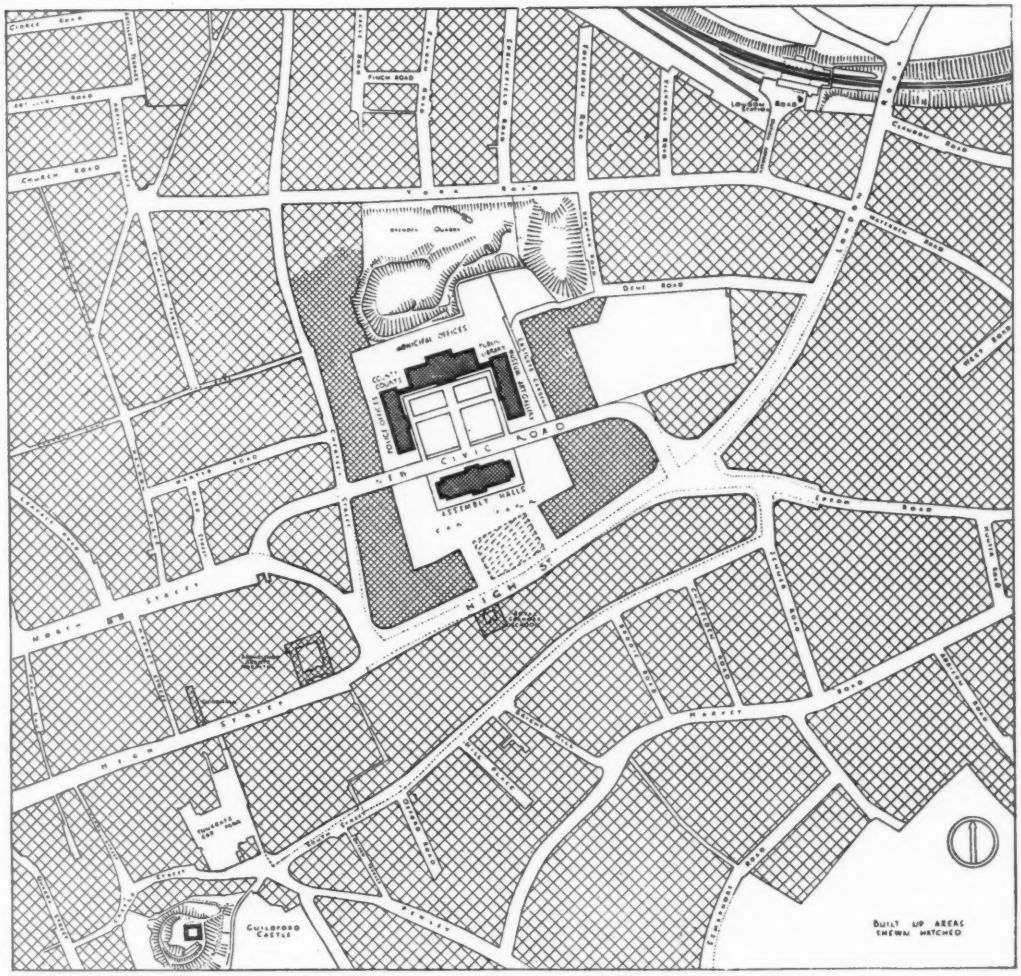
PROPOSED CIVIC CENTRE, GUILDFORD

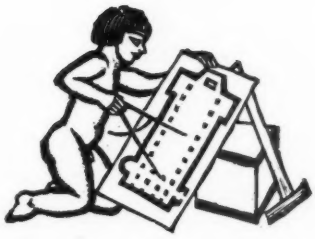
A SCHEME SUBMITTED TO THE BOROUGH COUNCIL



THE plan reproduced above forms part of the proposals for a future Civic Centre at Guildford which have recently been submitted for the consideration of the Borough Council. The scheme has been prepared and put forward by Messrs. Bryan Leighton, J. Garnett Harper and H. H. Norris, and advocates the acquiring of sufficient land for a complete Centre in the close vicinity of the High Street. The architects responsible for the lay-out were Messrs. H. Annesley Brownrigg and Leslie Hiscock.

SCAFFOLDING IN INDIA

The photograph reproduced above shows a new building in Bombay nearing completion. The scaffolding methods shown are interesting both for their apparently precarious stability, and also for a refreshing absence of concern for the complete safety of passers-by. The lack of a footway in the side street is also shown, an omission which Indian motoring associations are now strongly opposing.



LOOKING AROUND

TO judge from recent events the attitude of doubtfulness which is summarized by the phrase " perfidious Albion " has not wholly disappeared from the minds of Britain's continental neighbours even in 1935. This attitude, when analysed, would seem to originate from the belief that in all the crises of its history Great Britain has pursued the deliberate policy of awaiting the latest possible moment, and then, in disregard of all previous pledges, has exerted its strength upon the side which promised the larger material gain.

Such an opinion, which attributes the development of Britain to its taking of a series of cunning chances as continuously successful as diabolically lucky, is in some ways more flattering to this country than it deserves. For procrastination has not been reserved for use as an astute weapon of foreign policy ; it has been invariably applied to all domestic problems as well.

The successive Governments of Britain have always proceeded upon the lines of doing as little as possible, of allowing private individuals to solve their problems for themselves, and legislation has been reserved in the main for the correction of long-proven abuses.

Such a system has in its favour many strong arguments, but it possesses also one great defect. Legislation produced by it tends to be improvised legislation, aimed only at an immediate crisis and rarely considering relevant previous measures or looking far into the future.

Whilst the duties of government largely consisted of ensuring that the individual should be able to attend to his own business unhampered by internal disorder or external complications the system worked well enough. Private initiative might find occasionally that it was better for a few essential services to be the monopolies of the government or of public companies, but on the whole it felt that the proper function of Parliament was that of a safety-valve.

Within the last fifty years, however, the scope of government has both altered and enlarged. Despite their better feelings, as it were, the more enquiring of the public began to recognize that there were British cities in which the municipal services were all that could be desired, but which yet were lacking in nearly all of the qualities which a civilized community should possess.

To remedy these conditions legislative measures increased in number but did not change in kind. Any number of Acts of the moment seemed better than one longer view. Three of the four giant problems, inseparably inter-related problems, of the last and the next thirty years—Social Health, Housing and Town Planning—were dealt with by a hasty dole of powers and grants, first to one and then to another. But they were never considered together.

Today we have achieved a different outlook. It is realized that the State must be responsible for the housing of poorer-paid workers, that good housing cannot be achieved until a comprehensive town planning policy can ensure the wise use of land, and that the enormous sums annually spent upon social services would be much reduced if these two conclusions were successfully carried out in practice.

These ideas are long-term ideas and demand for their execution long-viewed legislation. But the tendency towards improvised, often superimposed, measures dies hard, and local authorities still tend to find the understanding of their powers harder than the action demanded of them.

Within the last few months three measures concerning housing and town planning have come into force, all of which show signs of hastiness. The Housing Act 1935 places upon local authorities the duty of remedying overcrowding. But before applying remedies each local authority must satisfy itself upon four facts, two of which are at present unascertainable. Under the Restriction of Ribbon Development Act local highway authorities are empowered to stop building speculators abusing the first object of a highway, but are also compelled to compensate them from local resources for refraining from so doing. And under an Interim Development Order the L.C.C. is restricting the redevelopment of sites whilst it attempts to grapple with the huge problem of London's planning. But little thought seems to have been given to what is to happen whilst this task is being completed.

These cases would seem to show that the time has come for a longer view of the dual problem of housing and town planning. For the moment there would seem to be enough of powers invested in local authorities. It would now seem wise for the Government, or perhaps for the next Government, to ask the local authorities whether they like the powers they have got ; whether they are complex and redundant, or simple and effective ; whether a few sweeping Amending Acts would not be helpful, and, above all, whether they have all the information they require to make the action that they take as lastingly useful as possible.

The housing and town planning authorities today have before them a task immensely intricate. The public should at least ensure that their equipment is the best obtainable.

The Architects' Journal
Westminster, S.W.1
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London

NOTES & TOPICS

INITIAL DIFFICULTIES

THE operation of the Interim Development Order, pending the completion of the L.C.C. Town Planning Committee's scheme for London, is giving rise at present to considerable discussion.

*

The difficulties of the Committee will be easily appreciated; for each application for the re-development of an isolated site must be considered with regard to the type of development which the Committee desires to secure around that site in the future.

*

Such a consideration, bearing in mind the issues at stake, must be done carefully and must take some little time.

*

The Committee's critics, however, maintain that it takes too much time—that eight weeks between a detailed application and a consent or refusal is altogether unreasonable.

*

And it would certainly seem very desirable that the Committee's officers should be enabled, with the least possible delay, to advise architects authoritatively as to the general type of development which is likely to be approved in any particular locality.

*

The dangers of too explicit pronouncements may be obvious, but a too close secrecy may result in a carefully prepared application becoming degraded into a form of lottery ticket—with a two months wait for the prizes.

FUTURE DANGERS

With town planning just entering the stage of practical application it is very necessary that the public should not imagine that all this change promises is the spectacle of one more dog-fight—of estate-developers versus town planning authorities.

*

Such an occurrence would be a tragedy. For it is now easily forgotten that nearly all of the fine town planning in this country was created by the enlightened estate developer.

TOWN-PLANNED NEWCASTLE

I was reminded very sharply of this fact in passing through Newcastle-upon-Tyne on my holiday travels. Most architects know of the town planning of Bath, new Edinburgh, and Regent's Park, but very few of that of Newcastle, perhaps because, as they say, it all seems so very unlikely.

*

Yet between 1820 and 1860 a single enterprising builder and estate developer named Richard Grainger, inspired by nothing save a tradition of decent simple building, transformed central Newcastle into what must have been one of the handsomest provincial cities in the country. And, oddly enough for an industrial city in the best days of roaring industrial expansion, he managed this because public opinion was solidly upon his side.

*

In the midst of the present tendency to bewail the gross self-interest of our forefathers, one must remember such exceptions.

*

Today, the shopping centre of Newcastle has moved to a street of brighter, more individualistic premises. And in the "old-fashioned" streets Grainger's façades still peer wanly out through festoons of attractive signs, placards and neon tubes, and balance precariously above a thousand up-to-date shop fronts.

*

During the troubled days that lie ahead of town planning it should not be forgotten that one urban estate developer of enlightened reticence is worth a whole session of restrictive legislation.

DOCTOR JOHNSON

Mr. J. S. Wilson, president of the engineering section of the present meeting of the British Association at Norwich, produced, in the course of his paper on the stability of structures, a delightful surprise for at least one architect who had thought that he had read his Boswell.

*

In 1759 a semi-circular arched design by a friend of Doctor Johnson for a proposed bridge at Blackfriars was rejected, and with all his customary equanimity and in the cause of friendship the learned Doctor entered the hazardous world of the theory of structures.

*

"If the elliptical arch be equally strong with the semi-circular"; he urged, "that is, if an arch, by approaching to a straight line, loses none of its stability, it will follow that all arcuation is useless, and that the bridge may at last, without any inconvenience, consist of stones laid in straight lines from pillar to pillar. But if a straight line will bear no weight, which is evident at the first view, it is plain likewise, that an ellipsis will bear very little; and that as the arch is more curved its strength is increased. Having thus evinced the superior strength of the semi-circular arch," he concludes, "we have sufficiently proved that it ought to be preferred. . . ."

*

To one who never allowed his disquisitions to be hindered by petty considerations of logic, it would possibly have been only impertinence to suggest that his premises were insufficient, or that his disregard of *non-sequiturs* was almost

A photograph of the new R.I.B.A. House Flag which was designed by Mr. Sydney Tatchell, cartooned by Mr. Macdonald Gill, and made by J. W. Gray and Son. The lions are in yellow on a red background, and the crown, column and border are yellow and royal blue. This flag was flown for the first time on Jubilee Day. (Reproduced by courtesy of the "R.I.B.A. Journal.")

sublime. . . . I don't suppose anyone dared to argue with him.

HACKNEY MARSHES

The scheme of the London County Council to convert 30 acres of Hackney Marshes into a building site is still creating a great deal of correspondence in *The Times*. On Monday last, Mr. E. M. Dence, of the L.C.C., in reply to one of the correspondents, quoted a paragraph from the minutes of the Council for July 30, dealing with the subject. I print the paragraph in question below.

> It is with the greatest reluctance, and only after having exhausted all other possibilities of dealing with the serious housing problems which arise in the East End of London, that we make this recommendation ; and except for the very urgent reasons which we have indicated we should not propose any step which would result in the loss to the Administrative County of London of any part of its existing open spaces. While it is impossible at the moment to make any definite proposal to provide within the county a comparable area for dedication to the public as open space, it is the intention of the Housing and Public Health Committee to give serious consideration to the question of reserving suitable areas for open spaces within the county as additional compensation for the loss of 30 out of 340 acres at Hackney Marsh.

Despite this "serious consideration," however, the L.C.C.'s critics still seem to feel that in the matter of open spaces in the county, a bird in the hand is worth any number in the bush.

SIR HENRY TANNER

The announcement last week of the death of Sir Henry Tanner came as a surprise to the many of those in whom his vigorous continuance of his practice had caused forgetfulness of his age. For at eighty-six Sir Henry was still in active and daily attendance at his city office.

*

But although in private practice for the last twenty-two years Sir Henry's greatest work lay in the raising of the standard of official architecture during forty-two years in the Office of Works, during which time he was for fifteen years its chief architect.

*

Winner of the Tite Prize in 1878 Sir Henry Tanner was a pioneer in the use of reinforced concrete and executed several important buildings in that material.

MORE FLOODLIGHTING

As far as I can make out I have missed nothing by not being in London this week for the floodlighting, for what there is of it is exactly the same as it was during Jubilee week, with an operatic blue for the Horse Guards Parade and the more or less white and amber of the National Gallery.

*

Apart from the general publicity and entertainment value of floodlighting, I heard recently of a further instance, where four evenings of high intensity illumination were enough to save an early example of American colonial architecture from premature demolition. The inhabitants seemed to realize quite suddenly that it was too good to lose, and actually paid out good dollars to keep it.

*

This might, of course, cut both ways—suppose we floodlit a really " bad " building. . . . ?

THE SECOND BRIDGE

Edinburgh Town Council has a scheme for spending about three and a quarter million on a suspension bridge to carry a roadway a few hundred yards above the existing Forth railway bridge.

*

So far, I have seen a rather arted-up perspective showing heavy pylons carrying the cables for the 3,000 ft. span, and the end of a rather unfortunate approach viaduct.

*

The chief excitement seems to be over the fact that 3,000 ft. is about double the span of Brooklyn bridge. I doubt if this proposed bridge will ever be built, even though it has been needed for years, and as a matter of pure sentiment I should be sorry to see the magnificent scale of the present bridge minimized by a new neighbour.

TILES, GENTLEMEN—PLEASE

Under the heading " Ministry will not have Modernism" the *Leicester Evening Mail* reports a decision by the Minister of Health insisting on the " conventional sloping roof with tiles " for a new housing estate for the Melton Urban Council.

*

I've not seen the designs, but as far as I can gather from the report, no other alterations to the houses were suggested. Just put a nice pitched roof on and make it look like a gentleman.

*

Has Sir Kingsley become the latest recruit to the obstructionist cause, or is it just subordinate officialdom ?

ASTRAGAL

NEWS

POINTS FROM THIS ISSUE

LIVERPOOL HALL'S FUTURE

The Liverpool City Council last week turned down a proposal to rebuild the Philharmonic Hall, which was destroyed by fire, on the same site at a cost of £250,000. Opponents of the scheme contended that the hall should be more centrally situated and should be in the fullest sense a civic hall.

INTERNATIONAL CONGRESS OF ARCHITECTS

In connection with the above Congress, which is to be held in Rome from September 22 to 28, Lt.-Col. H. P. Cart de Lafontaine, Hon. Secretary of the British Section, writes: "I have been requested by Signor Alberto Calza Bini, the President of the Organizing Committee and of the National Fascist Syndicate of Architects of Italy, to state that in spite of rumours to the contrary, which have no basis in fact, the above Congress will definitely take place.

"I may add that His Majesty's Government has appointed two official representatives to this Congress.

"Enquiries with regard to travel and accommodation should be addressed to the official agents: The Wayfarers' Travel Agency, 33 Gordon Square, W.C.1, by intending members without delay."

HOUSING COUNCIL WANTED

A supreme housing council was urged by Mr. F. R. Jefford, Chief Sanitary Inspector and Housing Officer of Cheltenham, at last week's conference of the Sanitary Inspectors' Association. Without such a body, he said, there could be no practical solution of the housing problem.

Today, he said, the permanent heads of the Ministry of Health were striving hard, but good results were not being obtained because there was a great gulf between Government and municipal service, a gulf which should be bridged. The present slum crusade made in history an epoch marked by courage, energy, and devotion to public duty by the public health officers. To the younger men, however, remained a still greater task; the word "slum" must be known as a social evil, to be uprooted for ever. There were today few districts with sufficient personnel to carry through the campaign properly. Emphasis should be made to secure the adequate inspection of rural areas. Inspectors were too often confronted with picturesque cottages which were actually rural slums and hotbeds of insanitation.

Discussing the question of reconditioning, Mr. Jefford said the history of their labours as sanitary inspectors was one constant fight against incompetency on the part of both masters and men through lack of control in the building trades.

THE ARCHITECTS' DIARY

Thursday, September 12

R.I.B.A. INTERNATIONAL EXHIBITION OF ARCHITECTURE. *At the Royal West of England Academy, Bristol. Until September 28.*

LONDON MUSEUM, *St. James's, S.W.1. Exhibition of photographs, "New London from the Air." Open until further notice 10 a.m. to 6 p.m.*

INTERNATIONAL REUNION OF ARCHITECTS. *International Study Tour. Until September 22. Itinerary for the week: To-day, Bratislava; 13, 14 and 15, Budapest; 16 and 17, Vienna.*

EXHIBITION OF PHOTOGRAPHY IN COMMERCE AND INDUSTRY. *At the Royal Institute (Princes) Galleries, Piccadilly, W. Until September 14. 10 a.m. to 9 p.m. (Saturday, September 14, 10 a.m. to 5 p.m.)*

SHIPPING, ENGINEERING AND MACHINERY EXHIBITION. *At Olympia, Until September 28.*

Monday, September 16

CROYDON SCHOOL OF ART. *At the Public Hall, George Street, Croydon. Annual exhibition of students' work, to be opened by the Mayor at 5 p.m.*

Thursday, September 19

CROYDON SCHOOL OF ART. *At the Public Hall, George Street, Croydon. Distribution of prizes by Sir Ian MacAlister. 8.15 p.m.*

LEEDS HOUSING INQUIRY

A public inquiry is to be held at Leeds on October 8 into the Corporation's application for leave to borrow £1,000,000 for the development of a municipal estate in the Moortown district. Objection has been made that the erection of 2,500 houses and flats will depreciate the value of property in a "high-class residential area" and cause the owners hardship.

INTERNATIONAL CONGRESS OF BUILDING SOCIETIES

Sir Harold Bellman, in his presidential address to the International Congress of Building Societies at Salzburg last week, said that during "the post-war years a total of £950 millions has been advanced by British building societies, which has provided assistance for the purchase of some 1,500,000 new houses and also many older properties. In a word, the building societies of Great Britain have attained a position of outstanding importance in the nation's economic structure.

"On the Continent of Europe the movement did not in the main make an immediate appeal, and it was not until after the war that thoughts turned seriously in this direction. In the short space of a little over a decade, however, the progress has been exceptionally creditable, for the continental societies can claim a membership of 390,000, with resources amounting to the equivalent of £40,000,000."

SLUM CLEARANCE

The latest figures issued by the Ministry of Health relating to slum clearance show that progress has been maintained in spite of the holiday period, states *The Times*. The number of new houses begun during July was well in advance of previous figures, which compare as follows:—July, 6,041; June, 5,513; May, 4,763; April, 4,946.

The number of new houses under construction at July 31 was also greater than at any previous period. Since last April the numbers at the end of each month have been:—July, 33,756; June, 30,853; May, 28,504; April, 26,682. The number of houses completed under the 1930 Act is now 53,596.

A total of 10,396 new houses were approved during August, compared with July, 5,276; June, 5,242; May, 8,808, giving an average of 7,430 houses a month. The high figure for August is partly accounted for by the approval of large numbers of houses in a few big towns.

ALTERATIONS TO A WREN CHURCH

St. Bride's Church, Fleet Street, which had been closed for some time for structural alterations and redecoration, was reopened on Monday last. The work has been carried out under the direction of Mr. H. M. Fletcher, F.R.I.B.A.

DOWNSIDE ABBEY

Today, September 12, the Abbey Church of Downside is to be consecrated by Cardinal Seredi, of Hungary. The church has taken over 50 years to build.

£350,000 MANCHESTER HOTEL

A first-class hotel with some 400 bedrooms is proposed for an acre site in Piccadilly, Manchester. The cost is estimated at £350,000. The site fronts on to the widest thoroughfare in the centre of the city.

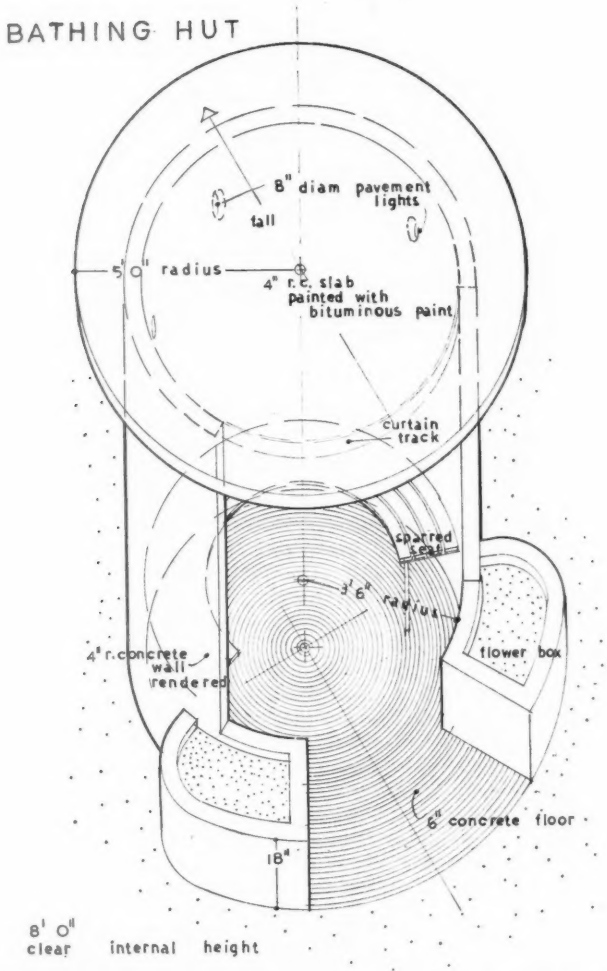
THE BRITISH ASSOCIATION

Professor P. G. H. Boswell, F.R.S., President of the Conference of Delegates of Corresponding Societies, gave an address on "The Preservation of Sites of Scientific Interest in Town and Country Planning," at the British Association meeting at Norwich, on Friday, September 6.

Without the systematic recording of areas and objects of scientific interest, he said, it would not be possible to take advantage of the opportunities now afforded for their appropriate preservation.

Professor Boswell welcomed the Town and Country Planning Act of 1932 and its provisions for preserving existing buildings or other objects of architectural, historic and artistic interest, and generally of protecting existing amenities whether in urban or rural portions of the area.

Formerly the success of efforts directed



Bathing Hut, House at Bognor Regis. Designer: Cameron Kirby.

towards the preservation of objects and sites of scientific interest was due to the enthusiasm of advocates, and the broadmindedness and public spirit of landowners and benefactors. Much more power was now in the hands of the people. The public was aware of the desirability and necessity for preserving sites and objects of scientific interest and natural beauty, and the Ministry of Health had given opportunity to the Association to advise as to when action ought to be taken.

But at the present time only a small amount of information had been collected and collated, and it was necessary to take account of all sites and objects throughout the kingdom. So far as botany and zoology were concerned, no systematic attempt to compile a list appeared to have been made, but in the case of geology an inquiry was instituted some years ago by the Geological Society among local geologists and learned societies, with the result that a valuable though incomplete list was drawn up.

Professor Boswell urged the delegates present to exhort their societies to begin, if they had not already begun, the compilation of a list of sites and objects of exceptional botanical, zoological, or geological character within their areas, and to communicate the results at frequent intervals to the central office of the Association. The reference list which would thus be compiled would be available for consultation as each scheme of planning was notified; and where there was doubt as to the best policy to pursue, the advice of experts on the panel already drawn up for the purpose by the Council could be sought.

Dr. Vaughan Cornish addressed the Association on "The Cliff Scenery of England and the Preservation of its Amenities."

The cliff lands, he said, were the most important section of the rural portions of our coast scenery. Their outlook on the sea was comparable in its natural majesty to the Alpine heights which were the culmination of Continental scenery. It was important that local authorities under the powers conferred by the Town and Country Planning Act should, first, secure a permanent right of way along all cliff fronts not yet comprised in private gardens, and, secondly, that they should procure as a public open space a strip of at least 100 yards broad, reckoning from the cliff edge. The setting of the building line at this distance was not by itself an adequate provision—the garden fence should not be allowed a nearer approach.

The preservation of our cliff scenery for the public should not, however, be saddled entirely on the local authorities, said Dr. Cornish, for it happened that many of the parts which were of most value to the nation as a whole were situated in localities where rateable value was relatively small and where scenic preservation was of much less financial benefit to the residents than in the neighbourhood of large watering places.

