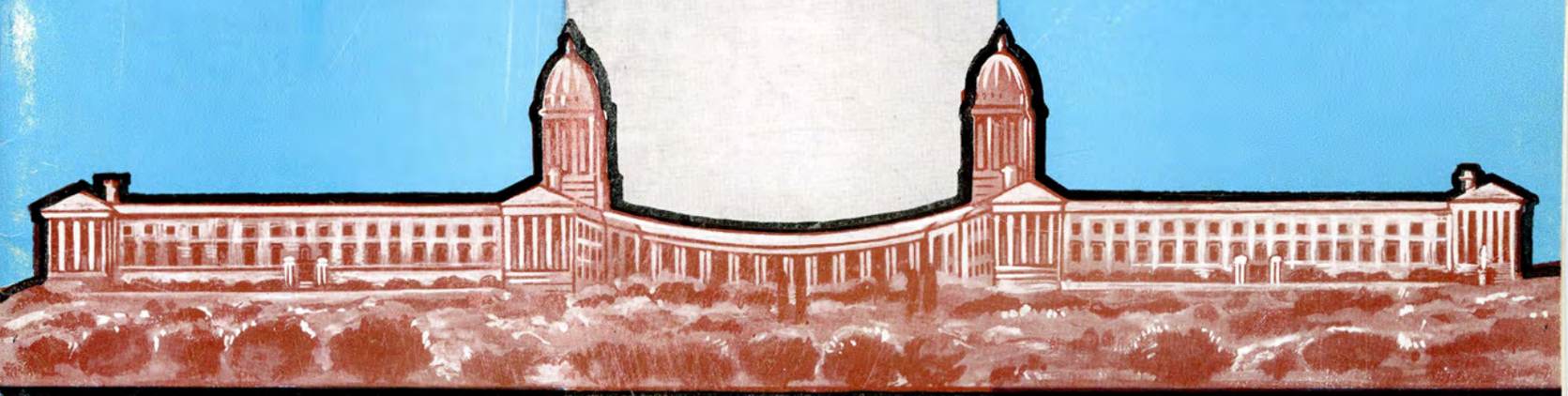
Vol. IX. No. 56. JULY : 1948.

PUBLIC WORKS OF SOUTH AFRICA



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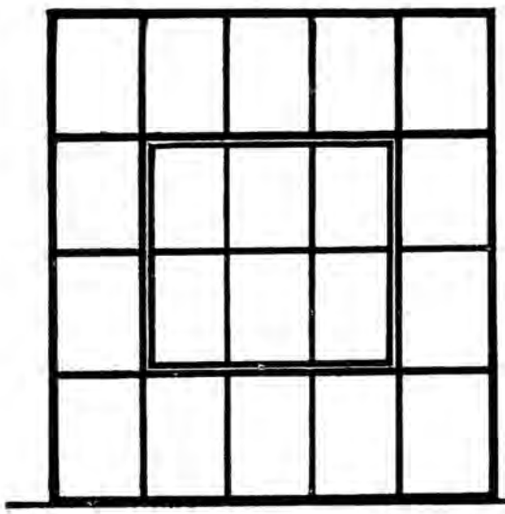

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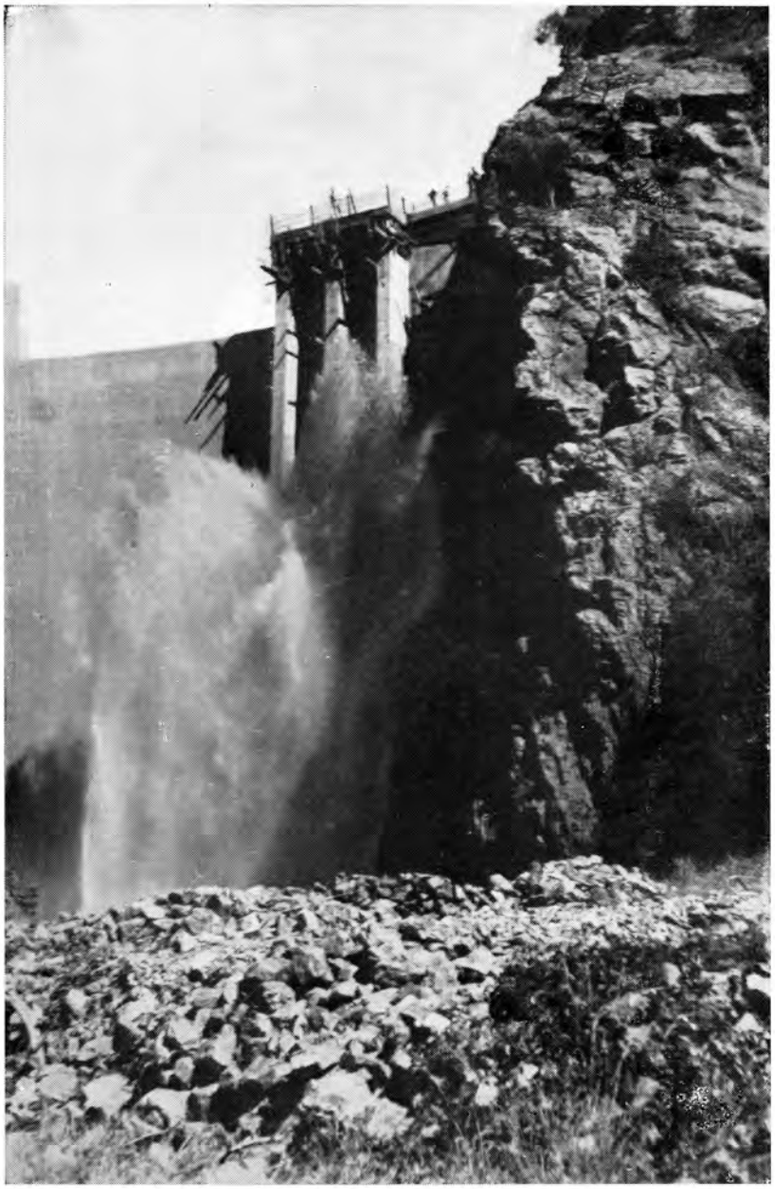


ALMOST COMPLETE — VALVE TOWER BEING FINISHED OFF.

View from the foot of left flank shows one of the valves being opened up. The ilustration shows on the extreme left one of the nappe-in serruptors which permit air to enter behind the sheet of water when the dam overspills.

LOOKING UP AT THE 100 FOOT HIGH WALL FROM THE GORGE BELOW.

When the outlet valves are in operation, the plumes of spray thrown up by the jet-dispersers provide a magnificent spectacle.

Page 14.

NJELELE IRRIGATION DAM.

THE Njelele River, which drains the northern slopes of the Zoutpansberg range, is a perennial tributary of the Limpopo. Irrigation development along most of the streams in South Africa, had outstripped the resources provided by the dry season flow. The problem caused by a shortage of water was, moreover, accentuated by overstocking and uncontrolled veld-burning in the catchment, which resulted in a weakening of the winter flows.

The 35 riparian owners along the Njelele River sought to solve their difficulties, by applying to the Water Court for a legal apportionment of the normal flow. In 1936, the Water Court apportioned the normal flow but naturally this step did not make available more water, and in spite of this ruling the irrigators found themselves in the position that existed before the Court order.

It was necessary, therefore, to approach the Government with a request that consideration be given to the suggested provision for water storage. Meanwhile, during the year 1932, the Irrigation Department had established a gauging station and was in a position to make an assessment of the total water resources. Reconaissance surveys were commenced and an ideal dam site was located on the farm Nairobi. In the year 1939, during the months of September and October, the foundations were tested by diamond drill when a total of ten boreholes were sunk. Afterwards, surveys of the soil were undertaken by the Division of Chemical Services and a project was ultimately designed and submitted to the Minister in February 1945. The project, reviewed and recommended by the Irrigation Commission and accepted by the Minister in April 1945, comprised the construction of a dam to regulate the flow of the river in order to ensure at all times, adequate water supplies to the existing diversion furrows. The provision of new canals was not contemplated.

Obstacles to the Project.

In considering the obstacles to the realisation of the project, it was apparent that the chief one was in the Order made in 1936, by the Water Court. It was an obvious fact that the proposed dam would unavoidably cause the normal flow to mix with the conserved surplus water, and it would be virtually impossible to effect the apportionment stipulated by the Court. This problem, together with others, was thrashed out at several meetings between farmers and officials of the Irrigation Department, and eventually, the riparian owners agreed to vest their rights in an irrigation board which would undertake the responsibility of effecting an equitable distribution of the conserved supply. The Minister thereupon promised to recommend the construction of the dam by the Government. Capital amounting to £150,000 was placed on the Loan Estimates of the Irrigation Department for 1945, and immediate steps were taken to build up an organisation from the Department's depleted staff, to tackle the preliminary work on the project. The construction of an access road was commenced in August 1945 under the direction of the Circle Engineer, Northern Transvaal. Erection of houses for the staff and workmen then followed, and in November the late Mr. P. C. Jackson, at that time Controller

NJELELE DAM OVERFLOWING SHORTLY AFTER COMPLETION.

View taken on 8th May — the day of the official opening by Senator the Hon. A. M. Conroy, Minister of Lands.

VIEW OF THE UPSTREAM FACE OF THE ARCHED WALL.

Showing the chutes provided to deliver concrete from the mixing station, situated high up and on the top of the krantz, to cocopans running on a tramway on the wall.

VIEW OF ARCHED WALL FROM A POSITION HALF-WAY UP THE KRANTZ.

Valve tower is on the left flank.

of Reconaissance, was appointed Resident Engineer on the scheme.

Prefabricated asbestos and steel houses were erected for European workmen, and the cost of the accommodation thus provided worked out at 4.9. shillings per square foot of floor space.

The Dam.

Situated on the farms Aerial and Nairobi, some 35 miles by road north-east of the town of Louis Trichardt, the site — a narrow poort with practically vertical sides of solid rock — stood literally "asking" to be closed by an overspill arch dam. A mass concrete constant-radius arch dam of 120 feet radius, with vertical upstream face and 5 : 1 downstream batter, was designed with an overspill crest 105 feet above the level of the river-bed. The thickness of the wall is 29.8 feet at the lowest foundation and 6 feet at the crest, which will permit the height of the dam to be increased by 10 feet, without adding to the thicknes of the wall. The overspill section of the crest is confined by abutments to 140 feet, over which a flood of about 30,000 cusecs can be discharged at a depth of 11 feet. A gauging weir, located a little way downstream of the dam, provides a water cushion to receive the overspilling flood water.

