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photo C.F.D.

A MODERN DEVELOPMENT

It is interesting and encouraging to see that members of parliament are at last waking up to the fact that our official architecture is not all that could be desired.

In discussing the vote for public works several members made some very pertinent remarks on the subject as well as on the size of the Public Works Department.

"The time had come," said one member, "to reduce the personnel of the department considerably. There was a time when there were not enough private architects in South Africa, but that was not so to-day."

We have stressed this point so often that it is hardly necessary to say anything further.

The same member stated that "work undertaken by the Public Works Department was more expensive than private work bcause contractors invariably added five per cent. to their estimates when it was a Public Works Department job."

In reply, the Minister of Public Works said that "It was true that contractors were accustomed to add five per cent. on a Public Works Department job. That was because they knew the Public Works Department insisted on good work. In general, public buildings were far better built than private buildings."

One would like to have the opinion of competent architects on such a statement which appears to be a reflection on the integrity or competence of professional men in practice.

The profession is getting weary of these statements which, unfortunately, have so often, to go unchallenged.

It is a well known fact that government work is far more costly when carried out by a government department instead of by a private practitioner. This has been proved conclusively in most countries and could be proved quite easily in this country, if the fullest investigation was made possible.

The profession has pegged away at this point for many years and must go on pegging away until satisfaction has been obtained.

With regard to the three recent architectural competitions for government buildings, one would very much like to know what amounts would have been expended on these buildings had they been designed and carried out by a government department. The consensus of opinion amongst competitors is that not one of them could be erected for the amount allocated, if carried out with the quality of material and workmanship usually associated with government work. It is quite impossible we are told, and, perhaps, just as well, to include the work of sculptors and painters, with which most of the buildings carried out by a government department are embellished.

We read in the parliamentary reports that a member of parliament deplored "the sterotyped style of South Africa's public buildings" and urged that "more work should be given to private practitioners and engineers."

This is encouraging as far as it goes but we sincerely hope that it will be taken a stage further by members of parliament as the Institute seems capable of doing so little.

The Minister stated that "he had inaugurated the system of competitions in regard to public buildings in order to give young South African architects a chance. These competitions were of great educational value to them."

But, as we have said before (and we are glad to see that our statements are reiterated by laymen, in the press), what chance has a young enthusiastic and highly trained architect, when he is hidebound by a preconceived plan or a vaguely suggestive stylistic manner. The majority of our younger architects derive little educational benefit from these competitions, as conducted, because they realise the futility of entering for them.

The Minister went on to say that "Some of the public buildings erected had, however, disappointed him. The primary object was to build buildings to last and buildings which would be convenient for the public. The architects, 'presumably the P.W.P.,' were informed of the class of buildings that was wanted, and they were left an absolutely free hand in designing the plans. There had been a great improvement in public buildings throughout South Africa, although some recently erected buildings were admittedly not all that could be desired."

These statements are most encouraging when coming from a responsible Minister, and we congratulate him on this attack upon his own department.

Judging by his discernment and taste we feel certain that several important government buildings, now nearing completion, will incur his displeasure and disappointment, and, we hope, as a result, that further competitions will take place.

We are not satisfied with the few crumbs which have fallen from the rich man's table.

We constantly hear of or read of great projects being mooted, such as further magistrates' courts, prisons, post offices, etc., and it is up to the councils of our institutes to act at once and see that further opportunities are given to practitioners and particularly to our younger practitioners to prove themselves.

On the opposite page appears the first instalment of a paper on Airports which was submitted by Mr. C. F. Drake as a thesis for the degree of B. Arch. in the Witwatersrand University. This paper will be completed in six parts.

Acknowledgment.

I am indebted to Messrs. Imperial Airways for plans and information concerning Croydon Aerodrome, and for full descriptions of their machines in current use ; to Messrs. The Deutsche Luft-Hansa for plans of Templehof Aerodrome and much information regarding their flying services and current German practice; The Royal Dutch Air Lines (K.L.M.) for descriptions, plans and information bearing on the subject ; all of whom have treated my enquiries with the greatest courtesy.

Much of the information on aerodrome surfacing was obtained from Messrs. Colas Products, London, and the Austin Company of Cleveland, who specialise in that work.

I also wish to express my thankfulness to the late Major Cochran-Patrick, and some members of Imperial Airways staff for valuable suggestions.

C. F. Drake,
University of the Witwatersrand.

THE DESIGN AND CONSTRUCTION OF AIRPORTS

By C. F. DRAKE

An "Aerodrome" consists of an open field and a number of buildings necessary for the housing and repair of aircraft, etc., and in some cases additional buildings of a different character for handling of passengers and freight. The aerodrome is a very modern development, and is remarkable in that its growth has been very rapid ; before 1920 only military aerodromes were of any importance. It was only after the war that the possibilities of flying as a mode of transport were exploited. A few aerodromes grew up in a haphazard way, being made as required. There was no precedent for planning and future development was uncertain. Generally, the first airports in Europe were mostly military aerodromes converted. The development of the early airlines was rapid owing to subsidies, and in time, new and better aerodromes were laid out as required. In the U.S.A. development was not so rapid, but the longer distances and the development of night flying for mails brought problems of a different nature.

Since aerodromes are made for and used only by flying machines, it may be as well to consider the principles of flight in order to have a better grasp of the essentials required in a good field. An aeroplane consists of a fuselage or "body", to which is attached a mainplane or planes forward, and a tail plane and rudder aft. A petrol-driven engine, either air or water-cooled, drives an airscrew or propeller, which pulls the craft through the air at a high speed.

When the rush of air over the cambered main plane surfaces reaches a certain velocity, the lift generated pulls the whole machine off the ground. This speed must be maintained in flight, or else the whole machine "stalls", i.e., it falls to the ground.

The greatest power output is required when the machine takes off, and if the aircraft is heavily loaded, a long run may be necessary to gain flying speed, and the rate of climb will be correspondingly low. Moreover, just when leaving the ground, and until level flight is attained, an aeroplane is very sluggish on the controls, and any sudden climb, or sharp turn may cause stalling and a consequent crash.

It can, therefore, be seen why long fields are desirable, and why obstructions are very dangerous.

As an aeroplane takes off as soon as the speed of air over the planes is sufficient, the take-off is always made into the wind, which shortens the run considerably. For example, if the take-off air-speed of the aeroplane is fifty miles per hour, and it faces a wind blowing at twenty miles per hour, it will take off when the ground speed of the wheels is thirty miles per hour. When desiring to land, the engine is cut out at a suitable height above the field and the aeroplane glides earthwards at an angle which gradually flattens as the earth is approached, finally finishing up with a short run. Landing is also done into the wind, as it is an aid to gliding, and the head resistance helps to pull the machine up and so shorten the length of run.

A diagram giving the required runs and climbing angles of several commercial aircraft is given, for sea level. As the altitude increases the atmosphere becomes rarer, having the effect of reducing both aerofoil and engine efficiencies. Longer runs are therefore required, in varying proportion according to altitude, which will be given later.

Since early airports were not properly planned, but developed as required, the result was that some ten years later remodelling was necessary at great expense. Le Bourget, the airport of Paris, was originally a military aerodrome, with the hangars all placed on one side of the triangular field ; a very poor arrangement for a commercial aerodrome, and alterations will have to be made soon. Croydon, the famous airport of London, has been enlarged and entirely rebuilt, with the addition of an hotel. Tempelhof at Berlin and Schiphol at Amsterdam are two other examples of airports of about the same date.

Selection of the Site.

There are several important factors governing the selection of an aerodrome site. A field of sufficient size is required within reasonable distance of the centre the airport is to serve ; easily found from the air, with absolutely clear approaches from all directions ; the nature of the ground must permit landing and taking off in any direction ; having a surface as near flat as possible, well drained, but not dusty ; resilient to absorb some of the shock of landing, but not so soft as to allow the wheels to sink in at all ; an even, firm surface allowing the least resistance to taking off and giving a good grip to prevent sliding ; this surface must be available in all weather. This last factor is important, for any airport which is liable to be unusable even for a few days in the year cannot hope to be a good commercial proposition. As fields offering all these advantages are practically non-existent, some compromises are necessary on most sites. The best possible site in any locality will only be found by the consideration of all relevant factors. Generally the requirements may be summed up as follows.

Easy Locality from the air.

Landmarks serve this purpose, and directing indicators may be constructed on the ground.

Clear Approaches.

These are very rarely obtainable in all directions, but when obstructions occur, they invalidate only a limited length of the approaches on which they lie according to a ratio of length to height. Several variations of this ratio are laid down :—

Aerodynamical Maximum	7 to 1
Air Ministry Maximum	7 to 1
Air Ministry preferred..	15 to 1
U.S.A. Maximum	10 to 1

Some of the pilots say twenty to one. Generally the Air Ministry Maximum of ten to one is adhered to. These figures are good up to and including altitudes of one thousand feet above sea-level, after which increases in heights of landing and take-off runs must be made as follows.

2,000 feet increases 10 per cent.
4,000 feet increases 25 per cent.
6,000 feet increases 50 per cent.
7,000 feet increases 75 per cent.

If the airport is close to a town or an industrial area of any size, the site must be chosen, if possible, on the side of the prevailing winds, thus avoiding, as far as possible, a haze of smoke over the airport, impairing visibility, especially in the early mornings.

When an airport is very close to a town, it is likely that the town will spread round the airport ; in town planning close to an airport, it is necessary to avoid obstructions by regulating the heights of buildings, etc., by a number of concentric zones ; and to give ample and clear road approaches. Railway connection is also necessary and must be provided for. Any airport may require a considerable water supply laid on for workshop and domestic purposes, and large quantities may be re-

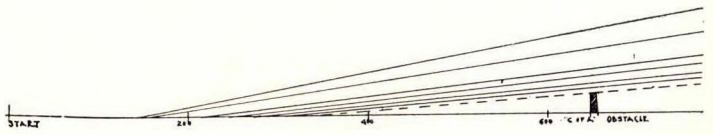


Diagram 1.

Maximum angles of climb of some commercial aircraft

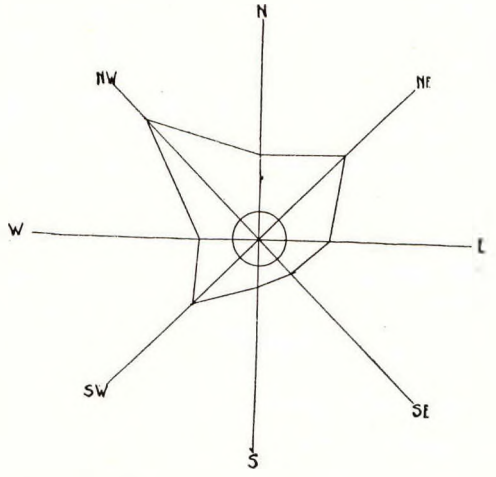


Diagram 2.