Certain stretches of coast should, therefore, come under the proposed scheme for National Parks and reservations of wild scenery, of which the cost was to be defrayed wholly or in part from the National exchequer. In relation to national reservations of cliff lands Cornwall had a pre-eminent claim, not only on account of the rugged grandeur of the rocks but of its blue oceanic waters and mild oceanic climate. The peninsula of the Land's End, with its granite rampart, was the most important part, but there were other stretches of the Cornish coast which should be included, notably the cliffs of dark blue slate from Tintagel to Boscastle and parts of the Lizard peninsula.

In this connection, Dr. Cornish added, it was important to free the mind from the idea that each nationally administered portion of cliff land was to be reckoned as an individual National Park; rather should we conceive all the portions of cliff land placed under the National Park Authority as constituting together a reservation equivalent to one of the proposed inland National Parks, as that of the Lake District or the Welsh National Park of Snowdonia.

APPEAL FOR THE PRESERVATION OF A LINCOLN BUILDING

A public appeal is being made for the preservation of St. Mary's Guildhall, Lincoln, popularly known as John of Gaunt's Stables.

The building, says Professor A. Hamilton Thompson, follows the conventional lines of the early mediæval dwelling-house, such as are indicated by the representation of Harold's manor house at Boshal in the Bayeaux Tapestry.

At some time it passed into the possession of the Great Guild of St. Mary, though the actual date is not known. At the dissolution of the Guild in the reign of Edward VI the property passed into the hands of the Corporation, who sold it shortly before the reform of municipal corporations a hundred years ago.

R.I.B.A.

The following are the dates on which the forthcoming R.I.B.A. Intermediate Examination will be held: November 15, 16, 18, 19 and 21. (Last day for applications: October 15, 1935.)

C.P.R.E. CONFERENCE

The eighth national conference of the Council for the Preservation of Rural England is to be held at Newcastle-upon-Tyne next month, under the chairmanship of Lord Crawford.

The conference sessions will be held in the Connaught Hall, Blackett Street. There will be three sessions: Friday morning, October 11, at 10 a.m., Friday afternoon at 2.30 p.m., and Saturday morning, October 12, at 9.30 a.m., and papers will be read dealing with the follow-

ing subjects—1 : Movable dwellings and camping grounds. 2 : Local authorities and co-operation with preservation societies, especially with regard to advertisements and planning. 3 : Schools and the countryside, with special reference to the protection of flora and fauna.

Full particulars of the Conference are obtainable from Mr. H. G. Griffin, Secretary of the C.P.R.E., at 17 Gt. Marlborough Street, W.1.

OBITUARY

SIR HENRY TANNER

It is with deep regret we record the death, which took place on Monday of last week, of Sir Henry Tanner, F.R.I.B.A., F.S.I., formerly principal architect to the Office of Works.

Born in 1849, he received his architectural education at the Architectural Association, and the Royal Academy Schools and, in 1871, entered the Office of Works by competitive examination. In 1884 he became a principal architect of the Department and, fourteen years later, was appointed Chief Architect, which position he retained until 1913, when he retired and entered into partnership with his sons, Edwin and Henry Tanner.

During his forty-two years' service with the Office of Works, Sir Henry was responsible for the design of a large number of Government buildings, including the King Edward Building at the General Post Office in Newgate Street, E.C., the Savings Bank, Kensington, the Duke of York's School, Dover, additions to the Law Courts, and several post offices in the provinces. The King Edward Building at the G.P.O. was constructed of reinforced concrete, of which he was one of the pioneers in this country. Sir Henry was also responsible for the completion of the great block of Government offices on the north side of Gt. George Street, Westminster, which had been designed by the late John Brydon.

In collaboration with his sons, Sir Henry was responsible for the design of several buildings in the West End, including the Park Lane Hotel and the Café Royal.

Sir Henry was knighted in 1904, and created a C.B. in 1911. He was vice-president and past chairman of the Council of the Royal Sanitary Institute, and past president of the Concrete Institute. He was elected a Fellow, R.I.B.A., in 1891, and was a recipient of the R.I.B.A. Tite Prize in 1878.

H. SHELMERDINE

We regret to record the death, at the age of 75, of Mr. H. Shelmerdine, of Southport.

Mr. Shelmerdine practised as an architect in Liverpool for a number of years, designing many buildings of note, including the Exchange station. Later he became architect to the Lancashire and Yorkshire Railway Company, holding that post for 35 years up to the time of his retirement through ill-health in 1920.

House at Hatfield

We regret that the description in our last issue of a house at Hatfield, designed by F. R. S. Yorke, stated that the internal partitions were of plaster blocks. The partitions throughout this house were constructed of Eonit pumice blocks, manufactured by Messrs. G. R. Speaker & Co., Ltd.

COMPETITION

NEWS

ATHLETIC BUILDINGS, MONTREAL

The winning design in the above competition is illustrated on pages 374–376 of this issue.

WORKING-CLASS FLATS

Conditions of a competition for the design of a block of flats for working men in Birmingham have just been issued by the promoters of the Birmingham Building Trades Exhibition. Premiums of £60, £30 and £20 are offered, and the whole of the designs submitted will be exhibited at the Exhibition, which is to be held from October 15 to 26 next. The following three architects have been nominated by the Council of the Birmingham and Five Counties Architectural Association to act as assessors : Messrs. W. T. Benslyn, F.R.I.B.A., Alfred Hale, F.R.I.B.A., and J. B. Surman, F.R.I.B.A.

All the designs, marked "Architectural Competition," must be submitted to the Birmingham Building Trades Exhibition, 71 Temple Row, Birmingham, not later than October 7.

Competitions Open

October 1.—Sending-in Day. Central county buildings, Hertford, for the Hertfordshire County Council. Assessor: Robert Atkinson, F.R.I.B.A. Premiums : £350, £250 and £150. Designs must not be submitted later than October 1. Particulars of the competition are obtainable from the Clerk of the County Council, Clerk of the Peace Office, Hertford. (Deposit £2 2s.)

October 5.—Sending-in Day. New Fire Station, Brighton, for the County Borough of Brighton. (Open to architects of British nationality resident in the British Isles.) Assessor : Stanley O. Livock, F.R.I.B.A. Premiums of £200, £125 and £75. Conditions of the competition may be obtained from J. G. Drew. Clerk, Town Hall, Brighton. (Deposit £1 1s.)

October 16.—Sending-in Day. Lay-out competition for Lump Fort site, for Portsmouth T.C. Assessor : E. Prentice Mawson, F.R.I.B.A. Premiums : £350 and further £200 divisible. Conditions are obtainable from the Town Clerk, Guildhall, Portsmouth. (Deposit £1 1s.)

October 28.—Sending-in Day. Competition for timber houses organized by the Timber Development Association. Assessors : Robert Atkinson, F.R.I.B.A., G. Grey Wornum, F.R.I.B.A. and E. Maxwell Fry, A.R.I.B.A. The competition is divided into two sections and competitors may enter for one or both. In each section there will be the following awards : first premium, £100 ; second premium, £30 ; third premium, £25.

SECTION 1 :—Designs to be submitted for a timber house suitable for a small family, the total cost to be £800. SECTION 2 :—Designs to be submitted for a week-end timber cottage, the total cost to be £350. Conditions, etc., are obtainable from the Manager, Timber Development Association, 69-73 Cannon Street, London, E.C.4. The latest date for submission of designs is Monday, October 28.

October 31.—Sending-in Day. New technical college, Manchester Road, Bolton, for the Bolton Corporation. (Open to architects of British nationality.) Assessors : John Bradshaw Gass, F.R.I.B.A., and Arthur J. Hope, F.R.I.B.A. Premiums : £500, £250 and £100. Conditions, etc., are obtainable from Mr. John A. Cox, M.A., Director of Education, Education Offices, Bolton. (Deposit £2 2s.) The designs must be submitted to the Director of Education before October 31.

November 1.—Sending-in Day. New municipal offices, clinics, etc., proposed to be erected in the grounds of York Castle for the Corporation of York. (Open to architects of British nationality domiciled in the United Kingdom.) Assessor : Henry V. Ashley, F.R.I.B.A. Premiums : £250, £150, £100 and £50. The last day for questions was July 29. Designs must be submitted to the Town Clerk, Guildhall, York, not later than November 1.

November 30.—Sending-in Day. Public library for the Colchester Corporation. (Open to members of the Essex, Cambridgeshire and Hertfordshire Society of Architects.) Assessor : Professor A. E. Richardson, F.S.A., F.R.I.B.A. Premiums : £150, £125 and £75. Conditions, etc., are obtainable from R. L. Hiscott, Town Clerk, Town Hall, Colchester. (Deposit £1.) Latest date for submission of designs : November 30.

December 31.—Sending-in Day. Proposed town hall, Bury, for the Corporation of Bury. Assessor : J. Hubert Worthington, O.B.E., M.A., F.R.I.B.A. Premiums: £500, £300 and £150. Conditions, etc., are obtainable from Richard Moore, Town Clerk, Municipal Offices, Bank Street, Bury. (Deposit £2.)

January 31, 1936.—Sending-in Day. Proposed Parliament House, Salisbury, Southern Rhodesia, for the Government of Southern Rhodesia. (Open to architects of British citizenship.) Assessor : James R. Adamson, F.R.I.B.A. Premiums : £500, £300, £200 and £100. Conditions, etc., obtainable from the High Commissioner for Southern Rhodesia, Crown House, Aldwych, W.C.2. (Deposit £2 2s.) Last day for questions was August 26. The designs must be sent to the Assessor at 19 Silverwell Street, Bolton, not later than January 31.

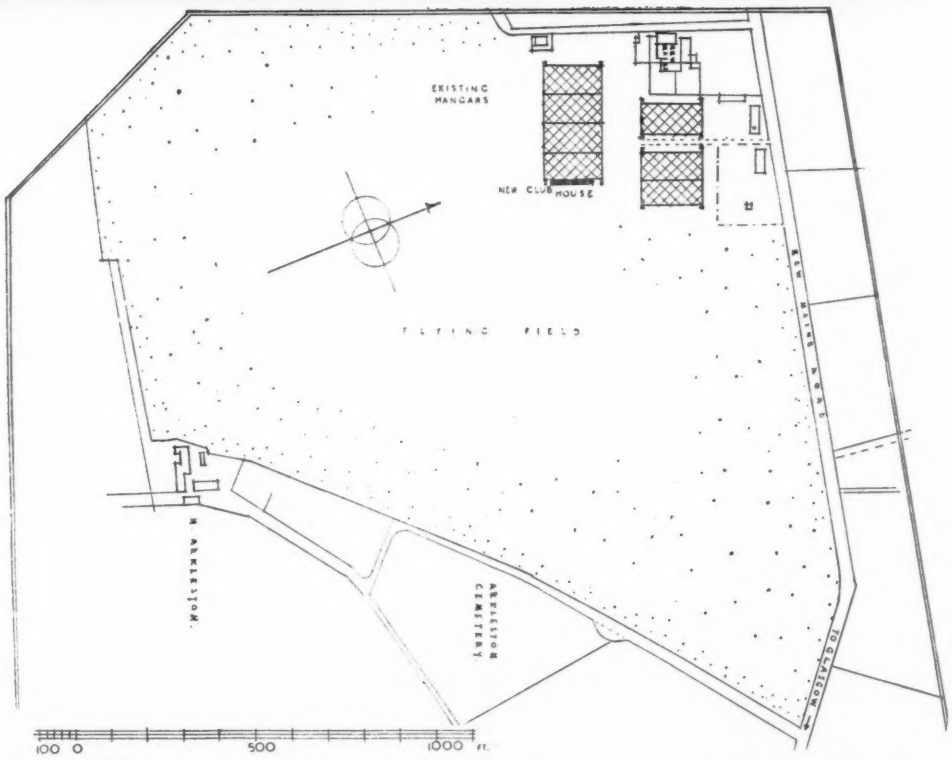
THIS ARSHETECTURE

It seemed a pity that the general public were not allowed within the precincts of the Exhibition Club for this year ; it formed one of the most attractive lay-outs in the whole of Radiolympia.

Here again the Alec Moody touch was to be seen in a most original and picturesque form. The club was laid out as a crazy village ; no two offices were alike and all possessed the most grotesque elevations painted in the craziest combination of colours that it is possible to imagine.

—*From "The Gramophone."*

NEW CLUB-HOUSE AT RENFREW AERODROME



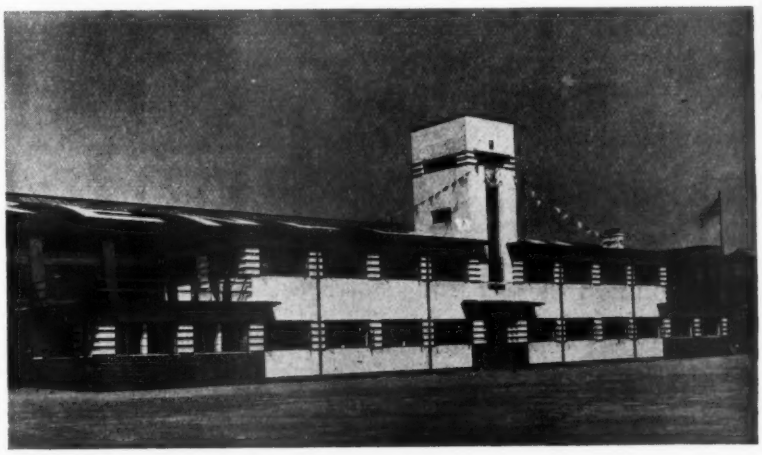
SITE PLAN

BY R. MERVYN NOAD AND WALLACE

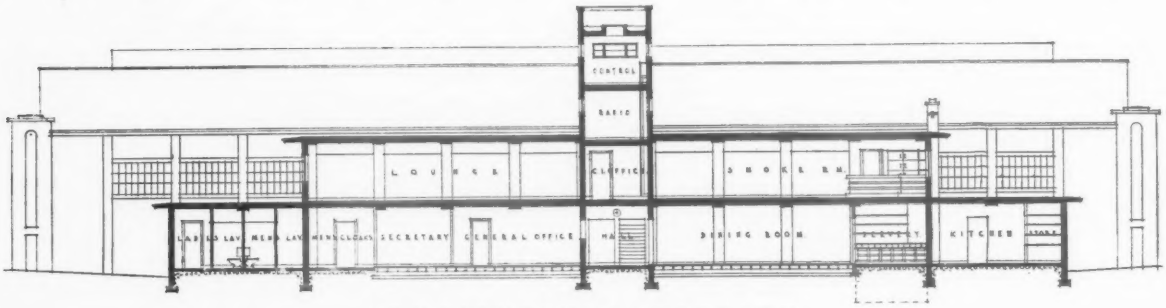
GENERAL PROBLEM AND SITE.—*The building comprises a club-house and control tower for the Scottish Flying Club, and was erected to replace previous wooden buildings inside one of the hangars. The site chosen was against the south-east side of the existing club hangar, approximately 170 ft. long and overlooking the flying field.*

Three new walls only were therefore required, the fourth being that of the hangar. This wall had raking buttresses at 10 ft. 6 in. centres throughout its whole length, and these, projecting 4 ft. 6 in. at the base and 1 ft. 6 in. at the eaves, added a certain complication to the planning of the various rooms. One buttress actually occurred on the main axis, with the result that the club had to be placed one bay off centre with the hangar.

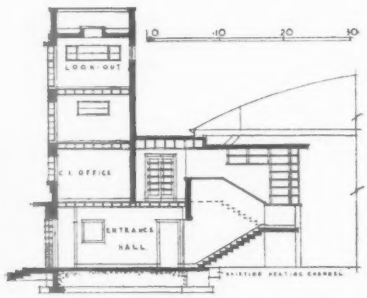
Above is a general view of the club-house from the south. Right, the principal elevation.



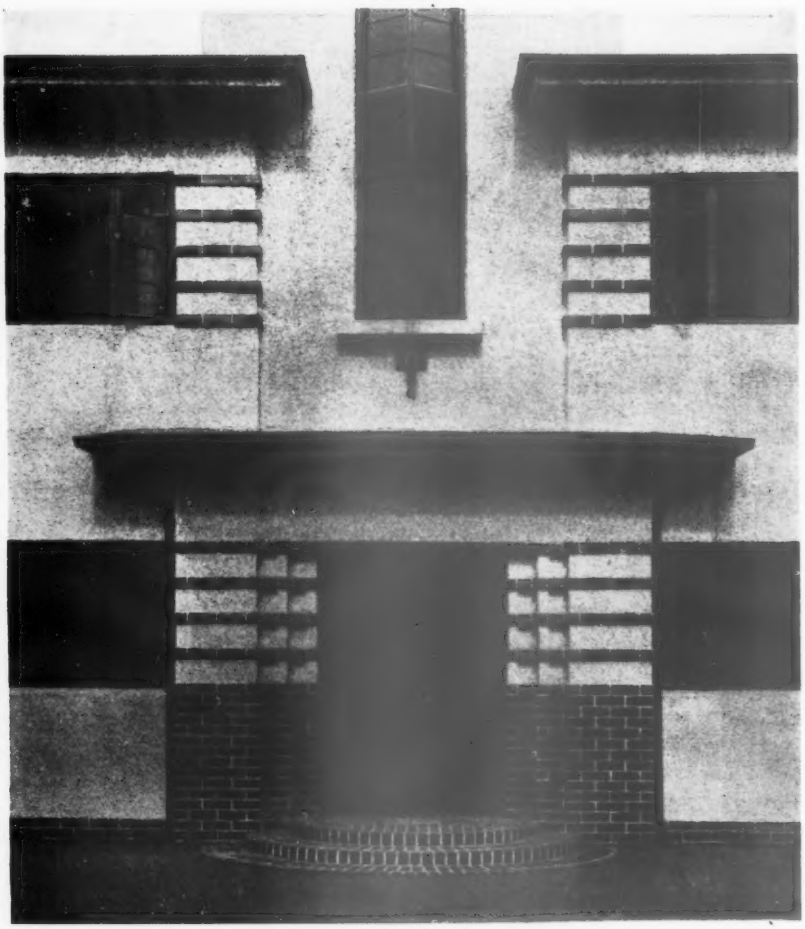
NEW CLUB-HOUSE AT



LONGITUDINAL SECTION



CROSS SECTION



PLAN AND ACCOMMODATION.—*The accommodation required was as follows: ground floor; administrative offices, dining-room with kitchen, etc., cloakroom and lavatory accommodation for both sexes, ambulance, general shop, telephones, heating chamber and fuel store.*

First floor; lounge, smoke room with bar (both rooms to have sun decks), and chief instructor's room.

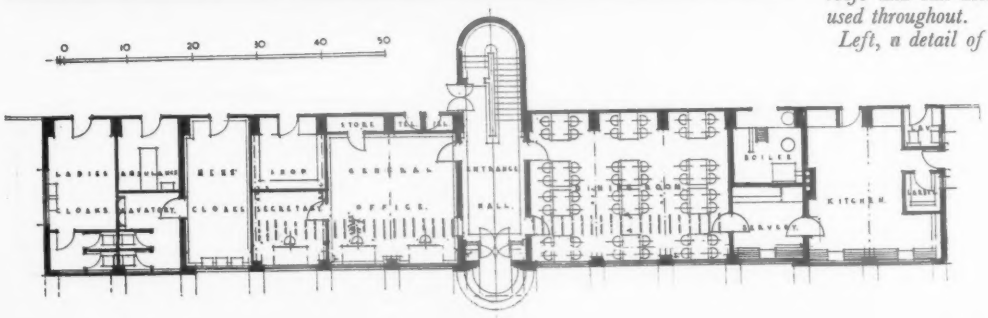
Second floor (in tower); wireless operators' room.

Third floor (in tower); control room.

CONSTRUCTION.—*Owing to the boggy nature of the site considerable difficulties had to be overcome before a safe foundation could be obtained; reinforced concrete foundations being finally superimposed on a gravel crust. The walls are of 9 in. brick, with 18 in. piers at the buttresses, which line through with those of the hangar. All common brick is faced with roughcast and the building stands on a black brick plinth.*

Bands of these black bricks were also introduced to carry through the lines of the horizontal glazing. Wooden flat roofs, felted and asphalted, were used for the main roofs and sun decks. Steel casements were used throughout.

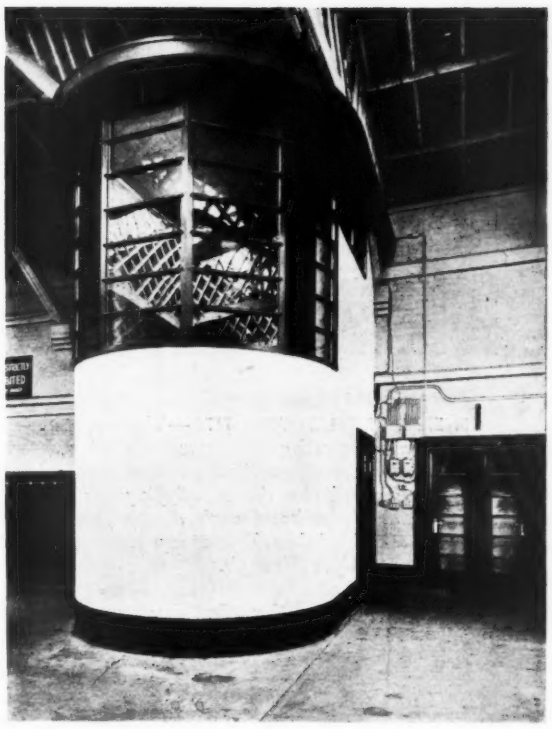
Left, a detail of the main entrance.



GROUND FLOOR PLAN

RENFREW AERODROME

DESIGNED BY R. MERVYN NOAD AND WALLACE

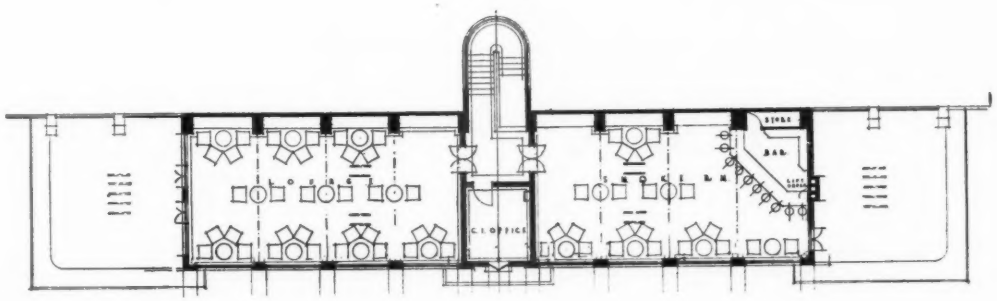


CONTRACT.—*The cost of the building, excluding fees and furnishings, was approximately £4,000.*

FINISHES AND EQUIPMENT.—*The walls and ceilings are in hard plaster, the ceilings to the hall and staircase being finished in high gloss enamel. A main concrete stairway finished in composition leads from the ground to the first floor, and from here an iron ladder (access to which is controlled by the chief instructor) ascends to the rooms in the tower. Floors are of birch in the administrative offices, dining-room, lounge and smoke room; elsewhere being finished in various colours of composition over concrete, inlaid with aeronautical designs. Doors are flush-panelled or glazed with fluted glass, and the main entrance doors are lined with diaper moulded and grooved boards. All electrical fittings are enclosed. Electrical clocks flush with the walls have been placed in most of the main rooms, and a system of automatic telephones connects the various sections of the building. The kitchen and adjuncts have been designed to cope with large numbers in the dining-room, and cooking is by gas. Steel furniture has been installed in the dining-room, modern lacquered bentwood, finished in bright fabrics, being chosen for the lounge and smoke room.*

The photographs show: above, general views of the lounge and dining-room; below, the staircase enclosure from the adjoining hangar.

FIRST FLOOR PLAN

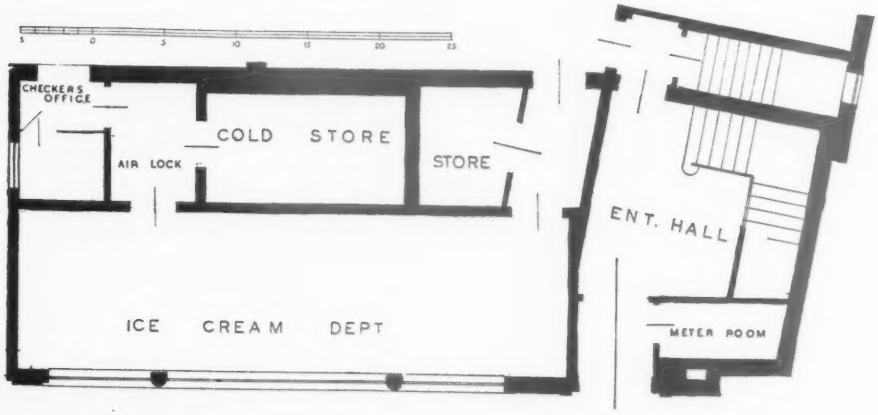


ICE-CREAM FACTORY

GENERAL PROBLEM AND SITE.—*The requirements consisted of a refrigerating plant, a manufacturing department and administrative offices, together with storage and services. The factory stands at a distance of fifty yards from a main street, which the staircase angle directly faces. It was, therefore, considered desirable that any elevational emphasis should be reserved for this angle.*

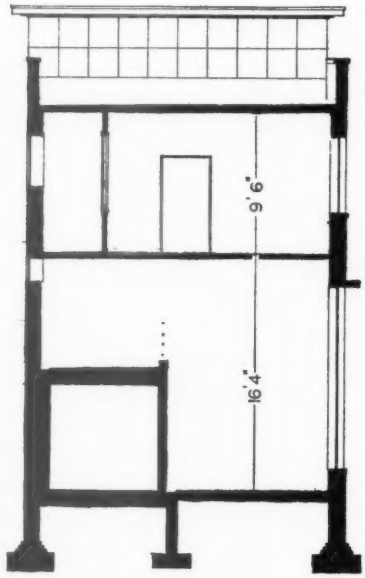
PLAN.—*The refrigerating plant is accommodated in the basement. The ice-cream department is placed at the front of the building on the ground floor, both to ensure good lighting and to allow the public to see the conditions of production. The offices and lavatories are situated on the first floor. The accommodation illustrated is concentrated on one side of the staircase tower, an extension being at present under construction upon the opposite side.*

Above is a general view of the main front, showing the large showroom window of the ice-cream department.