The catchment area situated above the dam is in extent 322 square miles and normally from this 77,000 acre ft. of run-off is expected. Furthermore, the nett full supply capacity of the dam is 25,000 acre ft. or roughly 7,000 million gallons.

The outlets, are set in the arch at the left flank, constructed between stiffening buttresses. These consist of a pair of cast iron pipes, 36-inch diameter, bell-mouthed at the upstream face and transitioned to 2 feet square section on the downstream site and fitted with radial gate valves. The valves discharge on to dispersers which aerate the issuing jet, and at the same time deflect it upwards. In this way the jet is broken up into a fine spray which falls with little violence, on the river bed below.

The plumes of spray produced when the valves are in operation provide a magnificent spectacle. All gate valves and dispersers are similar to those installed at Vaaldam, and are of a special type developed by mechanical engineers of the Irrigation Department. Two additional pairs of outlet pipes at intervals of 15 feet above the bottom pair, are provided for use in case siltation should interfere with the operation of the lower valves. These spare outlets are meanwhile blanked off.

Excavation.

Excavation of the foundations for the dam, necessitated the removal of 6,900 cubic yards of material, a task which took 5 months to complete. A coffer dam was constructed and by-passing of the ordinary flow of the river was effected, by the simple expedient of providing a corrugated iron flume to convey 70 cusecs across the excavation.

The concrete-mixing station, comprised of two three-quarter-yard mixers complete with the necessary bins, was located at the top of the left flank krantz overlooking

LOOKING DOWN FROM THE KRANTZ ABOVE THE LEFT FLANK.

The gantry for operating the emergency gates can be seen on the valve tower at the left. The two nappe-in serruptors on the curved crest divide the overspilling sheet of water to enable air to enter behind and thus relieve the suction.

the work. Stone required for concrete was quarried nearby, crushed in an 8-inch McCully Crusher and conveyed in 6-yard dumper wagons to the bins above the mixing station. Sand was carted by lorry from the Mtambaspruit, a few miles from the job.

Concrete.

Considerable difficulty was experienced with cement supplies owing to the general shortage throughout the country. At one period cement destined for almost all other works under the control of the Irrigation Department, was diverted to Njelele in order to tide over a critical period.

Concrete was lowered from the mixing station to the site of the work by means of chutes, assmbled zig-zag fashion to avoid slopes greater than 45°. These chutes delivered concrete of slump not exceeding half an inch. The design specification called for a concrete with a compressive strength of 1,350 lbs. per square inch at 7 days, and 2,500 lbs. per square inch at 28 days. In general, mixes between 1: 2 : 5 and 1 : 2½ : 5 satisfied the requirements of the specification and a strict control of the mix resulted in a gratifying saving in cement during a country-wide shortage. Altogether 44,927 bags of cement were used for the production of the 16,230 cubic yards of concrete in the dam. The total cost of the work amounted to approximately £135,000.

Employment.

The number employed on this scheme varied from month to month, as shown by the following recorded figures.

51 Europeans and 242 Natives were employed in February 1947, and 34 Europeans and 161 Natives in February 1948. The works were completed in March, 1948. It is interesting to note that throughout the period of the contract no labour difficulties were experienced.

Administration.

The Njelele Irrigation District Amendment Act was passed by Parliament during 1946, vesting in the Njelele Irrigation Board control of water in the Njelele River from the farm Nairobi down to the confluence with the Limpopo River. This act came into effect by Proclamation 88 of 1948 as from the 1st May, 1948.

By controlling the river flow during the latter stages of construction the Dam was almost full when completed — in fact, it spilled over in April 1948, about one month after completion. Adequate water should therefore be available for the winter irrigation season.

The lower Njelele Valley has developed into an important winter vegetable producing area. In the main, tomatoes, gem and other squashes, marrows, cucumbers and such like vegetables are grown, also grapes and tropical fruits. At present some 2,000 morgen of land is under irrigation and this dam, while ensuring adequate water supplies throughout the year to existing irrigators, will also permit further areas to be developed. The question of developing hydro-electric power at the dam has been considered. It would be possible to generate at the dam, a minimum of approximately 1,200,000 units of electricity per annum, during 90 per cent. of the time. No decision has yet been taken however, in regard to this possibility.

The dam was officially opened on 8th May, 1948, by Senator A. M. Conroy, then Minister of Lands.

South African Council For Scientific And Industrial Research.

LIBRARY ACCESSIONS.

THE Library Accessions List for May and June, 1948, issued by the South African Council for Scientific and Industrial Research contains a reference to publications dealing with subjects of importance and interest to the Architect and Civil Engineer. Many of the publications listed were received from the Union's Scientific Missions in London and Washington.

It should be noted that certain documents have been passed to professional institutions which have now built up a collection of works of reference covering highly specialised fields. This accessions list indicates the location of works that have been passed to the appropriate Institution, to whom application for their loan should be made. All other publications listed, may be borrowed by applying to the South African Council for Scientific and Industrial Research, Library and Information Division, P.O. Box 395, Pretoria. Publications that are considered to be of interest to our readers are enumerated below together with the relevant reference and classification numbers.

HEATING, America.

Great Britain. Ministry of fuel and power, *and* Department of scientific and industrial research.
Domestic heating in America: a study of heating, cooking and hot water supply in small houses in U.S.A. and Canada . . . . London, H.M. Stationery office, 1946.
x, 152 p., plates, tables, diagrs.
Reference 25/56. Classification Pam. 697(7).

HOUSES, Prefabricated.

BRUCE, Alfred *and* Harold Sandbank.
A history of prefabrication. New York, John B. Pierce foundation, 1944. (Research study 3).
80 p. Illus. photos diagrs.
Reference 25/59. Classification Pam. 693.061(091).

HOUSES, Conversion.

Great Britain. Ministry of Health. Central housing advisory committee.
Conversion of existing houses: report of the sub-committee of the central housing advisory committee . . . London, H.M. Stationery Office, 1945.
x, 52 p., plates, tables, diagrs.
Reference 25/57. Classification Pam. 728(1).

INSECTICIDES.

HEWLETT, P. S. *and* E. A. Parkin.
. . . The formation of insecticidal films on building materials. II: tests of the efficiency of various types of pretreatment . . . London Association of economic biologists, 1947.
pp. 224-232, tables, diagrs.
Reference 25/72. Classification Pam. 632.951 : 691.

ROADS.

Great Britain. Ministry of war transport.
Design and layout of roads in built-up areas . . . London. H.M. Stationery Office, 1946.
vi, 100 p., plates (photos), tables, diagrs.
Main sections: Road safety ; General traffic considerations ; Traffic components ; The road pattern ; The road in relation to development; Road design and layout; The stationary vehicle ; Amenity ; Legislation.
Reference 25/126. Classification Pam. 711.7.

SEATING.

Harvard university. Department of anthropology. Statistical laboratory.
A survey in seating, instituted by Heywood-Wakefield company and conducted by . . . Earnest A. Hoolon and staff of Harvard university. Gardner, Mass., Heywood-Wakefield company (c1945).
101 p., illus. pls. (photos), tables, diagrs.
Reference 25/131. Classification Pam. 625.23.042.2.

SOIL, Mechanics.

INSTITUTION of civil engineers.
The principles and application of soil mechanics: a record of four lectures delivered at the institution. Westminster, Institution of civil engineers, 1946.
119 p., illus., diagrs.
Contents: Development and scope of soil mechanics, by Leonard Frank Coahing — Earth pressure and the stability of slopes, by Alec Westley Skempton — Soil mechanics in foundations and excavation, by Rudolph Glossop — Roads and airfields, by Alfred Herbert Dorlencourt Markwick.
Reference 25/134. Classification Pam. 624.131(042).

WEATHERING.

Great Britain. Department of scientific and industrial research. Building research station.
. . . *The weathering of natural building stones, by R. J.* Schaffer. London, H.M. Stationery Office, 1933. (Special report No. 18.)
x, 149 p., front, plates (photos), tables, diagrs.
Reference 25/155. Classification 691.2 : 620.19.

YORK.

ROWNTREE, B. Seebohm.
Portrait of a city's housing: being the result of a detailed survey in the city of York, 1935-9 . . . edited with an introduction and comments by R. L. Reiss (1945) (Rebuilding Britain series, No. 13).
54 p., tables, diagrs.
Reference 25/160. Classification Pam. 728.1.

SEWAGE, Disposal.

METCALF, Leonard *and* Harrison P. Eddy.
. . . *Disposal of sewage* . . . revised by Harrison P. Eddy . . . third edition; New York, McGraw-Hill book co. 1935. (American sewage practice, vol. 3.)
xvii, 892 p., photos, tables, diagrs.
Reference 25/132. Classification 629.2/3.

ARCHITECTURE, Domestic.

BERTRAM, Anthony.
The house: a summary of the art and science of domestic architecture; Second edition; illus. by A. G. Wise, London, Adam & Charles Black, 1945.
114 p. frontis. (Photos.), illus.
Reference 26/5. Classification. 728.

CONCRETE.

Great Britain. Department of scientific and industrial research. Road research laboratory.
The grading of aggregates and workability of concrete; by W. H. Glanville . . . A. R. Collins . . . and D. D. Matthews . . . London, H.M. Stationery Office, 1947. (Road research technical paper no. 5, second edition).
vi, 38 p. plates, tables, diagrs.
Reference 26/46. Classification. Pam. 625.841.

United States.

National bureau of standards.
Underground corrosion . . . Washington, Government printing office, 1945. (Circular of the Bureau of standards C450).
ii, 312 p. photos., tables, diagrs.
Bibliography: pp. 271-278.
This book is based on investigations, which the National Bureau of Standards started in 1922, relating to the underground corrosion of metal pipes, cables, etc.
Reference 26/51. Classification. 620.19.

IRRIGATION.

Union of South Africa. Department of irrigation.
Report of the Director of irrigation for the period 1st April, 1940. To 31st March 1946 . . . Pretoria, Government printer, 1947. (U.G. No. 55—1947).
38 p. tables.
Reference 26/85. Classification Pam 351.792.1. (68) (047.1).

