. It was broken by the ravages of storms or by destructive Natives. Sections rolled down the 90-ft. cliff into the sea. The remainder was engulfed by the sand.

Early in the nineteenth century, three hundred years after it had been erected, the first European travellers to visit the site could find no trace of the Padrao. Historians were at odds to name the exact site; and many were the theories advanced. Some said it was on the Island of St. Croix in Mossel Bay, others preferred to name the sand dunes opposite the Island. Some said it must have been on Cape Padrone and others were equally convinced that it had been erected at the mouth of the Kowie River about 300 miles west of Mossel Bay. It was all guesswork without any scientific foundation. Although a number of persons very nearly solved the problem, it was left to Dr. Eric Axelson to solve it completely. As is usual in such discoveries, his solution came in an indirect manner.

The Discovery :

ACTING on the advice of Professor Leo Fouché, Dr. Axelson left South Africa for Europe in 1935 after he had been awarded a special scholarship for distinguishing himself in his historical studies at the University. He went to Lisbon to search the archives and libraries there for all available documents relating to the great Portuguese explorers of the fifteenth century, his object being to write a connected history of South East Africa from the day of its discovery in 1488 to 1530 or thereabouts.

Dr. Axelson spent two years studying in the archives and libraries in Lisbon, Porto, Evora, in the Vatican in Rome, in Paris and in the British Museum in London. He returned to South Africa with all the material he needed for his book plus a certain knowledge that he could locate the exact spot where Dias had erected his furthest Padrao in 1488.

Dr. Axelson acted immediately. On the very day that his ship berthed at Port Elizabeth, giving him only the afternoon to spare, he motored to Kwaaihoek; and miles away. His research had led him to suspect the upper part of the promontory at Kwaaihoek; and although on this first occasion he found no trace of the Cross he returned perfectly satisfied in his mind that the promontory would prove to be the site.

A fortnight later, after his arrival in Natal, his brother motored him down to the promontory for a more thorough search. The first day's search revealed nothing beyond the occurrence of a spring between the bush and the sea; but this spring told Dr. Axelson that the locality might well prove to be the Penedo das Fontes referred to in the oldest sailing instructions.

On examining the summit of the knoll they found it to be covered with low bush and scrub growing over a layer of sand about 20 ft. deep. Below the sand was a layer of tufa, and beneath the tufa the dune rock of the cliff. Dr. Axelson found that to maintain a Padrao in an upright position in such sand a base of boulders would have been necessary. Such boulders would have had to be carried up from the bottom of the cliff. With the passing of years it was probable that both the Padrao and its base had sunk into the sand.

Accordingly, a systematic search was started by driving pointed steel rods into the sand. The search

began at the highest part of the ridge where the ground drops sharply for 20 ft. to the edge of the 70-ft. cliff. The full details of the search need not worry us here. Continued probing into the sand revealed something solid about 3 ft. beneath the surface. Other obstacles were encountered by the rods at about the same depth beneath the surface—all within a radius of 5 or 6 feet.

Excavations were started, revealing boulders of which the largest was capable of being carried up the face of the cliff by two men. Later a piece of limestone was found that could not be matched anywhere in the vicinity. This stone was denser, more crystalline, more pinkish and more attractive than the local limestone which was soft, white and chalky in nature, being composed of pebbles set in a calcareous matrix. This piece of limestone, moreover, had two level and almost parallel faces about $8\frac{1}{2}$ in. apart. These faces seemed too smooth and true to be the result of natural jointing in the local rock. They suggested artificial shaping. Similar and smaller pieces of the same limestone were subsequently found.

Then occurred one of those fortunate accidents. A round boulder taken from the excavation was placed on the edge of the hole. It rolled down the slope, falling over the edge of the cliff into the sea. This immediately suggested that something similar may have happened to portions of the Cross.

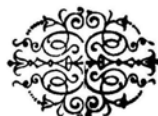
By this time night had fallen, and in the light of a full moon a search was made among the pools and rocks laid bare by the low tide. Dr. Axelson's brother made an important discovery. In a pool he found a block of stone which presented a rectangular face. When the marine growths were scraped off, it proved to be of the same kind of limestone as that found at the top of the cliff. The next day this block was dragged by donkey sledge to the car and taken to Alexandria from where it was railed to Pietermaritzburg. Professor Leo Fouché then made a special trip to Pietermaritzburg and, on examining the stone, declared it to be a portion of the true Cross.