GROUND FLOOR PLAN

A T W O L V E R H A M P T O N



SECTION

D E S I G N E D B Y

L A V E N D E R

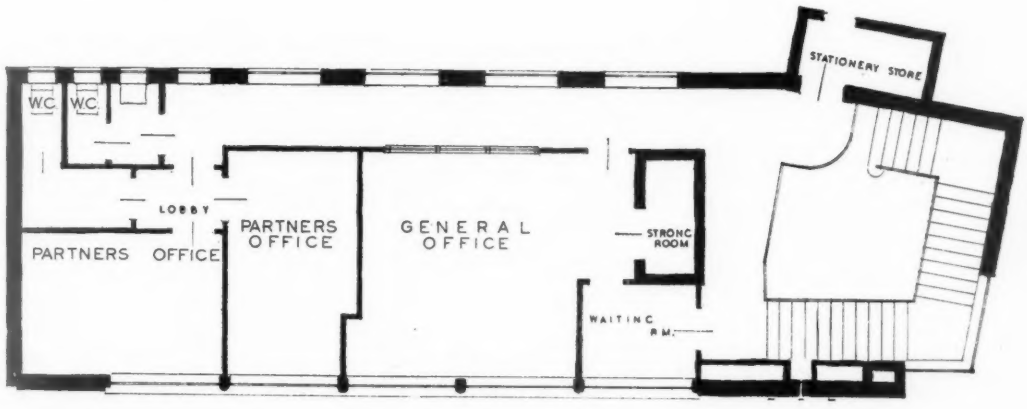
A N D

T W E N T Y M A N

CONSTRUCTION AND ELEVATIONAL TREATMENT.— *Walls are of 9 in. brick, and floors, roofs, and staircase are of reinforced concrete. Cold stores are of brick insulated with cork, the final internal finish being cement rendering. Externally the building is faced with ivory matt glazed faience 2 ft. 0¾ in. square and 4½ in. on bed with occasional 9-in. bonders. Plinth and copings are of pale green faience. Windows are of aluminium alloy with stanchion casings of stainless steel.*

INTERNAL FINISH. — *Walls and floors of hall and staircase are finished in pale green and buff terrazzo, the ice-cream department being tiled with a non-slip cement floor.*

The photograph is a detail view of the staircase tower. The balustrade is of wrot iron and aluminium.



FIRST FLOOR PLAN

COMPETITION FOR PROPOSED ATHLETIC BUILDINGS, McGILL UNIVERSITY, MONTREAL

The result of the recent competition for a new gymnasium, swimming pool, armoury and ice-hockey rink buildings at the McGill University, Montreal, has been announced as follows: Design placed first ($1,000): A. J. C. Paine, of Montreal; design placed second ($500): Hugh A. I. Valentine, of Montreal; design placed third ($250): H. R. Little, of Montreal. On this and the two pages following we reproduce the winning design, together with notes concerning the designs submitted and the winner's report.

THIS competition, which was sponsored by the Graduates' Society of McGill University, Montreal, was limited to those architects who had graduated from the University.

The Board of Assessors consisted of: Dr. John A. Pearson, of Toronto (chairman); Dr. R. Tait McKenzie, of Philadelphia; and Dr. Chas. Z. Klauder, F.A.I.A., M.F.A., also of Philadelphia.

The programme for the competition was drawn up by Professor Philip J. Turner, F.R.I.B.A., of the School of Architecture, who acted as Professional Adviser in the conducting of the competition.

Prizes of $1,000.00, $500.00 and $250.00 were offered to the authors of the three selected designs, the author of the design placed first being also appointed as the architect to carry out the work.

The principal features called for in the programme consist of:

(*a*) Athletic and medical offices.
(*b*) General locker room of 470 lockers with separate staff and graduates' and women's locker rooms.
(*c*) Main gymnasium with a floor area of 114 ft. by 85 ft., and small gymnasium 85 ft. by 60 ft., with special exercise room, wrestling and boxing rooms.
(*d*) Main swimming pool, 75 ft. by 40 ft., with diving alcove and beginners' pool, 40 ft. by 20 ft.
(*e*) Armoury, 144 ft. by 85 ft., with accommodation for spectators.
(*f*) Rink and auditorium with an ice surface 200 ft. by 85 ft., and seating accommodation for 5,000 spectators, with provision for an extension to provide an additional 2,500 extra seats.
(*g*) Curling club quarters, laundry, janitor's quarters, etc.

Twenty-eight designs were submitted from Canada, two from New York, and one from London.

The site, a naturally beautiful one, is situated south of the present Stadium and fronts on Pine Avenue and Macdonald Park. The difference in the levels of the ground—there being a drop of 27½ ft. from the extreme west corner to the east corner—gave interest to the solution of a somewhat difficult problem.

The conditions called for the buildings to be so designed that certain units could be built complete in themselves and other buildings or extensions of the whole scheme added from time to time without any extensive remodelling being necessary. The sum set down for the cost of offices, gymnasium, locker room and pool unit was $500,000.

As the proposed buildings will be separated entirely from all other buildings of the University, competitors were given a free hand in the choice of the design for the elevations.

The conditions emphasized the fact that simplicity in design combined with economy in upkeep were to be the governing principles, and these qualities were further stressed by the programme stating that the bulk of the buildings were to be worked out on a basis of 25 cents per foot cube. To these instructions little attention was given by many of the competitors, who submitted elevations that followed somewhat the type of design adopted in the recently erected stone buildings at McGill University. Anything of this character was recognized by the promoters to be too expensive and not desirable for the particular buildings under consideration.

THE WINNER'S REPORT

In the design submitted the principal aim has been to comply with the general instructions in the schedule, to obtain the desired qualities of sound construction; simplicity in design; economy in upkeep; utility of the buildings and correct relationship of the component parts.

Although the group of buildings divides itself into three blocks, no attempt has been made to confine the accommodation of one single activity or group of activities to a separate building. On the contrary, full advantage has been taken, wherever possible, of the continuity of floors in the two blocks forming the gymnasium group to locate upon the one floor level activities that are closely related to each other, especially from the standpoint of supervision.

1: *The South-west Block* is of sufficient area to contain the entire administration requirements on the ground floor, all offices, etc., being in easy and direct communication with all student activities housed within the buildings, including those of women students. The accommodation scheduled in the conditions has been met, with the exception that cloakrooms and lavatories of ample accommodation have been provided for the entire administrative group, which will permit of a locker system for the "special purpose" rooms, if desired.

The Squash Courts have been placed in this block below the administrative floor and close to the main locker room, and on the first floor of the block, the boxing, wrestling and fencing rooms are located, all on the same floor level as the gymnasia and adjacent thereto.

The caretaker's dwelling has been conveniently located on the penthouse floor of this block, as no suitable basement space is available in the portion of the scheme included in the first building operations.

2: *The Central Block* contains the swimming-pool accommodation and locker rooms, etc., on the lower floors, and the main gymnasia and armoury accommodation on the upper floors.

Fixed seating, terraced, for 1,000 spectators has been shown in the swimming-pool room. This arrangement definitely excludes all access to the swimming-pool floor except through the foot bath and emergency doors. If more floor space is essential on the pool floor level the front rows of terraced seats can be omitted and removable benches substituted on a level floor.

The armoury hall is so located that direct access (without a stairway) from the North Roadway to the hall is available for the University Corps.

Owing to the restricted width of the property the dimensions of the armoury hall differ slightly from those in the Conditions, but the total area is greater than asked for, and no restriction has been placed thereby upon the activities (basket ball, etc.) that can be staged on this floor.

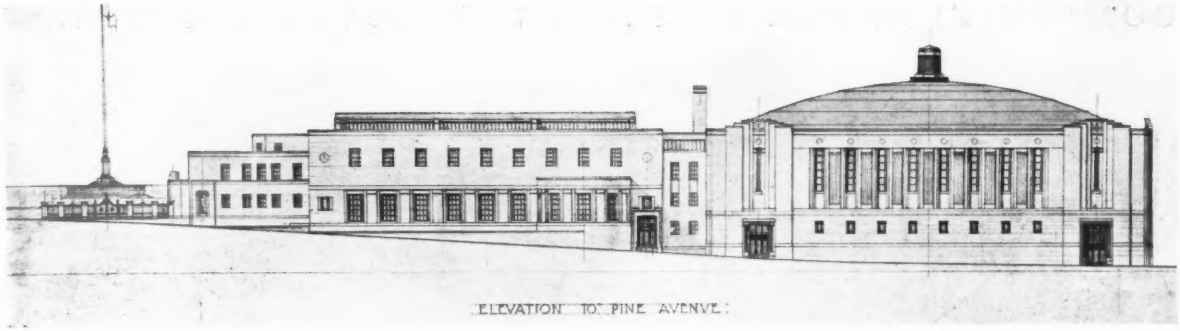
Access by the public to the swimming-pool and armoury seating space is by means of a public stairway separated from student activities and properly controlled for sale of admission tickets, etc. All stairways and exits are accessible from the seating spaces in case of emergency.

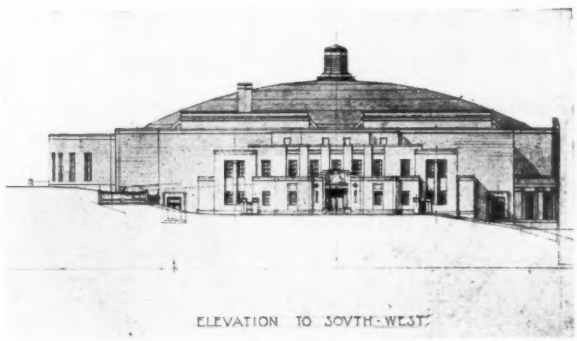
3: *The North-East Block* is occupied entirely by the hockey rink and accessories. The requirements of designing for a future extension, all on the west side as suggested, that would increase the seating accommodation from 5,000 to 7,500, demanded that careful study be made of the completed building. Since land area is not at all plentiful it was considered that to provide from 12,500 to 15,000 square feet on the west side for future extension for extra seating only, all to be placed at a high level, would restrict to a serious degree the areas available for the gymnasium, armoury and swimming-pool. At the same time, the future extension would be a costly one, and not altogether desirable as it would make the auditorium lopsided by adding, all on one side of the building, seating space equal to 50 per cent. of the total seating capacity originally provided for.

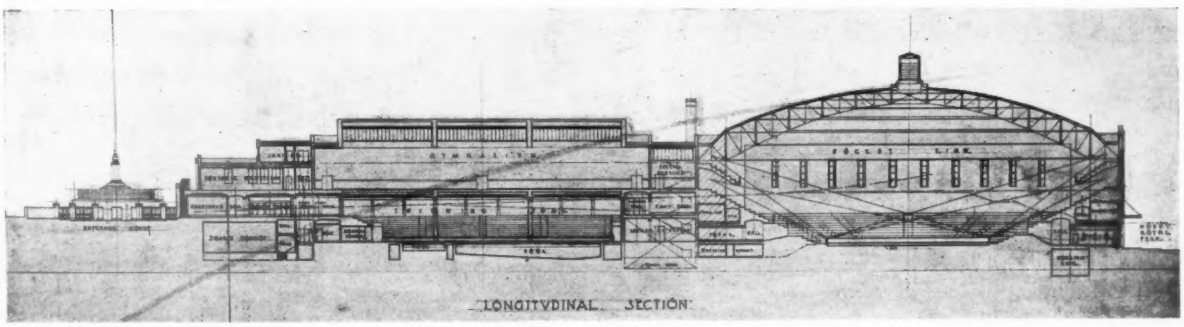
After careful consideration a design was completed for an auditorium with an ultimate seating capacity of about 6,100 in continuous terraced seating, but with ample height at the side walls for the future installation of fairly shallow galleries (seven rows of seating) that would increase the accommodation to 7,500 at a comparatively low cost. With this design seating in the auditorium would be symmetrical and the gallery seats, when installed, would actually be nearer the ice sheet, and on the average lower in height, than seating placed in a future extension on one side of the auditorium only.

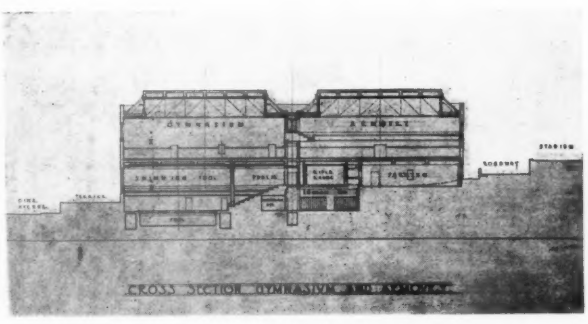
The design submitted shows the completed unit for 7,500 spectators. The omission of galleries reduces this number to 6,100, and the omission to start with of a strip of the building on the west side as shown, without affecting the roof trusses, would further reduce the accommodation to about 5,000.

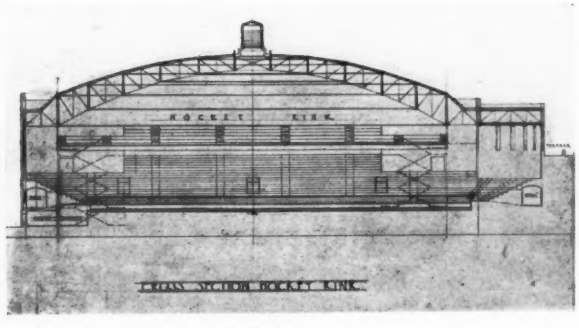
An alternative scheme for a building with an ultimate capacity of 6,100 is also possible by









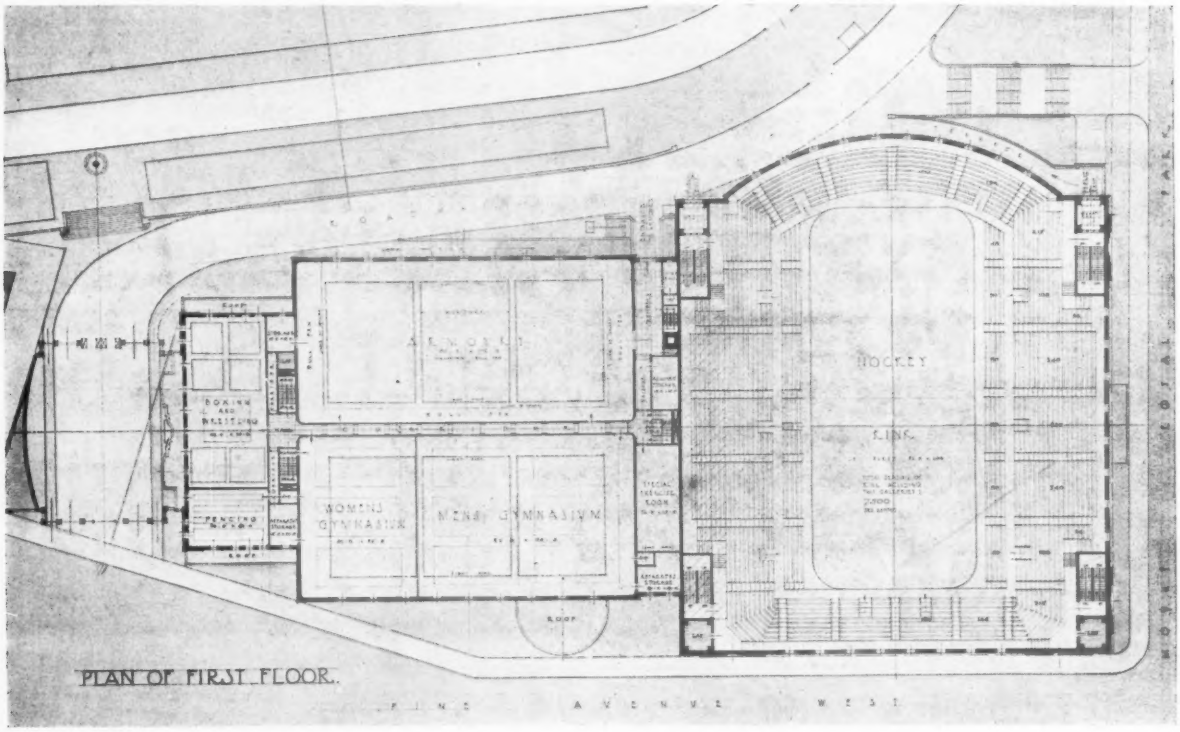


Elevations and sections of the winning design. By A. J. C. Paine.

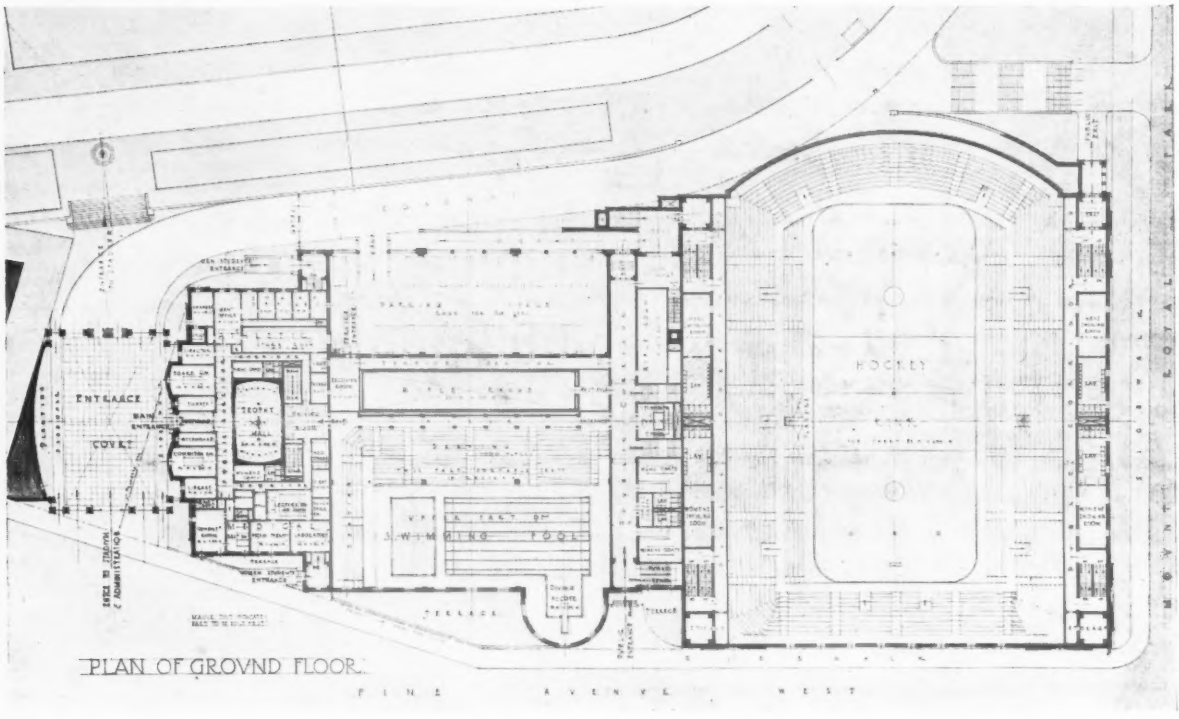
dropping the height of the building about ten feet and thus omitting the provisions for future galleries.

It may be pointed out that the roof suspension system indicated in the design is similar to that used on a somewhat greater clear span in the Maple Leaf Gardens at Toronto. The roof is carried on two three-hinged arches, intersecting at the centre hinge placed diagonally across the building and supported from the pylons of reinforced concrete placed at the four angles of the building. The diagonal arches are tied together at the base by four horizontal trusses. The arches support purlin trusses which in turn carry roof beams or channels spaced to receive the roofing slab which, in the case of the Toronto building, is steel plate corrugated roofing—fibre board insulation and waterproofing material, this construction having a very low "dead weight." The auditorium is entirely unobstructed by columns, and the construction in Toronto was cheaper in respect to steel used than the more orthodox method of lateral trusses or girders.

COMPETITION FOR ATHLETIC BUILDINGS, MONTREAL



PLAN OF FIRST FLOOR.

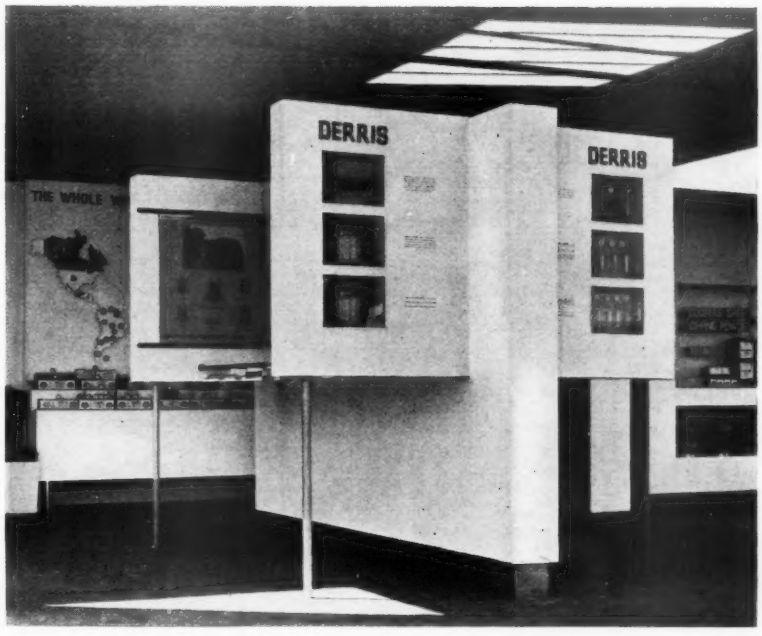


PLAN OF GROUND FLOOR.

WINNING DESIGN: BY A. J. C. PAINE

WORKING DETAILS : 323

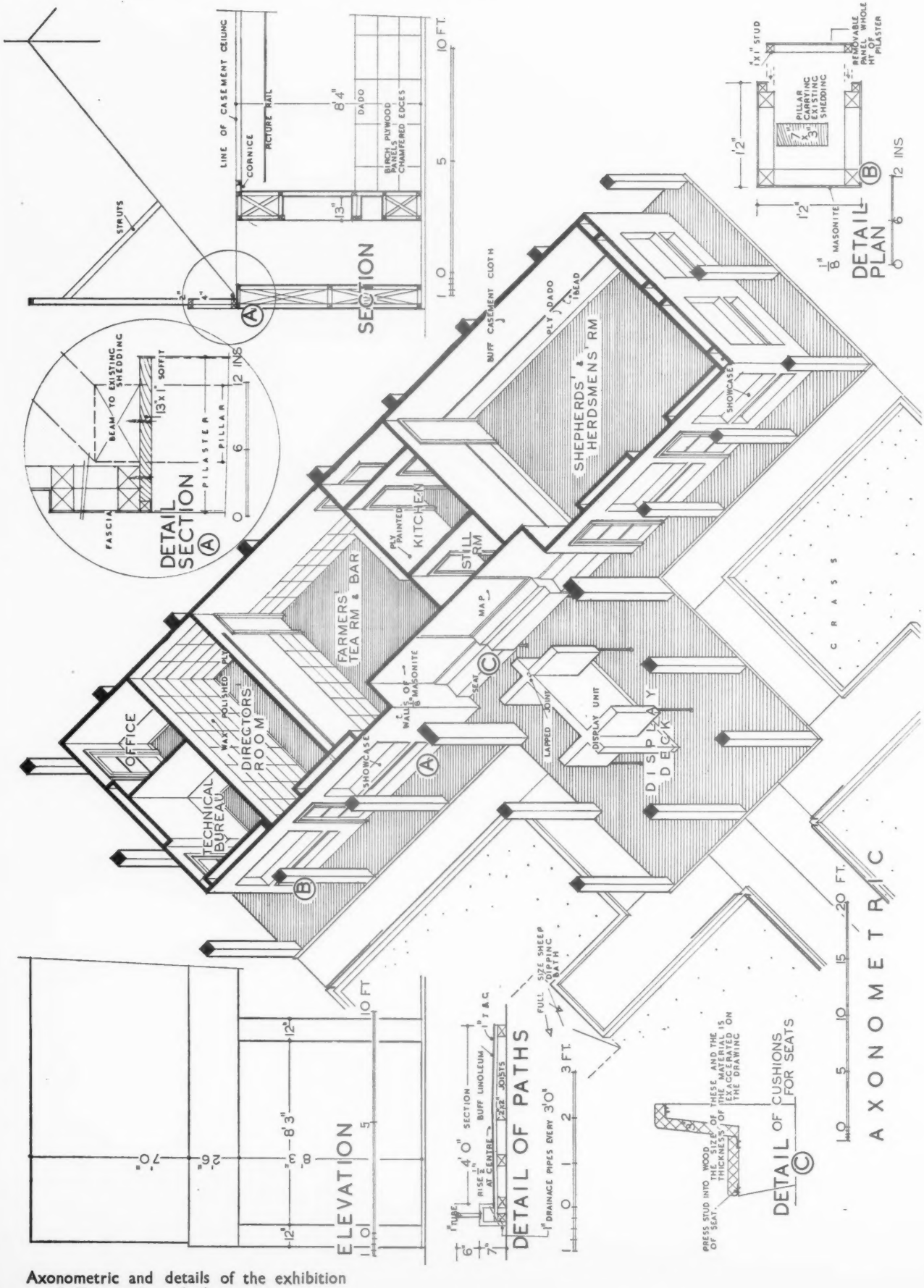
PORTABLE EXHIBITION STAND FOR AGRICULTURAL SHOWS • MISHA BLACK



Above are two illustrations of a portable exhibition stand, for a firm which manufactures cattle dips and general livestock remedies. The axonometric overleaf shows the general lay-out of the stand, which is built up of $\frac{1}{8}$in. compressed wallboard, and is arranged to pack flat for storage. The stand is finished in white, with blue lettering : the paths are in lino-covered plank units.