LIGHTING.

ILLUMINATING engineering society, **New York.**
I.E.S. lighting handbook: the standard lighting guide . . . New York, Illuminating engineering society, 1947.
Paging various. Illus., tables, diagrs.
Reference 26/91. Classification 628.9(021).

LIGHTING service bureau, *London.*
Interior lighting design. London, Lighting service bureau, 1947. (Electric illumination handbook, no. 2).
60 p. illus., tables, diagrs, col. diagr. (1 folding).
Main Sections: Common illumination terms; Light and sight; Light control: Summary of lamp qualities; Lighting design; Choice of lighting system: General lighting; Planning illumination.
Reference 26/92. Classification Pam 628.9.

UNITED States. National bureau of standards.
Structural, heat-transfer and water-permeability properties of five earth-wall construction; by Herbert L. Whittemore, Ambrose H. Stang, Elbert Hubbe and Richard S. Dill . . . Washington, U.S. Government printing office, 1941. (Building materials and structures report BMS 78).
ii, 55 p. photos., tables, diagrs.
Reference 26/127. Classification Pam. 691.41.022.

PLUMBING.

DAY, Louis J.
Standard plumbing details for architects, engineers, contractors, plumbers and students . . . New York, John Wiley and Sons, inc., 1946.
248 p. 119 plates.
Reference 26/130. Classification 628.6.

ROAD Research.

Great Britain. Department of scientific and industrial research. Road research laboratory.
Impressions of roads and road research in North America: by W. H. Glanville . . . and F. N. Sparkes . . . London, H.M. Stationery office, 1947. (Road research technical paper no. 7).
v, 37 p. pls. (photos.).
Reference 26/142. Classification Pam 625.7(7).

ROADS — Construction Equipment.

British standards institution.
Cast manhole covers, road gully gratings and frames. London, British standards institution, 1945. (British standard specification B.S. 497 : 1945).
40 p. tables, diagr. (folding).
Reference 26/143. Classification Pam 625.745.4(083.74).

ROOFING.

United States. National bureau of standards.
Metallic roofing for low-cost house construction: by Leo J. Waldron . . . Washington, United States government printing office, 1940. (Building materials and structures, report BMS 49).
ii, 23 p. illus., tables, diagrs.
Reference 26/144. Classification Pam 695.7.

SEWAGE.

Imhoff, Karl and Gordon Maskew Fair
Sewage treatment . . . with a discussion of industrial wastes, by Edward Warren Moore . . . New York, John Wiley and sons, inc. (1940).
(6), 370 p. tables, diagrs.
Bibliography: pp. 342-347.
Reference 26/153. Classification 628.2/3.

SUBURBAN Homes.

Richards, J. M.
The castles on the ground; illus. by John Piper. London, Architectural press (1946).
86 p. front., plates.
This is a discussion of the architecture of English suburbs. "The suburban style is not a style of architecture but the setting of suburban life itself, and its 'taste' is but the local colour the inhabitants gather round themselves in accordance with their peculiar instincts and aspirations."
Reference 26/163. Classification 711.583.

TECHNICAL Literature.

Nelson, J. Raleigh.
Writing the technical report . . . second edition . . . New York and London, McGraw-Hill book co., inc., 1947.
xiv, 388 p. tables, diagrs.
Reference 26/164. Classification 8.08-9.

TOWN PLANNING.

McAllister, Gilbert and Elizabeth Glen, eds.
Homes, towns and countryside: a practical plan for Britain . . . London, B.T. Batsford Ltd., (1945).
xxx, 170 p. frontis., plates, (photos.), map, tables.
Reference 26/173. Classification 711(42).

VENTILATION.

Australia. Commonwealth experimental building station.
Natural ventilation, ceiling height and room size. Notes regarding minimum provisions in dwellings with respect to Australian conditions. By J. W. Drysdale . . . Sydney, Commonwealth experimental building station, 1947. (Duplicated document no. 22).
28 + p. Duplicated.
Reference 26/176. Classification Pam 697.9 + 69.053 (94).

LIGHTING IN PUBLIC BUILDINGS.

Present Practice :

When an Architect is consulted with a view to the preparation of a design for some Public Building, and a rough outline of the proposal is first submitted to him, he automatically enquires during the course of negotiation, the precise use to which the building is going to be put. His client may explain both the interior and exterior architectural effect he wishes to obtain, and may feel satisfied that he has successfully communicated his ideas to the Architect, who in turn, finds pleasure in understanding the client. An appreciation of the fact, that the interior effect is solely dependent on either or both day-light and artificial light, is seldom evident. Every Architect is well acquainted with daylight factors and how to handle them, although it is not unknown for a request to be made for schemes for artificial lighting to augment day-light, after a building has been completed.

New Approach :

The state of affairs as outlined above has gradually changed overseas, and there is some evidence that it is changing in the Union. As a rule, it is considered the best practice for a Lighting Engineer to be called in by the Architect in the very early stages of design to obtain his advice as to the best method of creating effect, in a Public Building or Hall, that is in harmony with the architectural scheme. A general discussion should take place between the Architect and sometimes the client as well, before the Illuminating Engineer attempts to put forward any scheme and suggestions. In the Union it is almost a general practice for a provisional sum to be set aside to meet the cost of Artificial Lighting, and the matter is merely dealt with at a later stage, and in many instances, when the Building is well advanced in its construction. Windows are primarily designed for the purpose of providing day-light and are treated naturally as an integral part of the structure. Since the windows and Artificial Ligthing Equipment are provided for one and the same purpose at different periods of the twenty-four hours, they should be placed upon the same basis for the assessment of requirements for effective lighting.

This is not intended as a severe criticism of Architects in the Union or those dealing with the construction of Public Buildings. The beautiful edifices in South Africa show the high standard of accomplishment in this direction. The comments are made somewhat forcibly, to stimulate interest in a new method of approach to lighting problems, so that these may be better understood and appreciated.

FIG. 1 (A).

Town Hall — view showing candle-bracket fittings on mirrors, together with artificial daylight.

Available Equipment :

The equipment available to the Illuminating Engineer consists of the following :—

(a) Lamps, sometimes referred to as "Light Sources."

(b) Reflectors, consisting of surfaces that will reflect light in one way or another.

(c) Refractors, including Diffusers, and mostly consisting of glass or perspex that will bend the light rays at the will of the Designer.

(d) Louvres, that merely shield the light from the direction in which the light is not required.

The interpretation of the principle of these appliances can be simply stated in that Light is controlled by one of the following, or by means of their combination, namely,

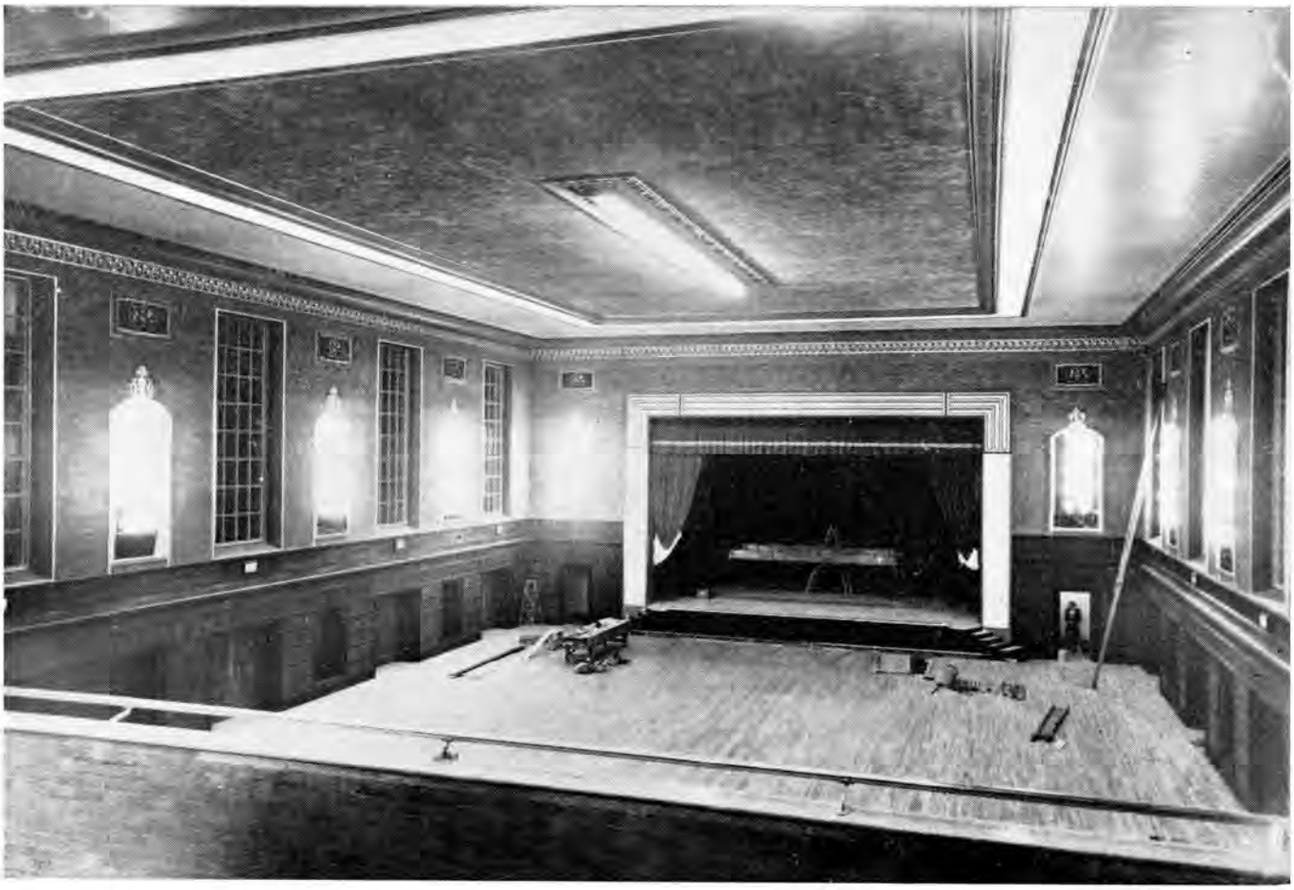


FIG. 1 (B).

Town Hall with all lights in operation.