Subsequently, the Witwatersrand University offered to pay for the expenses of excavation and Dr. Axelson returned to the site for a third time in February, 1938. By careful excavation and sifting of the sand the Cross was almost completely recovered, but only in pieces. There were about 5,000 fragments in all. These fragments were in due course sent up to the University in Johannesburg where the Cross was reconstructed by willing and expert hands.

Unfortunately, the damage to the Cross was of such a nature that the inscriptions were not legible, but a number of letters and portions of the coat-of-arms of Portugal are easily seen. Subsequently, the stone was proved to have been quarried in Portugal, possibly at Alcantara outside Lisbon.

This year the Commission for the Preservation of Natural and Historical Monuments, Relics and Antiques had a replica of the Padrao made. This replica was erected on the exact spot where Dias erected his Padrao and dedicated it to S. Gregoria over four and a half centuries ago. The reconstructed original Padrao has been placed on exhibition in the entrance to the Library of the University of the Witwatersrand, Johannesburg.

Decorative Treatment By Means Of Coloured Cements



PERHAPS one of the most useful of materials ever introduced for the embellishment of buildings is coloured cement which, in the course of its modern development, has evolved into a highly specialised substance with an almost unlimited scope for its practical application.

As is well known to architects, one of the most common uses to which coloured cement is put is to be found in a beautiful and hard-wearing substance called terrazzo. This, however, is only one of the uses of coloured cements.

There are many other uses which are familiar to the architect but almost unknown to the general public whose money is invested in building construction ranging from the domestic house to the modern block of offices or flats. To most of these people, decoration by means of coloured cements, whether inside or outside, is something new; and permanent exterior finishes not requiring maintenance are to them a matter for surprise. This article, therefore, is intended to appeal to such people; for, in cases where the client is inclined to be difficult about materials and costs, the architect is usually seriously restricted in his choice of the right materials for the right place.

Colour Standards :

ONE of the greatest difficulties that hitherto confronted plasterers called upon to achieve decorative effects by the use of coloured cements was the absence of any fixed standard of pigmentation. The plasterer was also required to draw upon his own experience in order to determine what grade of aggregate to use for any specific job and where to acquire such aggregate. Frequently he could not always get what he wanted, and just as frequently he did not always know what he wanted. As a result of this lack of precision, colour work in cement was generally unsatisfactory in many ways, one of the difficulties being the avoidance of patchy work. These difficulties, if they did not preclude the use of colour cement work, certainly restricted its application and deprived architecture of one of its most durable of decorative materials.

Developments in the method of preparing coloured cements as well as in the manner of their application have brought into the field of architecture a material which is gradually attaining greater and greater popularity. Until some few years ago modern methods in coloured cement work were restricted in their applica-

tion because the prepared materials had to be imported. The cost consequently tended to be prohibitive. Today, however, these materials are manufactured in the Union and are available at very reasonable prices.

As implied above, the most important advance in colour cement work was the development of colour standards, made possible by grinding specially selected colour pigments and cement so that each particle of cement had its coating of pigment, ensuring uniformity of colour.

Coloured cement, so prepared, may be used and applied as an ordinary plaster, there being no limit to the extent of its application. Its great advantage is that the plasterer, when preparing his materials, is not called upon to determine how much colouration he must add to his cement mixtures. He merely makes his concrete with coloured cement in the normal cement to aggregate ratios. No matter how great or how small the quantity he is preparing the colour of his mixture will be standard.

This cement is in all respects the same as ordinary cement, with the additional advantage that it can be used as a decorative finish in any desired colour. The colours available range through almost the entire spectrum, including in various shades such colours as ivory white, creams, greens, yellows, blue, buff, greys, khaki, pink, reds, brown, burnt sienna, terra cotta and orange. Being a plastic material, almost any surface finish and texture can be obtained.

Allied to the advent of properly coloured cements was the development of suitable aggregates which are now prepared in various grades and kinds. For any specific class of work it is now possible to obtain the right kind of aggregate ready mixed with coloured cement. All that the plasterer is required to do is to add mixing water.