WORKING DETAILS : 324

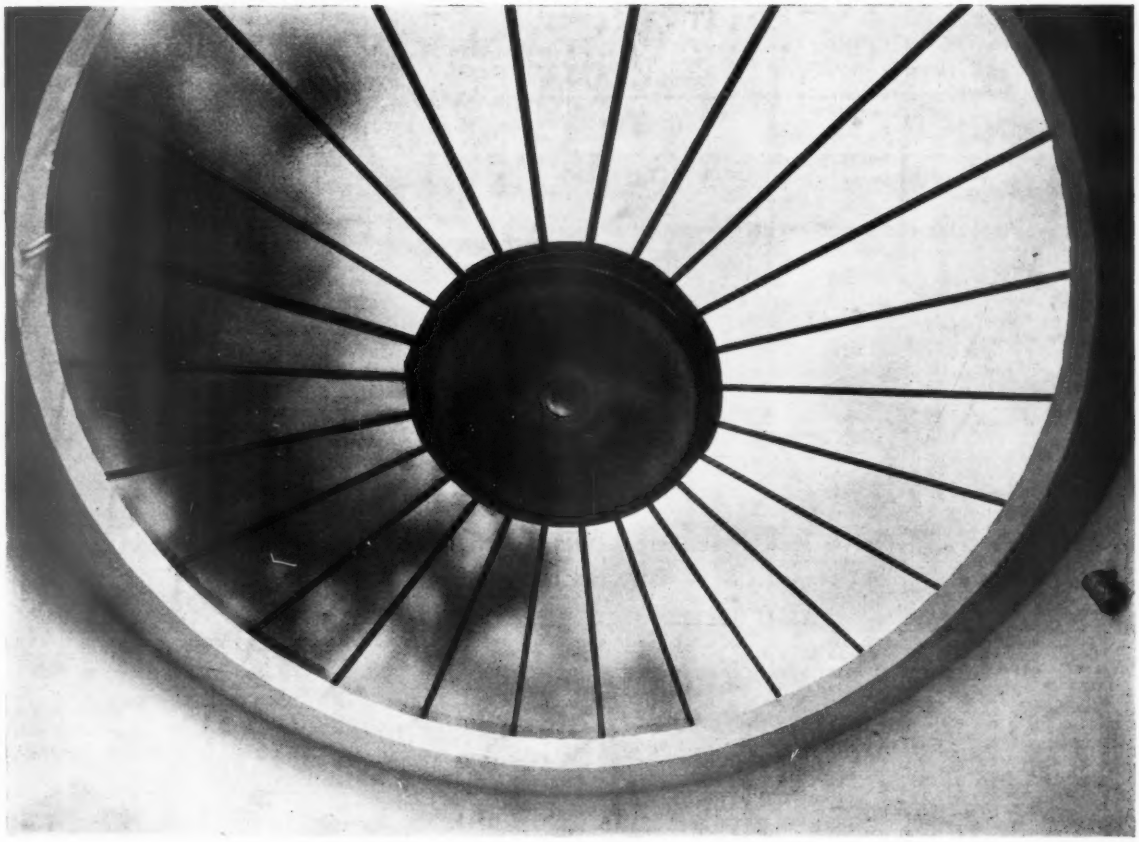
PORTABLE EXHIBITION STAND FOR AGRICULTURAL SHOWS • MISHA BLACK



Axonometric and details of the exhibition stand, illustrated overleaf.

WORKING DETAILS : 325

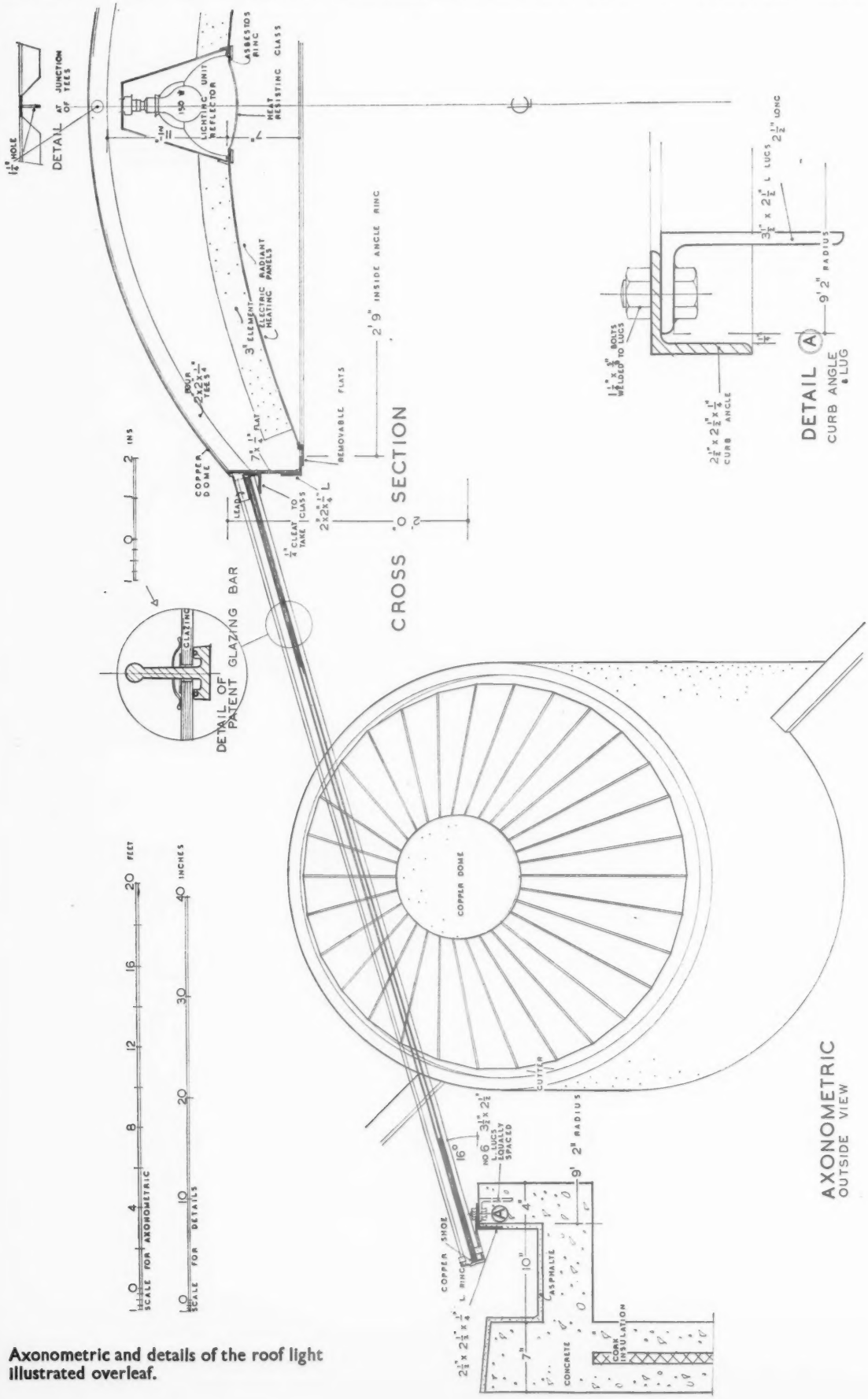
ROOF LIGHT • ELEPHANT HOUSE, WHIPSNADE ZOO • LUBETKIN AND TECTON



This roof light has, in its centre, a radiant heating element and a single 150 watt lamp for general lighting. The patent glazing bars are clipped to a continuous curved angle, which is bolted down to six equally spaced lugs embedded in the concrete. An axonometric and details are shown overleaf.

WORKING DETAILS : 326

•ROOF LIGHT • ELEPHANT HOUSE, WHIPSNADE ZOO • LUBETKIN AND TECTON



Axonometric and details of the roof light illustrated overleaf.

LITERATURE

CATHEDRALS OF NORMANDY

[*BY S. E. DYKES BOWER*]

The Cathedrals of Normandy. By Jocelyn Perkins. London: Methuen & Co., Ltd. Price 3s. 6d. net.

UNLIKE our ecclesiastical polity where some forty or more cathedrals are grouped in the two provinces of Canterbury and York, the eighty-seven cathedrals of France are divided between seventeen provinces, varying in size from two to seven sees each. Taken as a whole, perhaps no province maintains a more consistently high standard of architecture in its cathedrals than that of Rouen, comprising as it does, in addition to Rouen itself, Evreux, Sées, Bayeux and Coutances, with Lisieux, now only of parochial status but a cathedral in all but name. To these six buildings the author has confined his attention in this book. Although it contains notes for the benefit of those who like their sight-seeing to conform to printed directions, it is more than a handbook. The history and architecture of each cathedral are treated at some length and the accounts of each are readable and informative. If some of the descriptive matter is unduly fulsome in its praise, the writing is vivid and easy and succeeds in communicating something of the evident enjoyment which the author has derived from study of these great buildings.

Though Rouen is the largest and most imposing of the group it is in some respects the least typical. Bayeux, Coutances, Sées and Lisieux display more of the essential character of thirteenth-century architecture in Normandy, as we find it appearing also in parish churches such as Bretteville, Bernières and Langrune. It was an architecture that excelled itself in the design of steeples, and perhaps none is more famous than the lantern of Coutances—Le Plomb as it is locally known—which caused Vauban to exclaim "Who was the sublime madman that dared to launch such a monument into the air?" It throws into painful contrast the octagon which rises over the crossing at Bayeux—an octagon which, externally, might have reminded us of Ely, till the nineteenth century crowned it with an upper stage and incongruous Gothic Dome. It is curious, indeed, that Coutances is the only one of these six buildings in which the steeples have retained their pristine form; those of the others have undergone modifications, good or bad, with a certain loss of homogeneity which it is difficult not to regret.

However, the results serve to remind us of the vicissitudes through which these cathedrals have passed. The tale of damage that they have suffered successively from fire and pillage, collapse and rebuilding, decay and restoration constitutes a remarkable story and makes one wonder not merely at the inherent strength of their fabrics but that they have survived in such beauty at all. There are, of course, scars in plenty—and not all of them honourable ones, for the zeal of nineteenth-century architects was just as misdirected in France as in England and even pre-nineteenth-century architects did many things which we may justly deplore. If, for example, modern constructional science could obviate the need for them, who would not welcome the disappearance of the huge eighteenth-century buttresses which so mar the west front of Sées?

Yet it may well seem marvellous that so much survives, not just of the structures, but of the furniture and fittings in which most of our own cathedrals are so deficient. The glass, the statuary, the wrought-iron work, the woodwork of stalls, screens and organs are things that we can only envy and admire. But whether the original architects would relish the present appearance of these interiors is doubtful. Fine as it is, the architectural effect is unintentional and not altogether satisfactory. Just as in those English cathedrals where the pulpitum has been displaced, the loss of the jubé, coupled with the comparatively recent pushing of the stalls east of the crossing, upsets the proportions and emphasizes the shortness in relation to height which gives to so many French cathedrals their slightly abrupt appearance.

BUILDING SURVEY

[*BY PHILIP H. MASSEY*]

The Building Industries Survey. Building Industries National Council. Monthly, price 2s. (ordinary monthly issues) and 3s. 6d. (special quarterly issues).

INTELLIGENT people in the building and allied industries have for some time been conscious of two defects in the statistical material at their disposal. In the first place, the published figures have been contained in a number of separate sources, the use, and even existence, of some of these not being widely known. In the second place, the material was inadequate for the purposes they had in mind.

The B.I.N.C. Special Committee for Public Relations has in the past circulated privately a typed statistical summary. The *Building Industries Survey*, which replaces the summary, represents a considerable further development of its service, and may be said to have overcome the first of the two defects noted above.

The *Survey* is published monthly, and four issues each year are to be special quarterly issues. The price of the ordinary monthly issues is 2s. each, of special quarterly issues 3s. 6d.; the annual subscription is 30s. post free (two copies 50s. post free). Subscribers of the committee receive the issues free of charge.

There are four main parts to each issue—"General Position," "Special Articles," "Analysis of Recent Movements," and "Statistical Tables." This arrangement deliberately involves a measure of repetition, several series which appear in full in the final section being re-arranged in briefer form in earlier parts; it is intended that readers should refer to the relevant tables in the final section when studying the "Analysis," and the same order of items has been adopted in both sections to this end.

The brief article on the general position is intended to crystallize the conclusions which are to be drawn from the subsequent detailed analyses and to show the prospects of the immediate future.

The first of the "Special Articles," in each of the first three issues, was devoted to the *Survey* itself; the respective authors being Mr. Sydney Tatchell, F.R.I.B.A. (Chairman of the Special Committee for Public Relations), Lt.-Col. C. W. D. Rowe, M.B.E., and Mr. Oswald Healing, F.S.I., ASSOC. INST. C.E. The second special article in the first issue was a long statement on building recovery, with a number of tables covering the years 1932-34. The arrangement of the "Building Recovery" article might have been improved upon. The tables suffered a little from what Jeremy Bentham, I believe, called "nakedness in aids to intellection." We were not told, above the figures in the respective tables, what the figures were—thousands of unemployed, or thousands of pounds' worth of building plans approved, or what not. And the textual sub-headings did not, in all cases, come to our aid. One had to read the (rather long) article straight through, and refer to the tables, which did not in every case follow on, at the appropriate place in the text, in order to appreciate it. Furthermore, as to presentation, was it necessary to show statistics in terms of thousands-to-two-places-of-decimals? And could not the index numbers of employment, plans approved, etc., have been placed in

separate columns, or separate tables, instead of appearing in brackets interlined with the actual figures? The same criticisms apply to the "Survey of the Quarter" in the fourth issue. These are but details, but they do make a difference to the effectiveness of the presentation, and to the possibility of making quick reference to particular sections of the article.

The "Notes of the Month," in Vol. I. No. 1, consisted mainly of explanations of the dating, make-up, etc., of the *Survey*; brief notes on unemployment in Great Britain, output of structural steel, and value of retail sales were also included. This section contains news items of all kinds other than items to which special articles are devoted.

The statistical tables, which relate to unemployment, building plans approved, housing and imports and exports and prices of building materials, cover yearly figures for 1928-34, and monthly figures for the last two years or so, in respect of unemployment (which is analysed both by trades and by regions), building plans approved, and imports and exports, and also go back to 1928 in respect of housing. There are in addition detailed tables relating to shorter periods.

The make-up of this section is admirable; it forms a ready source from which can be obtained all the main official statistics relating to housing and building covering as long a period as is required in the great majority of instances.

In Colonel Rowe's article in the February issue it is pointed out that the committee has in mind the desirability of securing improvements in the information available from official sources and that it aims ultimately at collecting particulars from the industries themselves. Useful as the *Building Industries Survey* already is as a collation and interpretation, it certainly seems desirable that attempts should be made as soon as possible to collect and publish figures which will enable the individual firm to review the position of the industry and its own relative position, and above all to enable the industry as a whole to equip itself to meet the demands of the future.

TASTE AND TRADE IN GLASS

English Glass. By W. A. Thorpe. A. and C. Black. Price 7s. 6d. net.

"AN object of art . . . is primarily an object of trade, and it is not finished unless some person is willing to be persuaded to buy it." Here, then, is the story of the interactions of taste and trade in glass throughout the English civilization. It is a long story, here told with the general reader in view (as one of "The Library of English Art" series), by Mr. W. A. Thorpe, Assistant Keeper in the Victoria and Albert Museum. He is the author of "A History of English and Irish Glass," and these 262 pages are a terse, almost a racy, pendant; for a vivid humanity goes along with his learnings.

Closely referenced as the book is, the reader has the enthralling sensation of sharing the aspirations, the triumphs and failures, of the line of adventurers in the craft—of the Syrians in the Seine-Rhine area ("'Snake Thread [Rhine] Ltd.' were already flourishing in A.D. 200"); of the Wealden glassmakers during "the mediæval slump" (Chiddingfold became a centre); of "Mr. Jacob" (Giacomo Verzelini, "pattern of all glassmakers"), brought from Venice to London by Carré in 1571; of Sir Robert Mansell ("a

Left: posset-pot, lead crystal, with "ears of good handsome fashions" and other hyaloplastic decoration; crown contains a fleur-de-lys. English (London); late seventeenth century. H. 12¼". (D. H. Beves.) Right: ceremonial goblet, lead crystal, figure-of-eight stem and finial. English (London); late seventeenth century. H. 25½". (Sir Richard Garton Coll.) From "English Glass."

Left: pickle jar, thick blue-green glass, mould blown, five concentrics on base. Found at Cirencester, 1765. Roman; late first or early second century. H. 10", base 5½" sq. Corinium Mus., No. E. 1. 329. Right: oblong bottle, dark-green glass, blown and pressed in mould. Found at Colchester. Roman; late first or second century. H. 6¾". (Colchester Museum.) From "English Glass."

Welshman with the manners of an admiral and the brain of a financier," whose plate glass was described by Inigo Jones in 1621 as "mixed good and bad and very thin in the middle"); of the protégés of George Villiers, second Duke of Buckingham and monopolist.

After the Incorporation of the London Glass Sellers in 1635, the field widens. In 1660 the advent of lead crystal was "an invention in the stricter sense of the word." "Ravenscroft's importance is not easily over estimated . . . His metal . . . set the development of two centuries . . . It put England at the top of the world market." And so to the present day, by way of baroque, baluster, rococo and Adam.

Twenty-four plates illustrate the shrewd criticisms, the norm of taste which informs the work. There are a note for private collectors, bibliography, list of British museums, and valuable index (with some technical terms explained). There are one or two obvious misprints.

"The quantity of bad ornament which sells in every departmental store," concludes Mr. Thorpe, "proves nothing about plainness. It shows that after thirteen centuries of English art we are still an ornamental people, but ill served at the present primitive stage of mechanical production." H. F.

ART IN ELEMENTARY AND SECONDARY SCHOOL EDUCATION

Education for the Consumer: Art in Elementary and Secondary School Education. Report by the Council for Art and Industry. London: H.M. Stationery Office. Price 1s. net.

THIS is the first report by the Council for Art and Industry since it was appointed by Mr. Walter Runciman (President of the Board of Trade) in January, 1934, "to deal with questions affecting the relations between art and industry." Mr. Runciman, in his foreword, explains that the Council has started by approaching this subject from the standpoint of the consumer, on the ground that the decision of the ultimate purchaser has, in the long run, a most potent influence on industrial production.

The Council urges, in the interests of British industry, the importance of developing among consumers in this country the appreciation of good design, and with this object it recommends an overhaul of the instruction in art given to the six million or so potential wage-earners and purchasers of goods who are being taught in the elementary and secondary schools of England and Wales. A separate report by the Scottish Committee of the Council, dealing with the position in Scotland, will, we understand, be published shortly.

Barrel bottle, blown in two-piece mould. Mark, Froni (ex officina Frontini), mould-blown on base. Found at Milton-next-Sittingbourne (Kent), 1869. Made by firm of Frontinus, N.-E. Gaul; third century. H. 8⅞". (Eastgate House, Rochester.) From "English Glass."

The increasing industrialization of overseas countries and the consequent shrinkage of the demand for many classes of staple British products must result, the Council feels, in a large and increasing dependence of the industrial future of the United Kingdom upon the development of design. Appreciation of good design at home is needed to create conditions which will encourage our manufacturers to increase their employment of skilled designers. This must depend very largely on the consumer's demand and criticism; his choice must represent effective criticism, and his education will direct his choice.

During the past 18 months the Council has heard evidence from representatives of all phases of elementary and secondary school education, and its inquiries leave it in no doubt that there is a considerable field in which action must be taken by the schools and by the local education authorities. Art must have an improved status in the curriculum. The subject should be given the same measure of attention as languages, science or mathematics. There must be widening of the present school conception of art as drawing and painting and an end to the present divorce between art and handicraft. The supply of suitably trained specialist teachers is inadequate and the official handbook on teaching out of date.

The report criticizes as lop-sided and as calculated to develop lop-sided minds the neglect of art in the present system of public school and secondary school education. The results are serious from a practical point of view; not only in their effect upon the product of these schools as potential purchasers, but also because of the importance of artistic appreciation in most branches of business. The development of appreciation is just as important an element in the preparation for life as the training and mental discipline afforded by other subjects which are taken by every pupil.

There is still room for considerable improvement in the accommodation and equipment provided in elementary schools. Children's surroundings and the first impressions thereby created in their minds are important factors influencing their development and their outlook on life. There is no better way of teaching design than making the actual school an object lesson. Financial considerations must condition the scrapping of out-of-date schools, but all local authorities should see that all their schools are bright and pleasing places for the children so far as decoration can make them so. There can be no excuse for neglected paint work and dingy walls.

In advancing suggestions to deal with these and other shortcomings of the present system, the Council recognizes that much has already been done by the more progressive local education authorities and enterprising head masters and head mistresses, and that what is now wanted is an acceleration and an intensification of the measures somewhat slowly and timidly adopted hitherto. The schools and local authorities must realize the importance of the work they are doing and the still greater importance of the work which they may yet do in the service of British industry.

A. B.

Publications Received

The China Architects' and Builders' Compendium, 1935. Edited by J. T. W. Brooke, A.R.I.B.A., and R. W. Davis. Shanghai: North China Daily News and Herald, Ltd. Price 8s.

American Country Houses of Today. Edited by Lewis A. Coffin. New York: Architectural Book Publishing Company, Ltd. Price $8.

Buckinghamshire Regional Plan. By W. R. Davidge, F.R.I.B.A. Buckinghamshire County Council. Price 10s.

The Standard Form of Building Sub-Contract (Annotated). By T. R. Dingad Davies, Barrister-at-Law. London: Federated Employers' Press, Ltd. Price 7s. 6d.

SCHOOL AT ORLEANSVILLE,

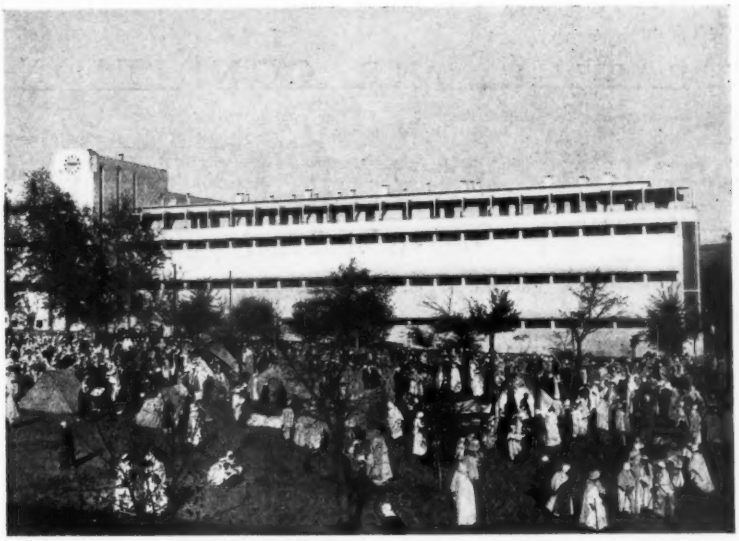
SITE.—*This secondary school for boys is situated at Orléansville in the Cheliff plain, about one hundred miles south-west of Algiers.*

PLAN.—*The controlling factor of the plan form was the necessity for keeping all day rooms removed from direct sunlight, and for screening the playground as much as possible from the rays of the setting sun.*

The classrooms therefore face north, and the windows of the south access corridor are protected by wide cornices. The dormitory block, at right angles to that of the classrooms, protects the west side of the playground.

The photographs show : top, general view from the east showing the large north windows of the classroom block, and the playground screened from the west. Below, the south front, showing the open gallery adjoining the uppermost classroom floor.