Reflection, Refraction, or Subtraction. It is these basic principles that the Illuminating Engineer appreciates and uses, when approaching the practical aspects of lighting in Public Buildings.

In the initial discussion with the Architect, the Illuminating Engineer should not only be told the use to which the building is going to be put, in the same way as the Architect is informed by his client, but in addition mention should be made of architectural features that require special treatment. A question sometimes asked by the Illuminating Engineer "Why do you want light?" will often elicit a really useful answer. In giving a reply to this question the Architect should remember that it is well to consider Artificial Lighting as a part of the basic structure of a Public Building, lending dignity and harmonising generally with the tout ensemble. It is important to bear in mind that the Lighting effect and/or Fittings, should never attract the eye blatantly.

Procedure in Lighting Problems :

The manner in which the Illuminating Engineer should approach a lighting problem is as follows :—

He should first consider those parts of the structure of a building that require the major portion of light. The incidence or angle at which Light strikes walls, ceilings and floors is also of paramount importance, as relief is one of the secrets of effect. This is shown in the illustration of objects receiving light from various angles.

The Lighting Engineer must then decide upon the best method of projecting the light beams, and the locations from which they must be projected should be decided. Finally, he must decide on the most suitable type of light source to employ. The question of lighting intensity is purely a mathematical consideration but certain factors employed have to be tempered by experience. Tables of the intensities advised for most buildings, are readily available.

Lighting Installation :

Consideration of Lighting Installations in one or two large buildings, may help to illustrate the foregoing remarks. Illustration Fig. 1 shows the decorative and practical application of wall mirrors on which are fixed Candle-Bracket Fittings. General relief to the ceiling itself, however, is provided by the long "Laylight" Troughs, and the central Ceiling Fitting has been made to blend with the general design. The Proscenium Arch is brought into general relief by the illuminated columns. This example shows what can be done by collaboration before construction, and how dignity and spaciousness can be lent to quite a simple design of Hall.

Illustration Fig. 2 shows how some direct lighting can be incorporated with the decorative structural features. In this instance the light is required essentially for the conditions of movement, and the low ceiling precluded the use, economically, of any form of Pendant Fittings which could provide light in the most useful places. Furthermore, Pendant Fittings would not illuminate the ceiling sufficiently, and in effect, would have reduced the apparent height of the ceiling. Flush fitted "Laylights," if they could have been

FIG. 2.

Illustration of combined indirect and direct illumination incorporated in decorative structural features.

FIG. 3.

Constructed lighting effects.

FIG. 4.

Restaurant, Rand Air Port.

FIG. 5.

Union Castle Building, Johannesburg.

FIG. 6.
A Ball Room illuminated by Cold Cathode Fluorescent Tubes.

accommodated in the structure, would also have left the ceiling areas between them dark by comparison. The type of unit finally adopted and shown in the illustration provided both illumination and decorative effect.

Interesting examples of various forms of constructed lighting effects are shown in the illustration Fig. 3. Beams and buttresses are a necessary evil in constructional work, but they can sometimes be made good use of if the Illuminating Engineer is able to co-operate with the Architect during the design and at a sufficiently early stage in construction.

A motif can often be sensibly incorporated in the design of fittings that is in keeping with the use to which a building is being put. The type of thing that is meant is shown in the illustration (4) of a restaurant at an Airport. Care must be taken, in such instances, that the principle does not run away with other lighting necessities. Yet a further illustration, Fig. 5, shows an entrance to a Shipping Company's building. In both instances the symbolism can hardly be mistaken, but at the same time it is essential that the fittings should light the locations in which they are erected efficiently.

Fluorescent Lighting :

The question of installations employing Cathode Fluorescent Lighting has received very much attention during recent years. This has been very largely due to the fact that this type of light source is a comparatively new venture in the Union, and Engineers, Architects, etc., are interested in the results that can be obtained. In the application of this type of light source however, something of a new science is employed and in the opinion of the Author the future of this light source does not lie in long straight lines of bare tubes that are either suspended or fixed direct to a ceiling. The resultant light on what might be termed the operative or working plane, may be very satisfactory but from the aesthetic point of view, it is felt that this is to be deplored in Public Buildings, except in certain instances. It is interesting to note illustration 6 of the Royal Star Hotel, Maidstone, Kent, in England, the ball-room of which is illuminated by Cold Cathode Fluorescent Tubes concealed in constructed cornices in a special central fitting. This installation may be described as "tailor-made." The interesting point about this installation is that three different types of colour emitting tubes are employed. By means of dimming devices almost any colour effect can be produced in this ball-room. There is no question, as in the case of one-coloured Fluorescent Tubes, of the deep reds being very nearly absent.

Comparison of Light Services :

There has been much divergence of opinion in this Country as to the practical comparison of various light sources. Generally speaking, for Public Buildings, any one of the following sources is available :.....

(a) Tungsten filament incandescent lamps.

FIG. 7.
Illustration shows another type of fitting — a further development in Cold Cathode Fluorescent lighting.

(b) Hot cathode fluorescent lamps.
(c) Cold cathode fluorescent lamps.

The characteristics of the light emission of these light sources are fairly well known. They all have mitigating factors, and an accurate computation of comparative cost is not so easy to arrive at as might at first be imagined. It is quite simple to say that the efficiency (generally measured in lumens per watt) of a particular light source is so many times that of another, but it is important to note that the rough costs embrace the following variables :—

1. Cost of lamp replacement.
2. Cost of current consumption.
3. Depreciation of Installation, referred to in terms of "Capital Depreciation."

The only basis upon which a fair comparison can be made is by reducing all the above variables to a constant over a set period (1,000 burning hours) for a specific quantity of light. The basis upon which all light fluxes are measured is in the term of a lumen, and the following formula can be applied :—

Cost in pence of 1,000 lumens for 1,000 burning hours, equals :

$$\underbrace{\frac{L\times 1{,}000\times 1{,}000}{G\times 1}}_{\text{(Lamp replacement cost)}} + \underbrace{\frac{W\times 1{,}000\times C}{1}}_{\text{(Current cost)}} + \underbrace{\left(\frac{I}{20}+\frac{5\%\ I}{20}\right)}_{\text{(Capital depreciation)}}$$

Where :—

I = Installation cost of all equipment in pence.
L = Lamp replacement cost in pence.
G = Guaranteed life of lamp in hours.
C = Cost of current in pence per unit.
1 = Output of lamp (light source) in lumens—average over life.
W = Wattage of lamp + watts loss of control gear, if any, in K.W.

In this formula, depreciation of capital outlay has been taken over a period of twenty years and based on 1,000 burning hours per annum, and interest on capital invested has been taken at the rate of 5%. The question of fittings has been entirely ignored. Not only is this latter item a very variable factor, but it may be said that a similar value could be employed for every differing type of light source.

The Graph (Fig. 8) has been produced by using the above-mentioned formula ; and list-prices, ruling in this Country, of Lamps and Control Gear, were used in the calculations.

It must be remembered that while this graph gives a true comparison of the economics connected with the various types of light sources, there are other factors concerning light sources that influence this aspect of installations. In particular, the question of colour, unbroken length of light source, intrinsic brilliance, and a convenient control, influence decision as to which type of light source is the most suitable for a particular installation.

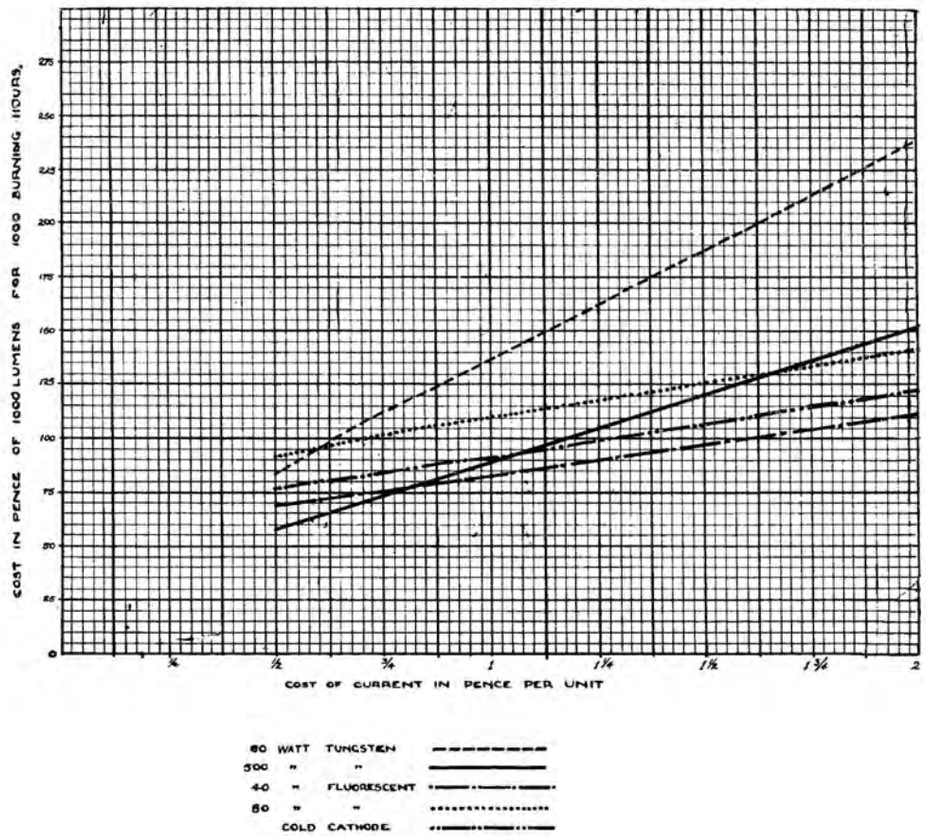
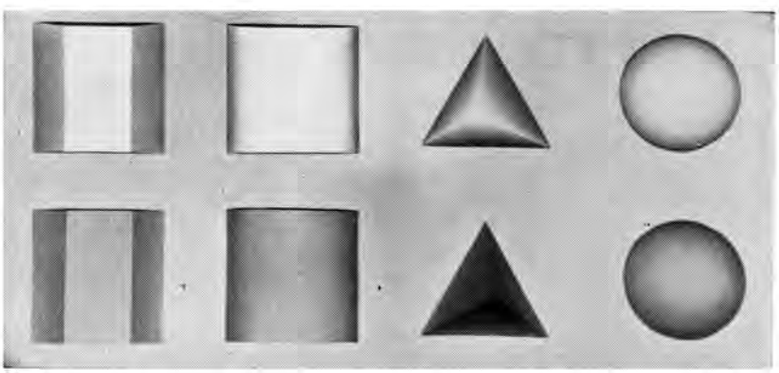


FIG. 8.

