

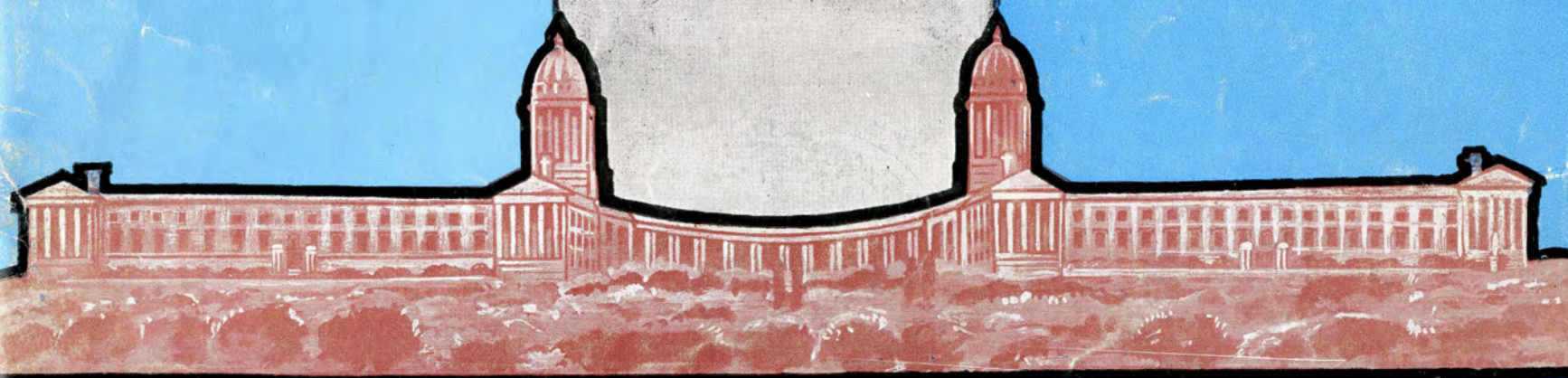
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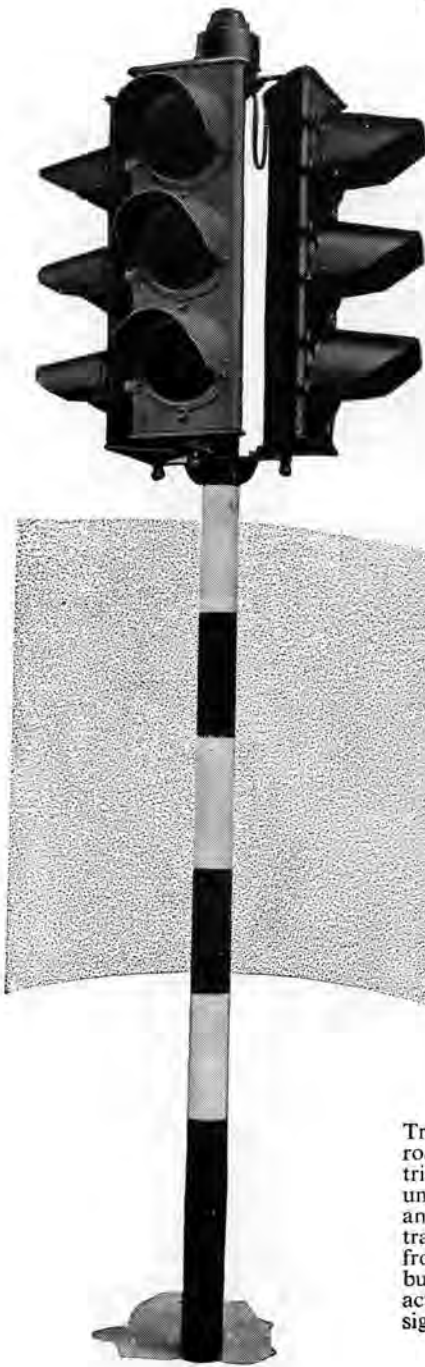
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Page 1.

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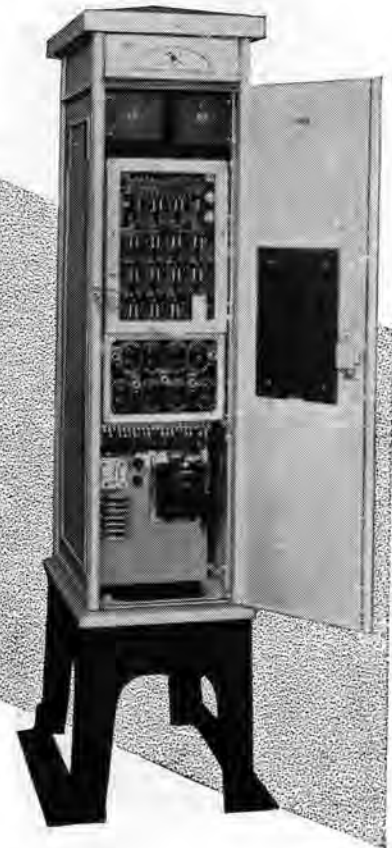


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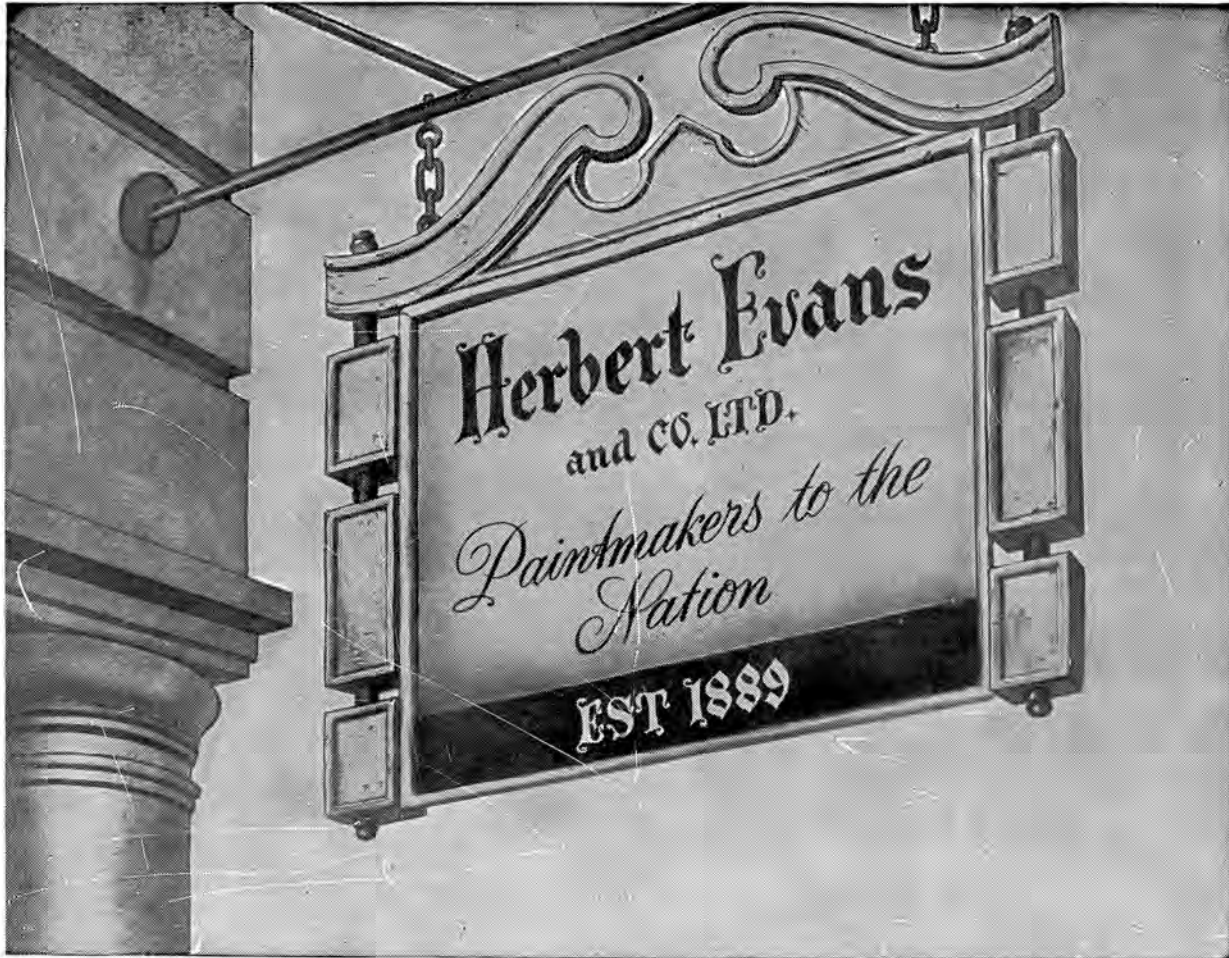
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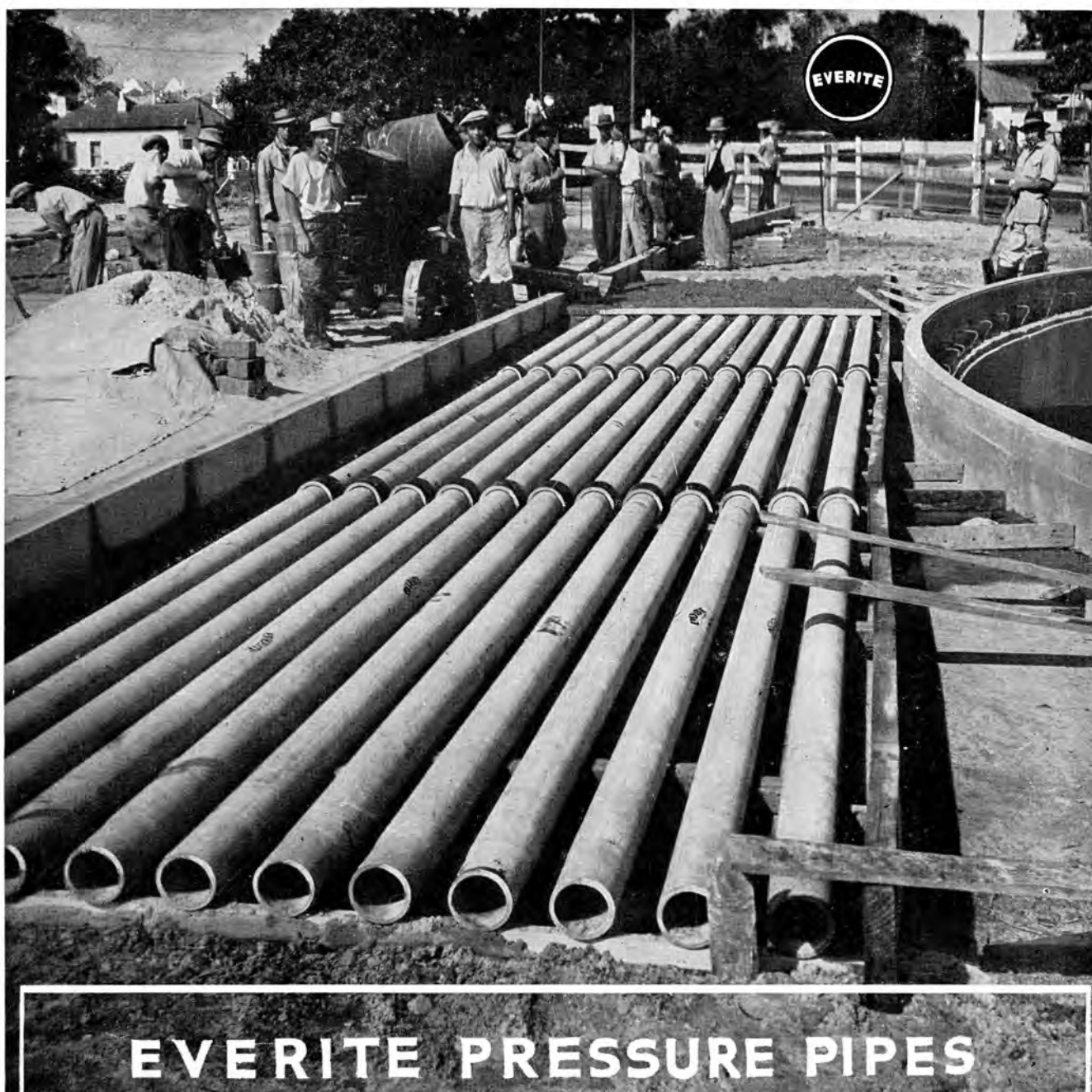
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E D I T O R
E R I K T O D D

PUBLIC WORKS OF SOUTH AFRICA, which is published monthly, is intended to keep the public up-to-date in regard to the engineering and building projects of the Central Government and the Provincial and Municipal Governments of South Africa.