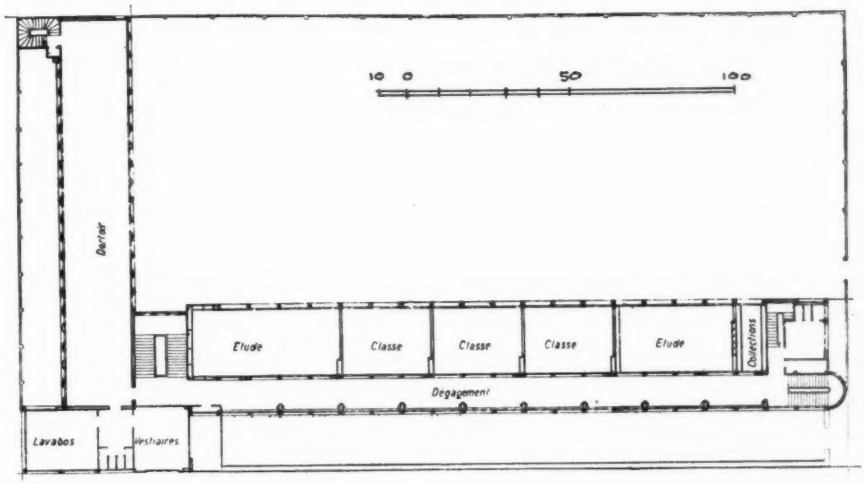
ALGERIA: BY F. BIENVENU



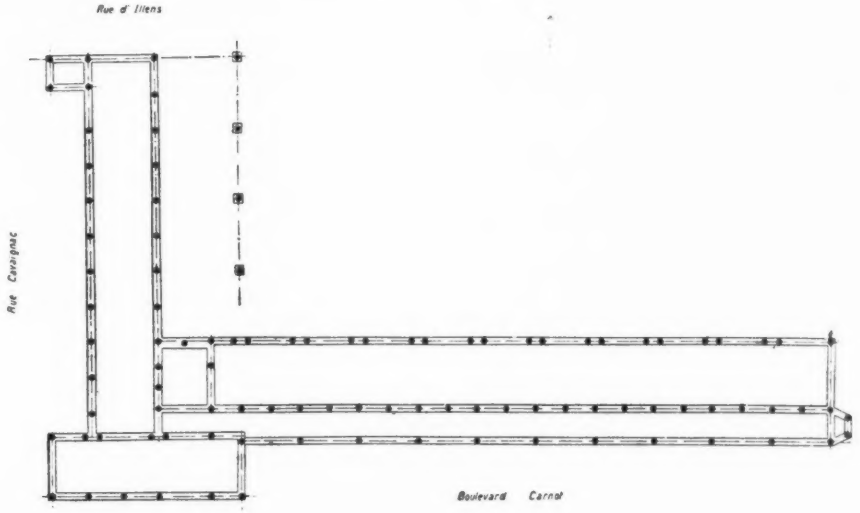
CONSTRUCTION.—*The school is built upon a pile foundation, and is reinforced-concrete framed, with a cavity wall infilling. The outer skin is of brick, cement-rendered, and the inner of 2½ ins. composition, cavity construction being adopted to increase heat insulation. The floors and roofs are of hollow tile. The windows of the staircase towers are of glass-concrete, and elsewhere of metal.*

INTERNAL TREATMENT AND SERVICES.—*The corridor, classroom and dormitory walls are tiled. The 40-bed dormitories on each floor have lavatories adjoining, and a shower bathroom is provided in the basement. Heating is by hot-water radiators.*

Right, the native market before the south front.



GROUND FLOOR PLAN



PLAN OF FOUNDATIONS

TECHNICAL SECTION: 30

HEATING, AIR CONDITIONING AND MECHANICAL EQUIPMENT

BY OSCAR FABER

O.B.E., D.C.L., D.Sc., M.Inst.C.E. Hon.A.R.I.B.A., A.M.I.E.E., F.C.G.I., M.I.H.V.E., M.Am.S.H.V.E.

AND J. R. KELL, M.I.H.V.E.

HEATING BY ELECTRICITY

GENERAL

ELECTRICITY, being a newcomer into the heating field, has caught the imagination of a great many interested in building as being the last word in modernity and a system which will eventually make all others obsolete. This has been fostered by the publicity of the electrical Grid, and the hope at one time commonly held that a general and considerable reduction of rates would follow as the Grid was more fully loaded. This hope is not now so widely held.

There is, unfortunately, much confusion of thought on this matter which requires clarifying, otherwise exaggerated and unsupportable claims will continue to gain ground, and a great disservice will be done to the whole electrical industry.

In the first place it should be remembered that electric heating follows the same well-known natural laws as any other system and, further, that it is not in principle particularly new.

The expenditure of energy of any form (and electricity is only one) is always accompanied by the liberation of heat, provided no actual work is done. For a given quantity of electrical power there is a corresponding fixed and unalterable equivalent number of heat units which may be liberated for the warming of a room, heating of water, or other purpose. In other words, heating by electricity has to be paid for just the same as with other fuels, and one heat unit produced electrically is no more and no less effective than if it were generated by other means at the same efficiency.

It is not new, since the heating effect due to the passage of current through a resistance was one of the earliest observed phenomena after the discovery of electricity. What is perhaps new is the variety of forms in which this heating effect is applied for warming purposes, each system having some particular result in view. Basically, however, they are all the same.

A second point of vital importance is that of cost. The question is frequently asked: "Why is the price of current as high as it is, and what is to prevent it being reduced further and further when the Grid gets into its stride?"

To answer this it is necessary to refer to Fig. 179, which shows diagrammatically the transition which takes place from the raw coal taken in by the generating station to the current received by the consumer.

The first loss occurs in the boiler due to the residual heat in the flue gases, radiation, etc., just as with an ordinary heating boiler, except that power station boilers commonly work at higher efficiencies than do the latter.

The second and by far the greatest loss occurs in the engine, in converting the heat energy in the steam into mechanical energy at the shaft of the generator. A study of thermodynamics will show that no heat engine can have even a theoretical efficiency of more than 25 to 30 per cent. when working between the temperature limits possible in practice. The heat wasted comes out at low temperature in the condenser water which is passed to a river, canal, lake, or cooling tower, and from these it is lost to the atmosphere. From this theoretical efficiency has to be deducted the friction and radiation losses in the engine and the heating and other losses in the generator before the final efficiency of output of electricity is found. From the diagram, which gives typical values for these losses with modern plant, it will be seen that no more than 22½ per cent. of the initial heat content of the coal is put into the transmission lines.

This means that, as a method of transmitting heat from one point to another, electricity suffers at the outset from the grave disadvantage of having to throw something over three-quarters of its heat input away.

Following this there are losses in transmission due to the inefficiency of successive stages of transformation, and due to the heating effect in the cables. These bring the resultant energy received in the building down to about 20 per cent. of that in the coal. Taking the coal at 13,000 B.T.U.'s per lb. and an electrical unit as equivalent to 3,415 B.T.U.'s, it will be apparent that $\frac{13,000}{3,415} \times \frac{100}{20} = 1{\cdot}9$ lb. coal are consumed in providing one unit at the consumers' terminals. Coal for this purpose often ranges around 16s. per ton, so that the coal cost per unit as received in the building =

$$\frac{16 \times 12 \times 1{\cdot}9}{2,240} = {\cdot}162\text{d.}$$

This in fact is about the usual coal cost per unit, the figures ranging from ·14d. upwards.

Added to this the consumer has to pay for labour, sinking fund charges and maintenance of the generating station, and similar charges, maintenance, etc., on miles of expensive underground or overhead transmission lines, meter reading, accounting, profit, and so on. Thus it can easily be understood that prices of much less than 0·2d. to 0·3d. per unit are commercially impossible, and these are only remunerative in special circumstances when used "off peak load" in thermal storage plant. Lower rates may in special cases be possible as a result of political or other considerations.

For current on demand at any time, which may mean extra plant at the power station to cope with it at peak load hours, higher rates are of necessity charged, and these generally range from 0·5d. upwards, often coupled with a standing charge bringing the price up to perhaps 0·6d. or 0·75d. per unit.

The less progressive distribution companies, who are probably faced with large capital expenditure if their mains have to be increased to deal with heavier loads, find such rates impracticable, and charges of 1d. to 3d. a unit for heating purposes are then asked. As will be seen later, such rates are entirely out of the question for economical running.

No doubt in the future these inequalities will be levelled out, but it would appear improbable that rates of ·2d. to ·3d. for off-peak current are likely to be much reduced, even when the Grid is fully loaded. It must be appreciated that the Grid only assists in the distribution side, as many power stations were working just as efficiently before its inception as they are ever likely to do.

A third point about electric heating is that there is a limit to the scale on which it can be undertaken. At the

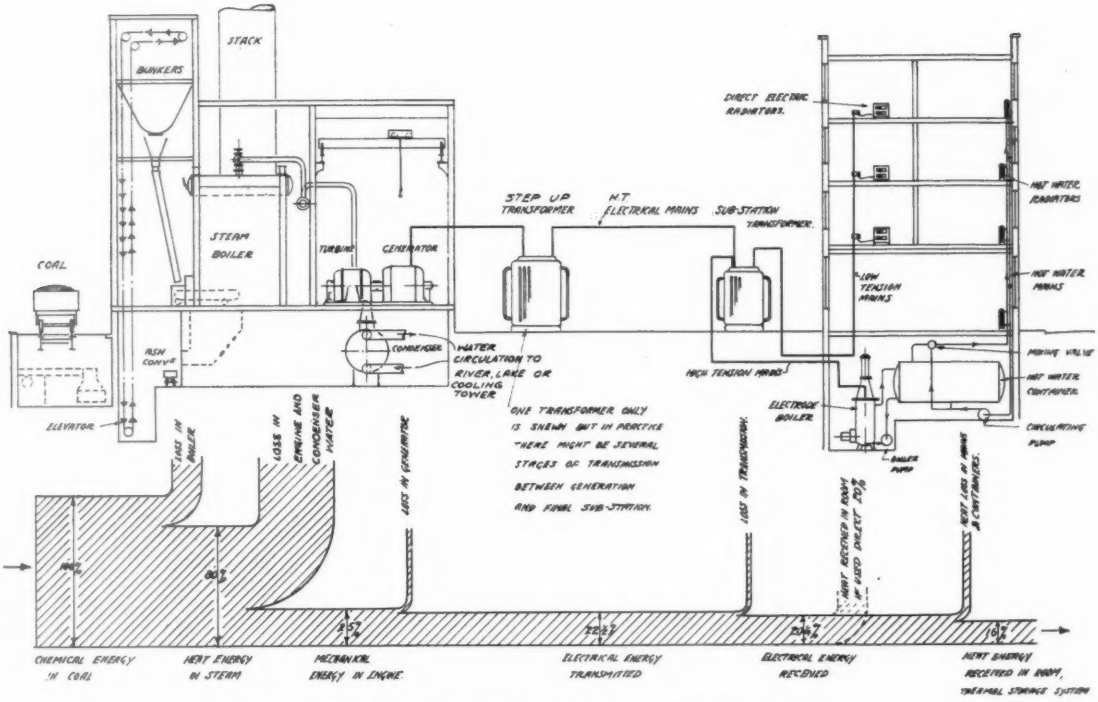


Fig. 179. *Diagram of electrical transmission of heat.*

moment probably not more than one new building in a thousand is completely heated electrically.

If every new building, as well as all the old ones, were to adopt this method, the heating load would become so vast as to overtop the existing loads of lighting and power. This would call for additional generating plant and increase of mains or voltages all round, all of which would reflect back in the price of current, and immediately this goes up the market is lost.

If it were all done on a thermal storage basis, again the loads would be so enormous as to transfer the peak load to the night instead of the day. All advantages of this method to the supply companies would then disappear and costs of current would similarly have to be readjusted.

It may be pertinent here to refer to the recent remarks of a mains engineer on the subject of electrical heating loads :

*" I should like my mains engineer friends to take one square mile of any large city and find what the loads are, and what loadings of 2,000 kW and upwards per building would lead them to in the distribution networks. It will, I think, be necessary to transmit at 66,000 volts or 132,000 volts to central points. The authors point to this by saying that 0·5 sq. in. 410 volt cables are no longer of any use ; they recommend 11,000 volt supplies for the apparatus of today. I suggest that we shall have to consider the possibility of 22,000 volt supplies because 11,000 volt supplies will not take us very far on these big building loads."

It is obvious from this that something rather revolutionary will have to be done in the matter of supply, involving colossal expense before such demands can be met.

To understand this better, Fig. 180 illustrates the kind of output curve from an electric generating station having a residential load. It is only intended as a diagram and does not pretend to be actual, as the curve naturally varies with each station and depends on the nature of the connected load and season of the year for which it is taken.

It is clear that the engines, boilers, generators, mains, etc., have to be large enough to carry the peak load (often determined by lighting load).

Now, if the company can sell any current at times which do not increase the peak load, such current need not carry any charge for engines, boilers, mains, etc., because these have not to be increased.

Hence any current which can be sold to fill up the valleys of the output curve, till at last a line approximating to the level output at peak load value is obtained, is beneficial in rate reducing, and can be at low rates such as 0·2d. to 0·3d. a unit. But once this limit is reached (and it would quickly be reached if much electric heating of complete buildings were undertaken, because the heating load greatly exceeds the lighting load), the current would have to bear the full cost, including its proper share of engines, boilers, mains, etc., and there would then be no justification in discriminating in favour of lower rates for heating as compared with lighting.

The Case for Electricity—Direct Electric Heating

Electricity for heating possesses undoubted advantages.

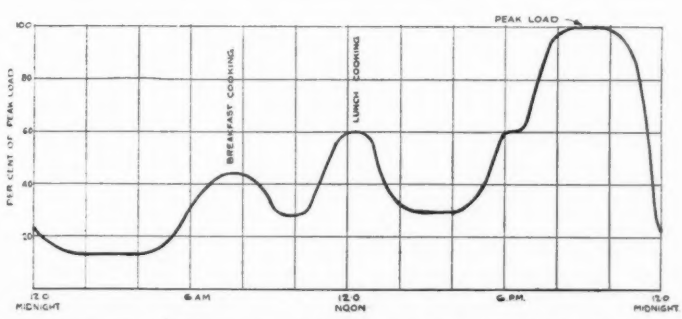


Fig. 180. *Diagram of typical daily curve for residential load.*

* Mr. J. R. Cowie in Discussion on Messrs. Grierson and Bett's paper, I.E.E. Proceedings, May, 1935.

When used direct, that is, with the heat emitter in the room to be warmed, these advantages may be summarized as follows :—

(*a*) It is 100 per cent. efficient and has no " mains " losses, but, of course, the price charged has already covered the enormous heat losses at the generating station.

(*b*) It requires no labour.

(*c*) No basement or boiler chamber is necessary.

(*d*) It is the most convenient of all methods since it may be turned on or off by a simple switch or controlled by individual room thermostat with little or no time lag or residual heat loss.

(*e*) Any form of radiator, convector, tube, or high or low temperature panel may be used to suit the particular conditions best.

(*f*) Electricity may be conducted to any point by a pair of cables only, and these may be run with the greatest facility without regard to levels or other limitations. Further, the apparatus may be portable, being connected by a flexible cord to a plug, though flexible cords are not the safest or the most permanent form of connection.

(*g*) It gives off no smoke or fumes and therefore requires no flue.

(*h*) For intermittent use or for quickly boosting the temperature in rooms warmed by other means it is probably the most convenient of all methods.

Electricity cannot, however, be stored in anything but small quantities, but must be generated as it is required. This means that the power station plant has to be large enough to carry the maximum load that may be applied at any one moment, even though for the remaining 24 hours a much smaller plant would serve. This does not apply, of course, to oil, gas, coal, or coke.

When electric heating is used direct and the above advantages obtained, it is more than probable that at some period all the heating loads of various buildings will be on at the same time as maximum lighting and power. Such might occur, for instance, on a foggy winter day. For the remainder of the year part of the plant called for to deal with this load will be standing idle, with overhead charges mounting up on it in the meantime.

Thus the majority of supply companies do not encourage the use of this type of heating on a large scale, and high prices are accordingly charged for current, these generally being of the order of ¾d. or 1d. a unit. Rarely is a figure as low as ½d. obtainable without a maximum demand or standing charge, which brings it up to about the same.

Reference to Table VI (page 96) again will show that at such rates electricity compares very unfavourably with other fuels. The table gave the following :—

Cost per therm of various fuels at 100 per cent. efficiency.

		d.
Electricity at	1d. per unit	29·2
,, ,,	½d. ,,	14·6
,, ,,	¼d. ,,	7·3
Gas ,,	9d. a therm	9·0
,, ,,	6d. ,,	6·0
Fuel oil (80/- ton)		2·4
Coal or coke at	40/- ton	1·8
,, ,,	26/8 ,,	1·2
,, ,,	20/- ,,	0·9

These figures are comparable only at 100 per cent. efficiency and electricity used direct is the only one with which this is possible without impairing the purity of the atmosphere in the room. It will be seen, however, that with other fuels, such as oil or coal, roughly 10 to 20 times as much heat may be supplied for the same cost as with current at ¾d.

A great many ingenious attempts are made from time to time to show that in practice no difference in running cost need exist even at this price. Such comparisons quite properly take into fullest account difference in efficiency, absence of mains losses and fineness of thermostatic control, but in addition a much restricted period of use is invariably assumed. Whether the latter is possible whilst providing the same comfort is a very debatable question and largely depends on the class of building under consideration. This matter will be discussed more fully later under "Running Costs." The article 6 (Feb. 14), on "Cooling and Warming Curves of Rooms," is very relevant to this matter.

The fact is that electric heating at this price must always be treated as an expensive luxury and used sparingly. Other fuels for a lower cost will give a generous warmth without the fine control and constant eye on economy necessary with the former.

The case for thermal storage.

It will have been appreciated from what has been said that current consumed at periods " off-peak load " is more attractive to supply authorities, and that is, in fact, welcomed by them, low rates being charged accordingly.

Means have therefore been adopted for taking advantage of these low rates by storing heat derived from electrical energy at night-time so that it may be used during the following day for the warming of a buiding. The system had, before its introduction to this country, already been much in use on the Continent, particularly in connection with hydro-electric schemes, in which case " off-peak " current virtually costs nothing.

The system is indirect and involves the use of immersion on electrode water heaters for warming the water which is stored at high temperature in large storage cylinders efficiently insulated. During the day the water from the cylinders is passed through the pipes and radiators or panels of a conventional hot water system, generally with a mixing valve arrangement to give a constant water flow temperature. The system, of course, ceases to be electrical the moment the power is converted into heat and all the corresponding advantages of the direct method enumerated previously are foregone with the exception of items (*b*) absence of labour and (*g*) absence of fumes, smoke or flue. A thermal storage system saves nothing in basement accommodation; in fact, it may require more than an ordinary boiler plant ; nor does it save anything on mains losses or time lag effect. The efficiency of output is not 100% since there must always be a certain loss from electric boilers and storage cylinders and their accompanying pipework.

In the matter of running cost a closer comparison may be made with other fuels burnt in boilers than is possible when used direct. The chief point of difference is in the relative efficiencies. Taking these at 98 per cent. electrical and 50 per cent. for a poorly run coke or oil system, the ratio of heat required will be seen to be 1 : 1·96. When the immediate response to thermostatic control absence of no-load boiler losses, etc., are allowed for this ratio may be increased to as much as, say, 1 : 2·3.

The corrected relationship on this basis is therefore :—

Electricity at ¼d.	7·3d. a therm.
Oil (80s. ton), 2·4d. × 2·3d.	5·5d. ,,
Coal or coke at 40s. ton, 1·8 × 2·3	4·2d. ,,
Coal or coke at 26s. 8d. ton, 1·2 × 2·3	2·8d. ,,
Coal or coke at 20s. ton, ·9 × 2·3	2·1d. ,,

Further to this, due allowance should be made in the comparison in favour of electricity for saving in labour and interest on cost of flue. Against this should be debited interest on any increased cost of basement. It should also be borne in mind that modern systems of solid or liquid fuel fully equipped with thermostatic controls may show a much higher working efficiency than the 50 per cent. taken above, and this would decrease the relative cost of these fuels.

From what has been said the comparable case for gas versus electricity can similarly be assessed. It will be found that a gas boiler at 85 per cent. efficiency will have approximately the same running cost as an electric thermal storage system if gas is at 6·33d. a therm and electricity at ·25d. a unit.

In examining any figures of cost of running with electric thermal storage as compared with other fuels the issue is often confused by the fact that the new

apparatus has been equipped with the most complete thermostatic controls, whereas the old system which it displaced has used an ordinary hand fired uncontrolled boiler plant. If the old system had been brought up to date with efficient thermostatic damper control it would probably at once have shown a saving of the order of 20 per cent. Further, if some form of automatic or magazine feed had been installed in place of the hand firing this saving would probably have been brought up to 25 per cent. or over (see Section 14, page 644, April 25).

Some recent figures which have been considered bear this out. The case put forward compares one year with coke at 30s. a ton and the next with electric thermal storage of ·3d. a unit. When labour and all other factors are taken into account the latter is shown to have cost only 20 per cent. more than before. A closer examination shows, however, that only $\frac{1}{4}$ of the heat has been supplied electrically as compared with the coke. Deducting 25 per cent. saving, had improved coke firing been adopted, the ratio is 1 : 3 and the difference between this and the 1 : 2·3 ratio mentioned above might easily be accounted for by the clock-switch control, difference of weather and greater economy exercised in using the electrical system.

Summary of case for electricity.

The position with regard to electrical heating may therefore be summarized as follows :—

(1) It is an ideal method of heating when used direct.

(2) Except in special cases its cost does not compare favourably with other fuels for direct use, and when used in thermal storage plant most of its advantages disappear.

(3) From an engineering viewpoint electric heating is extremely wasteful as the greater proportion of the potential heat source has to be thrown away. This is reflected in the price of current which is irreducible below a certain figure, which also has to include the fixed charges of the transmission system and other costs.

(4) It cannot cope with anything more than a small fraction of the present national heating requirements, and it is an open question whether, if the load for this purpose becomes too large, prices for "off-peak "current will not have to be raised, thus upsetting the economic balance to the disadvantage of electricity used for heating.

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Croydon School of Art

The annual exhibition of the work of the students of the Croydon School of Art, to be held in the Public Hall, George Street, Croydon, will be opened by the Mayor (Alderman James Trumble, J.P.) on Monday, September 16, at 5 p.m. The distribution of prizes, by Sir Ian MacAlister, will take place in the same building on Thursday, September 19, at 8.15 p.m.

TRADE NOTES

The amount of work involved in the Editorship of "Specification" makes it impossible for Mr. F. R. S. Yorke to continue to write these Trade Notes: It has been decided, therefore, that the general editorship of the series shall be in the hands of Mr. Philip Scholberg, with occasional contributions on specialized subjects by other authors, including Mr. Yorke and Mr. W. E. J. Budgen. All notes, other than those by the General Editor, will be initialled by the authors concerned.

Baths

VISITORS to last year's Building Exhibition will probably remember the diagonal bath which Mr. Wornum designed for George Jennings and Son. The same basic idea seems to be behind the "Neo-Angle Bathtub" recently produced by a Pittsburg firm and advertised extensively in American periodicals, though it is not available in this country.

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The general lay-out of this bath can be seen in the illustration and plan on this page. The official description reads: "This 4 ft. tub has a diagonal bathing recess. The corners not occupied by the deep recess form integral seats for use when entering or leaving the tub, for bathing children, or as a shower seat. As a shower receptacle the new unit offers unusual roominess. The bathing recess is equivalent to a standard 5 ft. 6 in. tub and is 5 in. wider. It is available in white and ten colours."

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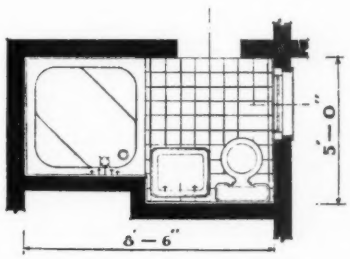
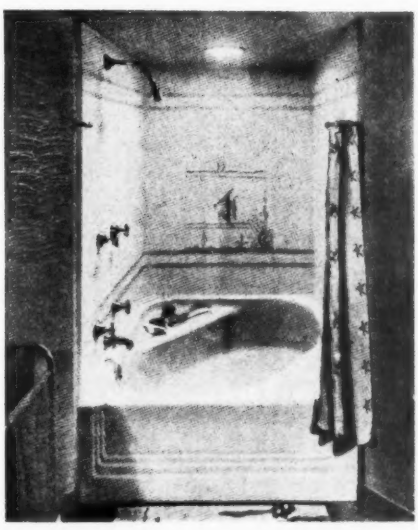
No price is given, but it cannot be cheap to produce, and it presumably sells on snob-appeal and novelty value. It might, however, come in usefully on such things has hotel jobs where bathrooms are liable to get tangled up with pipe ducts and ventilating shafts.





The Neo-Angle Bathtub made by a Pittsburg firm (see note above).

Electricity Costs

My note last week on the current consumption of electric clocks produced one or two queries from readers who have been doubtful about the morality of running a wireless set from a heating circuit or a fan from a power circuit, and it occurred to me that there is a large amount of apparatus which cannot well be classified under the usual terms on which current is supplied.