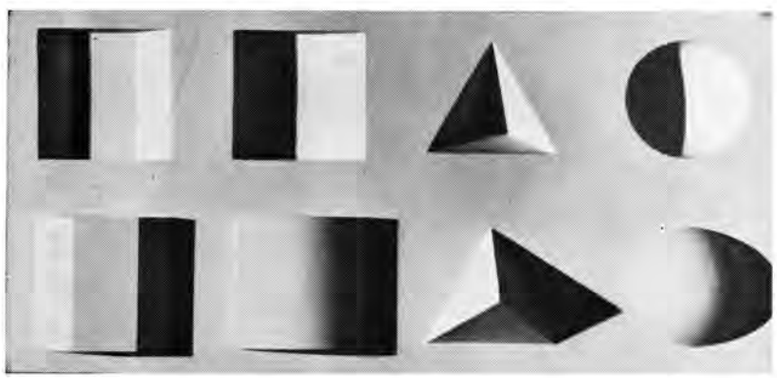


Generally diffused light mainly directed from the front of the objects.

Lower illustration shows the distortion effect, when light is projected from the left.

ILLUSTRATIONS SHOW DISTORTED APPEARANCE OF SIMPLE OBJECTS.

Note the difficulty in deciding whether the surface is projecting or indented.



MAIN ELEVATION — TO ESSELEN STREET, JOHANNESBURG.

PRINCESS MATERNITY HOME JOHANNESBURG.

THE Princess Maternity Home which is now nearing completion is a good example of architectural design that combines interior planning of a high standard, with attractive constructional features.

This Hospital is equipped on what might be termed very modern lines, to provide the most hygienic conditions known to medical science.

Programme: This building was designed to meet the following requirements: To provide a completely self-contained Maternity Hospital on a site in Hillbrow, Johannesburg, with a South frontage of 150 feet and a West frontage of 100 feet. Accommodation for 150 patients' beds, sub-divided into single, two-bed, four-bed and six-bed wards in a suitable proportion to cater for all sections of the community, together with ward ancillary rooms, lavatories, nurseries, labour and delivery rooms, operation theatres, isolation wing, administrative department, nurses' sitting- and dining-rooms, matron's flat, special staff bedrooms, main kitchen and general storage and engineering services, as well as for the housing of native employees. The general nursing staff will not live on the premises.

Planning: With the exception of the isolation unit, all wards have been placed on the South frontage, which is 150 feet long, and sub-divided into six floors of 24 beds each. A floor thus forms a completely self-contained nursing unit with its own banks of ancillary rooms and nurseries served by a nursing corridor of minimum length, but adequate in width and well lighted and aerated. The basement and ground floors under this bank of ward units are taken up by services, storage, administrative offices and nurses' sitting- and dining-rooms, while the seventh floor above contains the delivery rooms and operation theatres, as well as the central sterilizing and supply room. The South-facing wards have several advantages in a building of this nature, in which the patients' stay is of short duration. The incidence of sun on normal North or East-facing wards causes a large variation in their temperature and in intensity of light, which can on occasion cause great discomfort to a patient confined to bed and therefore unable to regulate or control these factors herself, by operating curtains, radiators and windows. The ward temperatures are easily controlled by means of a hot water heating system with thermostatic control to each unit. This siting of the wards has completely governed the disposition of the units of plan in the design of the hospital.

Lower Ground and Ground Floors.

Typical Ward Floor — Isolation Unit on First Floor only.

(A) This isolation unit accommodates eight single wards, three double wards, a four-bed and a six-bed ward on each floor. All are equally airy, well-lit and pleasant, and each has a surgeon's basin with action taps operated by elbow. Each bed is in communication with the service block by means of a patients' silent call system, and in addition is provided with its own built-in wardrobe, bed head light, telephone point and connection for radio earphones.

(B) The wards are quiet, since noise from nurseries, the service wing and lift foyers is cut off by self-closing doors leading from the nursing corridor. Ventilators to exclude light and sound are provided between the corridor and the wards.

(C) Ancillary rooms are planned to form a unit centrally placed for ease and efficiency of service, but there is direct access from the nursing corridor to the patients' lavatory block and the sister's duty room. The service corridor is used only by the staff.

(D) The services provided for the distribution of food are organised to permit a minimum of delay between cooking and serving. This requirement is successfully met by means of a food lift which directly links the main kitchen with the ward serveries.

(E) For patients' protection, a self-contained and completely separate isolation unit situated on the first floor takes care of any problem of infection, and is self-contained with nursery, sterilizing room, sluice room and servery.

(F) Passenger lifts are installed and also a stretcher lift and a lift for staff, all leading to their individual lobbies, thus segregating passengers, patients and staff to permit their individual and properly placed vertical circulation.

The nursery unit has been planned and organised in accordance with the latest findings on the subject of infant care and protection. Only authorised staff may enter the nursery wing and the special examination room, provided for doctors' use, has a hatchway to enable babies to be passed through from the nursery to the examination room. This arrangement prevents any person other than the nurse responsible for the care of the baby from entering the nursery proper.

Among the many interesting features incorporated in this model in hospital design for maternity cases is a viewing window, which is provided adjacent to the ward corridor, where babies may be seen by relations and friends. There is also a special ward equipped for the care of premature infants, as well as a suspect ward, for use when a baby is being observed for a possible infectious complaint, which is staffed by personnel from the main wards so as to safeguard the nursery from the risk of cross infection.

In addition, a milk servery which has facilities for direct entrance from the service stairs and lift, is fitted with a pasteuriser, refrigerator, sink and gas hot plate. The babies' bathroom, designed to provide hygienic conditions, has a built-in chute which communicates with the laundry on the ground floor, where soiled linen is cleaned, washed and sterilized.

Delivery Floor :

This is a completely self-contained unit, isolated and insulated from the accommodation below.

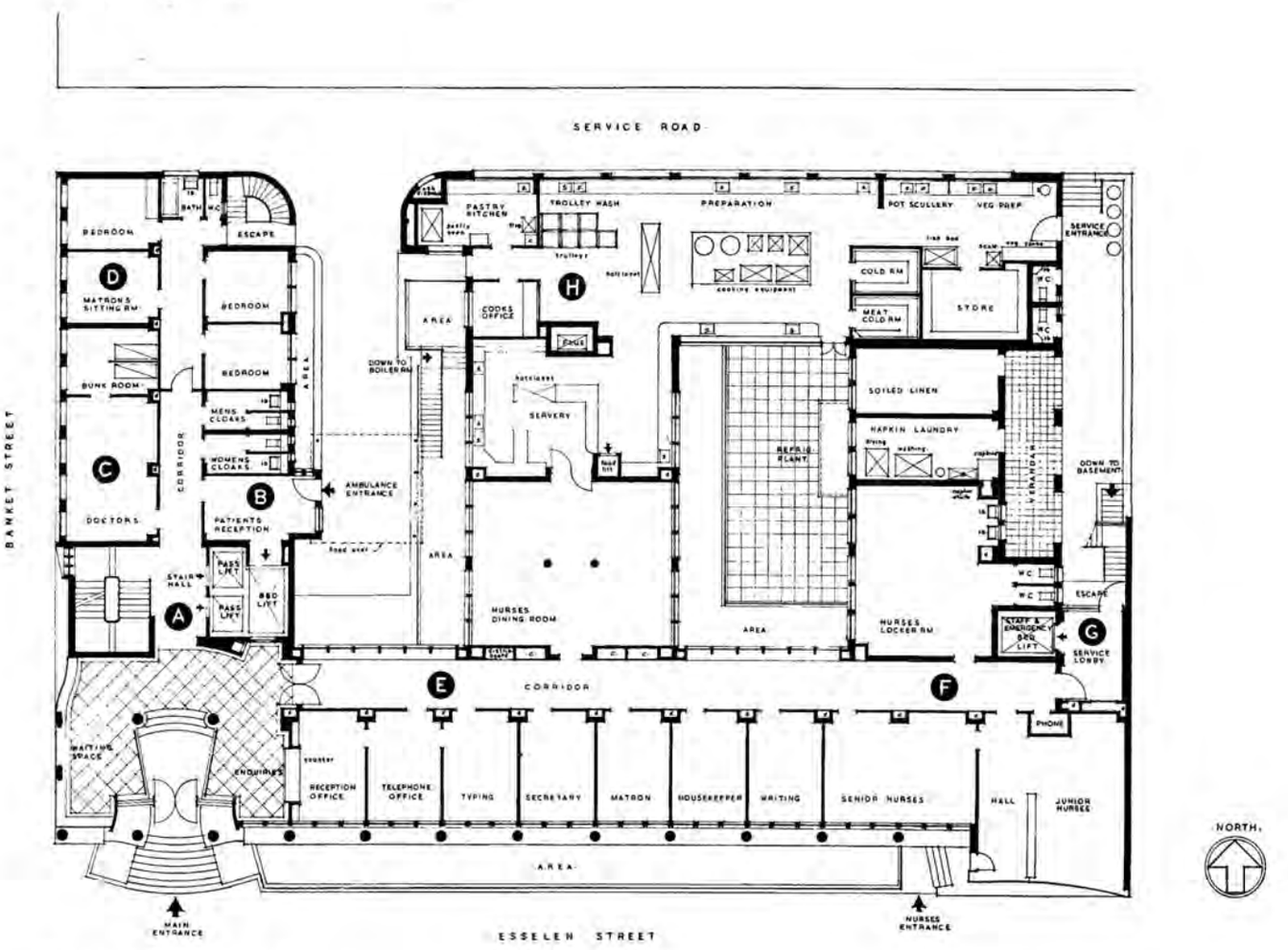
The block plan shows the convenient manner in which the following rooms are located.

(A) Patients' reception and preparation room with three cubicles, bathrooms and toilet.