Variety of Finishes :

THESE materials are available for all kinds of work; some for producing imitation granite effects as well as for many original and novel finishes.

With finer renderings, possible finishes range from that obtained from a wood float to fine scraped textures, a wide variety of other textures being produced either by manipulation of the trowel or by means of a special spraying machine to produce a pebble-dash finish. A sand-faced texture is obtainable by using a damp sponge on the prepared surface to wipe off the fine cement and so reveal the texture of the aggregate.

(Continued on Page 12.)

Design For New European
HOSPITAL AT POTCHEFSTROOM



A NEW 80-bed hospital for Europeans is to be erected shortly at Potchefstroom. The design provides for a four-storey building for which the architects are Messrs. Stegmann, Orpen & Porter. The existing hospital is to be converted into a Native hospital with accommodation for Indians. A new nurses' home is also to be provided, as well as a compound for Natives.

Bed accommodation in the new building is split up into separate units comprising a male nursing unit, a female nursing unit, a children's nursing unit and a maternity nursing unit. All wards are situated on the north frontage, the main entrance to the building being on the south. Side entrances have been provided for out-patients, visitors, ambulance cases and kitchen and other services.

The floor accommodation provided is as follows:—

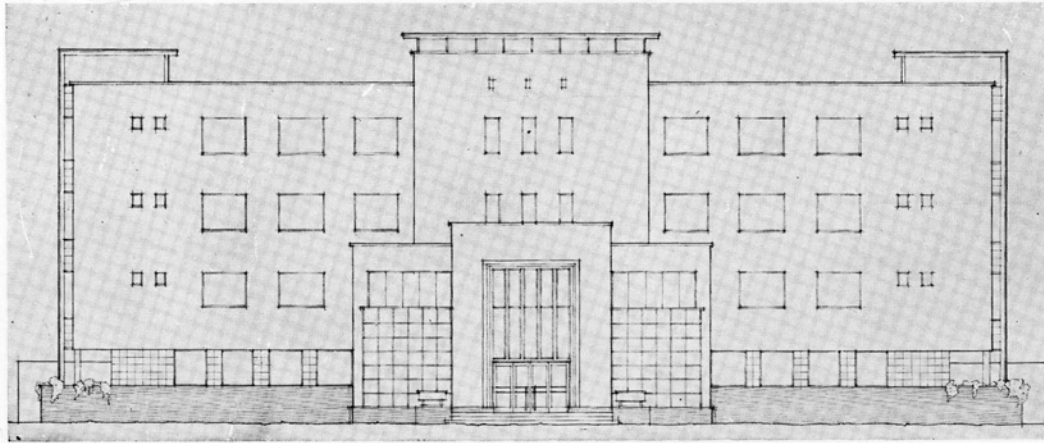
- GROUND FLOOR: Main entrance, administration department, visitors' entrance, casualty entrance, out-patients' department, kitchen, kitchen and service entrances.
- FIRST FLOOR: Operation theatre unit, general, observation and private wards for males, with the usual accessory rooms.
 tion ward and the usual accessory rooms.
- SECOND FLOOR: General, observation and private wards for females, together with an isolation ward and the usual accessory rooms.
- THIRD FLOOR: General wards, maternity wards and a maternity delivery suite.

Each general ward unit consists of 24 beds, subdivided into the following sub-units:— one 10-bed ward, one single-bed private ward and one observation ward in each wing. Besides these wards each unit has the usual auxiliary rooms such as a linen room, a kit room, ward store, ward kitchen, dressing room, sterilizing room, sluice room, patients' bathroom and lavatory.