Example of a wind rose, the prevailing wind is shown from the north west.

quired in emergencies. As in the case of water supply, a good and reliable source of electric power must be available both for workshop and illuminating purposes. Where no public supply is obtainable, a small generating station of suitable capacity must be installed.

Drainage of the field is a very important factor. Natural drainage of the site will depend on the nature of the subsoil, and a number of trial holes should be made to find what this is ; in some cases drain pipes will have to be laid.

Extent of ground required.

Those aerodromes intended to be used by the large types of aircraft should give a clear run of one thousand yards in all directions. The minimum is six hundred yards clear run in all directions, and this will only be licensed for large aircraft under exceptional circumstances. Wherever possible, a site larger than the minimum should be chosen. It is difficult at present to say what the needs of the aerodrome of the future will be, and as large as possible an area of ground should be acquired at first.

Irregularly shaped landing grounds should be avoided where possible, and in such cases the largest dimension should be in the direction of the prevailing wind.

After the site has been selected, it may require remodelling both in section and plan before it can be used. Firstly, a complete survey must be made. This will consist of :—

(1) A land survey to give an accurate and detailed contour map of the site.

(2) A subsoil survey to determine the nature and variations of the subsoil for drainage purposes.

(3) A daily log of wind directions, to determine the prevailing wind. A wind rose, an example of which is illustrated, can be drawn from the percentage frequency of the winds.

Surfaces.

The use to which the aerodrome is to be put is an important factor, for it will decide the amount of traffic, both now and in the future. The development of air transport has been so rapid that to plan for only ten years ahead is likely to cause heavy expenses for re-development even before that date. In the U.S.A. there are airports with seventy scheduled movements per day, and this is expected to rise to two hundred per day. At all the major airports in that country the movements of scheduled traffic (arrivals and departures) average from sixty to ninety-five per day.

In order to make the airport suitable for traffic of these dimensions, consideration must be given to the maximum number of movements in the early years of its use, and the maximum load that it can be made to carry. This will indicate the type of development to be laid down ; for it is likely that an airport can be made for present use that will be quite satisfactory for some years to come. But the scheme for future development must be fully worked out, so that, as funds become available, the gradual development shall lead to the completion of a properly designed airport. The scheme should, however, be of a highly flexible nature to make it adaptable to altering conditions of traffic.

Among the many possibilities that arise there are two certain developments in aviation ; firstly, aircraft will increase in size and consequently in weight, and secondly speeds will increase considerably. The result will be that fields will have to be larger. Also there is a tendency to multi-engined craft. These turn easier on the field, and as they can fly without all their engines, an emergency landing can often be avoided.

Launching by catapult has been used with success, and some development in this direction may do much to alter matters in the field. Landing would remain the same ; but a shorter run is required on landing than on taking off. The Helicopter and similar types of aircraft, although successful in their way, do not seem likely to replace the present type of machine ; and unless some revolutionary invention is made, the present principles of flight will hold good for a very long time to come.

Before proceeding further, it will be as well to define the various types of aerodromes used for civil and commercial purposes :—

(a) The large terminal type of airport like Croydon and Tempelhof. These are customs ports, used day and night for passengers and freight.

(b) The Municipal airport, chiefly existing in the U.S.A. These are similar to (a) but do not require customs facilities. In America these fields have often some industrial development of aircraft manufacturers requiring the use of a field.

(b) The emergency landing ground, generally of minimum size.

(e) The private aerodromes ; used by small private craft and selling agents for small and medium sized craft. These are often used as flying schools as well. Sky Harbour, Chicago, and Stag Lane and Hatfield in England are examples of this class.

The variations in these types of aerodrome are chiefly those of size and buildings required. The planning of the flying areas must in all cases be the same.

The ideal to be aimed at in planning a field has already been discussed ; the nature of the surface is of the utmost importance, for the performance of aircraft in taking off and landing is very much affected by the retarding effect of the surfaces on which they operate. A series of tests shows that taking tarmac as one hundred per cent. efficient, a dry short turf is sixty per cent., and when wet only about forty per cent. Theoretically therefore an aeroplane taking off from each of these surfaces in turn will require longer runs on the latter two in inverse proportion to the figures given. The higher the ground resistance, the longer the run required to attain flying speed, for aircraft generally take off at their maximum power output. This theory holds good in practice. Another important factor in relation to surfaces is their bearing strength. The largest aircraft in regular commercial service weighs about thirteen tons loaded ; heavier aircraft are being built. This weight is transmitted to the earth by three wheels, two forward and one under the tail ; if the total weight is thirteen tons, it does not follow that each point load is four decimal three tons, for over ninety per cent. of the weight is on the front wheels ; add to this static load an increase at the moment of impact when landing, which may be as much as five times static load. It is seen that the surface must be able to stand at least two tons per square foot. The surface must be able to take this load anywhere on the landing area, and even larger loads if necessary. Generally the soil is capable of supporting this weight without deformation. The common test is to drive a pneumatic tired three-ton lorry over the surface, and if it does not show signs of sinking in, then the surface is safe for ordinary aircraft.

Tractional resistance is much increased by irregularities of the surface, and also wears out machines, causing rolling and pitching when taxi-ing to the discomfort of the passengers. If a small car be driven at twenty-five to thirty miles per hour over the aerodrome without great discomfort to the occupants, the surface may be taken to be smooth enough for ordinary aircraft.

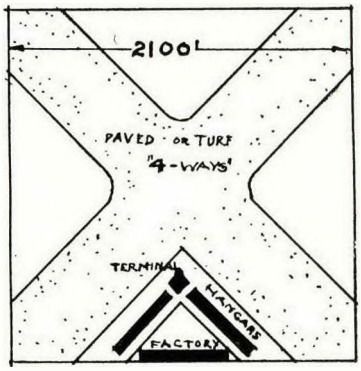
In South Africa the burrowing of animals and insects is a serious matter, and is even more troublesome in the tropics. Delays have been caused on the African airway on this account, when a large number of anthills appeared on Broken Hill Aerodrome overnight. These had to be cleared off by natives before the areas affected could be used. The looseness of their structure makes this an easy matter, but as all the earth comes from saps below the surface, the lorry test must be made before these portions of the field can be used. The burrowings of moles must also be watched for.

Another requirement of the surface is that it should not be composed of loose earth, sand, or cinders. Sand or dust is blown about in the slipstreams of airscrews, and besides causing much discomfort to passengers, finds its way into engines, causing much undue wear. Cinders are picked up by the slipstreams and are thrown through fabric covered wings and also damage airscrews. These materials will be considered later in their proper place.

The usual landing gear of a small aeroplane is a pair of front wheels and a skid under the tail. This skid is fitted with a steel pad or shoe, and can sometimes be used as a rudder when taxi-ing. On turf and damp surfaces this skid ploughs furrows wherever it goes. In dry weather this aggravates the dust nuisance, and in wet weather it churns up the field. The more recent aircraft have a wheel instead of the skid, which causes no furrows ; brakes are fitted to prevent sliding on paved surfaces. Probably all machines of any size will be so fitted in the near future.

As each machine lands, it must taxi to the terminal to offload. On busy airports the turf at that point becomes so worn that reparation is impossible ; this is especially bad when turf and pavements adjoin, as at Croydon, where the surface has been treated to keep down dust. The wear continues at the edges of the treated portion so that they in turn must be treated, until finally the whole field may have to be done. This leads one to the conclusion that the whole surface of a busy airport will ultimately require surfacing, in which case a system of runways will be more economical. Where traffic loads are light there is no better surface than well-drained turf, but this depends very much on the climate, and is practically impossible in South Africa.

(a)



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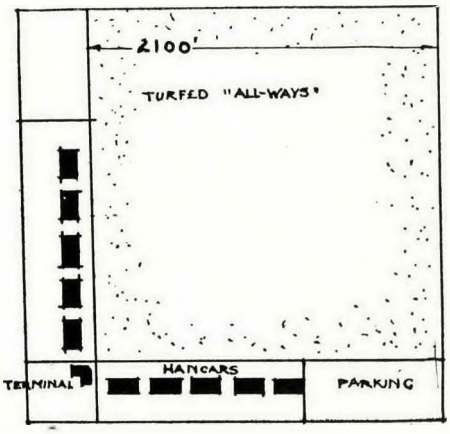

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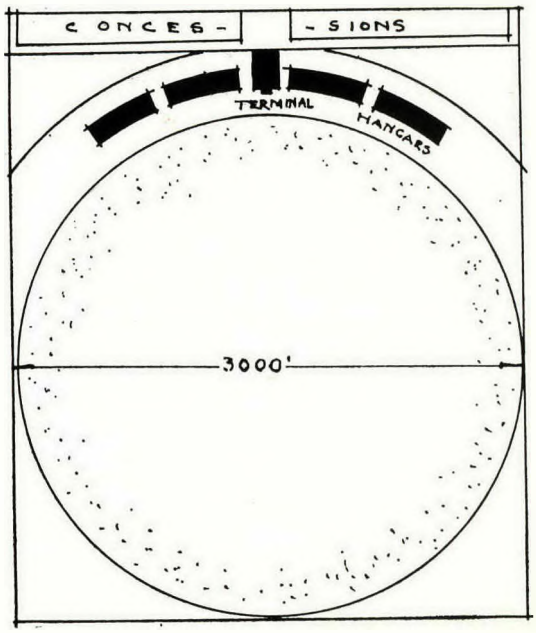


Comparative Site Planning.

Diagram No. 3.