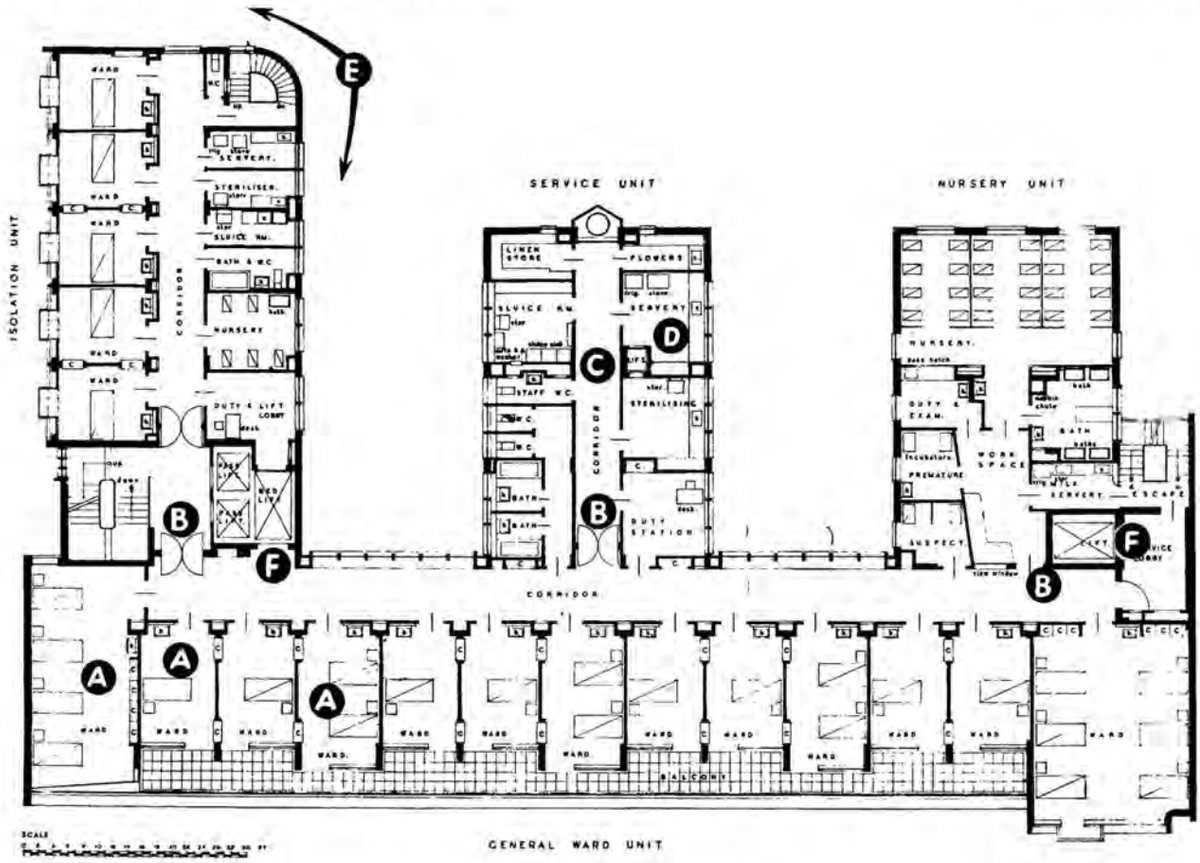
(B) Seven delivery rooms, equipped with delivery light, nurses' call system, flash-proof switches, telephone extension point and call light, and one labour room with its own toilet, are completely sound-proof, insulated from one another and from the floor below by means of cork insulation around 9-inch walls and under a double floor. They have fixed glazing and are artificially ventilated, equipped with delivery light, silent call system, surgeon's basin and electric sterilizer, for emergency use for such cases as an accidentally dropped instrument.

(C) Completely self-contained suite of three operating theatres with main sterilizing and sub-sterilizing rooms, surgeons' scrub-up rooms, and soiled instrument wash-up room which leads directly on to the service stairs and lift. The main lighting to the theatres is by means of South-facing clerestory windows. The theatres have been arranged for air-conditioning and sterilaps, but as a temporary measure extractor fans only have been provided. Each of the theatres is equipped with shadowless lamps, flash-proof switches, foot-operated call system for use by the nurses, telephone extension point and call light, switches for the ventilating plant and X-ray viewing boxes built in flush with the wall.

(D) The main sterilising work-room for the whole hospital (with the exception of theatres) is connected by a service lift to the dressing and sterilising rooms on the ward floors. A separate wash-up room is provided for soiled instruments and bowls.



GROUND FLOOR PLAN.



FIRST FLOOR PLAN.

(E) Kitchen servery for the preparation of light meals for patients awaiting delivery.

(F) Doctors' change room, shower and toilet.

Ground Floor : The main entrance is at the West corner of the South front of the site, defined by Esselen Street, and leads to the Lobby containing the passenger lifts and the main staircase. A secondary entrance at the East corner of this front is for the use of the nursing staff and leads directly to their locker- and sitting-rooms and also to the staff lift. The patients' and ambulance entrance is from an ambulance courtyard, situated off the service road on the North boundary of the site, and leads to the patients' reception room from which she is taken directly to the patients' preparation room on the seventh floor or alternatively removed to a ward by means of the patients' bed-lift. All this is accomplished without having to use the general administrative corridor, entrance foyer or public lift lobby. The general service entrance also leads off this North service road and is directly related to the main kitchen entrance and the staff and service lifts and stairs. This arrangement has organised the varying types of circulation directly to the units of plan, with separate lift banks and lobbies for the vertical transportation of (a) visitors and doctors ; (b) patients ; (c) staff and services, thus eliminating the cross circulation of conflicting lines of traffic.

Description of Floor Plan.

(A) Lifts and staircase for visitors and doctors.

(B) Reception Room for patients arriving either by way of the courtyard for ambulance and car, or at the main entrance, and patients' bed-lift for distribution directly to the delivery and ward floors. The bed-lift entrance, which gives direct access to the entrance hall on the ground-floor, is only brought into use for general traffic when the passenger lifts are out of commission.

(C) Visiting doctors' sitting-room and library, with bunk room attached, to cater for doctors called in at night but having to wait several hours before they are required in the delivery rooms.

(D) Matron's Flat, and bedrooms for emergency or special nursing staff use.

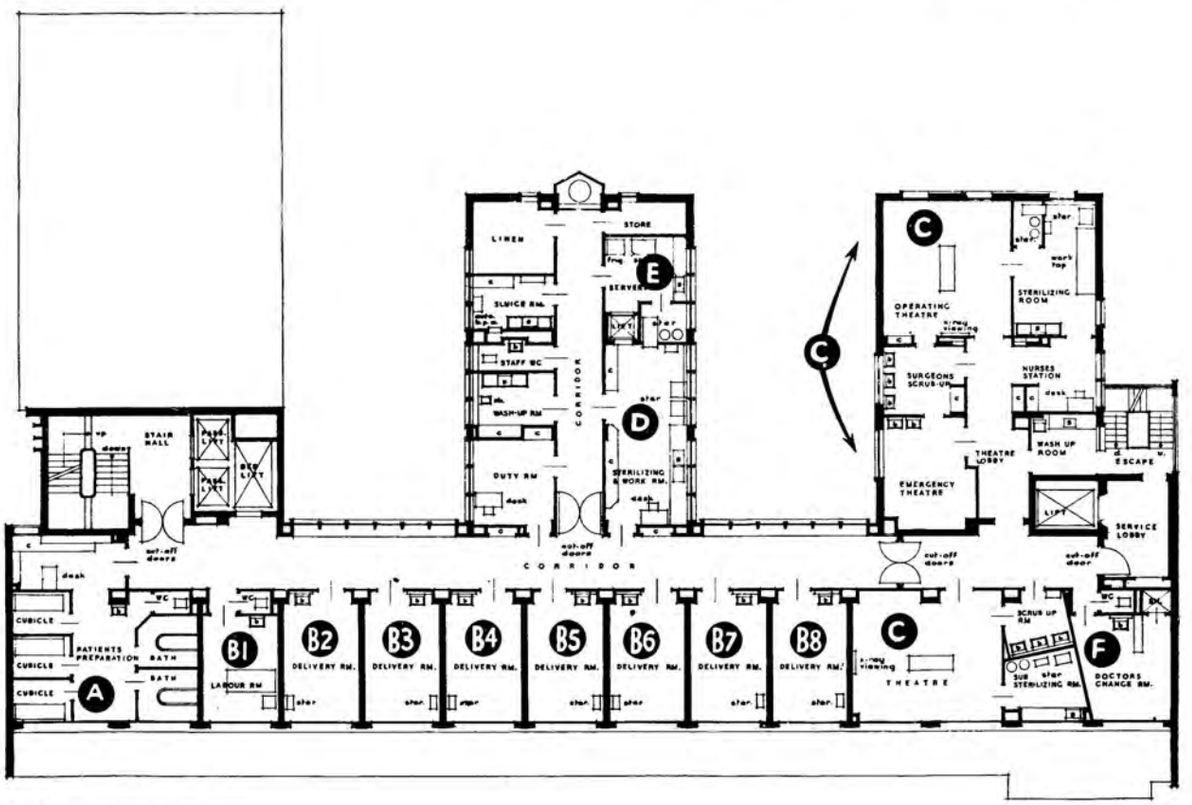
(E) Administration Offices.

(F) Nurses' entrance, sitting-, locker- and dining-rooms, and telephone booth.

(G) Staff and service lift designed to act as emergency bed-lift when the main bed-lift is out of commission. This is directly related to the nurses' and service entrances.

(H) Main kitchen department with cold rooms and stores, ward servery, food lift direct to ward floor serveries and general servery to nurses 'dining-room.

Lower Ground Floor Plan : The space under the administration offices and entrance hall on the South front is taken up by a waiting room for patients' friends, a hairdressing-salon for convalescent patients, reserve space for a mother-craft or physio-therapy department for after-care of mother and child, together with a lecture room and a reception room, under the West wing. All these rooms are directly related to the main staircase and the passenger and bed-lifts. The general linen and serving rooms and the bulk stores are all located under the East section of the South front, close to the service lift and stairs. Underneath the central or service block are the boiler rooms, transformer and switch rooms and the calorifier room. The portion under the nursery wing is unexcavated.



SCALE

SEVENTH FLOOR PLAN

VIEW OF ONE OF THE WARDS — A UNIT FOR 4 BEDS.