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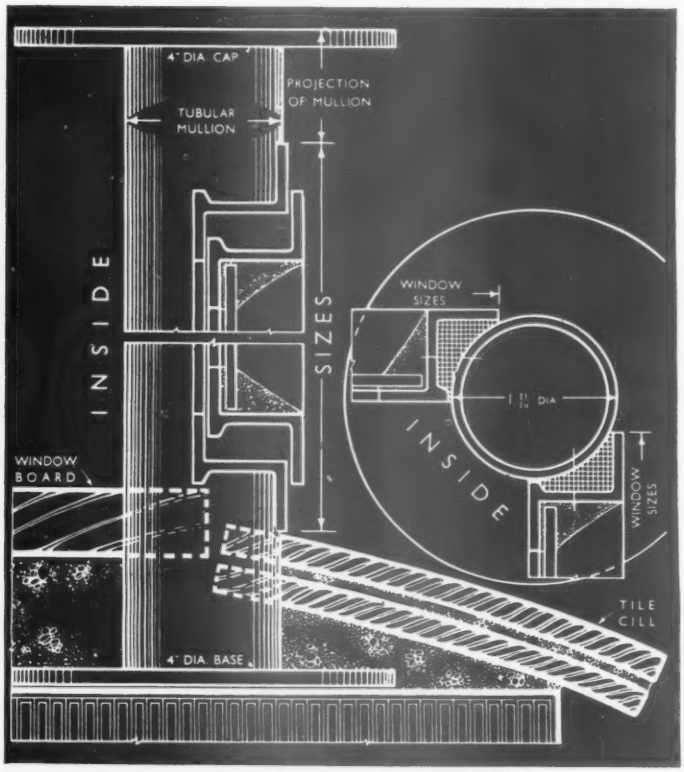
I wrote, therefore, to the Central Electricity Board, who have sent me a general statement of policy, while pointing out that there are liable to be local variations with different supply companies. Their reply is as follows :—

"The guiding principle lies in the tariff or charges for supply, the highest charge usually being for lighting, and in consequence it is improper to connect lighting apparatus to plugs or sockets which are supplied at a lower rate per unit than that properly applying to lighting, as for instance, a heating or power rate. Where the supply is given at simple or flat rates differing for lighting, heating and power, it is generally understood that any appliances other than lighting may be used on the lower rate heating or power circuits, but some undertakings make an exception in



All-metal window bay. See note on Window Frames.

regard to wireless apparatus, calling for its employment at the lighting rate.

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"There are a few undertakings also where different rates of charge for lighting, power, heating and water heating are used, and if the water heating is, as usual, at the lowest rate, it would be improper to connect power or ordinary heating apparatus thereto. There is, however, particularly for domestic use, a growing tendency to offer simpler tariffs in which the annual consumption is perhaps divided into blocks, a certain number of units at high rates followed by blocks of units at progressively lower rates, or to make some fixed charge per annum which may or may not include a certain number of units, and in addition to that fixed charge a low rate per unit *for all purposes*, or again a fixed annual charge plus two or more blocks of units at low and decreasing rates.

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"Under these simplified tariffs the consumer is saved any anxiety with regard to the use of electricity for purposes other than light, and can connect any appliances to any socket, provided that the capacity of the wiring to that socket is adequate for the appliance. Generally it may be taken that flat irons, vacuum cleaners, fans and similar appliances are classified together with heating, cooking and power, and separation of circuits is not required, only care should be taken to ensure that the wiring in use is of sufficient capacity for the appliance and/or that the fuses are not too large to protect any small capacity apparatus which may be used on the circuit."

Window Frames

Henry Hope and Sons have just issued a new catalogue of wood and metal window frames and bays, designed for use with their standard metal windows. Splayed, square and circular bays are illustrated, and the illustration above shows a typical all-metal bay with tubular mullions. The tables of sizes are clearly set out and there should be no difficulty in ordering.

LAW REPORT

BREACH OF COVENANT—DAMAGES

Looseley v. *Schofield—Official Referee's Court, High Court of Justice. Before Mr. C. M. Pitman, K.C.*

THIS was an action in which Mrs. A. J. Looseley, of Chipperfield, Herts., claimed possession of a dwelling house, 89 Church Street, Stoke Newington, from the defendant, Mr. Walter Schofield. Plaintiff also asked for damages for breach of covenants to repairs.

Mr. Mensor, plaintiff's counsel, said the house was leased to the defendant for a term of 14 years from 1931. The rent was at the rate of £100 a year. Counsel asserted that the defendant had committed breaches of his covenants to repair, the house being now in such a state that a sum of £237 would have to be expended on repairs. In addition the defendant was in arrears with regard to his rent.

Plaintiff gave evidence in support of her case and called a surveyor who supported her claim for £237.

Mr. Richmount, for defendant, whilst denying breach of covenants, called evidence to prove that £77 would put the premises into a good state of repair.

The official Referee found that the plaintiff was entitled to £179 odd damages and £116 odd for rent and insurance. He said under the lease the defendant covenanted to keep the premises and walls and fences in good and substantial repair. According to the evidence the premises were now in a deplorable condition, and he came to the conclusion that the reversion was being seriously damaged. Owing to gross neglect the structure was rapidly falling into decay and under those circumstances he could not accept the evidence called for the defence as to the extent of the repairs to be done. He found that the plaintiff was entitled to possession.

The next question was as to forfeiture of the lease. Defendant had jeopardized plaintiff's property by the way he had treated it and had done further damage to the extent of £25, since the action was begun. He would not, however, shut the defendant out of a chance of making good the damage done and therefore he ordered that before the defendant could get relief for forfeiture, he must pay the rent and insurance claimed within 14 days and the £204 for repairs, being the amount claimed, plus the £25 which had since accrued, within a month, and the costs of the action. On defendant complying with those terms, he would be granted relief from forfeiture, but failing that, there would be judgment for the plaintiff for possession and damages £179.

SOCIETIES AND SCHOOLS

L.C.C. SCHOOL OF BUILDING, BRIXTON

The evening departments of the L.C.C. School of Building, Ferndale Road, Brixton, S.W., the new session of which commences on September 23, provide organized courses of training and individual classes for the purpose of instruction in the work of the building industry and of allied vocations and professions.

Courses and classes are available to meet the needs of youths who have recently entered the industry, young men who have had considerable experience in the industry and adults who desire to specialize in the advanced sections of their vocation, of young men engaged in public works departments, and of pupils preparing to qualify as architects, surveyors, structural engineers, reinforced concrete engineers or sanitary engineers.

The school accommodation includes lecture rooms, workshops and studios for craft practice, architectural and art studios, science laboratories, mechanical testing laboratories, reference library, refreshment room and students' common room.

Special equipment is available in every

section of the school, and opportunities are provided for practical and theoretical study in each subject of instruction.

Although the courses of study and the scope of the instruction have been arranged primarily with a view to fitting the student for the practical duties of the various branches of the building industry, special consideration is given to the requirements of the recognized examinations held by independent bodies. Amongst these examining bodies the following receive special attention: The Institute of Builders, the R.I.B.A., the Chartered Surveyors' Institution, the Institution of Structural Engineers and the Institution of Sanitary Engineers. It is hoped to develop further this side of the school activities and to meet special requirements where a sufficient number can be grouped for instruction, e.g., special training for the statutory examination qualifying for appointment as district surveyor.

The principal of the school is Mr. F. E. Drury, M.SC.TECH., M.I.STRUCT.E., F.I.SAN.E.

BARTLETT SCHOOL OF ARCHITECTURE

The new session at the Bartlett School of Architecture, University College, Gower Street, W.C, will commence on Monday, October 7. The senior tutor, Professor A. E. Richardson, F.S.A., F.R.I.B.A., the tutor to architecture students, and the tutor to women students will attend from 10 a.m. to 1 p.m. on Monday, October 7, and Tuesday, October 8, for the purpose of giving advice and information to students entering the college. In the prospectus, just issued, it is pointed out that "the college, owing to its central position, its engineering laboratories, department of municipal engineering and hygiene, Slade School of Fine Art, sculpture studios, department of archæology, and lectures and classes on general subjects, offers special facilities for a full and comprehensive course of architectural education on a sound basis. The advantages to be gained by students attending lectures and classes in other departments are manifest. They are brought into touch with students engaged in other, but to some extent kindred, pursuits; they work side by side with future engineers, painters, and sculptors. In the lectures on general subjects and in the collegiate life they meet students intending to follow other professions or callings.

Copies of the prospectus may be obtained on application to the Secretary.

HOLLOWAY LITERARY INSTITUTE

A series of non-technical lectures entitled "The Appreciation of Architecture" is to be given by Mr. Daniel Roth, A.R.I.B.A., on Wednesday evenings at the Holloway Literary Institute, Hilldrop Road, N.7, and on Thursday evenings at the Dalston Literary Institute, Colvestone Crescent, E.8, commencing September 25 and 26. Full particulars of the lectures may be obtained from the principals of the Institutes.

ARCHITECTURAL ASSOCIATION

The new session of the Architectural Association School of Architecture will commence on Monday, September 30.

COLLEGE OF TECHNOLOGY, MANCHESTER

Copies of the prospectus of the College of Technology, Manchester, are now obtainable. The new session will commence on October 3.

The College offers systematic training in the principles of science and art as applied to mechanical engineering, electrical engineering, and municipal engineering; the building industry; the chemical industries; the textile industries; mining; and photography and the printing crafts.

LONDON SOCIETY

Following is a list of the lectures arranged by the London Society for the coming winter. The lectures are to be given in the lecture hall of the Royal Society of Arts, John Street, Adelphi, W.C.2, at 5 p.m.

October 18: "Heraldry and its London Home." By Archibald G. B. Russell, M.V.O. Chairman: Oswald Barron, F.S.A.

November 15: "Sculpture as Related to Buildings." By Professor Stanley D. Adshead, F.R.I.B.A., P.P.T.P.I.

December 20: "The History and Associations of the Royal Palace at Kew." By Ingleson C. Goodison.

January 17, 1936: "Greater London and the Open Spaces Problem." By Humphry Baker, Assistant Secretary, Commons and Open Spaces Preservation Society.

February 21: "Piccadilly 1836 and 1936: A Comparative Survey." By H. S. Goodhart-Rendel, F.R.I.B.A.

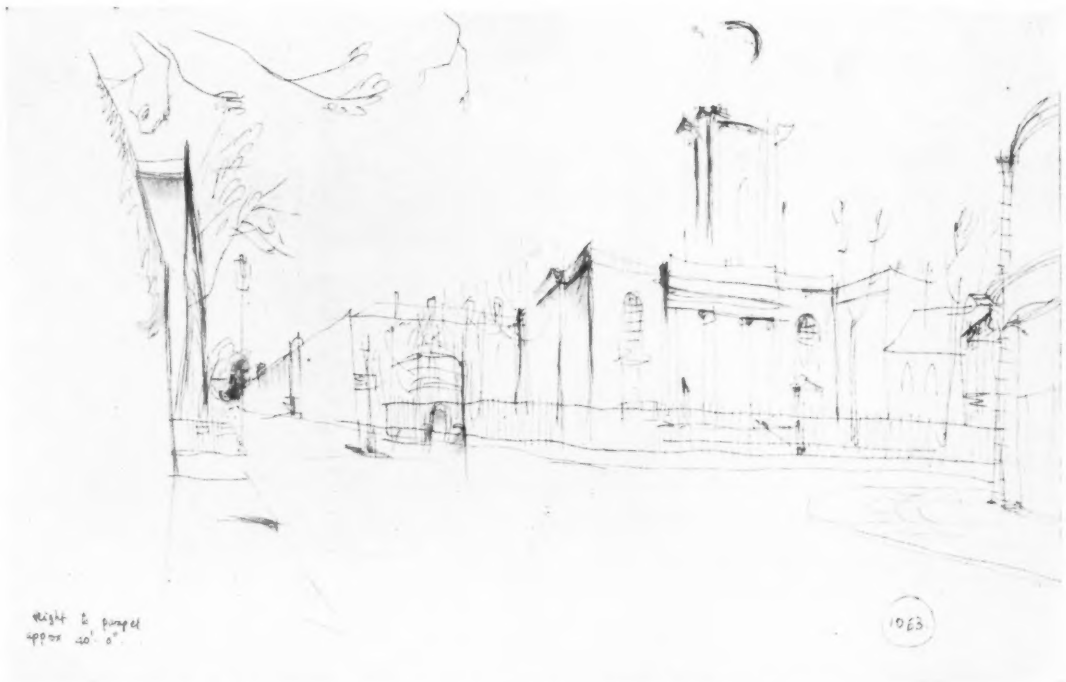
March 20: "Some Recent Discoveries at St. Paul's." By W. Godfrey Allen, F.R.I.B.A.

BOROUGH POLYTECHNIC

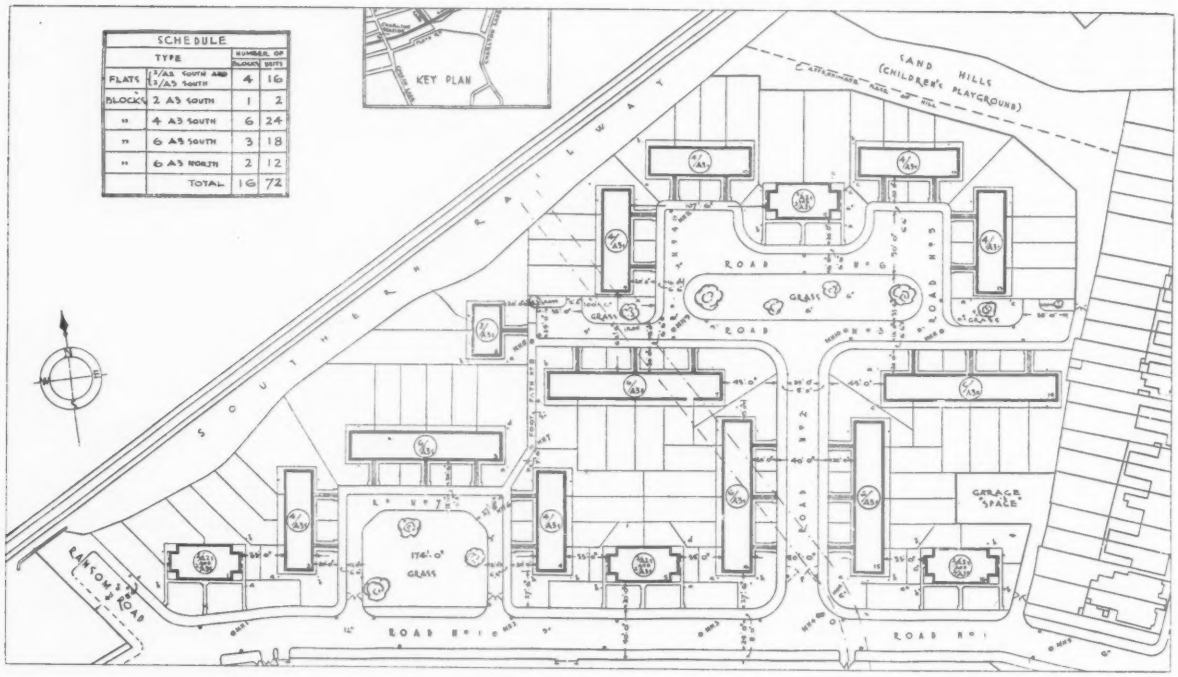
The new session of the Building and Building Trades Department of the Borough Polytechnic, Borough Road, S.E.1, will commence on Monday, September 23.

I.A.A.S.

The following is the lecture programme of the London and Home Counties Branch of the Incorporated Association of Architects



Holy Trinity Church, Gt. Portland Street, W. A pencil drawing by Gordon Cullen.



New housing estate at Charlton. See note on this page.

and Surveyors for the autumn and winter session, 1935-6 :

October 23.—"The Function of Sculpture Today." By Gilbert Bayes, V.P.R.B.S., Hon. Member of the I.A.A.S.

November 19.—"Town Planning." By Alfred Pike, F.C.C.S.

December 11.—"The Vanished City Churches." By Percy Lovell, F.S.A., Organizing Secretary of the London Society.

January 22, 1936.—"The State of Aviation in Great Britain." By Squadron Leader Nigel Norman, B.A., F.R.AE.S.

February 20.—"How the Housing Problem is being Solved Abroad." By F. R. Yerbury, HON. A.R.I.B.A.

March 25.—"The New Building Act." By Sir Robert Tasker, T.D., J.P., D.L., F.I.A.A.

The lectures will be held at the headquarters of the Association, 43 Grosvenor Place, S.W., at 7 p.m.

Manufacturers' Items

Work is now well in hand with the first section of a new housing estate that G. A. Harvey & Co., of Greenwich Metal Works, S.E., are building for their employees at Charlton. The architect for the scheme is Mr. Alfred Roberts, F.R.I.B.A.

The roads are practically completed, and many of the first lot of houses will, it is hoped, be ready for occupation early in September.

The houses now being built (which will accommodate 72 families in all) are in blocks of twos, fours and sixes, some blocks containing two ground floor and two first-floor flats, all grouped round grass plots.

The ground floor flats will have a living-room, scullery, two bedrooms, bathroom, larder and fuel store ; and the first-floor flats and all the houses will have living-room, scullery, three bedrooms, bathroom, larder and fuel store. The living-rooms average 15 ft. by 11 ft. 6 in. in measurement, and the rest of the rooms will be all good sized rooms.

It is intended to provide a cycle lock-up store in a handy position on the estate, and space has been arranged for garages for motor-cycles and cars.

THE BUILDINGS ILLUSTRATED

Sub-Contractors' List

Following are names of the general contractors and some of the sub-contractors for the buildings illustrated in this issue :—

Club House at Renfrew Aerodrome (pages 369-371). General contractors, James Y. Keanie, Ltd., who were also responsible for the brickwork and joiner work. Sub-contractors : D. and R. Fulton, plumber work ; William Tonner and Sons, plaster work ; Toffolo Jackson & Co., Campbolite flooring ; J. L. Saunders & Co., Ltd., heating ; Fraser and Borthwick, Ltd., electrical work ; Caterers' Appliances, Ltd., kitchen equipment ; William McKerracher, painter work.

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Ice-Cream Factory at Wolverhampton (pages 372-373). General contractors, Wilson Lovatt and Sons, Ltd. Sub-contractors : Doulton & Co., Ltd., faience ; B.R.C., reinforced concrete work ; James Gibbons, Ltd., aluminium windows, stainless steel stanchion casings, iron and aluminium staircase balustrades, metal lettering and bronze clock face ; Marbello and Durus, terrazzo floors ; Kleine Co., Ltd., Duromit floors ; Gent & Co., electric clocks ; Cherry-Burrell, Ltd., ice-cream plant.

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We print below a list of the general and sub-contractors for the Elephant House at Whipsnade, which was illustrated in our last issue. A photograph and detail drawing of the roof lighting in this building are given on pages 379–380 of this issue. Reinforced concrete designers and general contractors, J. L. Kier & Co., Ltd. Sub-contractors John Elbo, Ltd., cork insulation ; G. N. Haden and Sons, Ltd., electrical installation ; Bell Bros (Manchester, 1927), Ltd., filtration plant ; Pilkington Bros., Ltd, glass roof lights ; Williams and Williams, glazing and dome roofs, metal doors and windows ; Joseph Freeman, Sons, & Co., Ltd., Cementone finish to the underwater surfaces.

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Announcements

Messrs. Ivor Jones and Percy Thomas have removed their offices to 10 Cathedral Road, Cardiff. Telephone No. : Cardiff 1380.

Mr. A. B. Allan, Architect and Surveyor, of 24 Queen Anne Street, Dunfermline, has entered into partnership with Mr. A. A. Watson, late chief assistant to Messrs. Muirhead and Rutherford, of Dunfermline. They will practise under the name of Allan and Watson at the address given above.

THE WEEK'S BUILDING NEWS

LONDON & DISTRICTS (15-MILES RADIUS)

FINCHLEY. *Flats.* A block of flats is to be erected in East End Lane, Finchley, by Mr. H. Volondo. The architect is Mr. B. Ewart Dickson.

GREENFORD. *Development.* Messrs. J. and J. H. Boothman, of Western Avenue, Perivale, are to develop a further section of the Briar Hill estate, Greenford.

HIGHGATE. *School Buildings.* New school buildings are to be erected in Highgate Road, N.W., for the William Ellis Endowed School. The architect is Mr. H. P. G. Maule.

STOKE NEWINGTON. *Cinema.* Plans are being prepared for the erection of the proposed new cinema at Stoke Newington, London, N., for the Associated British Cinemas, Ltd. The architect is Mr. W. R. Glen.

WESTMINSTER. *Highways Depot.* The City Council has obtained sanction to borrow £181,765 for the erection of a highways depot in Catliff Road.

SOUTHERN COUNTIES

CHATHAM. *Theatre.* The Union Cinema Co. propose to erect a new theatre in High Street, Chatham. The architect is Mr. Robert Cromie.

EASTBOURNE. *Restaurant, etc.* Plans passed by the Corporation : Restaurant, Bobby's premises, Terminus Road, for Messrs. G. Baines and Son ; two houses, Astaire Avenue, for Mr. A. Fillery ; alterations, Lexden House School, Summerdown Road, for Messrs. G. Bainbridge and Sons, Ltd. ; four houses, Churchdale Road, for Messrs. G. Tanner and Sons ; three houses, Osborne Road, for Messrs. Rowsell and Ticehurst, Ltd. ; 76 houses, Northborne estate, for Borough Engineer ; cinema, shops and restaurant, Goldredge Road and Ivy Terrace, for Mr. H. C. Ford.

MAIDSTONE. *Extensions to Hospital.* The Corporation is to erect a maternity ward and nurses' accommodation at the hospital at a cost of £11,760.

OXFORD. *Cinema, etc.* Plans passed by the Corporation : Cinema, George Street, for Oxford and Berkshire Cinemas, Ltd. ; works extensions, Garsington Road, for Pressed Steel Co., Ltd. ; eight shops and houses, Gaisford Road, for Messrs. Pye Bros. ; seven houses, Squitchey Lane, for Mr. P. J. Frewin ; 12 houses, Coniston Avenue, for Gt. Headley Homesteads ; extensions, Sanatorium, Woodstock Road, for St. Edward's School governors ; new public house, Quarry Field estate, and additions, Corner House public house, Hollow Way, for Hall's Oxford Brewery, Ltd. ; stores, off Cowley Church Street, for Porkelles Property and General Investment Trust, Ltd. ; shops, Banbury Road, for Mr. E. E. Bird.

SWINDON. *Houses, etc.* Plans passed by the Corporation : Seven houses, Vicarage Road, for Mr. A. J. Colborne ; hall, Eastcott Hill, for Mr. S. A. Webber ; stores, 56 Regent Street, for Messrs. Pope Bros. ; alterations, 44 Bridge Street, for Messrs. A. and G. Blackwell ; alterations, 59 Regent Street, for Messrs. Tydeman Bros. and Sons, Ltd. ; 27 houses, Bouverie Avenue, for Messrs. E. H. Bradley and Sons.

WORTHING. *Maternity Block.* The West Sussex C.C. has approved amended plans for the erection of a maternity block at the Worthing Hospital.

SOUTH-WESTERN COUNTIES

CHELTENHAM. *Houses, etc.* Plans passed by the Corporation : Junior school and principal's house, Bayshill Road, for Ladies' College Council ; laundry extensions, Hatherley Road, for Paragon Laundry ; five houses, Hatherley Road, for Messrs. Rogers and Davies ; two shops, Royal Well Lane, for Mr. J. H. Boulter ; rebuilding, 117-19 High Street, for Messrs. Marks and Spencer, Ltd. ; two houses, Eldon Road, for Mr. A. Whitcombe ; school, Knapp Road, for Rev. J. A. Coughlin ; two houses, Cirencester Road, for Mr. G. W. Ward ; two houses, Painswick Road, Shurdingham, for Mr. F. Parsloe : development, Arle Court estate, for Mr. F. S. Swash, on behalf of Unwin exors.

TORQUAY. *Houses, etc.* Plans passed by the Corporation : 18 houses, Shiphay Park estate, for Mr. J. Lloyd ; two bungalows, Barton Church Road, for Mr. F. T. Stoneman ; seven shops and two houses, Sherwell Valley, for Chelston Building Co. ; four houses, Banbury Park, for Mr. H. Pearce ; 12 houses, Upper Cockington Lane, for Mrs. E. V. Bennett ; alterations and additions, St. Anne's Institute, St. Anne's Road, for Committee ; three shops, Barton Hill Road, for Mrs. H. L. Hudson ; 66 houses, Jack's Lane, for Mr. R. Ching ; eight houses, Congella Road, for Mr. F. White.

MIDLAND COUNTIES

BEDWORTH. *School.* The Warwickshire Education Committee is to obtain a site at Bedworth for the erection of a senior school for 480 children.

NORTHAMPTON. *Housing.* The Corporation has purchased 22 acres at Kingsthorpe Grove for housing purposes.

NORTHAMPTON. *Grain Silo, etc.* Plans passed by the Corporation : Grain silo and two intake houses, Nunn Mills, Bedford Road, for Messrs. Westley Bros. and Clarke ; two houses, Chestnut Road, for Messrs. E. H. Tibbs & Co., Ltd. ; stores, Wellington Place, for Mr. W. J. Elmer ; extensions, Boarding School, Abington Street, for Community of Notre Dame ; eight houses, Bush Hill, for Messrs. A. Glenn and Sons, Ltd. ; two shops, flats and offices, Wood Hill and Abington Street, for Mr. F. W. Panther.

NORTHERN COUNTIES

BLACKPOOL. *Houses, etc.* Plans passed by the Corporation : 16 houses, Sherringham Avenue, for Mr. W. Spencer ; six houses, Devonshire Road, for Messrs. Briand and Streule ; two houses, Poulton Old Road, for Mr. H. West ; eight shops and houses, Bispham Road, for Messrs. J. Cryer and Sons ; 31 houses, Hawes Side Lane, for Mr. T. Southworth ; six houses, Kingscote Drive, for Mr. V. Hague ; 10 houses, Teesdale Avenue, and 56 houses, Falmouth Road, for Messrs. R. Fielding and Son ; two houses, Mossom Lane, for Messrs. Earnshaw and Hilton ; four houses, Faringdon Avenue, for Blackpool Plumbing Co., Ltd. ; three houses, Guildford Avenue, for Mr. R. Jackson ; two shops, Red Bank Road, for Messrs. Cookson and Davies ; restaurant and shops, Bank Hey Street, for Messrs. Lockhart Bros., Ltd. ; reconstruction premises, Bank Hey Street, for G. Bennett exors.