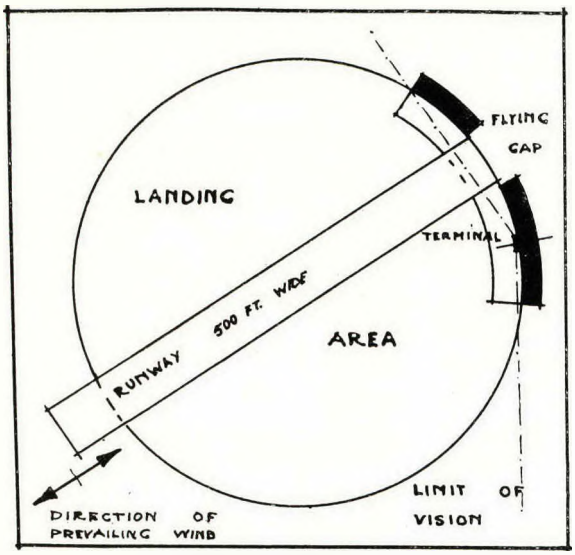
Plan (a)
Area required 100 acres
area for buildings 68 acres
area and runway maintenance 32 acres
approaches clear 4 ways.

plan (b)
Area required 145 acres
Area for buildings 45 acres
Area and runway maintenance 100 acres

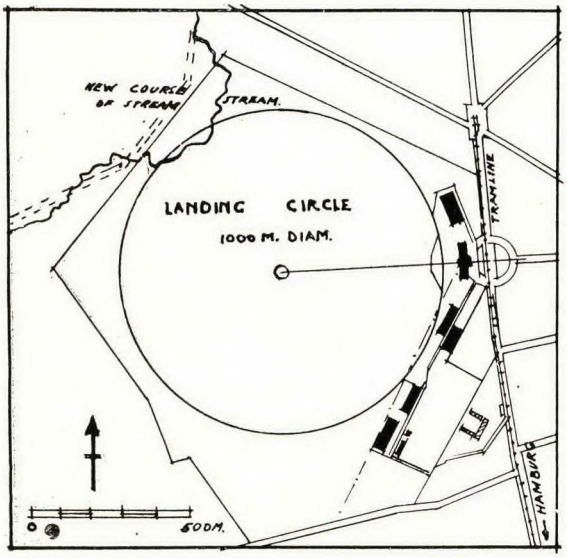
Approaches 50 per cent. over buildings

plan (c)

Area required 240 acres
Area for buildings 78 acres
Area and runway maintenance 162 acres
Approaches 50 per cent. over buildings



(a) Airport Site Planning. First type



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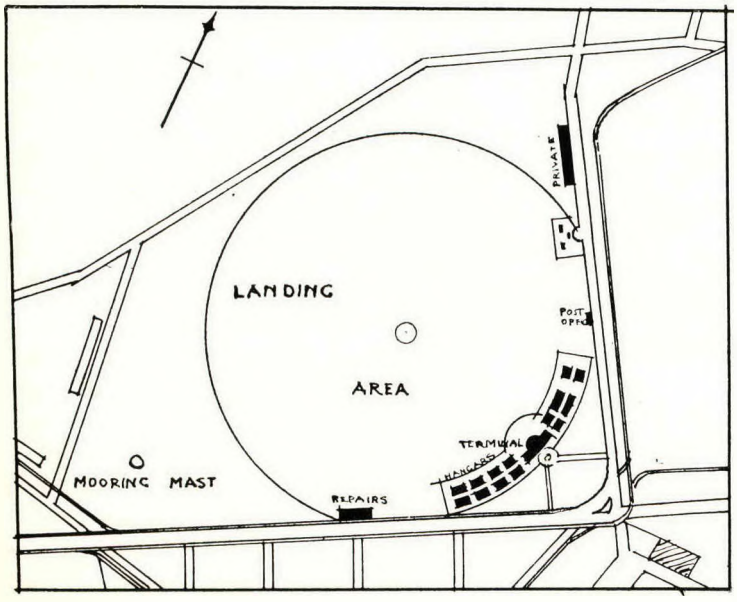


(c) Diagram No. 4.

(a) First theoretical type
Buildings sited on periphery of landing circle

(b and c)
two examples of peripheral type of site planning on right

Landing Area Planning.

One of the most important parts of the aerodrome is the landing ground itself. Bad landing grounds cause unnecessary crashes with consequent risk of life and loss in machines. A good surface allows of good landings and take-offs, giving a feeling of reliability and safety, and does much to popularise air travel. Owing to the increasing size, weight, and landing speed of modern machines and the increasing popularity of flying, it has become necessary to improve landing grounds.

"The apron" or "tarmac" which will be referred to later, is the large area of concrete or asphalt paving in front of the passenger building and hangars. Its chief purpose is to provide an all-weather surface for traffic and machines. Aeroplanes that are about to be used, or that are being attended to, are parked on the apron after being taken out of the hangars. It also drains storm water quickly away from the buildings, and in dry weather helps considerably in stopping dust from blowing into them.

When traffic is heavy and destroys turf, or in climates where turf is not practicable, an artificial surface must be laid down. To cover a whole field is very expensive ; and it is better to lay down a landing strip. These strips are sufficiently long and wide to be used by one or more aircraft in a given direction of wind and are called Runways. At first these strips were laid down in the directions of the most important winds, usually in a star shaped pattern with a complicated intersection at the centre. This system was found in the U.S.A. to be expensive and inefficient, and runways have since received more careful attention. In planning these landing strips, it is necessary to determine in what direction the runways are to be laid down to give the smallest cost and also the most convenient operation. Every site will have its own particular problems, and a study of the prevailing winds will prove very helpful.

All types of runway plan are developed from the ideal "Allways" field. This is a circle, and in any regular or irregular site only a circle need be maintained ; the addition of a runway will be in the direction of the prevailing wind and may extend outside the circle if necessary. An example of such a field is the Capetown airport. Any ground between the boundary and the circle should be cleared of high obstacles, and can be used for buildings of restricted height. Concentric height zones can be arranged, the outer one being, of course, the higher. This leads to the question of the placing of the buildings, for the chief obstruction at any aerodrome is caused by its own buildings ; to have a good plan these must be sited to the best advantage.

If, as before, we have a circular field, the obvious solution is to place the buildings on a restricted segment of the circle and placing the segment in the least important wind quarter. There are several examples of this in existence; Tempelhof and Hamburg in Germany, and in America Hog Island at Philadelphia ; at Hamburg the terminal building is curved to fit the arc of the circle (Diagram 4).

An analysis of plans shows another solution ; that is grouping the buildings together on a little used segment of the circle and giving a very narrow frontage by putting more buildings behind the terminal building (Diagram 5). Although this gives a very small frontage the awkward shape of the layout is seldom justifiable, and it makes the length of taxi-ing unnecessarily great. The control tower would be placed on the terminal building, and the officer there, while having control of the field, would be unable to see the apron before the hangars and people and machines moving about there. This is a serious fault, for the officer in charge must be able to see every aeroplane on the field and on the aprons, and also see people moving about where they might interfere with the aircraft. To overcome this, the rear buildings can be moved apart, with their axes on radii of the circle as shown in Diagram 6. This is a third plan form, and one that is difficult to improve upon. Carrying the plan further we have a circle with a narrow edge from the centre to a segment on the circumference. If one side of the wedge be parallel to the prevailing wind the plan will be very efficient. This plan has been adopted for many recent airports, and can be used with the "Allway" or "Runway" systems. Two

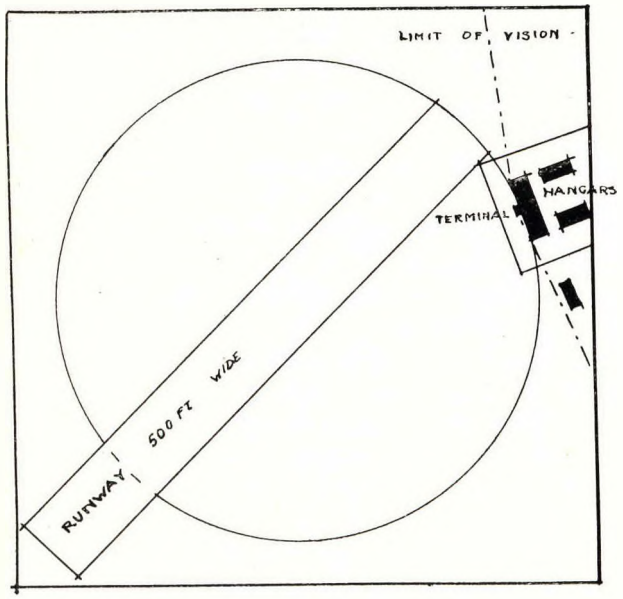
recent examples of this principle are Heston in England and Lyon-Bron in France. The advantages of this form of plan are :–

(1) An Allway open field.
(2) Easy supervision.
(3) Ample extensions beyond the circle, but within the wedge,without interfering with the flying facilities.
(4) It reduces the amount of taxi-ing to a minimum.

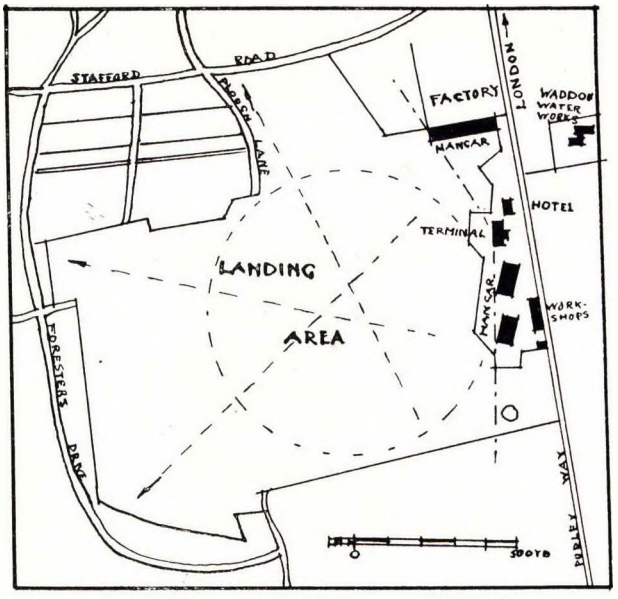
This last is quite an important advantage, for taxi-ing causes much wear and tear on the aircraft, especially over an indifferent surface. Generally the sides of the wedge subtend an angle of from 45 degrees to 60 degrees ; although this will depend on the site in question. The U.S.A. Rating Code says Runways shall converge or meet at an angle of not less than 40 degrees, so that the wedge can be placed between the runways.

Returning to the first type of plan, with the buildings on the circumference, it is evident that all the buildings cause an obstruction to flying. This is a very serious fault. At Le Bourget, which is to be rebuilt one whole side of the field is occupied by two rows of buildings ; some of the back row being ingeniously staggered to the front row, offering an almost continuous obstacle. Where, however, it is necessary to have a row of buildings they should not be across the important winds, and if near the end of landing strips, they must be separated at intervals, forming well-defined "flying gaps" of two hundred yards wide, as demanded by the British Air Ministry. They can be made three hundred yards wide if possible, for the flanking buildings cause some air currents, to which may be added the effect of rising currents fromthe roofs and pavements heated by the sun. These gaps may seem to be rather large, but it is necessary for safety, for an aircraft can easily be upset when just taking off, and under full load.

The principle of planning landing strips and indeed all such surfaces, is that buildings near the main direction of runs must be parallel to and not across those runs.



(a)



(b)

Diagram No. 5

AIRPORT SITE PLANNING SECOND TYPE

(a) Second theoretical type of plan for all-ways field, buildings placed in one block with narrow frontage to field.