OPERATING THEATRE.

Construction: Reinforced concrete frame structure on pad and beam foundations resting on shale with brick panel infilling, steel windows and steel door-frames, solid flush kiaat doors, electric light and power, patients' silent call system, steam sterilisers and hot-water radiator heating with unit thermostatic control. Electric lifts, two passenger, 1 patients' bed-lift, 1 staff and service emergency bed-lift, 1 service lift with a lower compartment for ward kitchen service and an upper compartment for use in conjunction with the dressing and sterilising room, which can operate between the main kitchen and the ward floor kitchens, or the central sterilising room and the ward sterilising rooms. Steam is produced by two economic type coal-burning boilers, each complete with worm gear type automatic stoker. Both the hot water and heating system are fed by means of calorifiers. The facilities for cooking include steam jacketed boiling pans, steaming ovens, gas boiling tops and roasting ovens, gas fish fryer, griller and steam hot closets. Gas stoves of special design and electric refrigerators are fitted in the ward service rooms. All sanitary fittings are easy-clean Corbel type, cantilevered from walls, automatic bed-pan washers, and separate bed-pan sterilisers to sluice rooms. The central sterilising and work room is equipped with large drum and water sterilisers to serve all ward floors and the delivery floor. Dressing and sterilising rooms on each ward floor have a combined instrument and bowl steriliser together with an electric steriliser for use in emergency. The main sterilising room of the theatre unit is complete with drum, water, instrument and bowl sterilisers. In addition, there is a sub-sterilising room for water, instruments and bowls only. Each of these, as well as all delivery rooms, has an emergency electric steriliser. Shadowless lights are provided to the operating theatres, and lights of special type to the delivery rooms.

A built-in cupboard fabricated in steel is provided for each patient. In addition, there are points for use in connection with wireless earphones supplied to each patient, as well as a telephone jack to each bed and telephones to all main duty and service rooms.

Finishes: The floors are finished throughout in asphalt tile, with colour light buff to corridors, blue to wards and nurseries, dark green to service rooms, and maroon to the administration offices, sitting rooms and dining rooms.

Skirtings are formed out of asphalt tiles, coved, turned up and clipped to the wall by aluminium cap strips.

The walls and ceilings throughout, with the exception of the bulk storage rooms, boiler house, etc., are painted with synthetic enamel, providing a semi-gloss or gloss finish, pale primrose in colour.

The solid flush doors are finished in kiaat ply-wood, filled in and ducoed to give a clear matt surface.

Service rooms, toilets and delivery rooms have cream tiled walls, while the operating theatres have egg-shell green tiled walls. Ventilation of the delivery rooms, theatre and sterilising rooms is accomplished by means of extractor fans, but it is interesting to note that ducts have been provided for full air-conditioning including refrigeration, if required in the future.

External Finish: Facing brick in buff colour and 2 inches thick have been used in the elevation fronting the main street,

and brick of similar character, but 3 inches thick, to the court-yards. Roof of asphalt sheeting covered with concrete sun-shading slabs, raised from the general roof surface with an air cavity under, to protect the building from the heat and destructive influence of the sun's rays. Plaster trim to external elevations is painted deep cream colour and rain water pipes to external balconies are in royal blue.

The balcony railings in light blue and pale primrose have a pleasing appearance. Entrance doors are in aluminium with plate-glass panels decoratively etched, while the entrance steps are in cream and maroon marble.

The main staircase is finished in asphalt tile with rubber nosing, and metal balustrade and kiaat hand-rail are provided.

An emergency lighting system installed for the whole of the seventh floor will operate by means of car-type batteries, constantly charged by means of a trickle charger, grouped to form a 220 volt system which cuts in or out automatically.

The building has been constructed to the design prepared by Messrs. Stegmann, Orpen & Porter, assisted by Mr. G. A. Christos. Messrs. McIntosh & Bowrie were the Quantity Surveyors, Messrs. Rapp & Maister, General Contractors, Mr. B. M. D. Cordiner, Electrical Consultant, and Mr. H. Kaganas, Reinforced Concrete Engineer, acting on behalf of Messrs. Wire Industries.

TYPICAL ARRANGEMENT ADOPTED FOR SLUICE ROOM.

OVERSEAS NEWS AND PRACTICE.

PREFABRICATED WOODEN HOUSES FOR SAUDI-ARABIA.

It is reported in the Swedish Press that prefabricated houses valued at 2.5 million kronor are to be exported to Saudi-Arabia. They will be delivered to the Arabian-American Oil Company and are to be erected at Ras Tanura. Negotiations are being conducted for further deliveries.

Some 65 factories are at present manufacturing prefabs in Sweden, according to a report recently issued by the Federation of Manufacturers of Prefabricated Houses. The annual output of the Swedish Prefabricating Industry is estimated at about 15,000 houses, but the total capacity with good supplies of raw materials and labour would be about 20,000.

This young industry has developed rapidly during the last 15 years. A large number of the villas, bungalows and barracks now being built in Sweden are prefabricated. There is a considerable demand for prefabs all over Europe, where they greatly contribute to the easing of the difficult housing position in war devastated countries. They have been sold to Denmark, France, Poland, England and outside Europe to the Argentine.

DANISH BUILDING ACTIVITIES IN 1947.

Danish building activities in 1947 recorded by Jens Johansen in No. 1, 1948, of *Ingenioren*, include important events such as the establishment of a new Ministry for Building and Public Health, and of a new Building Research Institute. In the course of the year, nearly 3,500 new dwellings were built and completed. Industrial building activity was considerably more extensive than in 1946. Among the new works are the refrigerated warehouse at Kolding and considerable works for the new power station at Isefjord. Mention is made of a new four-storeyed block of flats at Horsholm which is notable for its construction, with ceilings of reinforced concrete supported by partition walls of rough concrete.

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.

ELECTRICAL EQUIPMENT:

Benoni Municipality: High tension switch gear. Storekeeper, Benoni. Stores Contract 379. Extended to 23/8/48.

Bulawayo Municipality: Radial Drilling machine, critical pressure gaguge, sub-standard meters, vacuum cleaner, oscilloscope, rock drills, breaker. City Electrical Engineer, Bulawayo. Contract E34/1948. Due, 14/8/48.

Durban Municipality: Transformers. No. E.2170. Due, 20/8/48. 6,600 volt switch gear. No. B2174. Due, 8/10/48. Transformers. No. E.2673. Due, 1/10/48. Electricity Department, Durban.

Ermelo Municipality: Supply, delivery and erection at the Ermelo Power Station of the following generating plant: (a) 1 only 400 k.w. turbo-alternator with auxiliaries and steam boiler, etc., **alternatively** (b) 1 only 800 k.w. turbo-alternator with auxiliaries and steam boiler, etc. Town Engineer, Ermelo. (Copies of specifications and conditions on payment of £2-2-0 per copy). Due, 30/9/48.

Government of Northern Rhodesia, Lusaka: Section 1: 11 k.v. cable, cable boxes, laying, jointing, excavating and filling. Section 2: L.V. cables and cable boxes. Section 3: H.V. and L.V. switch gear and sundries (including erection). Section 4: Transformers. Consulting Engineers: J. S. Clinton, Preston House, Simmonds Street, Johannesburg. (Deposit of £3-3-0—extra copies of documents at £1-0-0 each). Specification L.10/1948. Due, 8/9/48.

Johannesburg Municipality: Battery charging set. Stores Department, Johannesburg. No. 543. Due, 10/9/48.

Marienthal Municipality, S.W.A.: Supply, delivery on site and complete erection or installation of the following: (a) Two crude oil engines and alternator generating sets, 40/50 k.w. fully installed. (b) One 5-panel switch-board, fully installed. (c) The complete distribution system, completely erected. (d) Tender for "house wiring" installations. Consulting Engineer: H.V.S. Muller, "Reflections," Murray Lane, Upington. C.P. (Deposit of £2-2-0—extra copies of documents at £1-1-0 each). Note: Tenders for section (d) only will not be considered. Due, 27/9/48.

Naboomspruit Municipality: Supply, delivery and erection in the power station of the following plant: 50 k.w. Diesel engine generating sets; 35 k.w. Diesel engine generating sets. The sets are required to run at about 1,000 r.p.m., the voltage to be 380. Town Clerk, Naboomspruit. Due, 31/8/48.

Odendaalsrus Municipality: Erection of electricity scheme. Full particulars from: Dr. J. K. Marais, 303, Sanlam Building, Loveday Street, Johannesburg. (Deposit of £5-5-0). Due, 13/8/48.

Oudtshoorn Municipality: One 12,000 lt. per hour water turbo boiler plant; one 1,500 k.w. turbo alternator. Town Clerk, Oudtshoorn. Extended, 31/8/48.

Paarl Municipality: Certain line and electrical material. Electrical Engineer, Paarl. No. E.D.6/48. Due, 20/8/48.

Pietersburg Municipality: Supply, supervision of erection and setting to work of traffic light signals. City Electrical Engineering and Transport Manager, Pietersburg. (3 copies of documents free of charge—extra copies at 5/- each). Contract 246/T.f.c. Due, 28/10/48.

Pretoria Municipality: Supply, delivery and erection of 33 k.v. and lever voltage auxiliary transformers for Power Station "B". City Electrical Engineer, Pretoria. (Deposit of £2-2-0). Form of tender: N437. Due, 24/8/48.

Pretoria Municipality: 250 m.v.a. rupturing capacity 400 amp., 11,500 volt metal-clad switch gear. Specification 321. Electrical instruments and test equipment for laboratory and field work. Specification 323. Controller of Stores, Pretoria West. Due, 16/8/48.

Pretoria Irrigation Department: One purification and pumping plant for Rust-der-Winter Irrigation scheme; electric stoves, hot-plates and geysers. Irrigation Department, P.O. Box 277, Pretoria. Nos. Irr. 9, Irr. 96. Due, 12/8/48, 9/9/48, respectively.

277, Pretoria. Nos. Irr. 9, Irr. 96. Due, 12/8/48, 9/9/48, respectively.

Somerset West Municipality: Electricity supply undertaking extensions 1948: Lighting plant (a) Pole line material and H.T. cable; (b) Transformers and switches; (c) Equipment of new sub-stations. Town Clerk, Somerset West. (One set of documents on deposit of £3-3-0—extra copies at £2-2-0 each). Contract 6/1948. Due, 19/8/48.