VOLUME IX • NUMBER FIFTY-TWO • MARCH 1948

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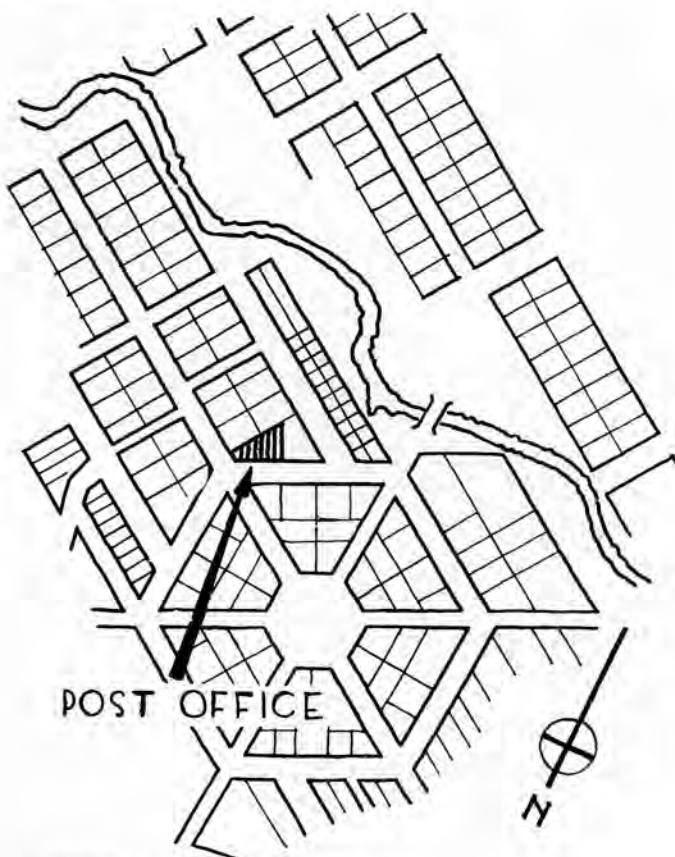
QUEENSTOWN POST OFFICE,
PERSPECTIVE VIEW.

QUEENSTOWN POST OFFICE.

AS far back as 1936 it was appreciated that Queenstown needed a new Post Office, and sketch plans were prepared, but the project had to be abandoned for more pressing work, and has remained in abeyance until the present.

The existing building was originally designed in 1915 as Public Offices and Post Office. In 1938 or 1939 the Public Offices were transferred to other premises, releasing further accommodation for the Post Office. This relief, however, was considered only a temporary expedient, as the building was out of date and not conducive to an efficient organisation.

The new building which is to rise on the site of the existing one, will be well placed in the Town, as it will terminate the vista of one main road and will be prominently seen from two others. The famous Hexagon, presumably the original market place of the Town, is its centre and focal point — it is joined to the outer Hexagon, Robinson Road, by six streets, like spokes of a wheel. The Post Office site is on the South-Eastern side of the outer Hexagon, on the corner of Cathcart Street, one of the "spokes."



LOCALITY PLAN.

The original building was sited with the main front facing North-west onto Robinson Street, and connected to the remainder, which faced North-East onto Cathcart Street, by a tower which emphasised the main entrance to the Public

Offices and Court Room. This "tower" feature was one of sufficient importance to influence the designers of the new building, who have incorporated in their scheme a tower in the same position.

Queenstown is a "stone" district — the old Post Office and many other buildings are constructed of stone, so it was felt that a certain amount of this material should be incorporated in the new building. Stone is therefore to be used up to the first floor level, and the "tower" as the main motif is all to be stone faced. Main entrances have been emphasised by stone features rising up through the rest of the facade, which will be executed in faced brickwork. The first and second floor windows have been linked together vertically by stone panels and surrounds. This treatment, although somewhat different in design to the surrounding buildings, will not clash with them and will stress the importance of the building.

The existing building is founded mostly on a rock bottom, approximately 6' 0" below the surface, with the exception of a portion under what will now become the Non-European Entrance, which is founded on a patch of clay. This clay patch will be excavated and the new boiler room, etc., will be placed here in a basement, thus eliminating most of the bad foundation on the site.

The main Postal Hall has been planned on the ground floor in the section on Robinson Road, with the European Entrance Hall adjacent to the main staircase, which is accommodated in the "tower" feature. The Private Box Lobby is situated adjacent to this, and has a separate entrance from Cathcart Street, but is also easily accessible to the main entrance hall. A separate Non-European entrance and counter-space has been provided at the other end of the main postal hall. Beyond this is situated the Air-conditioning Plant Room, for the Automatic exchange directly above on the second floor. A secondary staircase for Staff use is located behind the Non-European counter-space.

An arched carriage-way, flanked by the Air Conditioning Room and the Low Tension, High Tension and Transformer Rooms, passes through the street front section of the building, and gives access to the main postal yard, which is equipped with a loading platform, a car washing slab, and leads to garages, cycle shed, electricians' workshops, electricians' stores, and all the usual postal yard adjuncts.

A duct for splitting and carrying up telephone cables to the Exchange is situated at the extreme western end of the building.

The circulation office is located immediately behind the European counter-space, and extends through behind the private boxes. It is equipped with a special Registered Letter Section and strong rooms, and is well lit and ventilated from light areas, the main yard and the Cathcart Street front, and also by means of roof lights, and is easily accessible to all other parts of the building.

A special room is provided for Postmen, and a corridor towards the back of the site gives access to Male staff rest rooms and lavatory units.

A Non-European staff yard, with its necessary adjuncts is provided in the South-Western corner of the site.

The first floor comprises a Cathcart Street wing, a Robinson Road wing, and a central internal wing. The Cathcart Street wing houses the Postmaster and his staff. The Robinson Road wing houses the telegraph school, phonograms and men's rest rooms in the Eastern end, and in the Western end, cut off by swing doors, a kitchen, a women's rest room and the manual telephone exchange, with observation room attached. This exchange will be operated by women telephonists until the Automatic Exchange equipment has been installed, which will not be possible for some time after the completion of the building. The central internal wing houses the men's and women's lavatory units and provides storeroom accommodation.

The whole of the second floor houses the telegraph and telephone exchange equipment and staff, and in form is a repeat of the first floor plan. The Cathcart Street wing houses the engineers and spare parts. The Robinson Road wing accommodates the carriers, power equipment, battery room, and the automatic switch room. The central inner wing provides men's lavatory accommodation, engineers' rest room, storeroom and emergency engine room.

The Automatic Switch Room is air conditioned in order to avoid deterioration of the delicate exchange equipment, which is easily affected by dust and other climatic conditions. The windows are to be fitted with special glass which prevents the bleaching of the telephone wires, the colouring of which must always be readily discernable in order to facilitate repairs and adjustments, and to eliminate unnecessary replacements.

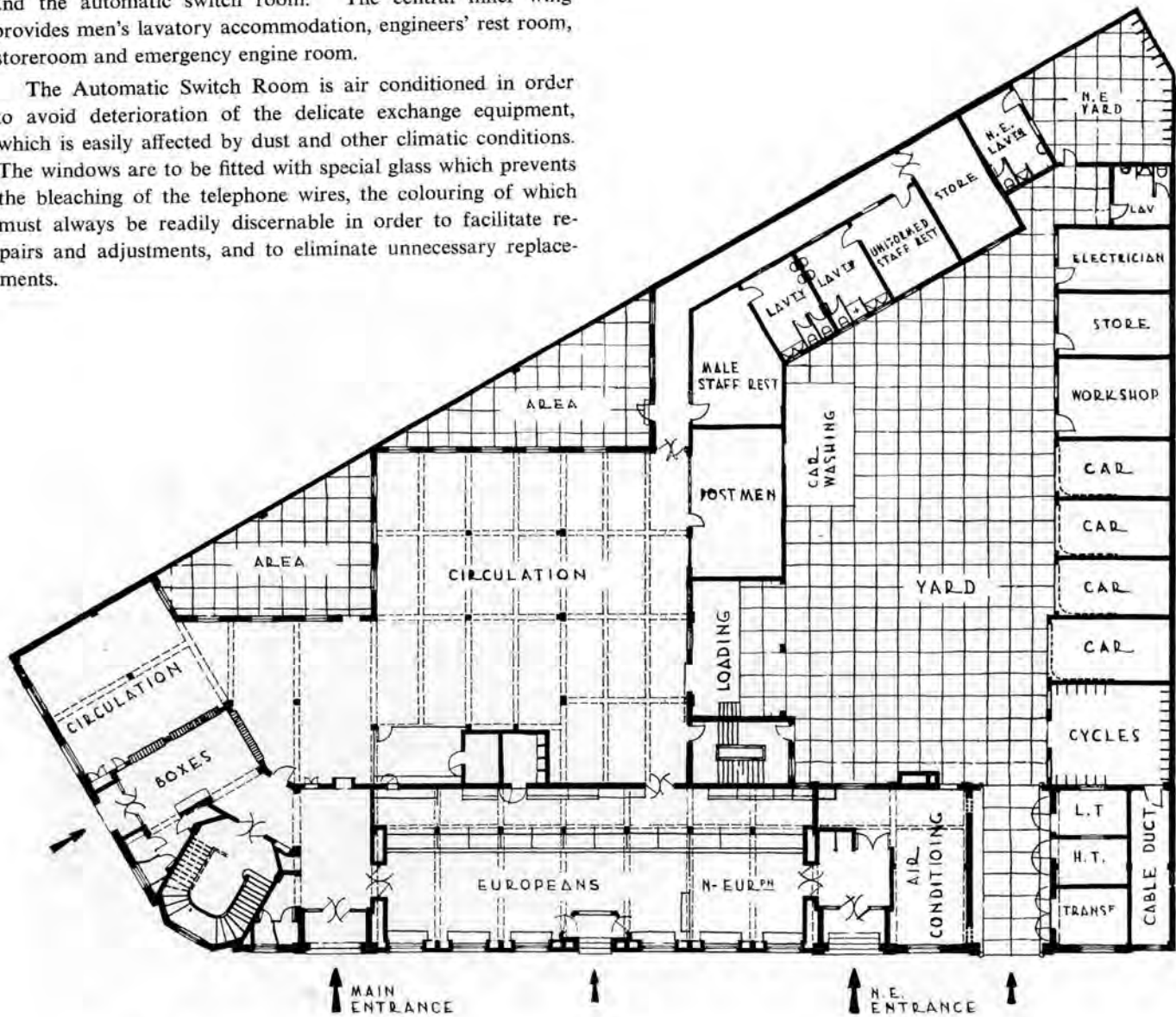
The main postal hall, the entrances and the private box lobby will be faced with "Travertine" dadoes 7' 0" high, and will have terrazzo floors. All corridors will have 5' 0" high faced brick dadoes, and lavatories will be tiled.

The constructional columns in the Main Postal Hall will form the divisions between the various members of the counter staff, thus serving a dual purpose. A light weight false ceiling will hide constructional beams, and a light and open appearance will result. To ensure adequate cross ventilation in the Main Postal Hall, forced ventilation will be introduced at both ends through vent ducts over the entrance doors.

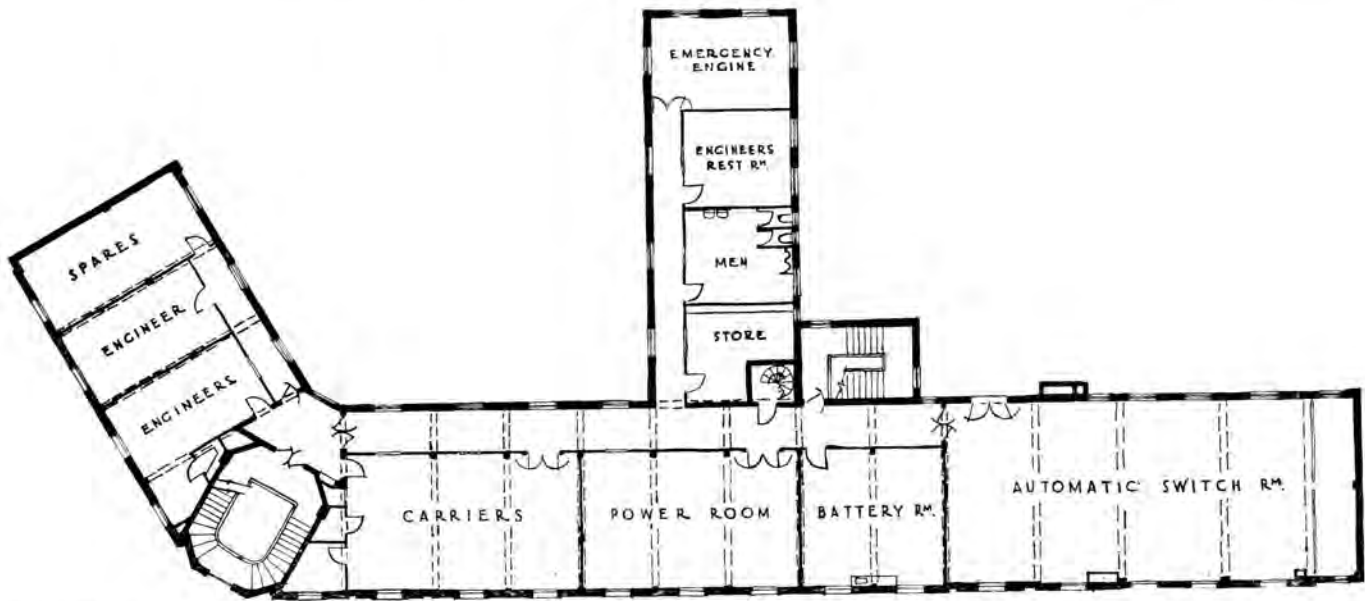
All yards will be macadamized and will have a faced brick dado around them.

This new Post Office should adequately satisfy Queens-town's requirements for many years to come.