(b) Block type of site planning in practice: Croydon airport, London

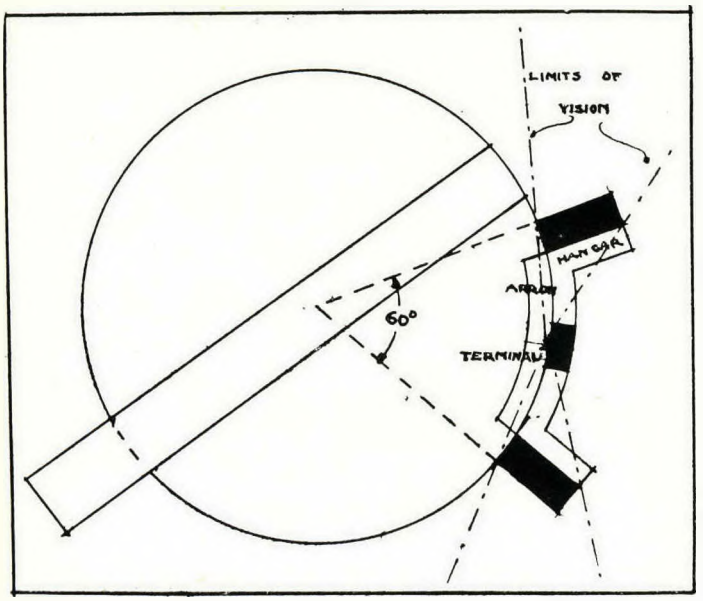
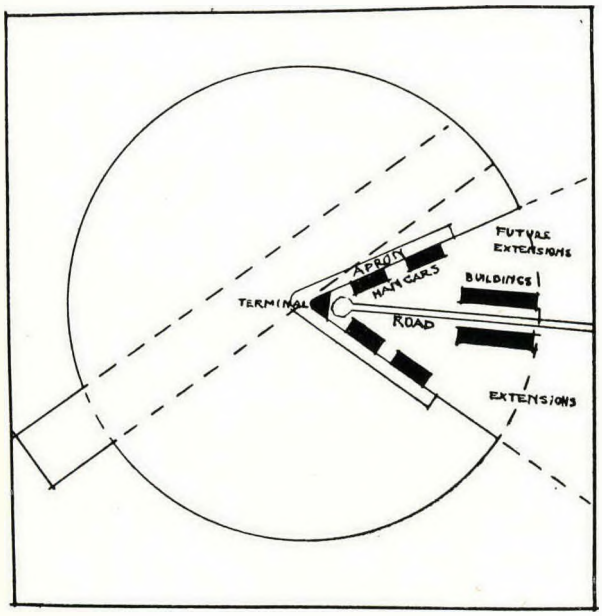


Diagram No. 6.
Third theoretical type of airport plan
Buildings arranged in wedge outside landing field

(a)



(b)

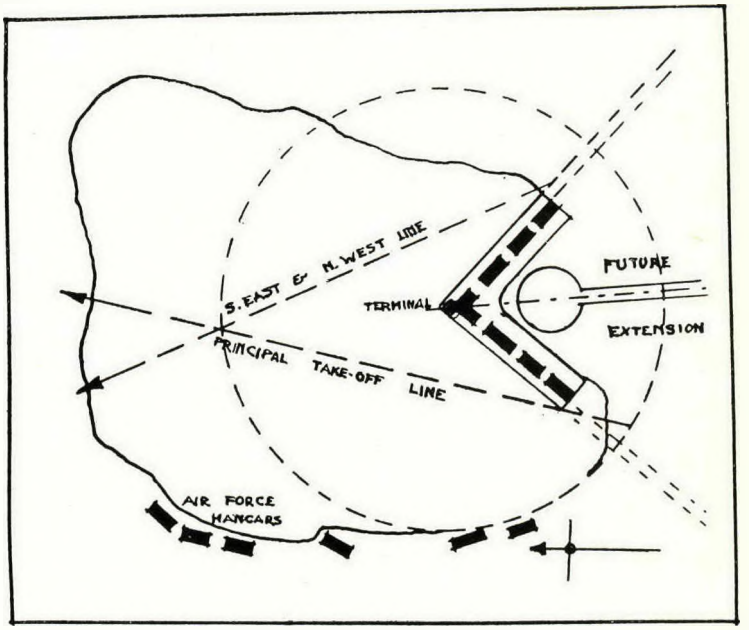
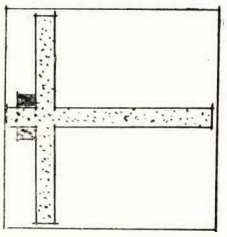
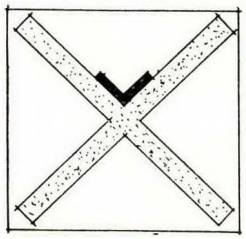
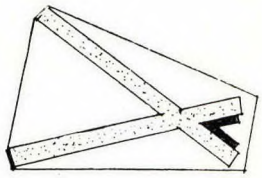


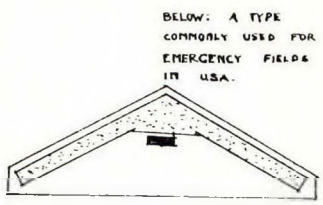
Diagram No. 7.
FOURTH TYPE OF "ALL WAYS" PLAN
(a) A 60 degree wedge from centre of circle planned to suit prevailing winds, as building site.
(b) Application of wedge type of plan: airport of Lyon-Bron France, most recent European Airport.

DIAGRAM 8 TYPES OF FOUR-WAYS FIELDS









ALL THESE FIELDS COMPLY WITH 4-WAY RATING REQUIREMENTS

Subsidiary Areas.

Since the circular or almost circular field is very rarely found, it may be assumed that the circle will be laid out in a rectangular or irregular outline, leaving a certain amount of land which can be used for other purposes, and since any developments of such areas may affect the planning of the main field, it is best to consider this at the same time. Usually these are let to the industries requiring the use of an aerodrome, such as importers and makers of aircraft. Most big aerodrome schemes include reservations for industries in the outer parts of the fields ; these reservations should be planned on the principles outlined above, placing roads and other unobstructive spaces in the lines of prevailing winds.

Since we have covered part of the circle with a wedge of buildings, with wind conditions permitting this could be done with more than one segment, so that if carried on, this would give a more or less regular star-form plan of landing strips, each strip adjacent to a wedge of buildings ; this plan would have the great disadvantage of irregular air currents and the need for much taxi-ing to and from the ends of the strips to the hangars.

Although the "Allways" field is an ideal plan, it is by no means essential, and where winds and topography permit a few landing strips may be constructed in different directions to allow of use in most states of the wind. In planning such strips the only condition necessary is that the pilot has never to take off at an angle greater than 22½ degrees to the direction of the wind. Where strips are planned to give eight ways at regular angles of 45 degrees this condition is fulfilled. The obvious form is a star patterned type ; a square with runways on the centre lines and diagonals (Diagram 10). The earlier American airports were so designed ; but as the terminal, etc., can only be in one position, aircraft have to do much taxi-ing except for two states of the wind, to get into position for taking off. This wastes time and fuel, and causes undue wear on the machines. It is impossible to give any one plan for an efficient eight-ways fields, as conditions vary with every site ; but by assuming good surroundings it is possible to compare the efficiency of different layouts (Diagram 10). In many cases it is neither necessary nor desirable for financial reasons to have landing strips in eight directions, and in such cases fields may be planned with three, two, or one major strip (Diagram 9).

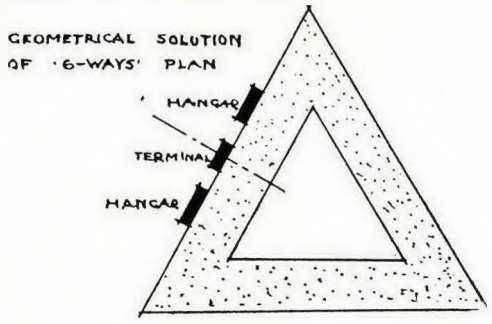
Taxi Strips.

While it is desirable to eliminate unnecessary taxi-ing, the runways should also be planned to be kept clear of aircraft not actually alighting or taking off. When the runways end at a point distant from the terminal this can be done by linking the ends of the runways with paved strips ; such strips can also connect the ends of the runways with the apron.

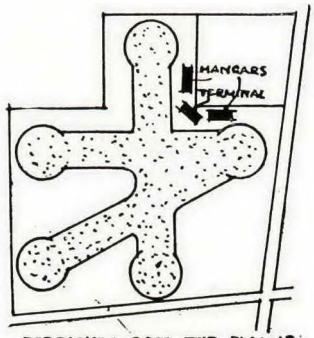
When the possibilities of landing strips are studied, it can be seen that with careful planning a regular perimeter is far from essential, and shapes can be used which at first seem unsuitable. For example Detroit Municipal Airport (Diagram 11) is in the shape of an L with a large gasholder in the crook of the L ;

Diagram No. 9.
Types of 6-way Fields in U.S.A.

(a)

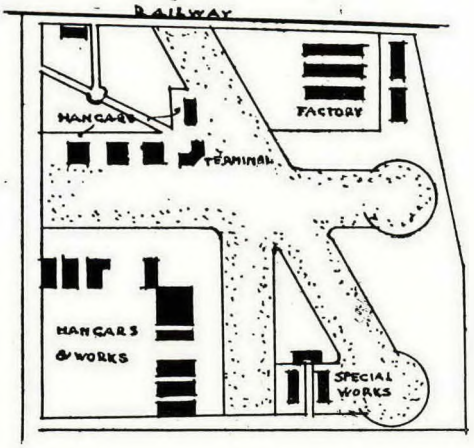


(b)



AIRPORT AT BURBANK : CAL. THE PLAN IS EASY & EFFICIENT TO OPERATE.