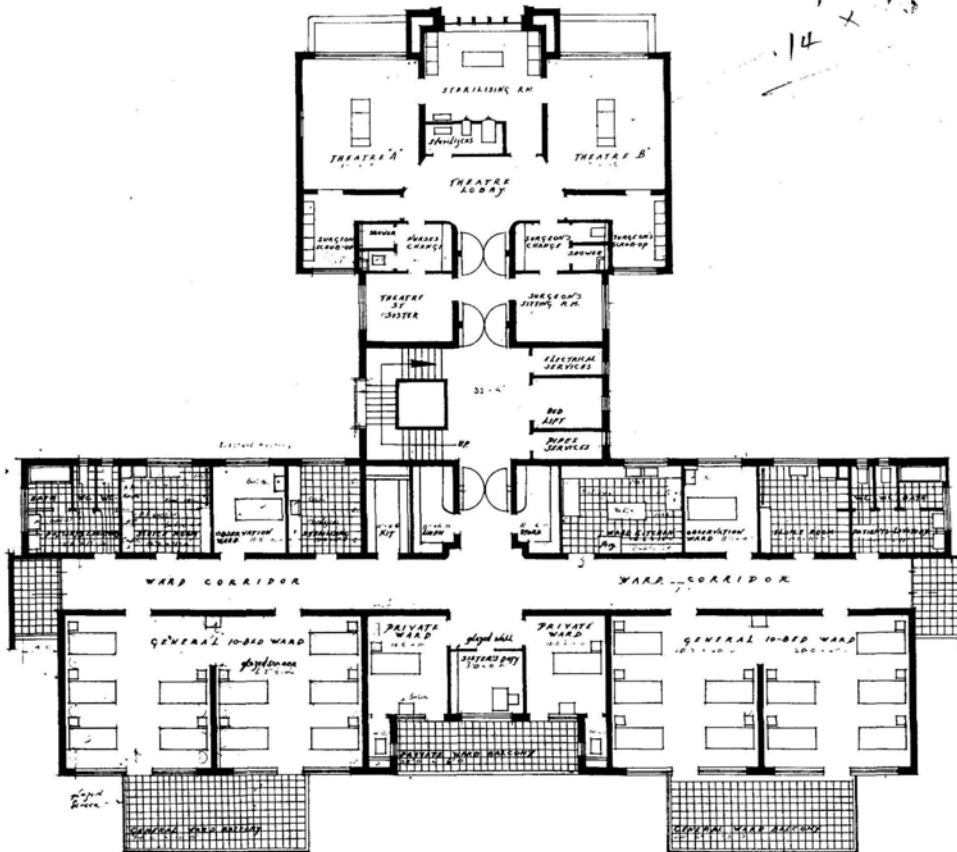
The operation theatre unit on the first floor comprises two theatres with a common sterilizing room equipped with built-in high-pressure steam sterilizers. Included in this unit are the sisters' duty office, surgeons' sitting-room, surgeon's' and nurses' change-rooms, surgeons' scrub-up, lavatory accommodation, storeroom, sluice rooms and theatre lobby. Both theatres are provided with artificial ventilation.

Internally, the building is to be oil-painted throughout, and cream glazed tile dadoes will be given to the service rooms. The wards, duty rooms, offices, etc., are to have wood-block floors. Linoleum will be used on the main staircase and in the corridors. External finishes will comprise plaster surfaces with face-brick relief. Adequate provision has been made for future extensions.