S.A.R. & H. Tender Board: Train lighting dynamos and cells. S.A.R. & H. Tender Board, 15 de Villiers Street, Johannesburg. No. 7630. Extended, 6/1/49.

ENGINEERING CONSTRUCTION, ETC.:

S.A.R. & H. Tender Board: Wheels and axles, automatic couplers and roller bearing axle boxes. No. 7600. Extended, 6/1/49.

HEATING INSTALLATIONS:

Johannesburg Municipality: Low tension distribution boards, No. 540. Due, 13/8/48. Electric ranges, water heaters and screwed conduit. No. 530; isolating links, No. 531. Stores Department, Johannesburg. Due, 13/8/48.

Klerksdorp Municipality: Section C: By-products plant and boiler. Electrical Engineer, Klerksdorp. (Tender documents in triplicate on deposit of £5-5-0—extra copies at £1-10-0 each). Due, 26/8/48.

Department of Public Works, Pretoria: Supply, delivery and erection of boiler plant, West Koppies Hospital, Pretoria. P.W.D. 38. Due, 5/8/48.

S.A.R. & H. Tender Board: Steam raising plants. No. 8028. Due, 26/8/48.

LABORATORY EQUIPMENT, ETC.:

Division of Chemical Services, Cape Town: Chemicals and laboratory apparatus to Department of Agriculture. No. S.O. 2686, Cape Town. Due, 9/9/48.

Division of Horticulture, Pretoria: Laboratory equipment. Union Tender and Supplies Board, P.O. Box 371, Pretoria. No. S.O. 2501, Pretoria. Due, 19/8/48.

Pietermaritzburg Municipality: Portable electro- encephalograph to Fort Napier Hospital. No. S.O. 2707; Laboratory apparatus to Onderstepoort Laboratory. No. S.O. 2708. Due, 12/8/48.

REFRIGERATION:

Klerksdorp Municipality: Section B: Refrigeration plant and cold storage equipment. Electrical Engineer, Klerksdorp. (Tender documents in triplicate on deposit of £5-5-0—extra copies at £1-10-0 each). Due, 26/8/48.

SEWERAGE SCHEMES, ETC.:

Germiston Municipality: Main sewerage reticulation, Fisher's Hill and Knights: certain salt-glazed earthenware pipes and fittings to be supplied as and when required as against orders placed by the Storekeeper/Buyer, Germiston. Stores Contract 20. Due, 11/8/48.

STRUCTURAL STEELWORK, ETC.:

Klerksdorp Municipality: Structural steelwork, railage system and slaughtering equipment (Section A). Electrical Engineer, Klerksdorp. (Tender documents in triplicate on deposit of £5-5-0—extra copies at £1-10-0 each). Due, 26/8/48.

S.A.R. & H. Tender Board: Structural Steelwork. No. 8012. Extended, 26/8/48.

TRACTORS AND ROADMAKING PLANT, ETC.:

Benoni Municipality: One crawler type tractor. Town Engineer, Benoni. Contract 326. Due, 9/8/48.

Gordonia Divisional Council: Road-machinery: one loader, ¾/1-cubic yard bucket, wheel or crawler type, mounted with full Diesel engine; one 105 c.f.m. air compressor outfit with jack hammer and accessories; one 40/50 h.p. heavy wheel tractor with full Diesel engine; two 4-cubic yard bottom dump trailers; one motor grader, full Diesel engine, 16/18,000 lbs.; one 10/12-ton (6/8 cubic yards) pay load capacity tip truck with full Diesel engine. Secretary. Due, 10/8/48.

VEHICLES, ETC.:

Bulawayo Municipality: 15-ton trailer. City Electrical Engineer, Bulawayo. Contract E34/1948. Due, 14/8/48.

S.A.R. & H. Tender Board: Inter-urban coaches manufactured in South Africa. No. 7471. Extended, 6/1/49.

WATER SUPPLIES, ETC.:

Bulawayo Municipality: Second N'cema water main: approximately 170,500 feet of steel piping of 30″, 28″, 21″ and 18″ internal diameter together with specials, valves and surfacer boxes. Town Clerk, Bulawayo. (Three copies of documents on deposit of £10-0-0—extra copies at £2-0-0 each). Contract 2/1948. Due, 16/8/48.

Cape Town Municipality: Pumps, motors, piping, valves, electrical equipment and other plant at the Wynberg Reservoir Pumping Station. Water Engineer, Old Drill Hall, Parade Street, Cape Town. (Deposit of £1-1-0). Form of tender A.8/48. Due, 16/8/48.

Heilbron Municipality: Water scheme revisions and extensions: Section A: General items; Section B: Excavation of pipe trenches; Section C: Piping, valves and specials; Section D: Laying and jointing of piping, valves and specials; Section E: Construction of sedimentation tanks, rapid gravitation filters and chemical dosing plant building; Section F: Supply, delivery and installation complete of chemical dosing apparatus, chlorination plant and further purification plant equipment. Consulting Engineer: J. Unger, 909, Jubilee House, Simmonds Street, Johannesburg. (Deposit of £5-5-0—additional copies of documents at £2-2-0 each). Contract 365/1948. Due, 12/8/48.

Enkeldoorn Municipality: All or any of the following contracts: Section A: Pipings and fittings (Contract 1); Section B: Installation of piping, meters and fittings (Contract 1); Meters and fittings (Contract 2); Supply, delivery and installation of 2 borehole plant and one booster plant (Contract 3). Chairman, Town Management Board, P.O. Box 19, Enkeldoorn. Due, 8/8/48.

Irrigation Department, Pretoria: Water-level and flow metering and indicating equipment for Odendaalsrus Goldfields Water Supply Scheme. Irrigation Department, P.O. Box 277, Pretoria. No. Irr. 1. Due, 9/9/48.

Salisbury Municipality: Water scheme—30″ diameter steel pipes and fittings (excluding valves). Consulting Engineers: Stewart, Sviridov and Oliver, Balgownie House, Commissioner Street, Johannesburg. (Deposit of £10-10-0—additional copies of documents at £2-2-0 per copy). Contract HW1/1948. Due, 16/8/48.

Sinoia Municipality: (a) Supply, delivery and erection of pumping plant to deliver water from the Hunyani River to tanks situated adjacent to the proposed pump house; (b) Supply, delivery and erection of 2 tanks adjacent to the pump house, total capacity 2,000 gallons; (c) Supply, delivery and erection of a pump, engine lay shaft and motor to deliver unclarified water from the tanks (vide Section (b) to the purification works through 4″ pipe provided under separate contract; (d) Supply, delivery and erection of a suitable pump house; (e) The testing of the completed works. Secretary, Town Management Board, Sinoia. Contract 1. Due, 16/8/48.

MISCELLANEOUS:

Asbestos Cement Sheets, etc.: S.A.R. & H. Tender Board. No. 8229. Due, 12/8/48.

Carbon Brushes: S.A.R. & H. Tender Board. No. 8245. Due, 12/8/48.

Chain: S.A.R. & H. Tender Board. No. 8086. Due, 12/8/48.

Coal: Nuts, Cobbles, Rounds: Annual requirement. Storekeeper/Buyer, Germiston. Contract 19. Due, 11/8/48.

Felt Washers: Department of Posts and Telegraphs, Pretoria. P.O. 939. Due, 26/8/48.

Fire Extinguishers: S.A.R. & H. Tender Board. No. 8250. Due, 12/8/48.

Galvanised Steel Refuse Bins: Annual requirement commencing 1/9/48. Contract 17. Storekeeper/Buyer, Germiston. Due, 11/8/48.

Galvanised Steel Sanitary Pails: Annual requirement commencing 1/9/48. Contract 18. Storekeeper/Buyer, Germiston. Due, 11/8/48.

Hydraulic Presses: S.A.R. & H. Tender Board. No. 8203. Due, 16/9/48.

Insulated Steel Staples: Department of Posts and Telegraphs, Pretoria. P.O. 943. Due, 26/8/48.

Marline and Lacing Twine: Department of Posts and Telegraphs, Pretoria. P.O. 944. Due, 26/8/48.

Medical Equipment to Department of Health: Union Tender and Supplies Board, P.O. Box 371, Pretoria. S.O. 2643, Cape Town. Due, 12/8/48.

Paper Sleeves: Department of Posts and Telegraphs, Pretoria. P.O. 947. Due, 19/8/48.

Plumbers Metal, Resin-cored Solder and Soft Solder: Department of Posts and Telegraphs, Pretoria. P.O. 940. Due, 2/9/48.

Portable and Stationary Concrete Mixers: Controller of Stores, Irrigation Department, P.O. Box 277, Pretoria. Irr. 60. Due, 12/8/48.

Pothead Compound and Petroleum Jelly: Department of Posts and Telegraphs, Pretoria. P.O. 946. Due, 2/9/48.

Roofing Felt: S.A.R. & H. Tender Board. No. 8257. Due, 5/8/48.

Spindles, Aluminium Alloy: Department of Posts and Telegraphs, Pretoria. P.O. 945. Due, 26/8/48.

Spindle Moulder to Technical High School: S.O. 2706, Middelburg, Transvaal. Due, 12/8/48.

Steel Sheets: S.A.R. & H. Tender Board. No. 8197. Due, 26/8/48.

Ticket-dating Presses: S.A.R. & H. Tender Board. No. 8288. Due, 12/8/48.

Winches: S.A.R. & H. Tender Board. No. 8202. Due, 19/8/48.

Wood and Metal Ladders: Department of Posts and Telegraphs, Pretoria. P.O. 935. Due, 26/8/48.

PERSONAL.

Messrs. Blackwood Hodge and Company (Pty.) S.A., Ltd., have recently announced the following changes in their organisation :—

Mr. A. Watson has now taken over his duties at Lombardy Building, 50 Kerk Street, Johannesburg, as director in charge of African operations in place of Mr. Stanley Draper, who has now returned to England.

Mr. A. G. Winterbottom has now commenced his duties in Salisbury as manager of their subsidiary company, Blackwood Hodge & Co. (Rhodesia) Ltd., at 30 Jameson Avenue, Salisbury, Southern Rhodesia.

Mr. D. Bennett has now taken up his duties in Elisabethville as manager of their subsidiary company, Blackwood Hodge (Congo Belge) Ltd.

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