(c)



(d)

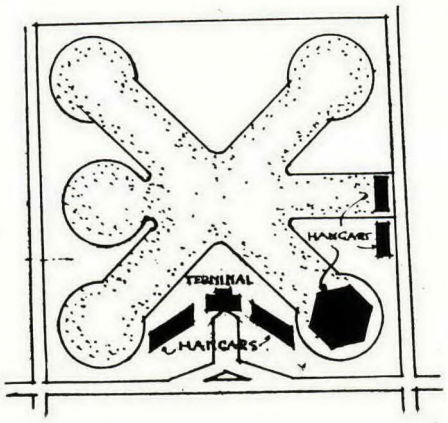
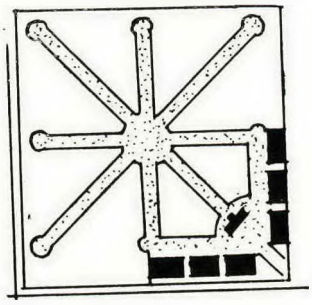


Diagram No. 10
Types of 8-way Fields

(e)



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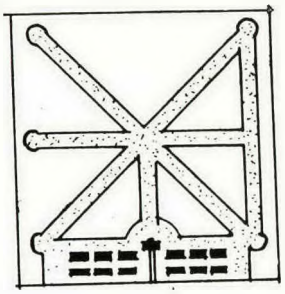
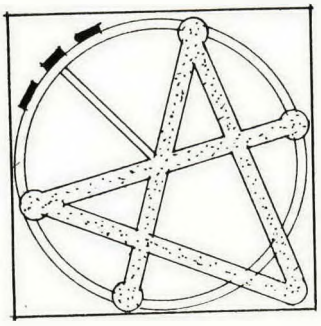
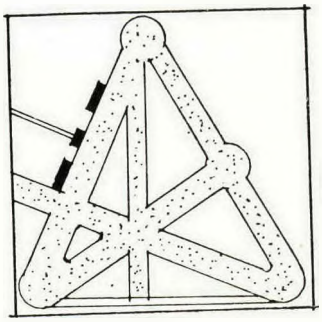


Union Jack runway patterns for 8-ways Fields

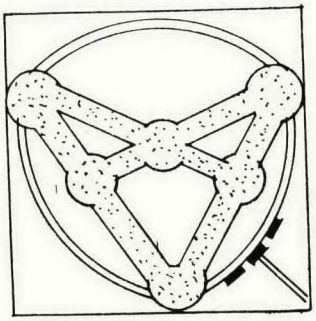
(g)



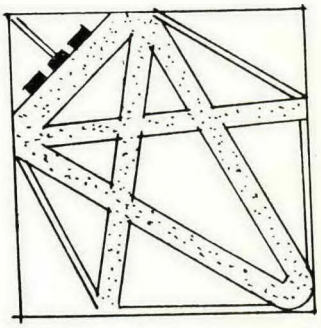
(h)



(j)



(k)

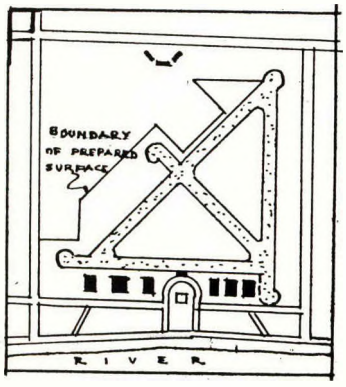


Four types of 8-ways Fields typical of current American Practice

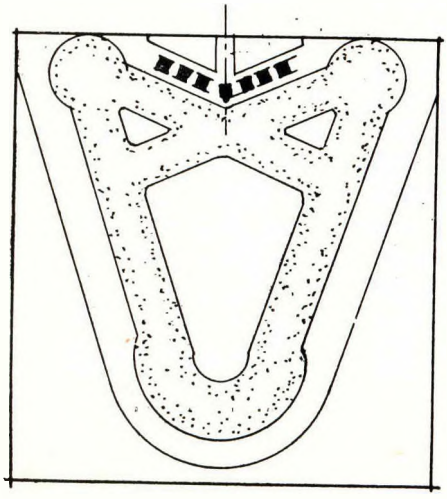
(d) Airport at Los Angeles western air express terminus. Note unusual hangars

(c) Airport for United Air Lines showing how space between runways may safely be used for buildings

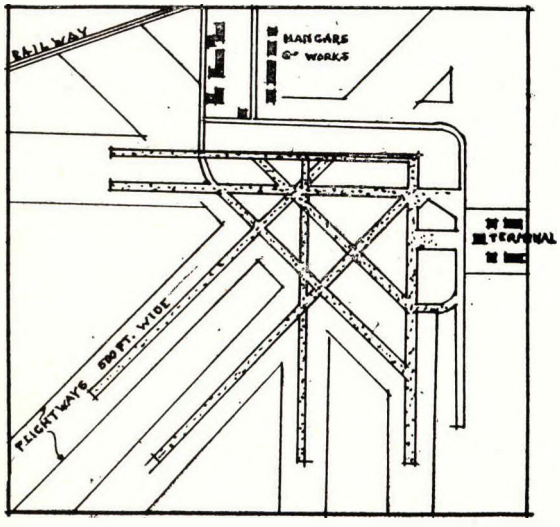
DIAGRAM II AMERICAN EXAMPLES OF 8-WAY FIELDS



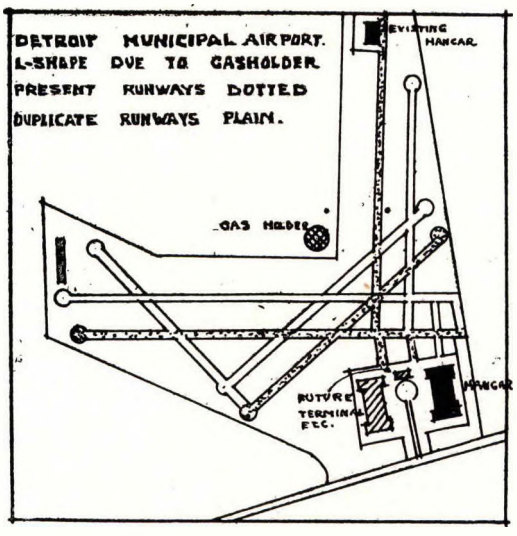
Layout for Nebraska airport Omaha similar to Petersburg, Florida



Airport at New Orleans similar to Shushan good facilities and low composition paving costs



Indianopolis



Detroit

the limbs of the L are large enough to permit of a practical layout as illustrated. The gasholder has caused no crashes as yet, for it is so large an obstacle that it is easily avoided by the stranger, whereas power and telegraph lines are far more dangerous because they are less visible. The problem of the four-way field is largely an economical one of the amount of taxi-ing up the runways and the consequent interruption of traffic. This can be overcome to some extent by joining the ends together with taxi strips, so that the "dead" runway may be used as a return ; taxi-ing may be reduced further by correct siting of the buildings, which are better at the open ends of the runways rather than at the apex.

Runways.

When the surfacing is carried out on the runways proper to provide safe surfaces for the operation of the aeroplanes, the lengths should be as great as possible, but the widths can be a minimum of one hundred feet. This is sufficient to allow for cross-wind drift and slewing of the aircraft. The runway should have a non-skid texture and must be flush with the field. These surfaces and their construction will be considered later.

Increase of traffic makes single runways inadequate, and this can be remedied by duplicating all runways. This is done by placing a second runway parallel to the first, as has been planned for several American airports, notably Detroit, Akron and Indianopolis. These double runways must be at least three hundred feet centre to centre, and preferably five hundred feet ; one is used for landing and for taking off, and they can be surfaced differently for that reason. Where a single runway is widened instead, the width should be at least five hundred feet. In planning the field, if future duplication of the runways is intended, the first runways must be placed off centre to allow for this extension. At the ends of all runways arrangements should be made for the aircraft to turn on the paved surface ; such turning points should not be less than one hundred and fifty feet in diameter.

The busiest part of the airport is the apron, the large paved area in front of the hangars where aircraft stand when offloading, waiting, or loading up. This paving should be one hundred and twenty feet wide or more if possible.

• The next instalment will deal with the preparation of the landing field itself.

BIBLIOGRAPHY

"Aviation and the Aerodrome," by H. A. Lewis-Dale.
"International Airports," by Stedman S. Hanks.
"Neuzeitlicher Verkehrsbau," compiled by M. Geschiet and K. Wittman (Aerodrome section only).
"Grundsatzliches uber Flughaven, from "Zeitschrift des Vereines Deutscher Ingenieure." Nos. 33, 34, Vol. 73.
"Civil Engineering," Articles on the Design and Construction of Airports," by A. L. Hall, Nos. 313/315. Vol. 26.
"Zentralblatt der Bauverwalting," No. 48, Vol. 17.
"The Aeroplane," No. 17, Vol. 42. Nos. 3, 5, 6, 10, 15, 19. Vol. 44.
"Flight," No. 5. Vol. 25.
"Journal of the Royal Institute of British Architects," Nos. 13, 16. Vol. 39.
"The Architects Journal," for January 3rd, 1931.
"Airports : Their Location, Administration and Legal Basis," H. McClintock Williams.
"Aerial Transport," G. Holt Thomas.
"Aerial Navigation and Meteorology."

BUILT OF MUD • R. E. BERNSTEIN

When we think of a mud house we usually visualise a mere hut or shanty, but in many portions of the world, mud, or adobe, is the principal building material. In the Orient, in sections of Europe, and particularly in Spanish America, buildings of adobe construction are the rule rather than the exception. Quite pretentious houses and other edifices are built of mud and, when stuccoed, whitewashed, or gaily painted, give no hint of the material of which they are composed.

In no other part of the world, however, has adobe construction reached such a state of development and attained to such heights as in Peru. Long ages before the Spaniards first set foot on Peruvian soil, the Incas and the pre-Incan tribes had learned the use of mud as a building material. Enormous walls, great mounds, countless dwellings, vast temples, and massive forts were built of the sun-dried mud bricks and blocks, and many of these still remain, little altered by time and the elements.

The Dons followed their example and used the cheap and easily obtainable adobe in erecting their buildings. Their palaces, homes, forts, and churches were made entirely of adobe mud, and through the centuries these have endured and remain to-day as imposing and as beautiful as in the days of Pizarro.

It was left to the modern inhabitants of Peru, however, to carry mud adobe construction to the nth degree and literally to glorify mud. In and about the capital, Lima, is this particularly true. Of course, to-day, many of the business buildings as well as residences, are of concrete and brick, but adobe still holds its own, and by far the greater number of Lima's houses, as well as a large proportion of its larger edifices, are entirely of mud.

In the days of the Conquistadors, the adobe bricks were merely piled one upon another to form the building walls, but to-day the usual method is to erect a light wooden framework and to build the adobe upon this. In some cases metal frameworks have been used in connection with adobe. This method was employed in erecting the beautiful Rimac building, perhaps the most elaborate mud building in the world. On the other hand, the world's largest mud building, the old Lima Cathedral, is built of adobe bricks without reinforcement of any kind.

Apparently there are no limits to what may be accomplished with mud in Peru. There are charming, one-storied bungalows with wide verandas, Moorish palaces, imposing colonial mansions, Elizabethan cottages, Spanish mission homes, and even turreted castles, all built of the same sun-dried mud dug from the land on which the edifice is built. So great is the demand for adobe that everywhere, round and about Lima, one sees endless piles and high walls of mud bricks. At first one thinks these merely boundary walls between properties, but it will be noticed that in nearly every case these walls are marked : "Este pared no es medianera"—"This wall is not a boundary."

Also, wherever there is available mud, one will see the natives industriously engaged in making adobe bricks.

The mud, dug from any convenient spot, is mixed with sand and usually with some chopped straw or dried manure. The resultant pasty mass is then pressed into wooden forms or frames. The shaped blocks are then removed and placed in the sun to dry and in a day or two are ready for use.

Brick-making is a most economical and inexpensive business for a man of limited means, or of no means at all. Provided he can secure permission to make use of the land, or a portion of its surface, for brick-making—usually an easy matter, for the rental is taken out in completed bricks—the penniless brickmaker needs little more than his bare hands. With his wife and children, and all his worldly goods—which usually amount to nothing more than a few battered tins and some handmade stools—he camps on the selected site. An ancient kerosene tin of water and a dilapidated shovel are produced. The dry earth is trod, dug, stirred, and worked into a thick paste ; then some dry manure, gathered anywhere along the road, is added, and with all

the members of the little family helping, the bricks begin to take form. As soon as they are dry they are piled in tiers.