BOLTON. *Extensions, etc.* Plans passed by the Corporation : Works extensions, Victoria Street, for Messrs. Pendlebury and Sons, Ltd. ; shop and warehouse, Clarence Street, for Messrs. John Crook (Bolton), Ltd. ; 32 houses, Seaton Road, for Messrs. J. Massey and Sons ; 11 houses, Sapling Road, for Mr. John S. Hughes ; three houses, Chorley New Road, for Messrs. R. Paiton and Son ; two houses, Beasdale Road, for Messrs. W. Townson and Sons ; works extensions, Blackhouse Street, and Barn Street, for Messrs. Kay & Co.

BOLTON. *Houses.* The Corporation has approved plans by the housing director for the erection of a further 150 houses on the Willows Lane estate.

BOLTON. *Cinema.* The Corporation has leased a cinema site at the junction of Ashburner Street and Blackhorse Street to Odeon Theatres, Ltd.

ECCLES. *Houses.* Plans passed by the Corporation : 80 houses, Haddon estate, for Corporation ; seven flats, Clarendon Crescent, for Mr. J. Zetie ; alterations and additions, Club House, Monton, for Worsley Golf Club ; two shops, Monton Road, for Mr. W. Taylor.

ECCLES. *Houses.* Wilham Estates, Ltd., are to erect 24 houses in three streets at Patricroft, Eccles.

HULL. *School.* The Education Committee has purchased a site in Cold Harbour Lane for the erection of an elementary school.

OSSETT. *Houses, etc.* Plans passed by the Corporation : 20 houses, Healey Road, for Mr. R. Roberts ; two houses, Kingsway, for Mr. S. Drake ; six houses, Intake Lane, for Mrs. Margaret Smith ; additions, Mission Hall, Healey Road, for trustees.

SHEFFIELD. *Houses, etc.* Plans passed by the Corporation : 10 houses, Carnaby Road, for Mr. C. Hatton ; six houses, Old Park Avenue, for Messrs. Wright and Walton ; four houses, Carterknowle Road, for Mr. W. Croft ; three houses, Norton Lees Lane, for Messrs. W. and J. Laver ; shop and house, Northern Avenue, for Mr. A. Bradley ; 34 houses, High Storrs Road, for Mr. A. Shaw ; two houses, Retford Road, for Messrs. E. W. Longton and Smith ; public washhouse, for Corporation Health Department ; two houses, Newlands Grove, for Hallewell Estates, Ltd. ; six houses, Hurlfield Avenue, for Newhouses (Builders), Ltd. ; six houses, Old Park Avenue, for Mr. R. Jones ; factory, Retford Road, for Messrs. Batchelor & Co., Ltd. ; two houses, Hollinsend Road, for Messrs. Brownhill & Co. ; house and four shops, Darnall Main Road, for Miss Railton ; three houses, Seagrave Road, for Mr. Fleming ; 24 houses, Bramley Hall estate, for Messrs. E. and H. Oliver.

STRETFORD. *Housing.* The Corporation is to acquire 47 acres of land at Lostock for housing and recreation purposes.

STRETFORD. *Houses, etc.* Plans passed by the Corporation : 29 houses, Debenham Road, for Messrs. Freeman, Evans & Co. ; four houses, Kings Road, for Mr. A. Wallwork ; extensions, assembly hall, Upper Chorlton Road, for Mr. A. Haines ; works extensions, Trafford Park Road, for Messrs. W. T. Glover & Co., Ltd. ; works extensions, Westinghouse Road, for Rubber Regenerating Co. ; 18 houses, Moss Road, for Messrs. Albert Locke, Ltd.

WAKEFIELD. *Houses.* The Corporation has approved plans for the erection of small type houses and is to negotiate for suitable sites.

YORK. *Houses, etc.* Plans passed by the Corporation : Eight houses, Langdale Avenue, for Mr. R. A. Cattle ; 22 houses, Chudleigh Road and Wilton Street, for Mr. J. N. Dunn ; two houses, Beach Avenue, for Mr. J. Dowling ; two houses, Trentholme Drive, for Mr. J. F. Clark ; two houses, Simpson Walk, for Messrs. T. and M. Caffrey ; six houses, Campbell Avenue, for Mr. J. Foster ; two houses, Temple Avenue, for Messrs. Westhead and Taylor ; eight houses, Abbotsford Road, for Messrs, Abbott and Son ; additions, Coppergate, for Messrs. M. A. Craven and Sons ; social club, Monkgate, for York Gas Co. ; warehouse, Feasegate, for Mr. C. Hart ; alterations and additions, 77 Walmgate, for Mr. C. Morrell ; 19 houses, Northcote Avenue, for Mr. W. W. Leggett ; 14 houses, Garrow Hill estate, for Messrs. H. Williamson and Son ; two houses, Hempland Lane, for Mr. T. F. Clark ; two houses, Maple Grove, for Mr. A. Temple.

SCOTLAND

GLASGOW. *Extensions, etc.* Plans passed by the Corporation : Extensions, Kelvin Works, Keith Street, for Messrs. P. and R. Fleming ; store, Cogan Street, for Messrs. Donaldson and Filer, Ltd. ; showroom extensions, Bothwell Street, for Messrs. Cameron and Campbell ; houses, Dolphin Road, Shawlands, for Messrs. William S. Gordon & Co. ; club extensions, Lumbeck Road, for Cartha Athletic Club ; offices, Shuna Street, Maryhill, for Messrs. Bryant and May, Ltd. ; shops, Balmore Road, for Mr. William D. Goold ; bungalows, Carmunnock Road, for Messrs. John Dickie and Son, Ltd. ; buildings, Renfrew Court, for Messrs. Kennedy, Robertson & Co.

RATES OF WAGES

The initial letter opposite every entry indicates the grade under the Ministry of Labour schedule. The district is that to which the borough is assigned in the same schedule. Column I gives the rates for craftsmen; Column II for labourers. The rate for craftsmen working at trades in which a separate rate maintains is given in a footnote. The table is a selection only. Particulars for lesser localities not included may be obtained upon application in writing.

			I s. d.	II s. d.
A_1	ABERDARE ..	S. Wales & M.	1 5	1 0½
A	Aberdeen ..	Scotland	1 6	1 1½
A_1	Abergavenny ..	S. Wales & M.	1 5	1 0½
A	Abingdon ..	S. Counties	1 4	1 0
A	Accrington ..	N.W. Counties	1 5½	1 1½
A	Addlestone ..	S. Counties	1 4	1 0
A	Adlington ..	N.W. Counties	1 5½	1 1½
A	Airdrie	Scotland	*1 5½	1 1½
C	Aldeburgh ..	E. Counties	1 1½	10½
A	Altrincham ..	N.W. Counties	1 5½	1 1½
B	Appleby ..	N.W. Counties	1 2	10½
A	Ashton-under-Lyne	N.W. Counties	1 5½	1 1½
B_1	Aylesbury ..	S. Counties	1 [illegible]	11½
B_1	BANBURY ..	S. Counties	1 3	11½
B_1	Bangor ..	N.W. Counties	1 3	11½
A_2	Barnard Castle	N.E. Coast	1 4	1 0
A	Barnsley ..	Yorkshire	1 5½	1 1½
B	Barnstaple ..	S.W. Counties	1 3½	11½
A	Barrow	N.W. Counties	1 5½	1 1½
A	Barry	S. Wales & M.	1 5½	1 1½
B_1	Basingstoke ..	S.W. Counties	1 3	11½
A_2	Bath	S.W. Counties	1 4½	1 0½
A	Batley	Yorkshire	1 5½	1 1½
A_2	Bedford ..	E. Counties	1 4½	1 0½
A_2	Berwick-on-Tweed	N.E. Coast	1 4½	1 0½
A_2	Bewdley ..	Mid. Counties	1 4½	1 0½
B	Bicester ..	S. Counties	1 2	10½
	Birkenhead ..	N.W. Counties	*1 7	1 2½
A	Birmingham ..	Mid Counties	1 5½	1 1½
A_1	Bishop Auckland	N.E. Coast	1 5	1 0½
A	Blackburn ..	N.W. Counties	1 5½	1 1½
A	Blackpool ..	N.W. Counties	1 5½	1 1½
A	Blyth	N.E. Coast	1 5½	1 1½
B_1	Bognor ..	S. Counties	1 3	11½
A	Bolton	N.W. Counties	1 5½	1 1½
A	Boston	Mid. Counties	1 4	1 0
A_2	Bournemouth ..	S. Counties	1 4½	1 0½
B_2	Bovey Tracey	S.W. Counties	1 2½	11
A	Bradford ..	Yorkshire	1 5½	1 1½
A_1	Brentwood ..	E. Counties	1 5	1 0½
A	Bridgend ..	S. Wales & M.	1 5½	1 1½
B	Bridgwater ..	S.W. Counties	1 3½	11½
A_1	Bridlington ..	Yorkshire	1 5	1 0½
A	Brighouse ..	Yorkshire	1 5½	1 1½
A_2	Brighton ..	S. Counties	1 4½	1 0½
A	Bristol	S.W. Counties	1 5½	1 1½
B	Brixham ..	S.W. Counties	1 2½	11
A	Bromsgrove ..	Mid. Counties	1 4½	1 0½
B	Bromyard ..	Mid. Counties	1 2	10½
A	Burnley ..	N.W. Counties	1 5½	1 1½
A	Burslem ..	Mid. Counties	1 5½	1 1½
A	Burton-on-Trent	Mid. Counties	1 5½	1 1½
A	Bury	N.W. Counties	1 5½	1 1½
A	Buxton ..	N.W. Counties	1 5	1 0½
A_1	CAMBRIDGE ..	E. Counties	1 5	1 0½
B_1	Canterbury ..	S. Counties	1 3	11½
A	Cardiff	S. Wales & M.	1 5½	1 1½
A	Carlisle ..	N.W. Counties	1 5½	1 1½
B	Carmarthen ..	S. Wales & M.	1 3½	11½
B	Carnarvon ..	N.W. Counties	1 3½	11½
A	Carnforth ..	N.W. Counties	1 5½	1 1½
A	Castleford ..	Yorkshire	1 5½	1 1½
A_2	Chatham ..	S. Counties	1 4	1 0
A	Chelmsford ..	E. Counties	1 4	1 0
A	Cheltenham ..	S.W. Counties	1 4	1 0
A	Chester	N.W. Counties	1 5½	1 1½
A	Chesterfield ..	Mid. Counties	1 5½	1 1½
B_1	Chichester ..	S. Counties	1 3	11½
A	Chorley	N.W. Counties	1 5½	1 1½
B_1	Cirencester ..	S. Counties	1 3	11½
A	Clitheroe ..	N.W. Counties	1 5½	1 1½
A	Clydebank ..	Scotland	1 5½	1 1½
A	Coalville ..	Mid. Counties	1 5½	1 1½
A_2	Colchester ..	E. Counties	1 4½	1 0½
A	Colne	N.W. Counties	1 5½	1 1½
A_2	Colwyn Bay ..	N.W. Counties	1 4½	1 0½
A_1	Consett	N.E. Coast	1 5	1 0½
A_2	Conway	N.W. Counties	1 4½	1 0½
A	Coventry	Mid. Counties	1 5½	1 1½
A_2	Crewe	N.W. Counties	1 4½	1 0½
A	Cumberland ..	N.W. Counties	1 4	1 0
A	DARLINGTON	N.E. Coast	1 5½	1 1½
A	Darwen ..	N.W. Counties	1 5½	1 1½
B_1	Deal	S. Counties	1 3	11½
A_2	Denbigh ..	N.W. Counties	1 4	1 0
A	Derby	Mid. Counties	1 5½	1 1½
A	Dewsbury ..	Yorkshire	1 5½	1 1½
B	Didcot	S. Counties	1 3½	11½
A	Doncaster ..	Yorkshire	1 5½	1 1½
B_1	Dorchester ..	S.W. Counties	1 3	11½
A	Driffield ..	Yorkshire	1 4	1 0
A_2	Droitwich ..	Mid. Counties	1 4½	1 0½
A	Dudley	Mid. Counties	1 5½	1 1½
A_2	Dumfries ..	Scotland	1 5	1 0½
A	Dundee	Scotland	1 5½	1 1½
A	Durham	N.E. Coast	1 5½	1 1½
A_2	EASTBOURNE	S. Counties	1 4½	1 0½
A_1	Ebbw Vale ..	S. Wales & M.	1 5	1 0½
A	Edinburgh ..	Scotland	1 5½	1 1½
A_1	E. Glamorganshire, Rhondda Valley District	S. Wales & M.	1 5	1 0½
A_2	Exeter	S.W. Counties	*1 4½	1 0½
B	Exmouth ..	S.W. Counties	1 3½	11½
A_2	FELIXSTOWE	E. Counties	1 4	1 0
A	Filey	Yorkshire	1 4	1 0
A	Fleetwood ..	N.W. Counties	1 5½	1 1½
B_1	Folkestone ..	S. Counties	1 3	11½
A	Frodsham ..	N.W. Counties	1 5½	1 1½
B_2	Frome	S.W. Counties	1 2½	11
A	GATESHEAD	N.E. Coast	1 5½	1 1½
B	Gillingham ..	S. Counties	1 3½	11½
A	Glasgow ..	Scotland	1 6	1 1½
A_2	Gloucester ..	S.W.Counties	1 4½	1 0½
A_2	Goole	Yorkshire	1 4½	1 0½
A_2	Gosport ..	S. Counties	1 4½	1 0½
A_2	Grantham ..	Mid. Counties	1 4	1 0
A_1	Gravesend ..	S. Counties	1 5	1 0½
A	Greenock ..	Scotland	*1 5½	1 1½
A	Grimsby ..	Yorkshire	1 5½	1 1½
B	Guildford ..	S. Counties	1 3½	11½
A	HALIFAX ..	Yorkshire	1 5½	1 1½
A	Hanley	Mid. Counties	1 5½	1 1½
A	Harrogate ..	Yorkshire	1 5½	1 1½
A	Hartlepools ..	N.E. Coast	1 5½	1 1½
B	Harwich	E. Counties	1 3½	11½
B_1	Hastings ..	S. Counties	1 3	11½
A_2	Hatfield ..	S. Counties	1 4½	1 0½
B	Hereford ..	S.W. Counties	1 3½	11½
A_2	Hertford ..	E. Counties	1 4½	1 0½
A	Heysham ..	N.W. Counties	1 5½	1 1½
A	Howden ..	N.E. Coast	1 5½	1 1½
A	Huddersfield ..	Yorkshire	1 5½	1 1½
A	Hull	Yorkshire	1 5½	1 1½
A	ILKLEY ..	Yorkshire	1 5½	1 1½
A	Immingham ..	Mid. Counties	1 5½	1 1½
A_2	Ipswich ..	E. Counties	1 4½	1 0½
B_2	Isle of Wight ..	S. Counties	1 2½	11
A	JARROW ..	N.E. Coast	1 5½	1 1½
A	KEIGHLEY ..	Yorkshire	1 5½	1 1½
A_2	Kendal	N.W. Counties	1 4	1 0
A_2	Keswick ..	N.W. Counties	1 4	1 0
A_1	Kettering ..	Mid. Counties	1 5	1 0½
A_2	Kidderminster	Mid. Counties	1 4½	1 0½
B_1	King's Lynn ..	E. Counties	1 3	11½
A	LANCASTER ..	N.W. Counties	1 5½	1 1½
A_1	Leamington ..	Mid. Counties	1 5	1 0½
A	Leeds	Yorkshire	1 5½	1 1½
A	Leek	Mid. Counties	1 5½	1 1½
A	Leicester ..	Mid. Counties	1 5½	1 1½
A	Leigh	N.W. Counties	1 5½	1 1½
B	Lewes	S. Counties	1 [illegible]	10½
A_2	Lichfield ..	Mid. Counties	1 4½	1 0½
A	Lincoln	Mid. Counties	1 5½	1 1½
	Liverpool ..	N.W. Counties	*1 7	1 2½
A_2	Llandudno ..	N.W. Counties	1 4½	1 0½
A	Llanelly ..	S. Wales & M.	1 5½	1 1½
	London (12-miles radius)		1 7½	1 2½
	Do. (12-15 miles radius)		1 7	1 2½
A	Long Eaton ..	Mid. Counties	1 5½	1 1½
A	Loughborough ..	Mid. Counties	1 5½	1 1½
A_1	Luton	E. Counties	1 5	1 0½
A	Lytham ..	N.W. Counties	1 5½	1 1½
A_1	MACCLESFIELD	N.W. Counties	1 5	1 0½
A_2	Maidstone ..	S. Counties	1 4	1 0
A_2	Malvern ..	Mid. Counties	1 4	1 0
A	Manchester ..	N.W. Counties	1 5½	1 1½
A	Mansfield ..	Mid. Counties	1 5½	1 1½
B_1	Margate ..	S. Counties	1 3	11½
A	Matlock ..	Mid. Counties	1 4	1 0
A_1	Merthyr ..	S. Wales & M.	1 5	1 0½
A	Middlesbrough	N. E. Coast	1 5½	1 1½
A_2	Middlewich ..	N. W. Counties	1 4½	1 0½
B_2	Minehead ..	S.W. Counties	1 2½	11
B_2	Monmouth & S. and E. Glamorganshire	S. Wales & M.	1 2½	11
A	Morecambe ..	N.W. Counties	1 5½	1 1½
A_2	NANTWICH ..	N.W. Counties	1 4½	1 0½
A	Neath	S. Wales & M.	1 5½	1 1½
A	Nelson ..	N.W. Counties	1 5½	1 1½
A	Newcastle ..	N.E. Coast	1 5½	1 1½
A	Newport ..	S. Wales & M.	1 5½	1 1½
A	Normanton ..	Yorkshire	1 5½	1 1½
A	Northampton	Mid. Counties	1 5½	1 1½
A	North Staffs ..	Mid. Counties	1 5½	1 1½
A	North Shields ..	N.E. Coast	1 5½	1 1½
A_1	Norwich ..	E. Counties	1 5	1 0½
A	Nottingham ..	Mid. Counties	1 5½	1 1½
A	Nuneaton ..	Mid. Counties	1 5½	1 1½
A	OAKHAM ..	Mid. Counties	1 4	1 0
A	Oldham	N.W. Counties	1 5½	1 1½
A_2	Oswestry ..	N.W. Counties	1 4	1 0
A_1	Oxford	S. Counties	1 5	1 0½
A	PAISLEY ..	Scotland	*1 5½	1 1½
B_2	Pembroke ..	S. Wales & M.	1 2	10½
A	Perth	Scotland	*1 5½	1 1½
A_1	Peterborough ..	E. Counties	1 5	1 0½
A	Plymouth ..	S.W. Counties	*1 5½	1 1½
A	Pontefract ..	Yorkshire	1 5½	1 1½
A_1	Pontypridd ..	S. Wales & M.	1 5	1 0½
A_2	Portsmouth ..	S. Counties	1 4½	1 0½
A	Preston ..	N.W. Counties	1 5½	1 1½
A	QUEENSFERRY	N.W. Counties	1 5½	1 1½
A_1	READING ..	S. Counties	1 4½	1 0½
B	Reigate ..	S. Counties	1 3½	11½
A	Retford ..	Mid. Counties	1 4	1 0
A_1	Rhondda Valley	S. Wales & M.	1 5	1 0½
A	Ripon	Yorkshire	1 4	1 0
A	Rochdale ..	N.W. Counties	1 5½	1 1½
B	Rochester ..	S. Counties	1 3½	11½
A_1	Ruabon ..	N.W. Counties	1 5	1 0½
A	Rugby	Mid. Counties	1 5½	1 1½
A_2	Rugeley ..	Mid. Counties	1 4½	1 0½
A	Runcorn ..	N.W. Counties	1 5½	1 1½
A_1	ST. ALBANS ..	E. Counties	1 5	1 0½
A	St. Helens ..	N.W. Counties	1 5½	1 1½
B_2	Salisbury ..	S.W. Counties	1 2½	11
A_1	Scarborough ..	Yorkshire	1 5	1 0½
A	Scunthorpe ..	Mid. Counties	1 5½	1 1½
A	Sheffield ..	Yorkshire	1 5½	1 1½
A	Shipley ..	Yorkshire	1 5½	1 1½
A_2	Shrewsbury ..	Mid. Counties	1 4½	1 0½
A_2	Skipton ..	Yorkshire	1 4½	1 0½
A_2	Slough	S. Counties	1 4½	1 0½
A_1	Solihull ..	Mid. Counties	1 5	1 0½
A_2	Southampton ..	S. Counties	1 4½	1 0½
A_1	Southend-on-Sea	E. Counties	1 5	1 0½
A	Southport ..	N.W. Counties	1 5½	1 1½
A	S. Shields ..	N.E. Coast	1 5½	1 1½
A_1	Stafford ..	Mid. Counties	1 5	1 0½
A	Stirling ..	Scotland	1 6	1 1½
A	Stockport ..	N.W. Counties	1 5½	1 1½
A	Stockton-on-Tees	N.E. Coast	1 5½	1 1½
A	Stoke-on-Trent	Mid. Counties	1 5½	1 1½
B	Stroud	S.W. Counties	1 3½	11½
A	Sunderland ..	N.E. Coast	1 5½	1 1½
A	Swansea ..	S. Wales & M.	1 5½	1 1½
A	Swindon ..	S.W. Counties	1 4	1 0
A_1	TAMWORTH ..	N.W. Counties	1 5	1 0½
B	Taunton ..	S.W. Counties	1 3½	11½
A	Teesside Dist. ..	N.E. Counties	1 5½	1 1½
A_2	Teignmouth	S.W. Coast	1 4½	1 0½
A	Todmorden ..	Yorkshire	1 5½	1 1½
A_1	Torquay ..	S.W. Counties	1 5	1 0½
B_2	Truro	S.W. Counties	1 2½	11
A_2	Tunbridge Wells	S. Counties	1 4	1 0
A	Tunstall ..	Mid. Counties	1 5½	1 1½
A	Tyne District ..	N.E. Coast	1 5½	1 1½
A	WAKEFIELD	Yorkshire	1 5½	1 1½
A	Walsall ..	Mid. Counties	1 5½	1 1½
A	Warrington ..	N.W. Counties	1 5½	1 1½
A_1	Warwick ..	Mid. Counties	1 5	1 0½
A_1	Wellingborough	Mid. Counties	1 5	1 0½
A	West Bromwich	Mid. Counties	1 5½	1 1½
A_2	Weston-s.-Mare	W. Counties	1 4½	1 0½
A_2	Whitby ..	Yorkshire	1 4½	1 0½
A	Widnes ..	N.W. Counties	1 5½	1 1½
A	Wigan ..	N.W. Counties	1 5½	1 1½
B	Winchester ..	S. Counties	1 3½	11½
A_2	Windsor ..	S. Counties	1 4½	1 0½
A	Wolverhampton	Mid. Counties	1 5½	1 1½
A_2	Worcester ..	Mid. Counties	1 4½	1 0½
A_2	Worksop ..	Yorkshire	1 4	1 0
A_1	Wrexham ..	N.W. Counties	1 5	1 0½
A	Wycombe ..	S. Counties	1 4	1 0
B	YARMOUTH ..	E. Counties	1 3½	11½
B	Yeovil	S.W. Counties	1 3½	11½
A	York	Yorkshire	1 5½	1 1½

* In these areas the rates of wages for certain trades (usually painters and plasterers) vary slightly from those given.

The rates for every trade in any given area will be sent on request.

CURRENT PRICES

The wages are the standard Union rates of wages payable in London at the time of publication. The prices given below are for materials of good quality and include delivery to site in Central London area, unless otherwise stated. For delivery outside this area, adjustment should be made for the cost of transport. Though every care has been taken in its compilation, it is impossible to guarantee the accuracy of the list, and readers are advised to have the figures confirmed by trade inquiry. The whole of the information given is copyright.