Potchefstroom Hospital



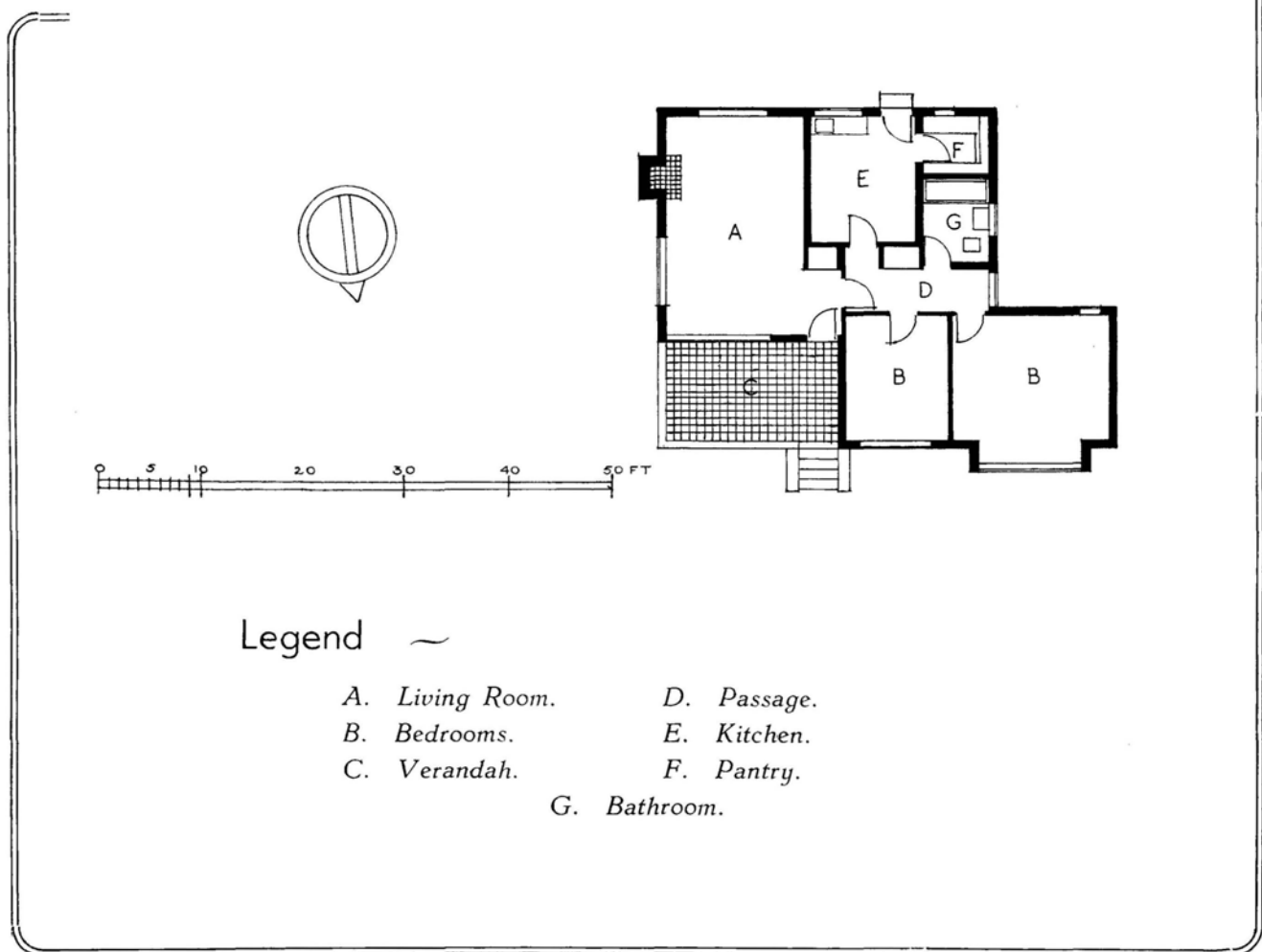
SOUTH ELEVATION.