In a few days the brick-maker and his family are surrounded by brick walls and are living quite comfortably in a little cavity left purposely for their accommodation. Here they remain as long as bricks can be made and sold on the land. And when an adobe building is in process of erection, the labourers invariably dwell within recesses in the piles of accumulated bricks—thus saving house rent—and tramp back and forth to their work.

Wherever a Cholo can find a mud-brick wall and employment, is "Home Sweet Home" to him, and often one may find a dozen or more families all dwelling in perfect contentment in their burrows in the piles of bricks where building is in progress.

In a damp or rainy climate, these dried mud-bricks would, of course, be worse than useless ; and, should Lima be subjected to a few days of really heavy rains, most of the city and its suburbs would be reduced to the original elemental mud. Several times within the past few years, various portions of Peru have been visited by unprecedented rains, and great has been the havoc wrought. Around and about Trujillo, houses and churches melted like snow exposed to sunshine, and even the prehistoric ruins of the Chima city at Chan Chan, which has stood unaltered for countless centuries, slumped and dissolved.

To protect buildings from the drip from the eaves, practically all modern adobe buildings have several feet of the wall covered with concrete, while others have the lower portions of the walls built of stone. Even the old cathedral, which is not only the largest but one of the finest adobe buildings in the world, has been safeguarded with a concrete coating about the base of its walls.

Originally, too, the adobe buildings were all very much alike. They were massive, thick-walled, square and usually of moderate height, were typically Spanish with iron-grilled windows, out-jutting carved cedar miradors, immense iron-studded and elaborately carved doors, and open patios. But with the modern improvements in adobe constructive methods, architecture appears to have run wild, and there is scarcely a type or style of building known to any part of the world the counterpart of which cannot be seen in or about the Peruvian capital.

Apparently the average Peruvian never has a definite plan in view when he starts building a house. He may start with a Spanish colonial form and by the time the first storey is complete, he decides that the English style is better. He then adds a second storey with exposed timbers, leaded glass windows, and stucco walls. Then to the steeply-pitched roof, he adds Spanish tiles, and among the chimney-pots erects a cupola where he can loll away many a hot evening.

His front door may be a graceful Moorish arch, but to put a finishing touch to the whole he adds the lofty pillars and severe portico of some Virginia mansion, and builds a porte cochere in Japanese style.

But with all his architectural failings, he loves colour, and so paints his home in brilliant ultramarine, rosepink, canary-yellow, or a combination of all. And, strange as it may seem, these architectural monstrosities do not strike a discordant note, in the scheme of things. Surrounded by glorious flower gardens and magnificent pines and luxuriant palms, their bright hues are delightful, and one forgets their faults in admiration of the masses of roses and geraniums which clamber over walls and droop from the eaves.

And there are countless dwellings which are as charming and as perfect in their architectural features as one could wish.

Truly, the Peruvians have glorified mud, and by the same token, they have attained the utmost in building economy, for what could be more economical than to build one's home from the crude material dug from the land when excavating foundations or grading one's garden ?

MINUTES OF EIGHTH ANNUAL GENERAL MEETING

Minutes of Eighth Annual General Meeting, held in the McFadyen Hall, Pretoria, on Friday, March 15th, 1935, at 7.45 p.m.

PRESENT.

Members :—Mr. R. J. C. Prentice, President, in the Chair ; Mr. D. J. Laing, Senior Vice-President ; Dr. E. J. Hamlin, Junior Vice-President ; Messrs. Leo. C. Austin, H. F. E. Banks, H. Bell-John, A. A. Bjorkman, C. L. F. Borckenhagen, N. T. Cowin, W. J. Clyde, John A. Cowling, J. W. Cowling, G. R. Durrant, E. B. Farrow, R. Harrison, Frank Hickman, J. Seaton Hodge, G. E. Howgrave-Graham, A. Lane, W. A. McKechnie, T. Moore, Lt.-Col. W. E. Puntis, G. P. Quail, J. D. Roos, P. M. Roos, W. Selkirk, D. M. Sinclair (Junior), J. P. Smyth, Harry C. Spencer, D. Watson. and F. Williamson ; and

Mr. J. S. Lewis, Secretary.

Students :—Messrs. D. J. Beveridge, G. B. McIntosh, H. Muller, and L. F. M. Lockwood-Hall.

ATTENDANCE REGISTER.

The Members and Students present signed the attendance register.

NOTICE CONVENING THE MEETING.

The Secretary read the notice convening the meeting.

WELCOME TO MEMBERS AND STUDENTS.

The President extended a hearty welcome to the Members of the Chapter and Students of Quantity Surveying attending the Eighth Annual General Meeting of the Chapter.

MINUTES OF SEVENTH ANNUAL GENERAL MEETING.

It was agreed, on the proposition of Dr. Hamlin, seconded by Mr. Borckenhagen, to take as read and to confirm the minutes of the Seventh Annual General Meeting held on March 10th, 1934, the said minutes having been duly circulated.

PRESIDENT'S REPORT FOR 1934-1935.

It was agreed that the President's Report, duly circulated to members, be taken as read. There being no discussion thereon, the meeting, on the proposition of Mr. Moore seconded by Mr. Watson, accorded the President a vote of thanks for his Report.

BOARD'S REPORT FOR 1934-1935.

Mr. Borckenhagen moved, and Mr. Roger Harrison seconded, the adoption of the Board's Report, duly circulated to members.

Mr. Moore, referring to Col. Puntis as one of the Union Government's two permanent nominees on the Central Council, pointed out that Col. Puntis was due to retire from the Government Service in the course of a few months, and emphasised the valuable work done by him on the Central Council in the interests of quantity surveyng.

The President expressed the view that Col. Puntis' retirement from the Government Service did not necessarily imply that his services on the Central Council would not continue.

Mr. Moore, apropos of the reference to "Government Work" on page four of the Board's Report, suggested that the Board should also express its appreciation of the fact that Provincial Administrations in South Africa also put out work to practising Quantity Surveyors. (Agreed.)

There being no further discussion, the meeting formally adopted the Board's Report.

ELECTION OF BOARD FOR 1935-1936.

(i) The President stated that unfortunately no additional nominations for election to the Board had been received from members of the Chapter. In his view it was regrettable that the Board should simply "Walk back into office" without any opposition, and for that state of affairs members of the Chapter alone were to blame. On such a Board "new blood" must be introduced sooner or later and, for his part, he felt that members of the Board would prefer to feel that they were put on the Board by votes of members of the Chapter.

(ii) "Board's Nominations for the New Board for the Ensuing Year."

Mr. F. D. Hickman addressed the meeting on the item appearing on the agenda in his name. He entirely agreed with the President that new blood was necessary on the Board from time to time. The general feeling amongst members was that it was useless to submit additional nominations for the reason that the majority of the members of the Chapter would follow the Board's nominations. He suggested that the Board, at the end of its present year of office, should nominate twelve entirely different members. At one time there were not sufficient practising Quantity Surveyors to admit of such a procedure, but that difficulty had passed. If his suggestion were adopted additional nominations could very easily be put forward of members of the outgoing Board. In that way they would definitely have an election every year. If it were felt that there was any danger in having a liberal infusion of "new blood" on the Board, he would reply that the Chapter had a permanent Secretary who would provide the necessary safeguard. He therefore proposed, "That it be a recommendation to the Board that it should, at the end of each year of office, nominate for the ensuing year an entirely new Board."

Mr. N. T. Cowin seconded the proposition.

Col. Puntis asked Mr. Hickman to explain to the meeting his reasons why a new Board was required. Was Mr. Hickman dissatisfied with the work of previous Boards, or did he feel that younger men should be on the Board ?

Mr. Hickman, replying to Col. Puntis, said that when he (speaker) tendered his resignation at a recent meeting of the Board, when the question of the Board's nominations was under discussion he was told that it would not be fair to the other members of the Board if he (speaker) resigned and the others did not. That was his reason for bringing the matter forward.

The President pointed out that he had dealt with this matter in his Report. If Mr. Hickman's suggestion was adopted there would unquestionably be difficulty, under the Regulations, in putting forward twelve names of members for the new Board. For instance, the acceptance of a member proposed for the Board was necessary. Dealing with Mr. Hickman's offer to resign at a recent meeting of the Board, the President said that if the other members of the Board had done the same, there would have been for a time no Board to carry on the work of the Chapter. Theoretically, Mr. Hickman's proposition seemed helpful ; in practice, however, he (President) feared that serious difficulties would be experienced. He deprecated the attitude of those members of the Chapter who felt that unless they were nominated by the Board they would have no hope of election ; in fact he felt obliged to mention that, although a younger member, he first came on to the Board by means of an election although he had not been nominated by the then outgoing Board. There was no reason whatever why that should not happen in the case of other younger members.

Mr. Hickman, replying to the difficulty suggested by the President, viz., that it might not be possible to find twelve outside members to nominate, said it was not essential that the Board should consist of twelve members ; in fact there were some who felt convinced that it would be wiser to have a smaller Board. On the other point raised, as to the necessity for obtaining the acceptance of the members nominated, that could easily be done by taking the matter in hand in time.

Mr. Williamson expressed the view that Mr. Hickman's proposal was altogether too drastic. He felt the position would be met if say one member of each section of the Chapter's membership represented on the Board were to retire annually ; in that way ample opportunity would be afforded for the introduction of the "new blood" desired.

Dr. Hamlin pointed out that an examination of the personnel of the Board during the past few years would show that changes had been made from time to time. He associated himself with Mr. Williamson's remarks but added that, in an Engineering Institution which had a rule requiring four members of the Committee to resign every year, the working of that rule proved so difficult that it was ultimately withdrawn.

Mr. Howgrave-Graham asked if it were not possible for the Board, when issuing nomina-

tions, to nominate more than twelve members, thus ensuring an election.

The Secretary replied that a similar suggestion had from time to time been made at meetings of the Board, but that the then Presidents of the Chapter had ruled against the adoption of the suggestion.

Mr. Laing suggested that a notice appear in the minutes of the Board issued about six or eight weeks prior to the Annual General Meeting, inviting those members of the Chapter who were willing to stand for election to submit their names to the Secretary. It might happen at the end of any year that certain members of the Board would not wish to seek re-election: if his suggestion were adopted the Board would then be in a position immediately to complete its nominations.

Dr. Hamlin proposed an amendment (seconded by Mr. Borckenhagen), "That it be a recommendation to the Board to consider ways and means of introducing 'new blood' on the Board every year."

On putting the amendment to the vote, it was carried by twenty-one votes to four. On putting the amendment as a substantive motion, it was carried unanimously.