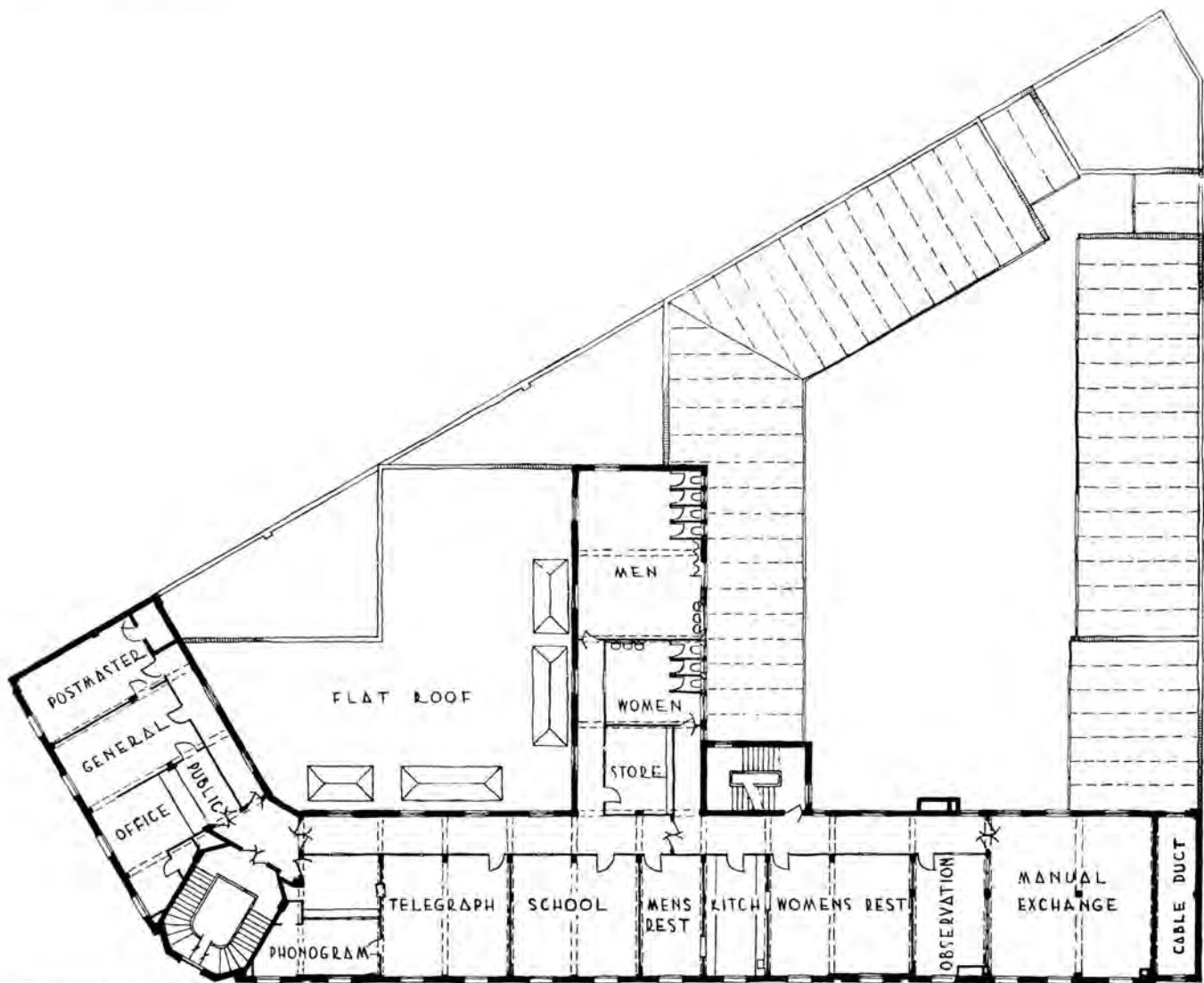
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GROUND FLOOR PLAN.



SECOND FLOOR PLAN.



FIRST FLOOR PLAN.

THE STANDARDIZATION OF COMMODITIES AND PRODUCTS IN SOUTH AFRICA.

IN terms of Proclamation No. 177 of 1945, the Standards Act, Act No. 24 of 1945, came into operation on the first day of September 1945, and the Honourable Minister of Economic Development thereupon established the Standards Council which held its first meeting on Friday, the 21st of September, 1945.

The South African Bureau of Standards was established by the Standards Council on the 1st of January, 1946, in terms of Section 2 of the Standards Act.

The Bureau was at first housed in temporary accommodation provided by the Department of Commerce and Industries, but it was moved on the 1st of April, 1946, to the South African Mint Buildings, Visagie Street, Pretoria, and it is at present operating at that address.

During the initial period of its existence up to the end of December, 1946, the Council succeeded in completing a great deal of basic work, and had crystallized or begun to crystallize its policy in regard to a number of important matters.

From the very outset the Council has been determined that the Bureau shall maintain the fullest liaison with standardization organisations in all parts of the world, so as to ensure that the very latest information in regard to standards would be available for the technical committees appointed by the Council from time to time to deal with specifications, codes, and similar matters. In 1946, largely to achieve this, the Council sent the Director overseas for a period of nearly six months, and he was able to arrange the fullest co-operation with a number of overseas standardization organisations and the fullest exchange of information between these bodies and the Bureau. Liaison has been established with the Standards Association of Australia, the British Standards Institution, the Canadian Standards Association, the Indian Standards Institution, the Irish (Eire) Institute for Industrial Research and Standards, the New Zealand Standards Institute, the Standards Institute of Palestine, the Swedish Standards Association, and the American Standards Association, and it is intended to extend this liaison to the standardizing organisations of other countries, particularly those of Europe, as soon as conditions make it possible.

In addition to liaison with other standardizing bodies, the Standards Council has sought the co-operation and assistance of many public, professional, industrial and commercial bodies and organisations which are interested in standardization in South Africa.

There is no doubt that industrialists here and overseas appreciate the fact that standards of quality are a powerful force in industry, and a useful instrument in commerce. This is proved by the fact that inquiries for further information have been received from England, Australia, the United States and Kenya, and by the fact that meetings of committees are being regularly attended by persons from all the important towns in the Union, and that technical representatives of oversea companies are to travel to the Union to attend meetings of the Council's Specification Committees. Excellent support is being received not only from organised commerce and industry, but also from individuals, firms, institutions, and Government departments. Firms with laboratory facilities have assisted to the extent of carrying out long series of expensive tests to obtain the necessary information for specification committees; many have co-operated with personnel on committees, with tests and with information from their own laboratory records.

The Standards Bureau does not undertake any research work: All research work arising in connection with the preparation of specifications or codes of practice is carried out by the Council for Scientific and Industrial Research. The Bureau is also fortunate in being able to avail itself of the facilities offered by other sections of the Council for Scientific and Industrial Research, its overseas scientific missions, etc.

A relationship much closer than liaison exists between the Standards Council and the South African Standards Institution. Provision is made in the Act for the Standards Institution to have two representatives on the Standards Council. To avoid any danger of overlapping of activities, a special body, known as the Standards Joint Committee, has been formed. The most important function of the Joint Committee is to screen or sift all applications for specifications, whether the application is submitted in the first instance to the Standards Council or to the Standards Institution. After the applications have been considered, and it is decided that a case has been established for the preparation of a South African specification for a particular commodity, the Joint Committee next recommends which body, either the Standards Council or the South African Standards Institution, is to undertake the actual preparation of the specification. A third function of the Joint Committee is to discuss any matters of mutual interest to the two bodies it represents, and where necessary to submit recommendations to these bodies on such

matters. More recently it has been decided that, whenever a specification for a particular commodity, forwarded by an oversea standardization organisation to either of the two South African bodies for comment and criticism, is felt to be of sufficient importance to warrant the framing of a South African specification for the same commodity, the matter is to be reported to the Joint Committee, which will then consider the matter carefully and submit specific recommendations to the Standards Council and the South African Standards Institution. Due to the fact that during the preparation of specifications for most commodities, a certain amount of testing work has to be done, keeping pace step by step with the deliberations of the relevant specifications committees, the bulk of the applications for specifications have been passed to the Standards Council for attention. The Standards Council has at its disposal the laboratories of the Standards Bureau and is then able to carry out this work.

At this point it may not be inappropriate to outline briefly the Council's policy and procedure in regard to applications for specifications. A South African manufacturer applies to the Council for a South African specification for a certain commodity. The Council, if it is satisfied that the application is worthy of consideration, refers the matter to the Standards Joint Committee. The latter body goes into the matter further and decides, let us say, that a case has been established for the framing of a South African specification for the particular commodity. It recommends accordingly, and may further recommend that the preparation of the relevant specification be undertaken by the Council. The Joint Committee may or may not at the same time submit recommendations in regard to the personnel of the technical committee which will draw up the specification. The Standards Council considers the specific recommendation of the Joint Committee and normally proceeds to appoint a technical committee. This latter committee includes representatives of producers and consumers of the commodity in question, together with impartial experts, usually drawn from the personnel of the Bureau and from Government departments. The various South African organisations with which the Council maintains liaison, as indicated in the preceding paragraphs, play a very important part in advising the Council regarding suitable persons to serve on technical committees and in nominating representatives to these committees. It is usually arranged that an officer of the Bureau takes the chair at meetings of the technical committee, but in the case of very important specifications the Council may decide to appoint one of its own members to the chair. Secretarial work in connection with the proceedings of the committee becomes the responsibility of the Standards Bureau. The technical committee meets at convenient intervals and prepares a specification. When completed, the specification is circulated as a draft specification throughout the Union for general comment and criticism. When time permits the comments and suggestions of oversea standardization bodies are also obtained. After a sufficient interval of time the technical committee meets again to consider the comments received. The specification is reviewed if necessary and amended in the light of the criticisms, and then submitted to the Standards Council by the technical committee with a recommendation that it becomes a South African Bureau of Standards Specification. Should the Council approve, the specification is thereupon published as a tentative Bureau specification. If, as provided in the Act, the South African Standards Institution decides to adopt the specification, the latter may,

subject to the approval of the Honourable the Minister of Economic Development, become a South African Standard Specification. In special cases where it is in the public interest to do so, for example for reasons of safety or health, the Minister may declare the specification to be a compulsory Standard Specification. In declaring any specification compulsory, the Minister will act on the recommendations made by the Standards Council, and it may here be stated that the Council does not intend to submit recommendations of this nature to the Minister except in cases where it is manifestly in the public interests and then normally only after the specification has had a thorough trial over a reasonable time as a tentative specification.

Linked with the preparation of specifications is the very important matter of Standardization Mark. The Act makes provision for the grant to producers and manufacturers by the Council of permits to use its Standardization Mark. The principal condition will be that the commodity on which the producer wishes to display the Council's Mark shall comply with the corresponding specification. The Mark will accordingly act as a guarantee that a certain minimum standard is being maintained in the product. Consumers will then know what they are paying for and reputable producers will be protected against unfair competition. It is hoped that the Council's Mark or Marks will in time become so familiar that consumers will refuse to buy an article which does not bear the Mark. In this way the Standards Council hopes to raise the quality of goods produced in South Africa.

During the war many enterprising local industrialists established factories to manufacture articles which were unobtainable or in restricted supply from overseas. In many cases the local product equalled or surpassed the imported article in quality, but with the end of the war the manufacturer has found that purchasers have a prejudice against the locally manufactured article, a prejudice which is in many cases quite unjustifiable. Many local manufacturers therefore feel that the application of the Council's Mark signifying a guarantee of compliance with a quality standard will assist them to overcome the prejudice against locally manufactured goods.

The preparation of regulations in connection with the Standardization Mark was considered by the Council to be a matter of such importance as to warrant the appointment of a special Council sub-committee. During his tour overseas the Director of the Bureau made a careful study of the procedure in other countries. The South African proposals for the use of standardization marks, as well as the regulations appertaining thereto, were also discussed by the Director with overseas authorities. Making use of the information obtained, a set of regulations was in due course drawn up to cover points such as: the issue of licences or permits to persons desiring to apply the standardization mark to a commodity they may be manufacturing, arrangements for testing the product, fees to be charged for the grant of a licence or permit, circumstances under which the licence or permit to apply the mark will be withdrawn.

It may be mentioned that the Standards Act makes provision for the prescription of a different standardization mark for each commodity for which the Council may frame a specification. The Council, however, is of the opinion that, in a country like South Africa with its large native population, it would be wiser to limit the range of marks for the present. The use of only one mark is therefore contemplated, and it is hoped that this mark will in course of time become so familiar

to the buying public that even the most illiterate members thereof will readily recognise it. The Council will accordingly follow the procedure of declaring this one mark to be the standardization mark applicable to every commodity for which it may from time to time frame a specification. In other words, whenever a notice for general information is published in the Government Gazette to the effect that the Council is about to issue a specification for a particular commodity, it will be accompanied by a formal declaration that the common mark which the Council has already adopted shall be the standardization mark in respect of that particular commodity.

To protect the common mark from misuse or imitation, it has been registered under the Merchandise Marks Act, No. 17 of 1941. The mark consists of an ellipse containing the letters S.A.B.S. When the mark is used in connection with a commodity for which the South African Standards Institution has issued a specification, the ellipse will also contain the letter "S" in a diamond.