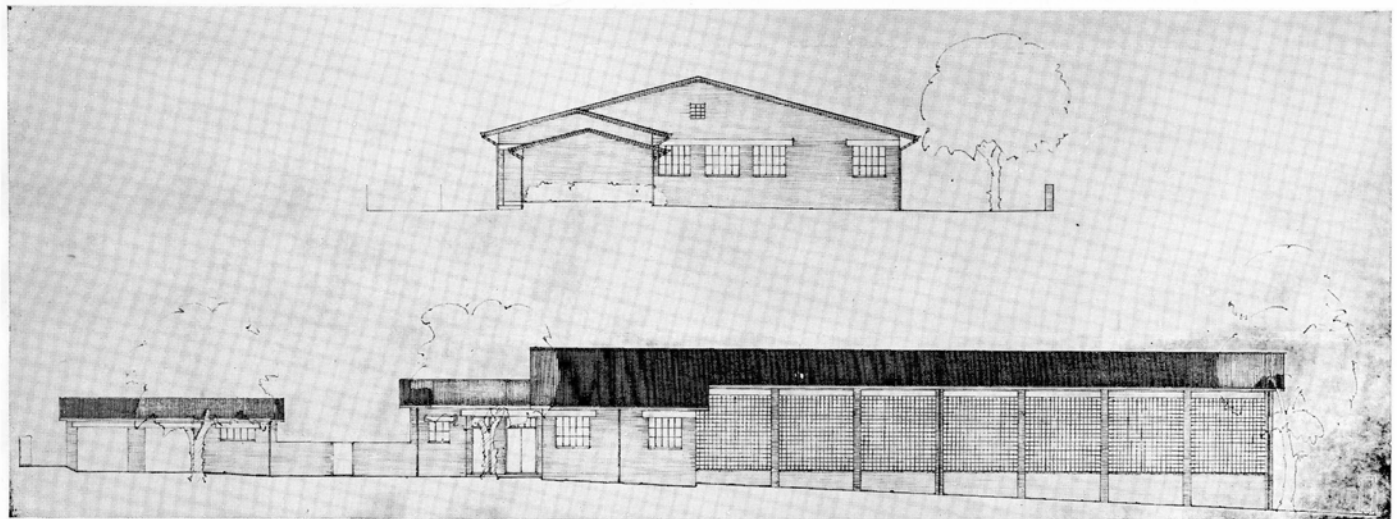
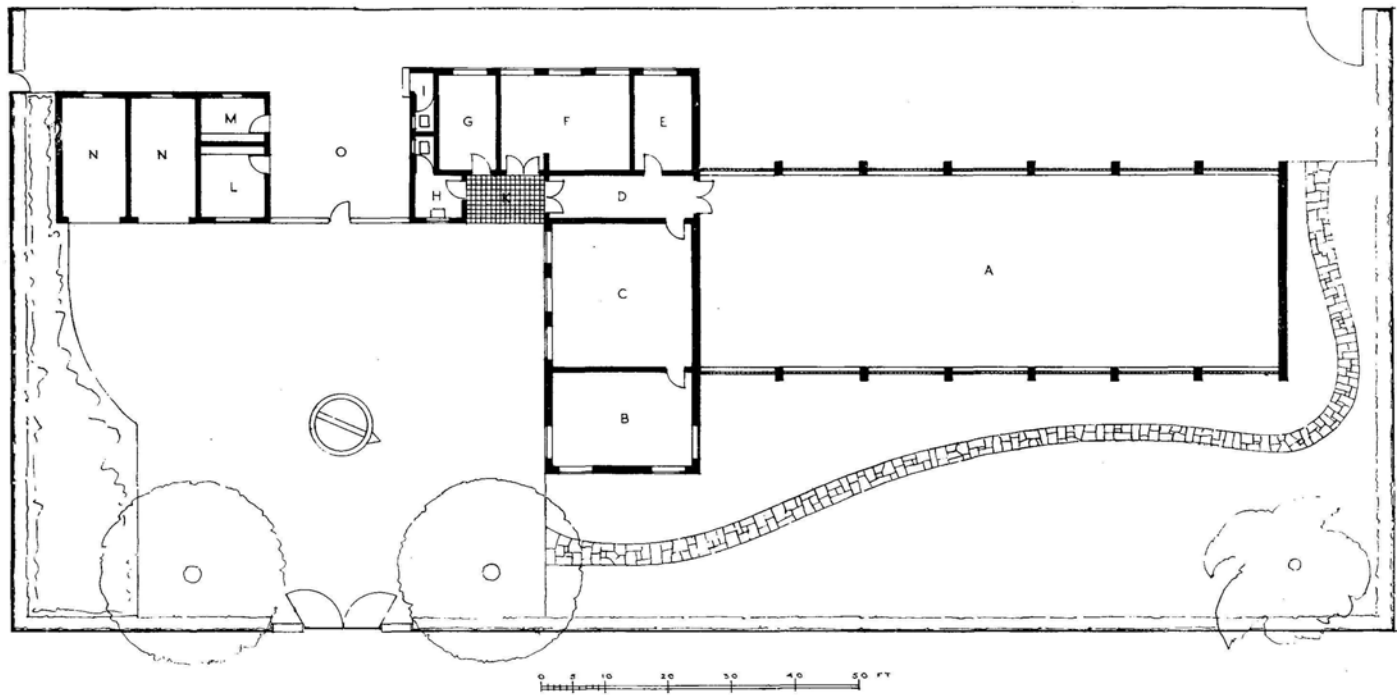


FIRST FLOOR — MALE UNIT.