(iii) The President then declared the Board for 1935-1936 to be constituted as follows:—

Practising Solely as Quantity Surveyors:—H. Bell-John, C. L. F. Borckenhagen, J. W. Cowling, F. D. Hickman, H. G. Labdon, D. J. Laing, T. Moore.

Practising in Dual Capacity:—R. Howden, F. Williamson.

Salaried Quantity Surveyors:—E. J. Hamlin. R. J. C. Prentice, W. E. Puntis.

The President extended a cordial welcome to Mr. Williamson, as a new member of the Board; and, in his absence, to Mr. H. G. Labdon, of Cape Town.

Mr. Williamson thanked the President for his kindly welcome and expressed the hope that his services on the Board would be of some value.

Re FINANCIAL STATEMENTS.

Mr. D. Watson proposed, and Mr. C. L. F. Borkenhagen seconded, the adoption of the Chapter's Revenue and Expenditure Account, and Balance Sheet, duly audited.

Mr. E. B. Farrow asked for an explanation of the item "Sundry Donations received, £30 9s. 0d.," the Secretary replying that this amount represented the travelling allowances paid to members of the Board for attending Board meetings, and refunded by them.

The President drew attention to the amount of subscriptions unpaid. His remarks were not intended for those present (since they could not attend the meeting unless they had paid their subscriptions), but he asked the members present to use their influence so far as possible to see that the work of the Board was not made more difficult than it need be by constantly having to deal with unpaid subscriptions.

The financial accounts were formally adopted.

APPOINTMENT OF AUDITORS.

It was agreed, on the proposition of Dr. Hamlin seconded by Mr. Williamson, that Messrs. Aiken and Carter be re-appointed auditors to the Chapter, and that the fixing of their remuneration be left to the Board.

STUDENT PRIZE WINNERS FOR THE YEAR 1934.

The President announced that the Board has adopted the recommendations of the University of Pretoria as follows:—

(i) First Year Book Prize Winner: K. A. Morren.

(ii) Second Year Book Prize Winner: R. M. Kennedy.

(iii) As no Final Year candidate had obtained "Honours marks," there would be no award of the Chapter's Gold Medal in respect of the year 1934.

"QUANTITY SURVEYOR ACTING PROFESSIONALLY FOR A BUILDER."

Mr. D. J. Laing addressed the meeting on the item on the agenda in his name. He wished the meeting to consider the propriety of a quantity surveyor acting for clients on a certain job, being approached by the contractors thereon employed, to act for them on a separate job. If the quantity surveyor were debarred from acting for the builder in such case, that might constitute a hardship; on the other hand, if the quantity surveyor did so act, the profession might be harmed in other directions. He felt for instance that it would

be only fair to the building client that his approval should be obtained before the quantity surveyor proceeded to act for the contractors already employed by the building client, although on a different job. He therefore moved, "That it be a recommendation to the incoming Board to consider all aspects of the question of practising quantity surveyors working for building contractors."

Mr. D. M. Sinclair (Junior) seconded the proposition. He felt that where a quantity surveyor acted simultaneously for both building client and contractor, although on different jobs, the building client was placed in an invidious position. He entirely agreed that the quantity surveyor should only act for the contractor, in the case quoted, with the full knowledge and approval of the building client.

Mr. Peter Roos said that the quantity surveyor was held in high professional esteem, whether he acted for the building client or the contractor. He felt therefore that the professional integrity of the quantity surveyor could be relied upon irrespective of any other work in hand or contemplated. If the building client were approached in the manner suggested, the building client might be made to feel that there was some underhand work going on, which was something which should be avoided.

Dr. Hamlin pointed out that what Mr. Laing proposed, i.e., notification to the client, was obligatory on every civil engineer.

Mr. Laing, replying to Mr. Peter Roos, said it would be infinitely preferable for the client to be advised direct, and beforehand, rather than to discover the position later when he might feel that there was something underhand.

On being put to the vote, Mr. Laing's proposition was adopted by twenty votes to two.

"MEMBERSHIP OF THE SCIENTIFIC AND TECHNICAL SOCIETIES CLUB, JOHANNESBURG."

Mr. N. T. Cowin addressed the meeting on the item on the agenda in his name. He referred to the social advantages to be gained by the Chapter joining the Club, to the amenities provided by the Club, and to the opportunity thus provided for meeting members of other learned professions. He added that the Transvaal Provincial Institute of Architects had recently decided to join the Scientific and Technical Club. As regards the cost of the Chapter joining, the assessment was one guinea per "town member" and half a guinea per "country member." He therefore estimated that the cost to the Chapter would be under £100 a year. As the Chapter's Revenue and Expenditure Account showed a surplus of £91 on the previous year's working, the suggestion seemed practicable. He therefore proposed, "That the Chapter of South African Quantity Surveyors should join the Scientific and Technical Societies Club, Johannesburg."

Mr. E. B. Farrow, in seconding the proposition, threw out the suggestion that probably the expense incurred could be borne by the Johannesburg members of the Chapter.

Mr. T. Moore pointed out that membership of the Scientific and Technical Club would benefit the Johannesburg members of the Chapter.

Mr. Williamson favoured the proposition, subject to the condition that it was financially practicable.

Dr. Hamlin said that from the social point of view he could not see what advantage was to be gained by the Chapter joining the Scientific and Technical Club. The Club was closed at night time, unless there happened to be a meeting on. Most of the bodies which belonged to the Scientific and Technical Club were there provided with a room for the holding of meetings ; in the case of the Chapter it already had a fixed meeting place in Johannesburg. From the salaried members' point of view (a point of view which he, as a "Salaried" representative on the Board was bound to consider) he would hesitate before inflicting an additional tax on them for the purpose of joining the Scientific and Technical Club.

The Secretary pointed out that the surplus of £91 referred to by Mr. Cowin was (as clearly pointed out in the Explanatory Statement accompanying the Chapter's financial accounts) only a "paper surplus" and could only materialise if all the subscriptions due from members were paid. In actual fact,

when viewed from a purely cash basis, the Chapter's working for 1934 did not show a surplus at all but a deficit.

Mr. Laing asked Mr. Cowin to change the wording of his proposition, i.e., to ask the incoming Board to consider ways and means of joining the Scientific and Technical Club.

The President agreed with Mr. Laing. The Board, which had already partly considered this matter, would be perfectly willing to consider it afresh with a view to finding a solution to the problem. One solution might be on these lines, that the thirty Johannesburg members of the Chapter might be prepared to guarantee to the Board, that if the Board were unable to find the necessary money, they (individual members) would do so.

Col. Puntis said he would like to issue a note of warning. Some years back the Chapter was a member of the Scientific and Technical Club, but was obliged to resign for financial reasons.

Mr. Cowin, with the consent of his seconder, expressed his willingness to change his proposition to read :—

"That it be a recommendation from this Annual General Meeting to the Board to consider ways and means of joining the Associated Scientific and Technical Societies Club, Johannesburg."

On being put to the vote the propositon, as re-worded was adopted by twenty-one votes to two.

"STANDARDISATION OF ARTICLES AND PREMIUMS."

Mr. E. B. Farrow addressed the meeting on the item on the agenda in his name. He said that, at the time he submitted this matter to the Secretary for inclusion in the agenda, he had not noticed that the question was engaging the attention of the Board. For that reason he did not wish to press the matter now.

Professor Bell-John invited the younger members of the Chapter to express their views on the matter.

Mr. J. Seaton Hodge replied that it would be very much easier for the younger members to speak after they had heard the views of the older practitioners.

The Secretary, with the object of promoting a discussion on this matter so as to ascertain the views of the Annual General Meeting, stated that the following information had been obtained in regard to the legal profession (attorneys) in South Africa :—

(i) The number of articled clerks was limited by statute.

(ii) No individual attorney could have more than two articled clerks.

(iii) No newly practising attorney could take articled clerks (i.e., he must have been in practice on his own account for three years).

(iv) After an articled clerk had been in the employ of an attorney for three years, he had to be paid a minimum salary of £15 yer month.

(v) The question of premiums was one over which the Law Societies had no control : that was left to the individual practitioner.

Mr. Hickman said it was the feeling amongst the older practitioners that the Board should lay down a standardised procedure applicable to articles and premiums. He instanced the different methods adopted by different practitioners at the present time.

Mr. Moore expressed the view that, while it would be a good thing to standardise the principle underlying articles, it would be a mistake to standardise the amount of the premium and the salary to be paid. For instance, the experience of individual practitioners differed very greatly.

Mr. Williamson, after relating his own early experiences, said it was now almost a general rule to favour academic training in preference to the old system of premiums and articles. Personally, he regarded it as a retrograde step for present-day practitioners to take pupils on a premium basis ; in these days the tuition of the student was almost entirely a matter for the University, and not for the individual practitioner.

Mr. Hodge said he felt that the question of premiums and salaries was one which should be left to the individual practitioner, but that the Board should legislate in the matter of limiting the number of pupils to be engaged by a practitioner.

Mr. Sinclair (Junior) referred to a proposition which he introduced on the Board, a couple of years back, asking that the number of articled pupils be limited. He was then

told, if that were done, that it would mean making a "trade union" of the profession.

Mr. Peter Roos said that, as no regulations had been laid down in regard to the duration of articled pupilage, his firm articled its student-assistants for the full period of the Four Year Course at the University, thus ensuring that the student would be in employment during the period of his academic training.

Mr. Bjorkman pointed out that the fees payable by a student in respect of the Four Year University Course, were considerable, and to expect a pupil to pay a premium of say two hundred guineas in addition, was "laying it on a bit thick." He ventured to disagree with Mr. Moore that the practitioner who had been long established was entitled to a larger premium than the comparatively younger practitioner for the reason that it was not the individual practitioner who provided the actual tuition but the University.

The President assured the meeting that the views expressed would be carefully considered by the Board, in due course.

ARREAR SUBSCRIPTIONS.

Mr. Bjorkman asked what was the position of a member of the Chapter who continually refrained from paying his annual subscription. Did such person remain a member of the Chapter ? If so, why should any members pay their subscriptions ?

The President replied that where the Board was satisfied that a member in arrear was in a position to pay, then legal proceedings were instituted. This step had been taken in several cases during the past year with the result that the arrears in question had been paid.

(ii) Issuing of Circulars.

Mr. John Roos said that, speaking on behalf of some of the younger practitioners, he would like the Board to clarify the following point in regard to professional etiquette. When a quantity surveyor started in practice, was it professionally proper for him to issue circulars notifying that fact ?

The President replied that, in his view, the issue of a notification stating that the practitioner concerned had gone into practice was legitimate ; but if the letter were amplified in any other way, that would be looked upon as an advertisement.

Mr. Laing said he would like to support Mr. Roos on this matter if the intention was to ask the Board to consider the whole question and lay down a clearly defined line of conduct for all members to follow.