A matter to which the Council gives most careful consideration is the avoidance of overlapping with other organisations in regard to activities, personnel and equipment. As the Council at the commencement is largely dependent on public funds, it has been its policy to avoid unnecessary expenditure. Before purchasing any specialized equipment or appointing specialized staff, the Council takes due note of what facilities exist elsewhere in the Union, and what assistance can be obtained from these other sources.

A special committee, known as the Equipment Committee, considers all equipment recommended for the various laboratories of the Bureau, and advises the Council in regard to equipment to be purchased. This committee takes special care, before submitting its recommendations to the Council, to ensure that there will be no unnecessary duplication of equipment between the Bureau and any other organisation which could be called upon to assist in cases where specialized equipment is required.

Mention has been made of the co-operation and assistance rendered to the Council by Government departments particularly in connection with testing work. The Council, it is stated, hopes in turn to reciprocate by carrying out work on behalf of State organisations at fees which will in all cases be low and in some cases may be nominal. The laboratories of

the Bureau can be of considerable assistance to organisations such as the Union Tender Board and the Provincial administrations when the purchase of equipment and consumable goods according to specification is under consideration.

Linked up with the matter of testing commodities on behalf of Government departments and other State organisations, is the question of the extent to which the Council through the facilities offered by the laboratories of the Bureau can assist State departments in the administration by the latter of Acts which deal with standards of quality. In terms of Section 3(j) of the Standards Act, one of the objects of the Bureau is to provide for the testing, at the request of the Honourable the Minister of Economic Development, and on behalf of the Government, of locally manufactured and imported commodities with a view to determining whether the commodities comply with the provisions of the Merchandise Marks Act or any other law dealing with standards of quality. In the brief period of its existence the Bureau has already had its attention drawn by reputable producers to numerous instances of unethical practice on the part of unscrupulous manufacturers and traders. Commodities have been advertised (a) as containing a certain minimum percentage of a given ingredient when the actual percentage has been much lower, and (b) as conforming to certain specifications when they in fact do not conform to those specifications. These are cases coming within the category of "False Trade Descriptions" as defined in the Merchandise Marks Act, and provision is made in the Act for the authorities to take legal proceedings against manufacturers and merchants thus falsely describing their products. It is clear that the Council through the testing work carried out by the laboratories of the Bureau will be able to detect instances of false trade descriptions and to report them to the Department of Commerce and Industries, which can then take further steps in the matter. The Council is in a position to render a similar service to any other department which administers an act dealing with standards of quality.

The Standards Council is fully constituted to protect the consumer and the reputable manufacturers against poor quality products and is in a position to set standards of quality and performance, etc. for commodities and products. The Council has a heavy task before it, but one which is well worth while performing.

RAILWAY ELECTRIFICATION ON WEST RAND.

WITH more gold mines coming into production in the Western Transvaal and with industry on the West Rand marching ahead, railway development has had to be adjusted accordingly. The electrification of the lines between Nancefield, Midway and Bank was decided on in 1946, and good progress is being made.

A construction depot was laid out at Bank on August 1, and offices, together with a Bellman hangar to serve as workshop and store, plus European quarters and a non-European compound were provided.

Construction work commenced in September, 1946, with the casting of the foundations for the steelwork on the Midway-Bank section, and by January, 1947, the inter-station sections were completed and the gangs were transferred to the Randfontein-Welverdiend section. The installation of cantilever mast foundations for tangent and curved track on the latter section was completed by the end of May, 1947, by which time a total of 1,000 mast foundations had been cast. Work was then commenced on the welding of masts and bridge boom steelwork for the overhead equipment, and early

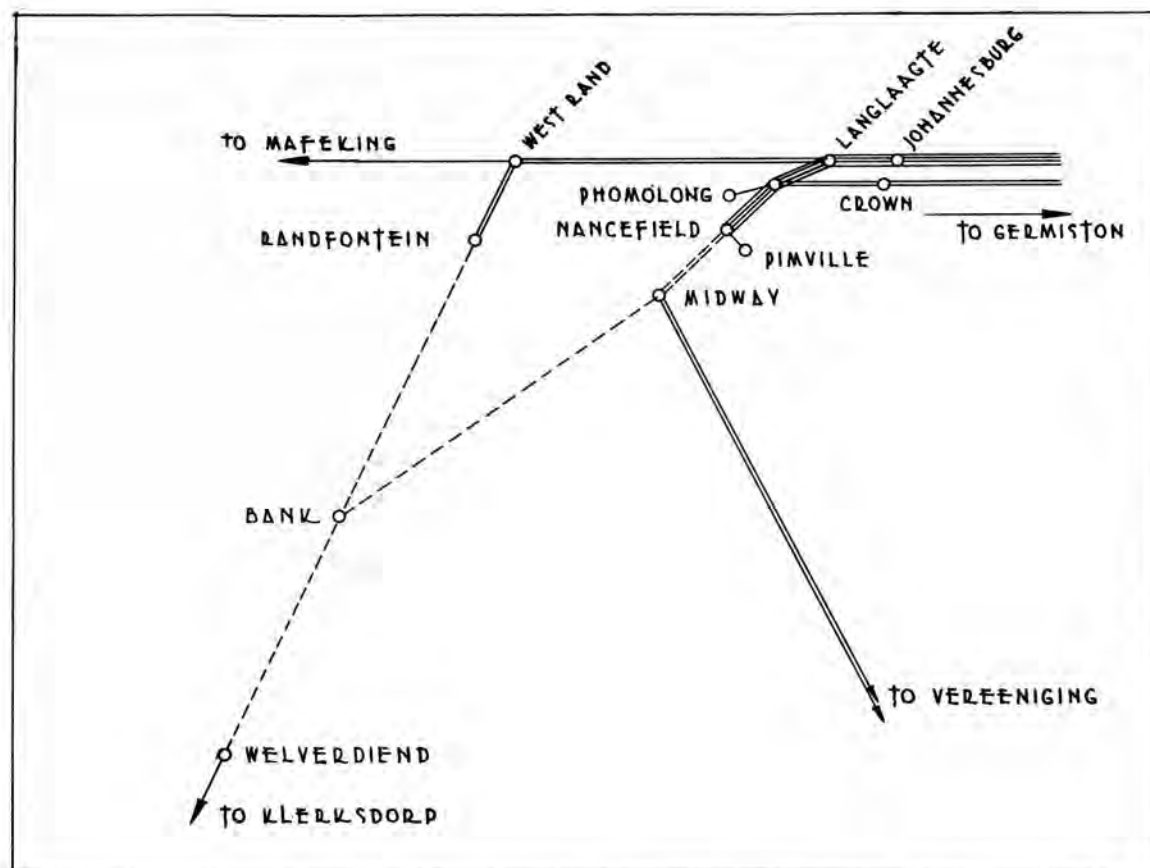
in August a commencement was made with the erection of steel cantilever masts at the west entrance of Randfontein station. More than 1,000 of these masts were erected by the end of October and cantilever arms are now being attached to them.

In addition to the work already undertaken on the single-line track sections between Randfontein and Welverdiend and between Midway and Bank, a commencement has been made with the electrification of the double track sections between Midway and Nancefield. This work will materially improve the transport conditions for non-Europeans in the Nancefield-Kliptown area.

The electrification of these sections entails the erection of sub-stations at Randfontein, Bank, Welverdiend, Westonaria and Midway, with tie stations at Oberholzer, Goudryk, Zuurbekom, Nancefield and one between Middlevlei and Vleikop.

It is estimated that the cost of electrifying these sections (which will be ready for full electric traction by the end of July, 1949) will total nearly £600,000.

(Railway News)



The dotted lines indicate the new sections which are to be electrified.

THE ALL ELECTRIC KITCHEN.

ANALYSIS OF COST.

TO-DAY with the high cost of building in South Africa in relation to salaries and wages it is almost impossible for a person in the middle income group to contemplate building a house, and, certainly it is quite out of the question for those in the lower income group.

Quite naturally this general state of affairs has resulted in the cost of the building and the equipment of a house becoming more important than ever before, and, it appears to be current opinion in some quarters that an all electric kitchen is beyond the reach of the average small house building owner. This has caused me to investigate the relative installation costs of an ordinary coal burning stove with boot boiler and storage cylinder and an electric stove plus electric hot-water heater.

For this purpose figures were taken from a block of 20 houses designed to be fitted with coal stoves and which were subsequently, during construction, changed over to all electric houses.

The items affected and costs were as follows:—

Omissions :

(1) Chimney stack, complete with trimming, flashing, capping, corbel slabs, etc., for 20 houses	}	£1,933 0 0
(2) Coal stove, with boot boiler including smoke pipe for 20 houses		
(3) 30 gallon storage cylinder including primary circulation pipes for 20 houses		
(4) Fuel store (5' x 3') for 20 houses		

Additions :

(a) 3-plate electric stove for 20 houses	}	£1,822 0 0
(b) 30-gallon electric hot water heater (thermostatic control) for 20 houses		
(c) Stove and hot water heater electrical outlet for 20 houses		
Saving on 20 houses		£111 0 0

From the above analysis it will be seen that 20 all electric houses were cheaper than they would have been if they had been provided with coal burning, combined cooking, water heating stoves: a saving of approximately £5.10.0 per house. It can therefore safely be concluded that all electric kitchens do not increase the cost of dwellings.

In considering the lighting in domestic kitchens by natural and artificial light, an important factor in the medium of cooking and water heating. If the ordinary coal burning stove with boot boiler and storage cylinder is the means of cooking and water heating, the light reflective values of wall and ceiling surfaces are likely to be considerably lower than in a kitchen fitted with electric stove and electric hot water heating cylinder. This is due to the paintwork becoming soiled rapidly, and the tendency to use dark paints which do not show the grey dirt produced by the coal burning unit. A coal burning stove of the ordinary black finish cast iron type, absorbs light heavily and in consequence needs greater light intensity on it than the electric stove with its brilliant reflective surfaces. All these factors result in the coal burning stove equipped kitchens being dark, dirty and uninviting when compared with the all electric kitchen.

It seems hardly necessary to draw attention to the many gains in comfort and efficiency if the kitchen is all electric. It is, however, considered worth while pointing out that an electric kitchen may well make it possible for the housewife reasonably to operate the dwelling without a servant. This might offer a considerable further source of saving in construction costs, for it may be possible in certain circumstances to eliminate the servant's latrine accommodation and servant's room.

Although I have no definite statistics on the comparative operation costs of the two systems, I firmly believe that there is every possibility of the running costs of the all electric kitchen being less than the coal burning kitchen, providing of course that the electric supply rates are reasonable. I believe that a great deal more is spent on maintaining the coal burning stove in a proper state than is usually thought. There are fire bricks, flue pipes, boilers, pot ring and top sections, grates, etc., all of which must be renewed quite frequently.

The subject is undoubtedly worthy of a great deal more research, and it is hoped that some of our many readers will come forward with their experiences and the results of their researches in order that this matter may receive a fuller consideration.

EDITOR.

SPORTS STADIUM PRETORIA.

BY

THE PUBLIC RELATIONS OFFICER
CITY COUNCIL OF PRETORIA

PRETORIA, already known for the wonderful facilities and amenities it provides for all sportsmen and sports-women, is now proposing to go a step further and build a great sports stadium to cater for all types of sport and to seat 50,000 spectators. This proposed stadium will constitute a centre where Olympic games may be held. The proposal, first made several years ago, has now reached the "blue print" stage, but is by no means yet finalized. The City Council's General Purposes Committee, which is the committee responsible for dealing with the scheme at this stage, has agreed to it in principle, after considering a plan for the stadium submitted by the Town Planning Office of the City Engineer's Department. The committee has appointed a sub-committee to interview representatives of sporting clubs and other associations who might wish to make suggestions in connection with the project.

A very rough estimate of the cost is £250,000, but this figure can only be taken as a broad indication of the amount involved, as no details have as yet been worked out for the various units within the scheme.

The plan is based on that of the White City Stadium, London, and the details on which the City Council's technical officers worked were obtained from the book "Sports Grounds and Buildings" by Captain F. A. M. Webster.

It is proposed to erect the stadium in the Groenkloof plantation, which is part of the expansive and historic farm of that name. The Fountains Valley, that well-known beauty spot and pleasure resort on the outskirts of Pretoria, the Voortrekker Monument, and the two historic Republican forts, Klapperkop and Skanskop, are all situated on this farm. Groenkloof was proclaimed a nature reserve by the Republican Government in 1895, and has proved a most valuable inheritance to the city. Now at this stage, when ground within easy reach of the centre of most other cities is almost unprocurable, Pretoria is in the fortunate position of being able to contemplate the construction of this vast stadium, almost in the heart of its built up area. In fact the centre of the stadium will be only $1\frac{1}{2}$ miles as the crow flies from the Church Square.

Reporting to the Council on the proposed stadium, the City Engineer said that the area to be laid out was 50 morgen and the area available for extension another 40 morgen, a total of 90 morgen.

The main feature of the plan was a sports stadium based on the most modern European standards, and capable of seating 50,000 spectators, the main arena including an athletic and a cycle track. Large East and West covered stands, and North and South open stands will be provided.

Three Rugby fields are shewn in the layout, two of which are linked together and surrounded by covered grand stands. The centre strip between the fields will function during the summer as a cricket pitch, and baseball may also be played over the two fields.

Soccer is well catered for by three fields, and two hockey fields are provided.