THREE SMALL PROPOSED PUBLIC WORKS DEPARTMENT UNDERTAKINGS

A Residence

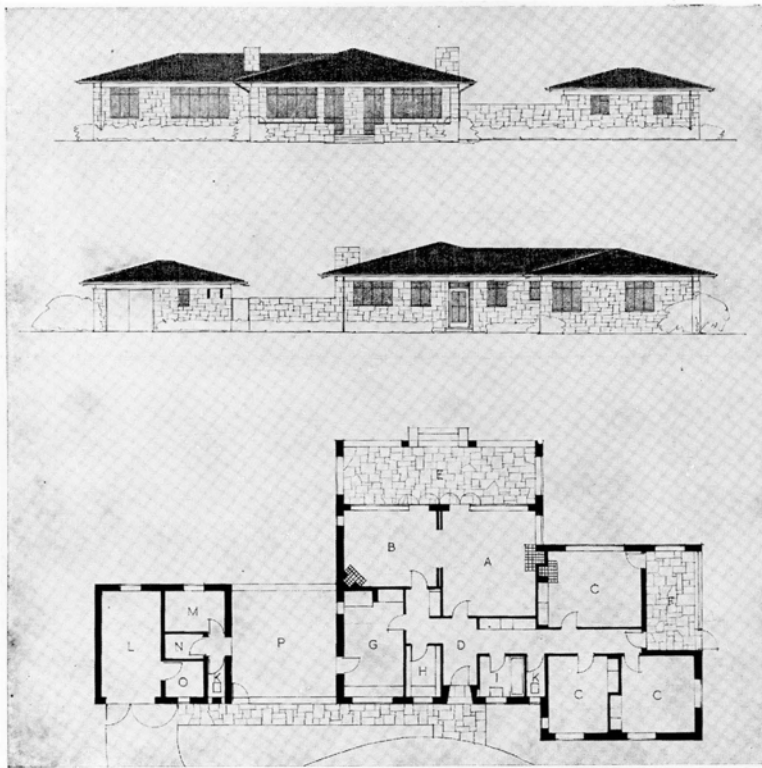




Proposed New Automatic Telephone
Exchange, Primrose, Germiston

Legend ~

- | | |
|-----------------------------|--------------------------|
| A. Automatic Exchange Room. | G. Electrician's Office. |
| B. Battery Room. | H. European Lavatory. |
| C. Power Room. | I. Native Lavatory. |
| D. Passage. | K. Entrance Stoep. |
| E. Main Transformer Room. | L. Workshop. |
| F. Air Plant Room. | M. Store. |
| | N. Garages. |
| | O. Gravel Yard. |



A Residence

Legend ~

- A. Living Room.
- B. Drawing Room.
- C. Bedrooms.
- D. Entrance Hall.
- E. Verandah.
- F. Sleeping Porch.
- G. Kitchen.
- H. Pantry.
- I. Bathroom.
- K. w.c.'s.
- L. Garage.
- M. Boy's Room.
- N. Fuel.
- O. Store.
- P. Gravel Yard.

(Continued from Page 7.)

Indeed, this method may be used to obtain fine effects with even the coarsest aggregate. A variation of this process is the use of a brush. Besides the various degrees of rough scraping, a fine smooth finish is obtainable with fine aggregate when a steel trowel is used.

Another finishing material that has come to the fore with these developments is coloured cement, prepared with a special aggregate so graded that it can be applied $\frac{3}{16}$ in. thick to any wall or ceiling surface by means of a brush. Many beautiful permanent decorative effects in single or dual colours can be obtained in this way. Having regard to the durability of this finish, in spite of its thinness, this is one of the most inexpensive of permanent finishes that it is possible to obtain.

The addition of waterproofing to these cements ensures the utmost durability to the finishes, both interior and exterior. Surfaces treated with these materials are impermeable to moisture. Consequently it is impossible for dirt to become ingrained in the material. Such surfaces may be cleaned of grime merely by washing or rinsing down. This in itself is an enormous advantage in instances where dirt is easily accumulated. When the hardness of the material makes it proof against the roughest usage with scrubbing brush, knocks and careless treatment the advantage is complete.