Mr. Roos said that was his intention. He accordingly proposed that the incoming Board be asked to consider the question of the issue of circulars by members with a view to laying down a procedure to be followed by all members. Mr. Laing seconded the proposition, which was agreed to.

(iii) Quantity Surveyor's Name on Board on Building in course of Erection.

Mr. Bjorkman asked (a) was a quantity surveyor allowed to put his name on a board on a building in the course of erection, as was done by the architect and the contractor, or (b) alternatively, was there any need for such a step to be taken—because it had been done.

Mr. Peter Roos replied that he recollected some years ago seeing the name of an eminent quantity surveyor appearing on such a board. In a recent case, quite unknown to the quantity surveyors concerned, but as was later ascertained, at the express wish of the building owners, the name of the quantity surveyors was also put on the board in addition to the name of the architect.

Mr. Moore said it was simply a question of custom : it had not been the custom for the name of the quantity surveyor to appear on the boards referred to.

The matter was not proceeded with.

(iv) Welcome to New Members.

The President said it was very gratifying to find that two of the most recently enrolled members of the Chapter were present at the Annual General Meeting. On behalf of the members generally he thanked them for this early display of interest in the affairs of the Chapter.

(v) Votes of Thanks.

Votes of thanks to the President and the Secretary for the excellent work done during the year, were passed with acclamation.

The meeting terminated at 10.15 p.m.

Central Council.

The first meeting of the Central Council elected for the year 1935-1936 was held at Cape Town from Friday, April 19th, to Tuesday, April 23rd, 1935. There were present : Messrs. H. J. Brownlee and C. P. Walgate (Cape Provincial Institute) ; Mr. Ernest M. Powers (Natal Provincial Institute) ; Mr. Fredk. W. Masey (O.F.S. Provincial Institute) ; Messrs. R. Howden, Gordon Leith, G. Moerdyk and F. Williamson (Transvaal Provincial Institute) ; Messrs. D. J. Laing and T. Moore (Chapter of S.A. Quantity Surveyors) ; Mr. J. S. Cleland and Lt.-Col. W. E. Puntis (Union Government Nominees on the Council) ; and Mr. J. S. Lewis, Registrar of the Institute.

Lt.Col. W. E. Puntis, who retires from the Union Government service in July, 1935, was elected President-in-Chief, in appreciation of the services rendered by him to the Central Council since its inception. Mr. C. P. Walgate was re-elected Vice-President-in-Chief ; and Mr. R. Howden, Chairman of the Executive Committee of the Council.

A summary of the deliberations of the Central Council at the Cape Town meeting will be published in the next issue of the "Record."

Mr. Cleland in addressing the meeting said :—

Mr. Vice-President-in-Chief and Members of the Central Council : It is my very pleasing duty to open the first meeting of the Central Council held away from headquarters, and, in this instance, at Capetown. This is a step which has been in contemplation for five or six years : now that it has been taken, every one of us must see to it that this visit of the Central Council to Capetown shall achieve the maximum amount of professional good.

Eight years have elapsed since the passing of our Act. What have we as an organised profession in South Africa achieved in that time ?

On the professional side we have endeavoured, with some success, to secure for Architecture and Quantity Surveying a worthy place among the learned professions. On this point I would like to issue an appeal, through this Council : as architecture is, or should be, a national asset, I would ask individual architects and quantity surveyors in their respective engagements to give to their clients the best possible value in the way of professional services. Those of you who have occasion, as I have, to travel throughout South Africa will agree that a candid statement of this kind is necessary.

On the educational side, the results of our joint efforts with the Universities are satisfactory, and the type of University-trained young architect and quantity surveyor coming into the professions to-day is all to the good.

It is interesting to note here that in my year of office twenty-five new architects have been registered, and six new quantity surveyors, the majority of whom are university-trained.

One of our important visitors during the year was Sir Herbert Baker—I regret to say not in very good health and on a recuperative trip. I did all that was possible to make his stay comfortable and pleasant.

The year under review has been a particularly busy one for most of us, especially for my Transvaal colleagues, who nevertheless have been able to hold six meetings of the Executive Committee. I feel that our thanks are due to them for their self-sacrificing efforts on behalf of the two professions.

The agenda before us contains several important, even contentious matters for discussion and decision. All of these problems can be satisfactorily dealt with if we apply to their solution the statesmanlike capabilities which this Council undoubtedly possesses.

I would like especially to record my personal thanks to our Registrar who is a tower of strength to the Central Council and Institute generally.

Summary of the activities of The Central Council and its Executive Committee.
1934-1935 Session.

President-in-Chief : Mr. J. S. Cleland ; Vice-President-in-Chief : Mr. C. P. Walgate ;

Chairman of Executive Committee : Mr. R. Howden ; Representatives on R.I.B.A. Council : Mr. J. S. Cleland, South African Representative ; Mr. Maurice Webb (Practising in Great Britain Representative).

During the session there was one meeting of the Central Council of four days' duration, and there were six meetings of the Executive Committee.

Twenty-six new registrations as architects were effected, and six new enrolments as quantity surveyors. Of the twenty-six new architects, fourteen joined as practising and twelve as salaried members ; the Transvaal Provincial Institute gaining nineteen new members ; the Cape Provincial Institute four and the Natal Provincial Institute three. Of the six new quantity surveyors, two joined as practising members, and four as salaried members.

The Central Council, during the year under review, repaid the final balances outstanding in respect of moneys advanced for the promotion of the Act. The Central Council thereupon substantially reduced the levy payable to it by the Constituent Bodies of the Institute.

Another public work, i.e., the proposed new residence for the Prime Minister, Pretoria, has very kindly been put out by the Union Government to the profession by means of architectural competition, following on representations made by the Central Council.

Documentary evidence was tendered by the Central Council to the Commission appointed by the Union Government on the subject of "Copyright," etc., in so far as architectural plans and Bills of quantities are concerned. The Report of the Commission is not yet available.

As the result of inquiries made, an "Architect's Indemnity Policy" is now available to members of the Institute (Particulars are furnished in the advertising section of the Year Book).

A document pertaining to the conditions under which an architect is engaged and headed "The Duties of an Architect" has been drafted by the Central Council, to be published as its considered opinion, based on the accepted customs of the profession. It is likely that the document will be issued to members in the near future, and included in the next issue of the Year Book.

It has been agreed that a firm of architects, one of whom is a quantity surveyor, is entitled to use the plural designation of "Architects and Quantity Surveyors," provided that underneath such title appear the individual names and professional initials of the members of the firm.

The Central Council brought into being a comprehensive Joint Committee to inquire into standard specifications for building timber. After the Joint Committee began its work it was found that a body termed the South African Standards Institution, officially recognised by the Union Government as the standardising authority in South Africa, had undertaken similar work. The present position is that the Institute of South African Architects has been made one of the constituent bodies represented on the South African Standards Institution, and has been allotted a seat on its Main Committee. The work of the Joint Committee will continue under the auspices of the Standards Institution.

Important progress has been made in the matter of co-ordinating Building Bye-Laws in the Union.

Two circulars were issued to members of the Institute and the Chapter during the year : one on July 25th, 1934, dealing with "Limited Competitions," "Touting," "Deviating from the Scale of Fees," "Bills of Quantities," "Delay in Settlement of Final Accounts," and "Disclosing Lists of Tenders"; and the second, on March 6th, 1935, containing the opinion of the Institute's legal advisers on the position of members in relation to the Workman's Compensation Act.

The Central Council will publish in the near future a "Code of Professional Ethics" for the guidance of members of the Institute and the Chapter.

As the result of negotiations between the Controlling Committee of the Empire Exhibition (South Africa) 1936, and the Central Council, an architectural competition has been organised for registered students of architecture. The competition, which is for designs for facades to cover certain temporary buildings required for the purpose of the Exhibition, has attracted applications from eighty-five students throughout South Africa.

Matters which are still under consideration by the Central Council include : "Clause 3(c) "; the legal validity of the Statutory Scale of Fees ; the Report of the Provincial Finance Commission ; the revision of the new "Conditions of Contract" ; Architects and Consultants' Fees ; Architects' Services in relation to Smaller Domestic Work ; and the "Minimum Wage Bill."

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Members are informed that applications are invited by the Government for Grants in Aid of Research to be conducted during the financial year commencing 1st April, 1935. Applications must be received by the 13th May, 1935.

Forms of application may be obtained from the Secretary, Transvaal Provincial Institute.

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Prime Minister's Residence.

The Assessor, Mr. J. S. Cleland, has made the following awards in this Competition :—

1 Mr. Gerard Moerdijk, A.R.I.B.A., of Pretoria.
2 Mr. J. Z. S. Stekhoven, of Capetown.
3 Mr. G. E. Le Sueur, A.R.I.B.A., of Durban.

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The Annual Dance of the Architectural Students Society, Witwatersrand University, will be held at the "Langham Hotel," on Wednesday, May 29th. Tickets : Double, 12/6 ; Single, 7/6 ; Students, 7/6. Members of the profession are cordially invited.

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R.I.B.A. Prizes and Studentships, 1935–1936.

Particulars regarding the various Prizes and Studentships for 1935-1936, including, where applicable, the detailed programmes for the competitions, may be obtained from the Secretary, Transvaal Provincial Institute of Architects, 67, Exploration Building, Johannesburg.

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New Members.

We regret that in recording the registration of new members in our March issue, Mr. B. Janks' qualification was given as Dip. Arch. (Rand). This should have read B.Arch. (Rand).

Residence Waite.

In last month's issue we published an article on Residence Waite. While this building was designed and supervised by Mr. D. M. Cowin, the firm of architects responsible was Messrs. Cowin, Powers and Ellis, of Johannesburg.

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Rhodesian Notes.

After a prolonged spell of idleness the profession appears to be getting busy once more ; the accelerated circulation of capital due to gold mining is now reflected in a mild building boom. This only affects us in the larger centres—in the wide open spaces the architect is still regarded as an expensive luxury.

The Government has an active programme of official building in all towns, with a high standard of architecture that certainly cannot be bracketed with the hard depressing official styles one is informed affect the Union (last month's "Record").

The municipalities are now forming the good habit of giving out their work in rotation. Salisbury's latest will be a terminal building at the airport ; I believe a similar project is likely at Bulawayo.

The new Customs disagreement will probably affect building by an eight to ten per cent. duty on Union goods, the obvious remedy being direct import.

Parliament opened its season with great gusto last week by half promising itself a new home fit for legislators to perform in—soon.

A competition is mooted, open to all architects, both private and departmental, in the Rhodesias, with a probable extension to embrace Union architects. Rather a handsome gesture considering that Union competitions are not open to us.

A possible Union winner of the probable competition would of course, if entrusted with the work, have to be registered here.

As the qualification, I think, is membership of the R.I.B.A., a bright young winner with a university degree only would be in a queer position, another anomaly of registration acts.