The facilities for tennis enthusiasts are particularly good. A smaller stadium with covered and open stands around four courts is provided. In addition to these four "centre courts," two additional blocks of ten courts each have been allowed for.

Six bowling greens are to be put down, and squash and badminton courts are to be built. Basketball fields and jukskei pitches are also shewn on the layout.

A swimming pool complying in every respect with Olympic standards, with horse-shoe stands, will cater for one of Pretoria's most popular sports.

A main car park is to accommodate 1,000 cars, and will have access to four roads leading to different parts of the city, and will also have an outlet to the Reef. In addition to this main car park, several smaller car parks are suggested, creating parking for a total of 2,500 cars.

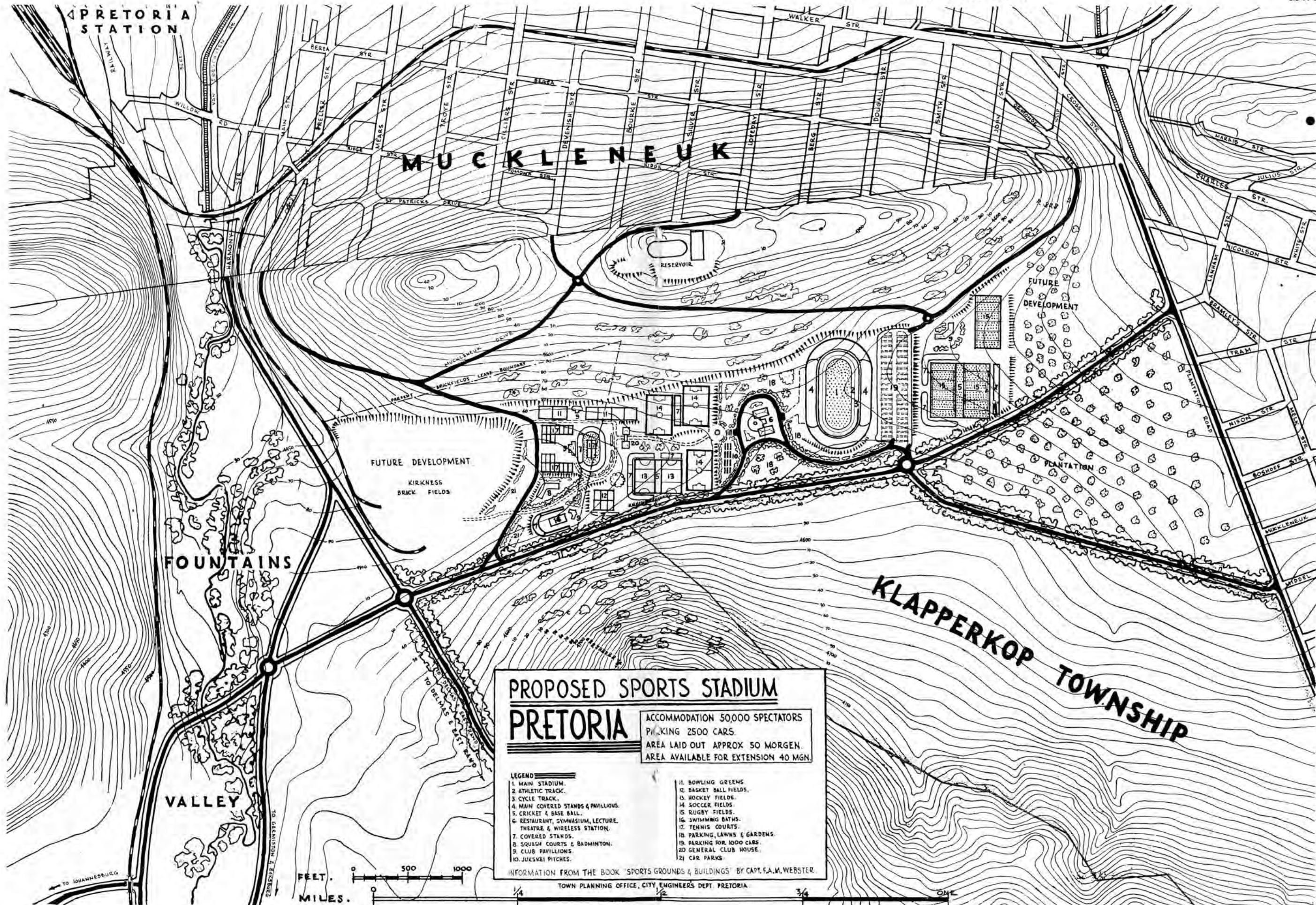
A central building, housing a restaurant, a gymnasium, a lecture theatre and a wireless station is indicated on the layout, as also are several club pavilions.

The site appears to be an ideal one from many points of view. It is well protected from wind by the surrounding hills, its contours are well suited to the project, and as before pointed out it is easily accessible not only to Pretoria, but also to the Reef. Furthermore, it is in pleasant natural surroundings. The fact that it is located in a deep valley may produce one disadvantage, that of heat.

The Director of Parks, in his report, said that he had discussed the matter with Professor W. Holford, the well-known architect and townplanner, who considered the site at Groenkloof ideal for a project of this nature, as space was available to incorporate all the facilities required.

One of the major points that will arise when the project is considered further is how it is to be financed, as the expenditure of an amount of quarter of a million pounds is a subject which will have to be carefully studied, as interest and redemption charges on this sum will be substantial.

However, Pretoria has the ball (of constructing a sports stadium) at its feet, and from now on it will be dribbled until the goal is scored.



**PROPOSED SPORTS STADIUM
PRETORIA**

ACCOMMODATION 50,000 SPECTATORS
 PARKING 2500 CARS.
 AREA LAID OUT APPROX 50 MORGEN.
 AREA AVAILABLE FOR EXTENSION 40 MORGEN.

LEGEND

1. MAIN STADIUM.	11. BOWLING GREENS.
2. ATHLETIC TRACK.	12. BASKET BALL FIELDS.
3. CYCLE TRACK.	13. HOCKEY FIELDS.
4. MAIN COVERED STANDS & PHILLIONS.	14. SOCCER FIELDS.
5. CRICKET & BASE BALL.	15. RUGBY FIELDS.
6. RESTAURANT, GYMNASIUM, LECTURE, THEATRE & WIRELESS STATION.	16. SWIMMING BATHS.
7. COVERED STANDS.	17. TENNIS COURTS.
8. SQUASH COURTS & BADMINTON.	18. PARKING, LAWNS & GARDENS.
9. CLUB PAVILLIONS.	19. PARKING FOR 1000 CARS.
10. JUKESKI PITCHES.	20. GENERAL CLUB HOUSE.
	21. CAR PARKS.

INFORMATION FROM THE BOOK 'SPORTS GROUNDS & BUILDINGS' BY CAPT. F.A.M. WEBSTER.

TOWN PLANNING OFFICE, CITY ENGINEERS DEPT. PRETORIA



Photo: City Council of Pretoria.

A Pretoria municipal single-deck trolley bus at a turning circle in the city. Note the overhead construction and also the clear street nameplate in the background.

TROLLEY-BUS ROUTES IN THE TRANSVAAL CAPITAL CITY.

BY THE PUBLIC RELATIONS OFFICER, CITY COUNCIL OF PRETORIA

"ICEBOUND" public passenger transport services may be a common occurrence in Europe and America, but not in South Africa. Yet, the damage to overhead cables due to "icing" is one of the possibilities that has to be guarded against by the Pretoria Municipal Mechanical and Transport Engineer's Department when constructing overhead cables for the civic trolley bus routes.

It is not generally known that during the winter of 1946, there was a minor dislocation of the trolley bus service on some of the routes as a result of the overhead copper wires being "iced." Bus drivers, unaccustomed to such an occurrence, noticed that the vehicles were "behaving" in a most unusual manner which seemed to indicate an altogether irregular supply of electricity. Examination of the overhead equipment by experts who were called to the scene showed that the overhead cables were covered with ice and that this was the cause of the trouble. As soon as one bus had managed to pass over the route, others were able to follow with no difficulty because the ice was removed by the first bus travelling over the section. On other routes it was also only the first bus that experienced trouble.

In Pretoria, of course, there is no special equipment to remove the ice, such as is used in overseas countries where overhead wires frequently become ice-covered. Owing to the rarity of these occurrences it has not been found necessary to import such equipment, and so far the purchase of such equipment would have proved to be unnecessary expenditure.

But temperatures play an important role when overhead lines are laid down. The copper wires on a straight are normally pulled up according to the temperature prevailing at the time when they are pulled up. At the side of the tower wagons used for this work there are thermometers, and the tension to be put on each wire is marked against the various temperatures. This means, of course, that the hotter it is the lower the tension put on each wire, and that during the summer the tension on the wires is less than in winter.

The loading on the poles is designed in accordance with a 2,000 lb. pull per copper wire at freezing point (32 degrees F.). In Pretoria the temperature seldom drops below this point and this has been found to be a satisfactory minimum point.

The poles are planted under the supervision of the Electricity Department which is well equipped to do this work as it is constantly busy planting poles for electricity supply extensions. In this case, however, the planting is a somewhat

more "ticklish" job as some of the poles carrying the trolley bus overhead equipment weigh 1,500 lb. each. To lift these and place them in the six-foot holes takes some manoeuvring.

An unusual difficulty experienced with the present extensions was the fact that water was struck while the holes to take the poles were being dug. Subterranean water flowed so quickly into some of these holes that pumping plant had to be used to keep them free of water while they were being dug.

The poles, which, incidentally, are all made in South Africa (Germiston), are planted with a rake to compensate for the strain applied to each pole at about six feet from the top. The amount of rake measured in inches is proportionate to the strain applied. Three sizes of poles are used, referred to as medium (1,100 lbs.), heavy (1,360 lbs.), and extra heavy (1,500 lbs.). The maximum strain applied to these poles is 1,250 lbs., 2,000 lbs., and 3,000 lbs., respectively. The medium pole is used on the straight, the heavy poles at feeder points and offsets from the straight, and the extra heavy poles on curves. The maximum strain is on the poles standing on curves. Along the straight the poles are spaced 100 feet apart.

For each mile of double track four miles of copper wire are required. Cross-bands of seven strands (twisted) of No. 12 galvanised wire support the copper wire. The same wire is also used on the curves where the strains do not exceed 2,000 lbs. When the strain exceeds 2,000 lbs., five strands of No. 8 galvanised wire are used. The total length of span wire used is 2,080 feet per mile. For a circle about 300 ft. of 7/12 span-wire, eight bullrings and 22 hangers are used to form a 90 degree curve.

A considerable amount of work is now being done on the extension of Pretoria's trolley bus system. When completed the present routes totalling 20 miles will have been extended to a total of 37. In effect, the present work will result almost in doubling the present number of route miles.

It is not surprising, therefore, that the estimates for capital expenditure provide for an amount of £100,000 on overhead equipment only. The amount which is set aside for new trolley buses up to the end of the present financial year on June 30, 1948, is £60,000.

The purchase of new trolley buses is, however, one of the snags in the scheme. Though 40 new trolley buses are on order, and the chassis of the first 12 are awaiting body construction, there is no saying when these will be delivered.



Photo: City Council of Pretoria.

A Pretoria municipal single-deck trolley bus at a turning circle in the city. Note the overhead construction and also the clear street nameplate in the background.

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Photo: City Council of Pretoria.

Planting poles for trolley bus overhead wires. The pole, weighing 1,500 lbs. has been placed in the six-foot hole and the official-in-charge can be seen, with the aid of a level, ensuring that the pole has sufficient rake for the strain which it will have to take.



Photo: City Council of Pretoria.

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The latest information is that body construction will not begin until much later this year, and that the first new trolley buses will not be delivered until early next year.

The rate of delivery will probably be not more than three per month, so that even by the end of next year the City Council's order of 40 trolley buses will not have been completely executed.

How difficult the position has been and still is, is shown by the fact that a number of trolley buses ordered in 1940 have not been delivered yet. They were actually complete but the British authorities would not allow them to be exported.

So that at present the Municipality has to make the best possible use of its fleet of 34 trolley buses. These have been on the road since the introduction of the trolley bus system in Pretoria on August 19, 1939, when the first trolley bus section (Brooklyn-Church Square) was opened. Other sections were opened after that, and some even after the outbreak of the war.

These buses have not been allowed to stand idle, which is shown by the fact that one of the double-deck trolley buses has since then covered a distance of 359,000 miles.

Altogether the 24 single-deck trolley buses covered up to the end of February a distance of 4,662,379 miles, and the ten double-deck buses a distance of 3,408,775 miles, a total of 8,070,154 miles. Sometimes these buses are on the road for as much as 18 hours per day.

The double-deck bus has proved more popular than its counterpart, the single-deck bus, mainly because it can carry more passengers. In construction, however, the two types are similar, though the double-decker has a slightly lower gear ratio in the final drive.

The maintenance costs of trolley buses and oil buses are practically equal. There are, of course, differences depending on the condition of the vehicles. This is obvious from the fact that there are oil buses on the road in Pretoria to-day which were taken into service as far back as 1929 — which



Photo: City Council of Pretoria.

Street-widening in Pretoria for the extension of trolley bus routes. This particular street in the northern suburbs will become one of the main traffic routes and will have a carriage way of 44 feet. Two poles for the overhead wires have been planted and all the overhead electric cables will eventually be transferred to these poles.