Because of its decorative qualities, coloured cement is today enjoying a widely extended use. For exteriors there is no limit to the extent of its applications, many delightful colour schemes being carried out not only on building façades, but for garden furniture in concrete and such other structures as ornamental stairways, swimming baths and surrounds, bridges, etc. For interior work the scope is even more unlimited. Dadoes and wall finishes, architraves, floors and ceilings all may be treated with this material. Hospitals, for instance, are using these materials increasingly for wall finishes, thereby saving large sums of money on maintenance. This indeed, is an important point for, although the cost of these materials is slightly higher than that for more conventional finishes, a saving is effected by the absence of maintenance costs over a long period of years.

For readers who are interested, coloured cements in all colours are manufactured in South Africa under the trade name of "Colorcrete." A mixture of "Colorcrete" and aggregate for any specified type of work is available under the trade name of "Cullamix." Other varieties are "Snowcrete" mixture, a pure white portland cement prepared with special aggregate by the same manufacturer, and "Stipplecrete," a mixture which can be applied in thin coats to wall and ceiling surfaces.

HUNT LEUCHARS & HEPBURN LIMITED

DURBAN
P.O. Box 943

JOHANNESBURG
P.O. Box 47

TIMBER and BUILDERS' MERCHANTS

Branches at:

LOURENCO MARQUES,
PRETORIA, GERMISTON,
BRAKPAN & KLERKSDORP.

SPECIAL LINES:

"UNIVERSAL" MULTI-UNIT TEAK WINDOWS.

"UNITEX" INSULATING & BUILDING BOARD.

"UNTEX" HARDBOARD.

"FERRODOR" ELASTIC PAINT.

"MALTHOID" ROOFING FELT

and

"MASTIPAVE" FLOORING COVERING.

"FIBRECRAFT" WALLBOARD.

"COLORCRETE" and "CULLAMIX"
(Coloured Cements).

The Brick and Potteries Company, Limited

Manufacturers of the following :

"HERONMERE" BRICKS
DOWN DRAUGHT KILN FACING BRICKS
GOLDEN BROWN FACING BRICKS
HOFFMAN KILN BRICKS
SPECIALS

Prices will be furnished on application to :
THE SALES MANAGER, 'Phone 33-4158/9.

Head Office :

TRUST BUILDINGS,
Cor. Fox and Loveday Streets,
JOHANNESBURG.
'Phone 33 - 3414.

Works :

STEVENS ROAD,
Off Eloff Street Extension, Booysens,
JOHANNESBURG.
P.O. Box 155. 'Phones 33 - 4158/9.

TELEPHONE 2-7111.

P.O. Box 598.

CAXTON PRINTING WORKS

(PTY.) LTD.,

PRINTERS, STATIONERS,
BOOKBINDERS RULERS.

265 PRETORIUS STREET,
PRETORIA.

WHITE'S
SOUTH AFRICAN
PORTLAND CEMENT
FOR GENERAL REQUIREMENTS

AND

FERROCRETE
THE ORIGINAL TRUE
RAPID HARDENING
PORTLAND CEMENT
FOR SPEEDING UP CONSTRUCTIONS

BRITISH STANDARD SPECIFICATION GUARANTEED

WHITE'S SOUTH AFRICAN PORTLAND CEMENT COMPANY, LIMITED.
(REGISTERED IN ENGLAND)
HEAD OFFICE: P.O. BOX 2484, JOHANNESBURG. WORKS: WHITES, O.F.S.

JOHN J. KIRKNESS,
(THE GROENKLOOF BRICK, TILE AND POTTERY FACTORY, LTD.)
PRETORIA.

Works : P.O. Box 44; 'Phones 3140 - 3141.

Head Office : Palace Street, 'Phone 30.

Manufacturers of :

**HOLLOW-WARE
KLOMPJES
BRICKS**

**ROOFING TILES
QUARRY TILES
POTTERY**

Contractors to the Public Works Department, S.A.R. and H. Administration, Pretoria Municipality, S.A. Iron and Steel Corporation, and many other public bodies.

Representatives in the Union and Rhodesia :

Johannesburg — Douglas, Son & Pugh (Pty.), Ltd.

Cape Town — R. Heddie & Co.

Rhodesia — Messrs. Harrison & Hughson, Bulawayo and Salisbury.

Bloemfontein — Woolf Engineering Co. (Pty.), Ltd.

Kimberley — Angus Galloway.

Reef — Hillman Bros., Springs, Brakpan, Benoni, Krugersdorp.