Photo: City Council of Pretoria.

A gang at work constructing a turning circle on one of the new trolley bus routes in Pretoria.

means that next year they will have carried passengers for 20 years, an achievement for any motor vehicle.

The trolley bus is naturally a cleaner vehicle than the motor bus, but this is to some extent offset by the fact that it is dependent on overhead construction. A broken wire causes dislocation, but this is usually only of a short duration because faults of this nature are speedily repaired by the maintenance gangs which are always standing by. The overhead construction is shared by the Mechanical and Transport Engineer's Department and the Electricity Department, the latter being responsible for the supply of electricity to the vehicles. The repairs and maintenance of trolley buses and the design and construction of overhead extensions are carried out by the Electrical Superintendent under the Mechanical and Transport Engineer.

The income earned on trolley bus routes is 38.982d. per mile, and the costs amount to 33.347d. per mile, so that on these routes the Passenger Transport Department shows a profit of 5.635d. per mile.

Motor buses on the other hand are operated at a cost of 24.476d. per mile, but the income is only 17.664d. per mile, so that on these routes the Transport Department operates at a loss of 6.812d. per mile.

During the year ended June 30, 1947, the City Council's 34 trolley buses covered 1,005,866 miles, and the motor buses, numbering about 100, covered 2,633,140 miles, so that it is obvious that the loss suffered by the Transport Department must be a considerable one, and for the last financial year it amounted to over £51,000. For the current financial year it is estimated to amount to £92,000.

The capital invested by the City Council in trolley buses up to June 30, 1947, amounted to £199,250, and the expenditure for the year ended June 30, 1947, totalled £139,760. The corresponding figures for motor buses were £139,450, and £268,538.

The number of passengers carried during the year in the 34 trolley buses was 11,189,827, and on the approximately 100 motor buses, 15,554,460.



Photo: City Council of Pretoria.

Every precaution is taken not to interfere unnecessarily with the many beautiful trees which grace the sidewalks of the streets in Pretoria when new trolley bus routes are laid down. The photograph shows staining-up trolley bus overhead wire in one of the streets with high trees.



Photograph: Martin Gibbs, Pretoria.

PRETORIA STATION GARDENS AFTER REMODELLING FOR ROYAL VISIT.

DEVELOPMENT IN RAILWAY STATION GARDENS OF SOUTH AFRICA

RAILWAY NURSERY
AT
CAPITAL PARK,
PRETORIA.



Photograph: Martin Gibbs, Pretoria.

THE railway station of to-morrow will be one of the country's show windows. It will still carry out its normal functions, the sale of tickets, the handling of luggage and the place where passengers linger in waiting rooms, but there will be several changes. The use of corrugated iron in buildings has been eliminated under the driving impetus of the former Minister of Transport, Mr. F. C. Sturrock, who also laid down the rule that the railway station must be designed from the point of view of passenger-comfort and travel-promotion. Neatness and cleanliness of station premises have been prescribed as minimum requirements, while the Railway Horticultural Department has been told to go ahead with the layout of gardens and the planting of trees.

As a general rule, visitors see rather more of railway stations than of other national features. Frequently the station serves as a standard for measuring the attractiveness

of a country and the customs of its people. First impressions are important and the Railways, anxious to do their part in developing the tourist trade, are fitting their station-building programme into the pattern of the campaign to bring visitors to South Africa. Unfortunately building operations may be delayed a long time. Stations must give precedence to the national housing programme and other priority building, but in the meanwhile plans and designs are being completed.

The garden side is being pushed ahead vigorously. During the past year the Railway Horticultural Department concentrated on the laying out of gardens at stations and staging points along the route of the Royal train. More than sixty major garden layouts were undertaken including the garden around the beacon at the Princess Elizabeth Graving Dock at East London, and the remodelling, in record time, of the fountains, lily-ponds, lawns and cavity walls around the Paul

Kruger Monument outside Pretoria Station. The bulbs and hard-wood plants imported from Holland and the annuals and perennials imported from America and England for the purpose will serve as stock plants for the various railway nurseries.

Four main nurseries — at Capital Park (Pretoria), Inchanga (Natal), Kroonstad (O.F.S.), and Belville (Cape) — are in operation, while Uitenhage, established as a temporary nursery during the preparations for the Royal Tour, is still producing. In addition, a site for a main nursery to supply South-West Africa is being prepared at Okahandja. Sites for distributing nurseries from which station masters can draw seedlings are in the course of selection, and it is hoped that most of these will be brought into operation during the present year.

In order to step up the planting programme of trees on the Natal north coast as a preventive measure against cane fires, four gangs were equipped with mechanical hoes. This equipment has been so successful that 30,000 trees are being planted each month, and the programme will take only three years instead of the five as originally scheduled.

At Palmietfontein airfield, work on the maintenance of runways is being continued, and although the number of planes using the airport increased considerably during the year, the grass and macadam runways were maintained in satisfactory condition.

In order to assist with the production of maize and potatoes for use in railway compounds, farming operations were com-

menced during August, 1946, on the farm Boschmansfontein in the Oogies district. Owing to the lateness of the season only 450 morgen were cultivated, 400 under maize and the remainder under potatoes.

TROPHY FOR EMPANGENI STATION

Empangeni station, Natal, won the C. M. Hoffe Trophy for the best-kept station and yard premises on the South African Railways last year, and the trophy was presented to the Station Master by Mr. W. Heckroodt, Acting General Manager, South African Railways, recently.

In making the presentation Mr. Heckroodt said that South Africa could expect a record influx of visitors from all parts of the world in the course of the next few years. Attention was being given to hotels, roads and rail and air travel. Every railway station also entered into the picture since it was an integral part of the national scene and was a big factor in forming a visitors' opinion of South Africa. For that reason a clean, well-kept station was an asset not only to the Railways, but also to the country.

In judging this competition points were awarded for neatness of platforms; the cleanliness, appearance and general condition of waiting rooms and shelters, offices and sheds, drains and outhouses; for the manner in which hoardings and posters were preserved; and for the condition of the station yard and the manner in which permanent way material was stacked, Mr. Heckroodt concluded.

TENDERS INVITED

THE following are particulars of the more important tenders which have been invited up to the time of going to press for Public Works by Government Departments, Provincial Administrations and Municipalities. In each case the date by which the tender must be submitted is given. While every endeavour will be made to maintain accuracy in these columns it is pointed out that readers using this information do so entirely at their own risk.

Note: S.A.R. & H. Tender Board address is: 715, P.F.A.C. Building, 15, de Villiers Street, Johannesburg.

BUILDINGS:

Luderitz Municipality: Electrical Engineer, Luderitz. (1) Erection of Bioscope Hall, Beer Hall and Clinic; (2) Supply of building material, electrical fittings and wiring, etc. Bioscope chairs. Standard Cinematograph projector, complete with sound equipment. Hire of films suitable for native bioscope. Due, 1/5/48.

S.A.R. & H. Tender Board: System Manager, East London, Port Elizabeth and Bloemfontein. Erection and completion of new station buildings at Fort Beaufort. Deposit of £2-2-0. Due, 15/4/48.

S.A.R. & H. Tender Board: District Engineer, Upington. Erection of one type P.95a/4 house (labour only) at Kleinbegin. Deposit £2-2-0. Due 1/4/48.

S.A.R. & H. Tender Board: General Manager, 207, Helpmekaar Buildings, Johannesburg. Erection of six houses at Retreat, Cape Town. Deposit £2-2-0. Due, 1/4/48.

ELECTRICAL EQUIPMENT, ETC.:

S.A.R. & H. Tender Board: Electric passenger and freight locomotives. No. 6375. Due, 20/5/48.

S.A.R. & H. Tender Board: Electric shunting locomotives. No. 6374. Due, 10/6/48.

S.A.R. & H. Tender Board: Electric motor coaches and electric plain trailers. No. 6116. Extended to 7/5/48.

S.A.R. & H. Tender Board: Transformer and switchboard. No. 7783. Due, 13/5/48.

S.A.R. & H. Tender Board : Telegraph material. No. 7673. Due, 8/4/48.

S.A.R. & H. Tender Board : Telephone cable. No. 7579. Due, 8/4/48.

S.A.R. & H. Tender Board : Copper wire. No. 7770. Due, 13/5/48.

S.A.R. & H. Tender Board : Train lighting material. No. 7692. Due, 13/5/48.

S.A.R. & H. Tender Board : Instrument landing system receivers. No. 7901. Due, 8/4/48.

S.A.R. & H. Tender Board : V.H.F. radio equipment for aircraft. No. 7900. Due, 1/4/48.

S.A.R. & H. Tender Board : Electric lamps. No. 7982. Due, 8/4/48.

S.A.R. & H. Tender Board : Switchgear and transformer. No. 7905. Due, 1/4/48.

S.A.R. & H. Tender Board : Electric material. No. 7935. Due 8/4/48.

S.A.R. & H. Tender Board : Electric material. No. 7936. Due, 8/4/48.

S.A.R. & H. Tender Board : Telegraph line material. No. 7695. Due, 20/5/48.

S.A.R. & H. Tender Board : Dry cells. No. 7911. Due 1/4/48.

S.A.R. & H. Tender Board : Electric lamps. No. 7979. Due, 1/4/48.

South African Railways, Park Chambers, Rissik Street, Johannesburg : Insulation material. Enquiry C. 7850. Due, 7/4/48.

Post Office Stores, Johannesburg : Accumulators. P.O. 891. Due, 8/4/48.

Department of Public Works, Pretoria : One Diesel alternator set, P.W.D. Johannesburg. P.W.D. S. 139. Due, 1/4/48.

Department of Public Works, Pretoria : Electric cooking equipment for Sterkfontein Hospital, Krugersdorp. P.W.D. S. 189. Due, 15/4/48.

Union Tender and Supplies Board : 271, Visagie Street, Pretoria : Diesel generating plants to Civil Aviation Telecommunications. S.O. 2396. Due, 22/4/48.

Union Tender and Supplies Board : Constant voltage transformers to Civil Aviation Telecommunications. S.O. 2400. Due 8/4/48.

Union Tender and Supplies Board, P.O. Box 311, Pretoria : Laying batteries to Stellenbosch-Elsenburg College. S.O. 2386. Due, 8/4/48.

Cape Provincial Administration, 81, Castle Street, Cape Town : Writing plates. F.116/47. Due, 9/4/48.

Durban Municipality : Reinforced concrete poles and cross arms. E.2162. Electricity Department, Durban. Due, 2/4/48.

Durban Municipality : Copper lamp shades to drawing P.2282. E. 2163. Electricity Department, Durban. Due, 2/4/48.

Durban Municipality : Four propellor-type ventilating fans. S.2823. Stores Department, Durban. Due 9/4/48.

Ceres Municipality : Supply, delivery and erection of :—
(a) One Diesel engine, approx. 300 h.p. coupled to an alternator of approx. 175 K.W. capacity, 400 volts 50 cycles together with the necessary panels, switchgear meters and automatic voltage regulator, or

ALTERNATIVELY

(b) Two diesel engines of approx 150 h.p. directly coupled

to 75-90 K.W. alternators, 400 volts, 50 cycles together with the necessary panels, switchgear, meters, etc. Electrical Engineer, Ceres. Due, 12/4/48.

Cape Town Municipality : 30-ampere 230-volt single-pole miniature circuit breakers. 1463/1947. Due, 1/4/48.

Cape Town Municipality : City Electrical Engineer, Cape Town. Cast iron bases of electric light poles. No. 1466/48. Due, 4/4/48.

Cape Town Municipality : Switchgear. Specification No. 1479/1948. City Electrical Engineer. Due, 21/4/48.

Cape Town Municipality : Overhead line material :

(a) Overhead line material to Specification No. 1473/48. Due, 5/5/48.

(b) Transmission poles to Specification No. 1474/48. Due, 7/5/48.

(c) Bare copper conductors, varnished Cambric insulated copper conductors and tinned copper binding wire to Specification No. 1475/48. Due, 7/5/48.

(d) Porcelain weatherproof pole fuse units for consumers' connections to Specification No. 1476/48. Due, 4/5/48.

(e) Electric lamps to Specification No. 1478/48. Due, 3/5/48.

Cape Town Municipality : Metal-clad service cutouts. Specification No. 1484/48. Due, 2/6/48.

Cape Town Municipality : City Electrical Engineer, Cape Town. Manufacture, machining, assembly, testing, supply and delivery of air compressors for diesel electric locomotives. 1483/48. Due, 28/4/48.

Bloemfontein Municipality : (a) Cable, cable joint boxes and compound. Enquiry No. 3/1948. Due, 30/4/48.

(b) Steel poles, crossarms and L.T. insulators. Enquiry No. 4/1948. Due 7/4/48.

Bloemfontein Municipality : E.H.T., H.R.C. power station switchgear. Enquiry No. 5/1948. Due, 2/6/48.

Maclear Municipality : Town Clerk. One 25 kilowatt set : full specifications from the Town Clerk, at a fee of 21/-. Tenderers must state cost of erection if required. Due, 8/4/48.

Oudtshoorn Municipality : Electrical material. Extended to 18/4/48.

Potchefstroom Municipality : Electrical Engineer, Potchefstroom. 1,000 ft. of 4-core .1 sq. inch armoured cable. 660 volt ; 3,000 ft. of 4-core .0225 sq. inch armoured cable, 660 volt ; 100, 27-ft. steel poles. Due, 2/4/48.

Fochville Health Committee : The Secretary, Health Committee, Fochville. Electricity Supply Undertaking : Supply, delivery, erection and completion of : (a) High tension link station ; (b) High tension cable ; (c) Distribution sub-station equipment including h.t. switchgear, transformers, low tension distribution board ; (d) Overhead reticulation scheme ; (e) Overhead house service connections ; (f) Meters and service cut-outs. Deposit £3-3-0. Additional £2-2-0. Due, 2/4/48.

Butterworth Municipality : Consultant Engineer, J. S. Clinton, Esq., Box 4648, Johannesburg. Transformer and oil circuit breaker meters, H.T. and L.T. cables and cable boxes. Deposit of £3-3-0. Additional sets £2-2-0. B.W. 1/1948. Due, 5/4/48.

Rustenburg Municipality : Town Clerk, Rustenburg. Supply, delivery and erection of diesel engine generating plant. E/148. Extended to 15/4/48.

Port Elizabeth Municipality : Electrically-operated traffic signals. Specification No. 317 (one copy of contract

documents free of charge — extra copies at 10/6 each). Due, 29/4/48.

Pietermaritzburg Municipality: Distribution material: Section 1: Cable; Section 2: Transformers; Section 3: Feeder pillars. Contract No. 241/E. (Three copies of contract documents free of charge — extra copies at 5/- each). Due, 20/5/48.

Johannesburg Municipality: 20.5 KV. 750 M.V.A. switch-gear. D9/48. (Deposit of £3-3-0 — extra copies on payment of £1-1-0 each). Due, 10/5/48.

Johannesburg Municipality: Electric batteries and charging equipment. Contract D10/48. (One copy of contract documents on deposit of £3-3-0 — extra copies at £1-1-0 each). Due, 12.5.48.

Johannesburg Municipality: Stores Dept., Johannesburg. Refrigerating plant. 409. Due, 20/4/48.

Robertson Municipality: Consultant Engineer, J. S. Clinton. P.O. Box 4648, Johannesburg. Section 1: 11 K.V. Cable, cable boxes, laying and jointing; Section 2: L.T. Cable, cable boxes, laying and jointing; Section 3: H.T. and L.P. switchgear, pillar-boxes, etc.; Section 4: H.T. Overhead line material; Section 5: Transformers. (Deposit of £3-3-0 — extra copies at £1-0-0 each). Due, 25/5/48.

East London Municipality: Controller of Stores and Buyer, Dyer Street, East London. Overhead electrical equipment. Due, 3/4/48.

FIRE CONTROL EQUIPMENT

Durban Municipality: Fire control installations: Berea Park and Cato Street sub-stations (Contract E.2149). Extended to: 9/4/48.

Port Elizabeth Municipality: Petrol-driven turntable water tower — fire escape. Due, 29/4/48.

HEATING INSTALLATIONS

Potchefstroom Municipality: Town Engineer, Potchefstroom. Supply and installation of heating equipment in the Municipal Treasury Building. Deposit of £2-2-0. Due 2/4/48.

ROADMAKING, ETC.

S.A.R. & H. Tender Board: General Manager, Helpmekaar Buildings, Loveday Street, Johannesburg. Construction of, approximately, one million square yards of water-bound macadam foundation on the site of the Jan Smuts Airport, Kempton Park. C.T.O.(R) 106. Deposit of £5-5-0. Due, 15/4/48.

Rustenburg Municipality: Foreman of Works, Town Hall, Rustenburg. Construction and tarring of streets. Contract R.1/48. Due, 5/4/48.

SEWERAGE INSTALLATIONS, ETC.

Bloemfontein Municipality: Town Clerk, Bloemfontein. Sewerage sludge digestion unit, 7/48/49. Extended to 5/4/48.

TRACTORS AND ROADMAKING PLANT, ETC.

Theunissen Municipality: Erection of stone crusher plant on the Town Commonage. Town Clerk. Due, 5/4/48.

Union Tender and Supplies Board, P.O. Box 311, Pretoria. Some crushers to the George and Knysna Forestal Districts. S.O. 2403. Due 8/4/48.

Union Tender and Supplies Board, P.O. Box 311, Pretoria. Road graders to Nelspruit and Tzaneen Forestal Districts. S.O. 2395. Due, 8/4/48.

South African Railways, Park Chambers, Rissik Street, Johannesburg. Machinery and plant. Tender No. 7111. Extended to 29/4/48.

Natal Provincial Administration, P.O. Box 358, Pietermaritzburg. Provincial Roads Engineer, P.O. Box 417, Pietermaritzburg. All tenders due on 21/4/48.

Angledozer attachments for crawler tractors, 60 h.p.: Angledozer attachments for crawler tractors, 110 h.p.: Industrial, wheeled tractor, 35 h.p. No. 3/48; Bitumen distributors — 1,000 gallons. No. 4/48; Bitumen boilers — 500 gallons. No. 5/48; Air compressors — 35 c.f.m. up to 16. No. 6/48; Portable air compressors — 210 c.f.m. No. 7/48; Concrete mixers, 7-10 cubic ft. No. 8/48; Mobile truck-mounted crane. No. 9/48; Dumpers: 4-6 cubic yards. No. 10/48; Diamond core drilling machines. No. 11/48; Heavy motor graders. No. 12/48; Jackhammers. No. 13/48; Mechanical loader. No. 14/48; Power shovels ($\frac{3}{4}$ yard): crawler type. No. 15/48; Power shovels ($\frac{1}{2}$ yard): pneumatic tyred. No. 16/48; Power shovel trailers. No. 17/48; 3" Centrifugal pumps. No. 18/48; 6" Centrifugal pumps. No. 19/48; Cable-operated rooters. No. 20/48; Tractor-drawn rippers. No. 21/48; Road rollers, 9-10 ton: self-propelled. No. 22/48; Road rollers, 6-8 ton: self-propelled. No. 23/48; Tamping (sheepsfoot) rollers. No. 24/48; Pneumatic-tyred rollers. 25/48; Self-loading wheeled scrapers. No. 26/48; Truck chassis: 5-6 ton. No. 27/48; Truck chassis: 6 ton. No. 28/48; Flat bodies for 6-ton truck chassis. No. 29/48; Truck chassis: 3-ton. No. 30/48; Light delivery trucks ($\frac{3}{4}$ ton). No. 31/48; Mechanics' vans. No. 32/48; Water sprinkler on motor chassis. No. 33/48; 25-30 ton transporters. No. 34/48; Crawler tractors: 110 drawbar h.p. No. 35/48; Crawler tractors: 6 drawbar h.p. No. 36/48; Articulated self-propelled scrapers. No. 37/48; Chip spreaders. No. 38/48; Electric welding outfits and power take-offs. No. 39/48; Double drum winches. No. 40/48; Asphalt mixing plants (continuous). No. 41/48; Asphalt paving machines. No. 42/48; 4 Cubic yard truck tipping bodies. No. 43/48; Trailer type rotary brooms. No. 44/48; Portable lubricating equipment. No. 45/48.

Transvaal Provincial Tender Board, P.O. Box 1040, Pretoria. Bitumen pre-mix. Tender 78/1948. Extended to 7/4/48.

Maclea Municipality: One light road grader. Due, 8/4/48.

Umzimkulu Road Board: Supply of heavy motor grader. Due, 29/5/48.

WATER SUPPLIES, ETC.

Fish Hoek Municipality: Augmentation of water supply. Contract 1/1948. Deposit £2-0-0. Due, 30/4/48.

Gwelo Municipality: Pipes and fittings for water reticulation. Contract T.E. 3/1948. (One copy of contract documents free of charge — extra copies at 10/6 each). Due, 5/4/48.

Cape Town Municipality: City Engineer, Cape Town. Valves, sluices and pipes. A.9/48. Due, 5/4/48.

Johannesburg Municipality : Water valves. No. 408. Due, 20/4/48.

Southern Rhodesia Government : Circle Engineer, P.O. Box 566, Bulawayo. Construction of earthen storage dam and spillway works, Umgusa River. Deposit £2-2-0. Due, 12/4/48.

Southern Rhodesia Government : Director of Irrigation, P.O. Box 1383, Salisbury. 20 Water boring drills of the percussion type and capable of drilling 6" and 8" holes to a depth of 800 and 600 ft. respectively. Due, 12/4/48.

Irrigation Department, P.O. Box 277, Pretoria : Valves and fittings for Odendaalsrust Water Supply. Irr. 352. Due, 6/5/48.

Irrigation Department, P.O. Box 277, Pretoria : Construction of two dams, Klipfontein Organic Products. Irr. 372. Due, 1/4/48.

Irrigation Department, P.O. Box 277, Pretoria : Water purification plant. Irr. 247. Due, 15/4/48.

VEHICLES, ETC.

S.A.R. & H. Tender Board : Inter-Urban coaches manufactured in South Africa. No. 7471. Extended to 29/7/48.

S.A.R. & H. Tender Board : Diesel electric shunting locomotives. No. 7253. Due, 11/11/48; Steam locomotives Class N.G., G16. No. 7531. Due, 15/4/48.

Johannesburg Municipality : 3-ton motor tipping truck. Contract 403. Due, 20/4/48; 6-ton motor tipping truck. Contract 404. Due, 20/4/48.

Johannesburg Municipality, Stores Department, Johannesburg : "Jeeps" or similar type vehicles. No. 410. Due, 2/4/48.

Johannesburg Municipality : Ford truck. Contract 358. Due, 19/4/48.

Germiston Municipality, Transportation Manager, Box 145, Germiston : Three double-decker omnibuses. Alternatively : Three double-decker omnibus chassis and three double-decker omnibus bodies. (Contract documents on payment of fee of 10/6 per copy). Due, 4/5/48.

MISCELLANEOUS :

Automatic couplers : S.A.R. & H. Tender Board. No. 7773. Due, 8/4/48.

Abrasive cleaning paint : S.A.R. & H. Tender Board. No. 7581. Due, 13/5/48.

Aluminium alloy sheets, angles, flat and round sections and rivets : Post Office Stores, P.O. No. 904. Due, 15/4/48.

Aluminium crossarms : S.A.R. & H. Tender Board. No. 7951. Due, 22/4/48.

Blue-print machine : P.O. Stores. P.O. No. 903. Due, 15/4/48.

Bus seats : S.A.R. & H. Tender Board. No. 7472. Due, 13/5/48.

Binoculars : Post Office Stores, Johannesburg. P.O. No. 892. Due, 8/4/48.

Bush and tree cutting machine : P.O. Stores, Johannesburg. No. 894. Due, 15/4/48.

Boring machine : S.A.R. & H. Tender Board. No. 7353. Due, 13/5/48.

Boring and turning mill : S.A.R. & H. Tender Board. No. 7450. Due, 13/5/48.

Cotton rope : S.A.R. & H. Tender Board. No. 8505. Due, 15/4/48.

Catering equipment — crockery ware : S.A.R. & H. Tender Board. No. 7603. Due, 22/4/48.

Catering equipment — kitchenware : S.A.R. & H. Tender Board. No. 7604. Due, 15/4/48.

Catering equipment — electro-plated ware : S.A.R. & H. Tender Board. No. 7595. Due, 8/4/48.

Chemicals and laboratory equipment : Union Tender and Supplies Board, P.O. Box 371, Pretoria. S.O. 2306. Due, 6/5/48.

Cotton waste : S.A.R. & H. Tender Board. No. 7915. Due, 29/4/48.

Cranes : S.A.R. & H. Tender Board. No. 7529. Due, 13/5/48.

Crane : S.A.R. & H. Tender Board. No. 7676. Due, 13/5/48.

Crowns for gas holders : Johannesburg Municipality. No. 407. Due, 20/4/48.

Carriage fittings : S.A.R. & H. Tender Board. No. 7506. Due, 27/5/48.

Chemicals and laboratory apparatus : To Division of Botany and Plant Pathology, Pretoria. (Department of Agriculture). Union Tender and Supplies Board, P.O. Box 371, Pretoria. S.O. 2308. Due, 6/5/48.

Drill steel sharpeners : S.A.R. & H. Tender Board. No. 7977. Due, 22/4/48.

Duplicating ink : S.A.R. & H. Tender Board. No. 7985. Due, 22/4/48.

D. rings : Post Office Stores. No. P.O. 902. Due, 15/4/48.

Flax tow sheeting canvas : S.A.R. & H. Tender Board, No. 7734. Due, 15/4/48.

Furniture : Cape Provincial Tender Board, Cape Town. No. F.24/48. Due, 2/4/48.

Filing cabinets : Johannesburg Municipality. No. 406. Due, 20/4/48.

Furnaces : S.A.R. & H. Tender Board. No. 7702. Due, 13/5/48.

Flags : S.A.R. & H. Tender Board. No. 7934. Due, 15/4/48.

Grease for P. & M. rail and flange lubricators : S.A.R. & H. Tender Board. No. 7984. Due, 8/4/48.

Hydraulic hoist : Johannesburg Municipality. No. 357. Due, 5/4/48.

Helmets, manufacture and supply : S.A.R., Park Chambers, Rissik Street, Johannesburg. No. 7889. Due, 1/4/48.

High pressure steam jointing : S.A.R. & H. Tender Board. No. 7876. Due, 13/5/48.

Hospital furniture : Johannesburg Municipality. No. 392. Due, 19/4/48.

Jacks : S.A.R. & H. Tender Board. No. 7797. Due, 15/4/48.

Locomotives spare parts : S.A.R. & H. Tender Board. No. 7944. Due, 1/4/48.

Lathe, 10½" centre : S.A.R. & H. Tender Board. No. 7384. Due, 13/5/48.

Laboratory equipment : to King George V. Hospital, Durban. Union Tender and Supplies Board, P.O. Box 311, Pretoria. S.O. 2361. Due, 8/4/48.

Medical equipment to Training Scheme for Health Personnel, Durban. Union Tender and Supplies Board, P.O. Box 311, Pretoria. S.O. 2379. Due, 13/5/48.

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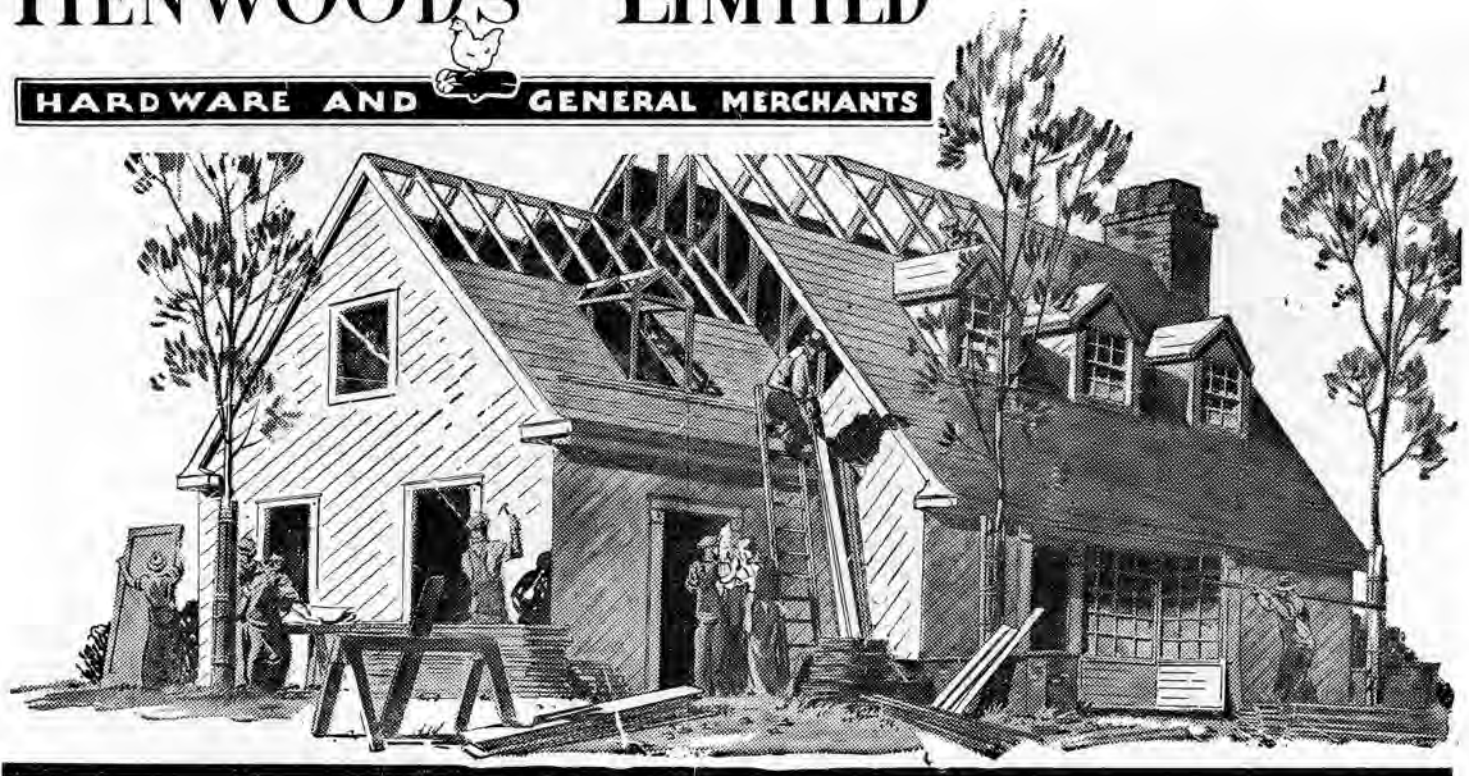
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Medical equipment: Johannesburg Municipality. No. 393. Due, 19/4/48.

Mobile crane and a manual stacker: Post Office Stores. P.O. Tender 898. Due, 1/4/48.

Microscopes to Department of Agriculture, Pretoria. Union Tender and Supplies Board, P.O. Box 311, Pretoria. S.O. 2385. Due, 8/4/48.

Mobile crane: S.A.R. & H. Tender Board. No. 7551. Due, 1/4/48.

Mobile crane: Johannesburg Municipality. No. 359. Due, 19/4/48.

Oil engine pumping plant: Irrigation Department, P.O. Box 277, Pretoria. Irr. No. 323. Due, 1/4/48.

Oil thermometers, etc. to Department of Defence, Pretoria. Union Tender and Supplies Board. S.O. 2383. Due, 22/4/48.

Point locks and keys: S.A.R. & H. Tender Board. No. 7884. Due, 8/4/48.

Paper bags: S.A.R. & H. Tender Board. No. 7968. Due, 1/4/48.

Portable bench saw to Amatikulu Leper Institution. Union Tender and Supplies Board, 271, Visagie Street, Pretoria. S.O. 2369. Due, 8/4/48.

Roofing felt: S.A.R. & H. Tender Board. No. 8057. Due, 20/4/48.

Ring packing: S.A.R. & H. Tender Board. No. 7964. Due, 20/5/48.

Rope, linen thread and seaming twine: Post Office Stores. No. P.O. 901. Due, 15/4/48.

Rubber gum boots: S.A.R. & H. Tender Board. No. 7924. Due, 13/5/48.

Sailmakers tools and requisites: S.A.R. & H. Tender Board. No. 7799. Due, 8/4/48.

Structural Steel Works: S.A.R. & H. Tender Board. No. 7731. Due, 15/4/48.

Steam raising plant: S.A.R. & H. Tender Board. No. 7701. Due, 13/5/48.

Spares for tar distillation plant: Johannesburg Municipality. No. 394. Due, 19/4/48.

Spares for carburetted water gas plant: Johannesburg Municipality. No. 395. Due, 19/4/48.

Steel requirements: S.A.R. & H. Tender Board. No. 7674. Due, 1/4/48.

Sulphathiazole and Sulphadiazine to Central Medical and Veterinary Stores, Department of Defence. Union Tender and Supplies Board, P.O. Box 311, Pretoria. S.O. 2404. Due, 1/4/48.

Track jacks: S.A.R. & H. Tender Board. No. 7837. Due, 29/4/48.

Uniform caps, making: Johannesburg Municipality. No. 405. Due, 5/4/48.

Veterinary and laboratory equipment, etc., to Director of Veterinary Services, Onderstepoort: Union Tender and Supplies Board. S.O. 2288. Due, 1/4/48.

Vertical boiler: S.A.R. & H. Tender Board. No. 7583. Due, 13/5/48.

Woodwork vices: Transvaal Provincial Administration, P.O. Box 857, Pretoria. No. 75/1948. Due, 7/4/48.

Wire rope electric hoists: Johannesburg Municipality. No. 360. Due, 19/4/48.

Webbing, 1948/49 requirements: S.A.R. & H. Tender Board. No. 8044. Due, 5/4/48.



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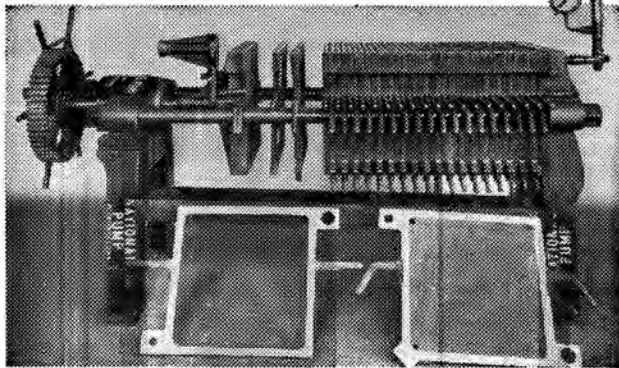
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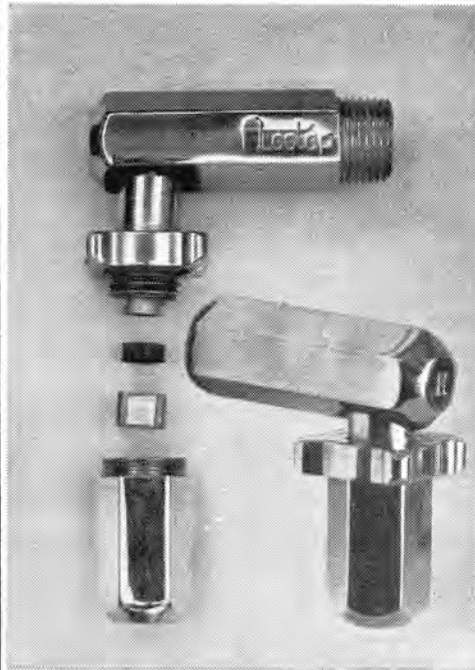


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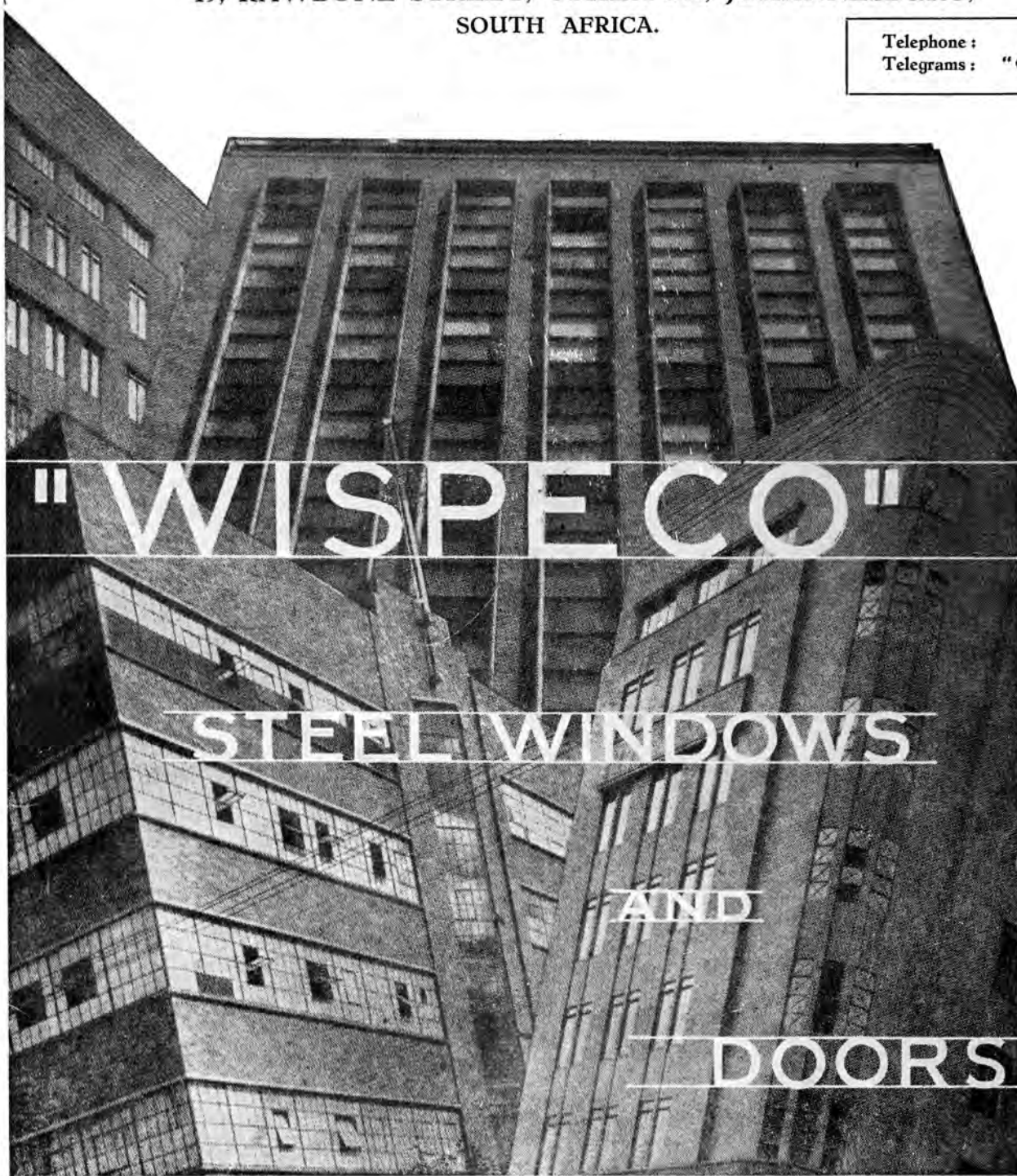


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★ Inset: The Taungs Skull, discovered in 1925.

*Aerial view: Aircraft Operating Co.
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