WAGES

		s.	d.
Bricklayer	per hour	1	7½
Carpenter	,,	1	7½
Joiner	,,	1	7½
Machinist	,,	1	8½
Mason (Banker)	,,	1	7½
,, (Fixer)	,,	1	8½
Plumber	,,	1	7½
Painter	,,	1	6½
Paperhanger	,,	1	6½
Glazier	,,	1	7½
Slater	,,	1	7½
Scaffolder	,,	1	3½
Timberman	,,	1	3½
Navvy	,,	1	2½
General Labourer	,,	1	2½
Lorryman	,,	1	5½
Crane Driver	,,	1	6½
Watchman	per week	2	10	0

MATERIALS

EXCAVATOR AND CONCRETOR

		£	s.	d.
Grey Stone Lime	per ton	2	2	0
Blue Lias Lime	,,	1	16	6
Hydrated Lime	,,	3	0	9
Portland Cement, in 4 ton lots (d/d site, including Paper Bags)	,,	2	0	0
Rapid Hardening Cement, in 4-ton lots (d/d site, including Paper Bags)	,,	2	6	0
White Portland Cement, in 1-ton lots	,,	8	15	0
Thames Ballast	per Y.C.		6	3
¾" Crushed Ballast	,,		6	9
Building Sand	,,		7	3
Washed Sand	,,		8	3
2" Broken Brick	,,		8	0
¾" ,, ,,	,,		10	3
Pan Breeze	,,		6	6
Coke Breeze	,,		8	9

DRAINLAYER

BEST STONEWARE DRAIN PIPES AND FITTINGS

		4" s.	4" d.	6" s.	6" d.
Straight Pipes	per F.R.	0	9	1	1
Bends	each	1	9	2	6
Taper Bends	,,	3	6	5	3
Rest Bends	,,	4	3	6	3
Single Junctions	,,	3	6	5	3
Double ,,	,,	4	9	6	6
Straight channels	per F.R.	1	6	2	6
¼" Channel bends	each	2	9	4	0
Channel junctions	,,	4	6	6	6
Channel tapers	,,	2	9	4	0
Yard gullies	,,	6	9	8	9
Interceptors	,,	16	0	19	6
IRON DRAINS:					
Iron drain pipe	per F.R.	1	6	2	6
Bends	each	5	0	10	6
Inspection bends	,,	9	0	15	0
Single junctions	,,	8	9	18	0
Double junctions	,,	13	6	30	0
Lead Wool	lb.		6		—
Gaskin	,,		5		—

BRICKLAYER

		£	s.	d.
Flettons	per M.	2	15	0
Grooved do.	,,	2	17	0
Phorpres bricks	,,	2	15	0
,, Cellular bricks	,,	2	15	0
Stocks, 1st quality	,,	4	11	0
,, 2nd ,,	,,	4	2	6
Blue Bricks, Pressed	,,	8	17	6
,, Wirecuts	,,	7	17	6
,, Brindles	,,	7	0	0
,, Bullnose	,,	9	0	0
Red Sand-faced Facings	,,	6	18	6
Red Rubbers for Arches	,,	12	0	0
Multicoloured Facings	,,	7	10	0
Luton Facings	,,	7	10	0
Phorpres White Facings	,,	3	17	3
,, Rustic Facings	,,	3	12	3
Midhurst White Facings	,,	5	0	0
Glazed Bricks, Ivory, White or Salt glazed, 1st quality:				
Stretchers	,,	21	0	0
Headers	,,	20	10	0
Bullnose	,,	27	10	0
Double Stretchers	,,	29	10	0
Double Headers	,,	26	10	0
Glazed Second Quality, *Less*	,,	1	0	0
,, Buffs and Creams, *Add*	,,	2	0	0
,, Other Colours	,,	5	10	0
2" Breeze Partition Blocks	per Y.S.		1	7
2½" ,, ,, ,,	,,		1	10
3" ,, ,, ,,	,,		2	1
4" ,, ,, ,,	,,		2	6

MASON

The following d/d F.O.R. at Nine Elms:		s.	d.
Portland stone, Whitbed	F.C.	4	4½
,, ,, Basebed	,,	4	7½
Bath stone	,,	2	10
York stone	,,	6	6
,, ,, Sawn templates	,,	7	6
,, ,, Paving, 2"	F.S.	1	8
,, ,, ,, 3"	,,	2	6

SLATER AND TILER

First quality Bangor or Portmadoc slates d/d F.O.R. London station

		£	s.	d.
24"×12" Duchesses	per M.	28	17	6
22"×12" Marchionesses	,,	24	10	0
20"×10" Countesses	,,	19	5	0
18"×10" Viscountesses	,,	15	10	0
18"× 9" Ladies	,,	13	17	6
Westmorland green (random sizes)	per ton	8	10	0
Old Delabole slates d/d in full truck loads to Nine Elms Station:				
20"×10" medium grey per 1,000 (actual)		21	11	6
,, ,, green ,,	,,	24	7	4
Best machine roofing tiles	,,	4	10	0
Best hand-made do.	,,	5	0	0
Hips and valleys	each			9½
,, hand-made	,,			10
Nails, compo	lb.		1	4
,, copper	,,		1	6

CARPENTER AND JOINER

		s.	d.
Good carcassing timber	F.C.	2	2
Birch	as 1" F.S.		9
Deal, Joiner's	,, ,,		5
,, ,, 2nds	,, ,,		4
Mahogany, Honduras	,, ,,	1	3
,, African	,, ,,	1	1
,, Cuban	,, ,,	2	6
Oak, plain American	,, ,,	1	0
,, Figured ,,	,, ,,	1	3
,, plain Japanese	,, ,,	1	2
,, Figured ,,	,, ,,	1	5
,, Austrian wainscot	,, ,,	1	6
,, English	,, ,,	1	11
Pine, Yellow	,, ,,	1	0
,, Oregon	,, ,,		4
,, British Columbian	,, ,,		4
Teak, Moulmein	,, ,,	1	3
,, Burma	,, ,,	1	2
Walnut, American	,, ,,	2	3
,, French	,, ,,	2	3
Whitewood, American	,, ,,	1	1
Deal floorings, ¾"	Sq.	18	6
,, 1"	,,	1	1	6
,, 1¼"	,,	1	2	0
,, 1½"	,,	1	5	0
,, 1¾"	,,	1	10	0
Deal matchings ¾"	,,		14	0
,, 1"	,,		15	6
Rough boarding ¾"	,,	1	4	0
,, 1"	,,		16	0
,, 1¼"	,,		18	0
Plywood, per ft. sup.	,,	1	6	0

Thickness	¼" d.	½" d.	¾" d.	1" d.
Qualities	A B BB	A B BB	A B BB	A B BB
Birch				
60 × 48	4 2½ 2	5 3 2½	7 5 4	8 6 5
Cheap Alder	– 2 1½	– 3½ 2	– – –	– – –
Oregon Pine	– 2½ –	3 2½ –	4 3½ –	5 4½ –
Gaboon				
Mahogany	4 3½ –	5 4½ –	7 6½ –	8 7 –
Figured Oak	6½ 5 –	7½ 5½ –	10 8 0	1/- 9 –

	d.
Scotch glue lb.	8

SMITH AND FOUNDER

Tubes and Fittings:
(The following are the standard list prices, from which should be deducted the various percentages as set forth below.)

	¼"	½"	1"	1½"	2"
Tubes, 2'-14' long, per ft. run	4	5½	9½	1/1	1/10
Pieces, 12"-23" long each	10	1/1	1/11	2/8	4/9
,, 3"-11½" long ,,	7	9	1/3	1/8	3/-
Long screws, 12"-23½" long ,,	11	1/3	2/2	2/10	5/3
,, ,, 3"M-½" long ,,	8	10	1/5	1/11	3/6
Bends ,,	8	11	1/7½	2/7½	5/2
Springs not socketed ,,	5	7	1/1½	1/11½	3/11
Socket unions ,,	2/-	3/-	5/6	6/9	10/-
Elbows, square ,,	10	1/1	1/6	2/2	4/3
Tees ,,	1/-	1/3	1/10	2/6	5/1
Crosses ,,	2/2	2/9	4/1	5/6	10/6
Plain sockets and nipples ,,	3	4	6	8	1/3
Diminished sockets ,,	4	6	9	1/-	2/-
Flanges ,,	9	1/-	1/4	1/9	2/9
Caps ,,	3½	5	8	1/-	2/-
Backnuts ,,	2	3	5	6	1/1
Iron main cocks ,,	1/6	2/3	4/2	5/4	11/6
,, with brass plugs ,,	—	4/-	7/6	10/-	21/-

Discounts:

TUBES.	Per cent.		Per cent.
Gas	65	Galvanized gas	52½
Water	61½	,, water	47½
Steam	57½	,, steam	42½

FITTINGS.			
Gas	57½	Galvanized gas	47½
Water	52½	,, water	42½
Steam	47½	,, steam	37½

SMITH AND FOUNDER—*continued.*

		s.	d.
Rolled steel joists cut to length	cwt.	12	9
Mild steel reinforcing rods, ¼"	,,	10	6
,, ,, ⅜"	,,	10	3
,, ,, ½"	,,	10	0
,, ,, ⅝"	,,	9	6
,, ,, ¾"	,,	9	6
,, ,, ⅞"	,,	9	6
,, ,, 1"	,,	9	6
,, ,, 1¼"	,,	9	6
,, ,, 1½"	,,	9	6

		3" s.	3" d.	4" s.	4" d.
Cast-iron rain-water pipes of ordinary thickness metal	F.R.		8		10
Shoes	each	2	0	3	0
Anti-splash shoes	,,	4	6	8	0
Boots	,,	3	0	4	0
Bends	,,	2	7	3	9
,, with access door	,,		—	6	3
Heads	,,	4	0	5	0
Swan-necks up to 9" offsets	,,	3	9	6	0
Plinth bends, 4½" to 6"	,,	3	9	5	3
Half-round rain-water gutters of ordinary thickness metal	F.R.		5		6
Stop ends	each		6		6
Angles	,,	1	7	1	11
Obtuse angles	,,	2	0	2	6
Outlets	,,	1	9	2	3

PLUMBER

		s	d.
Lead, milled sheets	cwt.	22	0
,, drawn pipes	,,	21	6
,, soil pipe	,,	24	6
,, scrap	,,	13	0
Solder, plumbers'	lb.		9½
,, fine do.	,,	1	0
Copper, sheet	,,		8½
,, tubes	,,		11

L.C.C. soil and waste pipes:	3"	4"	6"
Plain cast F.R.	1 0	1 2	2 6
Coated ,,	1 1	1 3	2 8
Galvanized ,,	2 0	2 6	4 6
Holderbats each	3 10	4 0	4 9
Bends ,,	3 9	5 3	10 3
Shoes ,,	2 10	4 4	9 6
Heads ,,	4 8	8 5	12 9

PLASTERER

		£	s.	d.
Lime, chalk	per ton	2	5	0
Plaster, coarse	,,	2	10	0
,, fine	,,	4	15	0
Hydrated lime	,,	3	0	9
Sirapite	,,	3	6	0
Keene's cement	,,	5	0	0
Gothite Plaster	,,	3	6	0
Pioneer Plaster	,,	3	6	0
Thistle plaster	,,	3	6	0
Sand, washed	Y.C.		11	6
Hair	lb.			6
Laths, sawn	bundle		2	4
,, rent	,,		3	9
Lath nails	lb.			3

GLAZIER

	s	d.	s.	d.
Sheet glass, 21 oz., squares n/e 2 ft.			s. F.S.	2½
,, ,, 26 oz. ,, ,,			,,	3
Flemish, Arctic, Figures (white)*			,,	7
Blazoned glasses			,,	2 6
Reeded; Cross Reeded			,,	11
Cathedral glass, white, double-rolled, plain, hammered, rimpled, waterwite			,,	6
Crown sheet glass (n/e 12 in. x 10 in.)			,,	2 0
Flashed opals (white and coloured)	,,	1 0	and 2	0
¼" rough cast; rolled plate			,,	5½
¼" wired cast; wired rolled			,,	9½
¼" Georgian wired cast			,,	11
¼" Polished plate, n/e 1 ft.	,,	†10	to ‡1	1
,, ,, 2	,,	†1	2 ,, ‡1	4
,, ,, 4	,,	†2	3 ,, ‡2	6
,, ,, 8	,,	†2	9 ,, ‡3	2
,, ,, 20	,,	†3	7 ,, ‡4	2
,, ,, 45	,,	†3	11 ,, ‡4	7
,, ,, 100	,,	†5	0 ,, ‡5	7
Vita glass, sheet, n/e 1 ft.			,,	1 0
,, ,, ,, 2 ft.			,,	1 3
,, ,, ,, over 2 ft.			,,	1 9
,, ,, plate, n/e 1 ft.			,,	1 6
,, ,, ,, 2 ft.			,,	3 0
,, ,, ,, 5 ft.			,,	4 0
,, ,, ,, 7 ft.			,,	5 0
,, ,, ,, 15 ft.			,,	6 0
,, ,, ,, over 15 ft.			,,	7 6
"Calorex" sheet 21 oz., and 32 oz.	,,	2 6	and 3	6
,, rough cast ¼" and ½"	,,	8½	,, 1	0
Putty, linseed oil	lb.			3

* *Colours, 1d. F.S. extra.*
† *Ordinary glazing quality.* ‡ *Selected glazing quality.*

PAINTER

		£	s.	d.
White lead in 1 cwt. casks	cwt.	2	8	6
Linseed oil	gall.		2	3
Boiled oil	,,		2	9
Turpentine	,,		4	1½
Patent knotting			14	0
Distemper, washable	cwt	2	6	0
,, ordinary	,,	2	0	0
Whitening	,,		4	0
Size, double	firkin		3	0
Copal varnish	gall.		13	0
Flat varnish	,,		14	0
Outside varnish	,,		16	0
White enamel	,,	1	15	0
Ready mixed paint	,,		13	6
Brunswick black	,,		7	6

CURRENT PRICES FOR MEASURED WORK

The following prices are for work to new buildings of average size, executed under normal conditions in the London area. They include establishment charges and profit. While every care has been taken in its compilation, no responsibility can be accepted for the accuracy of the list. The whole of the information given is copyright.

EXCAVATOR AND CONCRETOR

		£ s. d.
Digging over surface n/e 12" deep and cart away	Y.S.	2 9
" to reduce levels n/e 5' 0" deep and cart away	Y.C.	8 6
" to form basement n/e 5' 0" and cart away	"	9 0
" " 10' 0" deep and cart away	"	9 6
" " 15' 0" deep and cart away	"	10 0
If in stiff clay	add "	6
If in underpinning	" "	4 0
Planking and strutting to sides of excavation	F.S.	1 0
" " to pier holes	"	5
" " to trenches	"	5
" " extra, only if left in	"	3
Hardcore, filled in and rammed	Y.C.	10 0
Portland cement concrete in foundations (6-1)	"	1 6 0
" " (4-2-1)	"	1 12 6
" " underpinning	"	1 16 0
Finishing surface of concrete, space face	Y.S.	7

DRAINLAYER

		4" s. d.	6" s. d.
Stoneware drains, laid complete (digging and concrete to be priced separately)	F.R.	1 6	2 3
Extra, only for bends	Each	2 8	3 9
" junctions	"	3 9	4 6
Gullies and gratings	"	16 6	18 0
Cast iron drains, and laying and jointing	F.R.	4 9	6 9
Extra, only for bends	Each	10 6	15 6

BRICKLAYER

		£ s. d.
Brickwork, Flettons in lime mortar	Per Rod	26 10 0
" " in cement	"	27 12 6
" Stocks in cement	"	34 0 0
" Blues in cement	"	50 0 0
Extra only for circular on plan	"	2 0 0
" backing to masonry	"	1 10 0
" raising on old walls	"	2 0 0
" underpinning	"	5 10 0½
Fair Face and pointing internally	F.S.	1½
Extra over fletton brickwork for picked stock facings and pointing	"	8
" " " red brick facings and pointing	"	11
" " " blue brick facings and pointing	"	1 4
" " " glazed brick facings and pointing	"	3 6
Tuck pointing	"	7½
Weather pointing in cement	"	3
Slate dampcourse	"	10
Vertical dampcourse	"	1 1

ASPHALTER

		s. d.
½" Horizontal dampcourse	Y.S.	4 6
½" Vertical dampcourse	"	6 9
½" paving or flat	"	4 0
1" paving or flat	"	5 6
1" × 6" skirting	F.R.	1 0
Angle fillet	"	2
Rounded angle	"	2
Cesspools	Each	5 0

MASON

		s. d.
Portland stone, including all labours, hoisting, fixing and cleaning down, complete	F.C.	17 9
Bath stone and do., all as last	"	13 6
Artificial stone and do	"	13 0
York stone templates, fixed complete	"	10 6
" thresholds	"	13 6
" sills	"	1 0 6

SLATER AND TILER

		£ s. d.
Slating, Bangor or equal, laid to a 3" lap, and fixing with compo nails, 20" × 10"	Sqr.	3 10 0
Do., 18" × 9"	"	3 7 0
Do., 24" × 12"	"	3 17 0
Westmorland slating, laid with diminished courses	"	6 0 0
Tiling, best hand-made sand-faced, laid to a 4" gauge, nailed every fourth course	"	3 0 0
Do., all as last, but of machine-made tiles	"	2 16 0
20" × 10" medium Old Delabole slating, laid to a 3" lap (grey)	"	2 16 0
" " " " " (green)	"	4 15 0

CARPENTER AND JOINER

		£ s. d.
Flat boarded centering to concrete floors, including all strutting	Sqr.	2 2 6
Shuttering to sides and soffits of beams	F.S.	7
" to stanchions	"	7
" to staircases	"	1 6
Fir and fixing in wall plates, lintols, etc.	F.C.	3 9
Fir framed in floors	"	4 6
" " roofs	"	6 6
" " trusses	"	7 6
" " partitions	"	8 6
½" deal sawn boarding and fixing to joists	Sqr.	1 14 6
1" " " " "	"	1 17 6
1½" " " " "	"	2 3 0
1½" × 2" fir battening for Countess slating	"	9 0
Do. for 4" gauge tiling	"	12 0
Stout feather-edged tilting fillet	F.R.	4½
Patent inodorous felt, 1 ply	Y.S.	2 3
" " " 2 "	"	2 9
" " " 3 "	"	3 3
Stout herringbone strutting to 9" joists	F.R.	10½
1" deal gutter boards and bearers	F.S.	1 2
1½" " " "	"	1 6
2" deal wrought rounded roll	F.R.	8
1" deal grooved and tongued flooring, laid complete, including cleaning off	Sqr.	2 1 0
1¼" do.	"	2 10 0
1½" do.	"	2 17 0
1" deal moulded skirting, fixed on, and including grounds plugged to wall	F.S.	1 6
1¼" do.	"	1 9

CARPENTER AND JOINER—*continued*

		s. d.
1½" deal moulded sashes of average size	F.S.	1 9½
2" " " " "	"	1 11½
1½" deal cased frames double hung, of 6" × 3" oak sills, 1½" pulley stiles, 1½" heads, 1" inside and outside linings, ½" parting beads, and with brass faced axle pulleys, etc., fixed complete		3 7
2" " " " "	"	3 10
Extra only for moulded horns	Each	6
1½" deal four-panel square, both sides, door	F.S.	2 0
2" " " " "	"	2 8
1½" " but moulded both sides	"	2 4
2" " " " "	"	3 0
4" × 3" deal, rebated and moulded frames	F.R.	1 0
4½" × 3½" " " "	"	1 4
1½" deal tongued and moulded window board, on and including deal bearers	F.S.	1 9
1½" deal treads, 1" risers in staircases, and tongued and grooved together on and including strong fir carriages	"	2 6
1½" deal moulded wall strings	"	2 1
1½" " outer strings	"	2 4
Ends of treads and risers housed to string	Each	1 9
3" × 2" deal moulded handrail	F.R.	1 3
1" × 1" deal balusters and housing each end	Each	2 0
1½" × 1½" " " "	"	2 9
3" × 3" deal wrought framed newels	F.R.	1 3
Extra only for newel caps	Each	6 0
Do., pendants	"	6 0

SMITH AND FOUNDER

		£ s. d.
Rolled steel joists, cut to length, and hoisting and fixing in position	Per cwt.	16 6
Riveted plate or compound girders, and hoisting and fixing in position	"	1 0 6
Do., stanchions with riveted caps and bases and do.	"	19 0
Mild steel bar reinforcement, ¼" and up, bent and fixed complete	"	17 6
Corrugated iron sheeting fixed to wood framing, including all bolts and nuts 20 g.	F.S.	11
Wrot-iron caulked and cambered chimney bars	Per cwt.	1 10 0

PLUMBER

		£ s. d.
Milled lead and labour in flats	cwt.	1 15 6
Do. in flashings	"	1 19 0
Do. in covering to turrets	"	2 6 6
Do. in soakers	"	1 11 0
Labour to welted edge	F.R.	3½
Open copper nailing	"	3
Close "	"	4

Lead service pipe and fixing with pipe hooks	F.R.	½" s. d. 10	¾" s. d. 1 0	1" s. d. 1 3	1¼" s. d. 2 0	2" s. d. 2 10	4" s. d. —
Do. soil pipe and fixing with cast lead tacks	"	—	—	—	—	—	5 6
Extra, only to bends	Each	—	—	—	—	2 0	6 9
Do. to stop ends	"	6½	8	9	11	1 0	—
Boiler screws and unions	"	3 3	3 9	5 0	8 0	—	—
Lead traps	"	—	—	—	6 3	8 9	—
Screw down bib valves	"	6 9	9 6	11 0	—	—	—
Do. stop cocks	"	7 0	9 6	12 6	—	—	—

		s. d.
4" cast-iron ½-rd. gutter and fixing	F.R.	1 0
Extra, only stop ends	Each	1 0
Do. angles	"	1 6
Do. outlets	"	2 9
4" dia. cast-iron rain-water pipe and fixing with ears cast on	F.R.	1 2
Extra, only for shoes	Each	1 3
Do. for plain heads	"	5 6

PLASTERER AND TILING

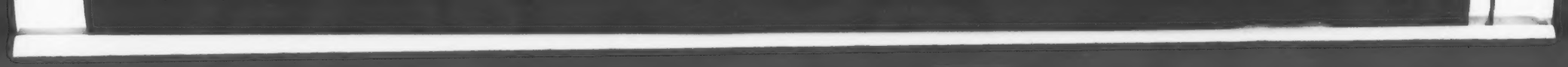
		s. d.
Expanded metal lathing, small mesh	Y.S.	2 0
Do. in n/w to beams, stanchions, etc.	"	2 9
Lathing with sawn laths to ceilings	"	1 3
½" screeding in Portland cement and sand or tiling, wood block floor, etc.	"	1 5
Do. vertical	"	1 7
Rough render on walls	"	1 2½
Render, float and set in lime and hair	"	1 9
Render and set in Sirapite	"	1 11
Render, backing in cement and sand, and set in Keene's cement	"	2 9
Extra, only if on lathing	"	4
Keene's cement, angle and arris	F.R.	6
Arris	"	
Rounded angle, small	"	3
Plain cornices in plaster, including dubbing out, per 1" girth	"	1½
1" granolithic pavings	Y.S.	3 6
1½" " "	"	4 6
6" × 6" white glazed wall tiling and fixing on prepared screed	"	17 6
9" × 3" " " " "	"	1 2 6
Extra, only for small quadrant angle	F.R.	8

GLAZIER

		s. d.
21 oz. sheet glass and glazing with putty	F.S.	6½
26 oz. do. and do.	"	7½
Flemish, Arctic Figured (white) and glazing with putty	"	1 1
Cathedral glass and do.	"	1 2
Glazing only, British polished plate	"	7
Extra, only if in beads	"	2
Washleather	F.R.	4

PAINTER

		s. d.
Clearcolle and whiten ceilings	Y.S.	0
Do. and distemper walls	"	9
Do. with washable distemper	"	1 1
Knot, stop, prime and paint four coats of oil colour on plain surfaces	"	3 3
Do. on woodwork	"	3 6
Do. on steelwork	"	3 0
Do. and brush grain and twice varnish	"	5 6
Stain and twice varnish woodwork	"	1 11
Stain and wax-polish woodwork	"	4 6
French polishing	F.S.	1 2
Stripping off old paper	Piece	2 0
Hanging ordinary paper	from "	2



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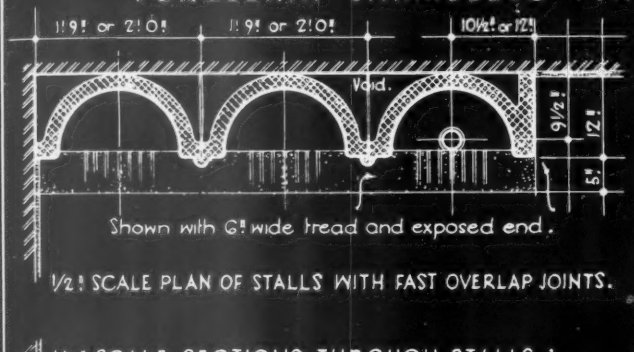
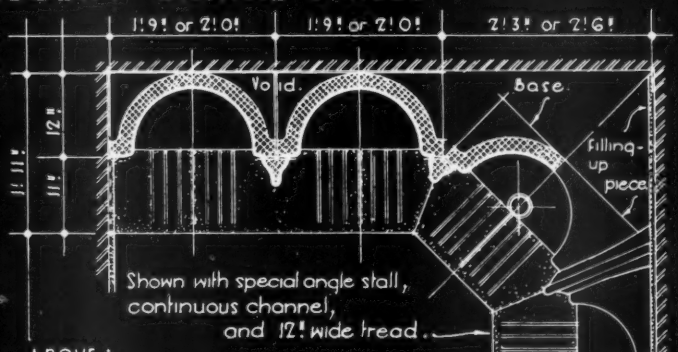
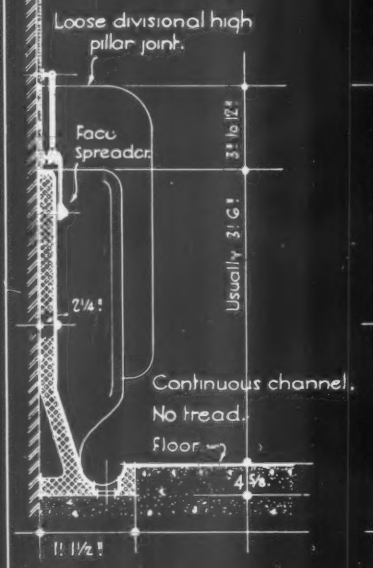
PORCELAIN ENAMELLED FIRECLAY URINAL STALLS :

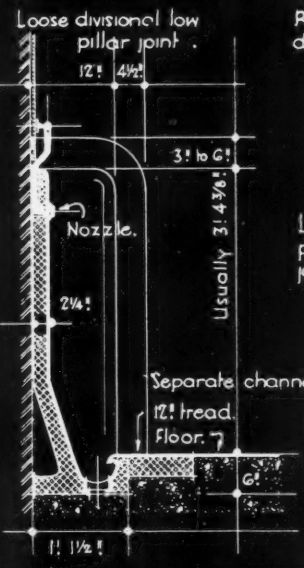


½" SCALE PLAN OF STALLS WITH FAST OVERLAP JOINTS.

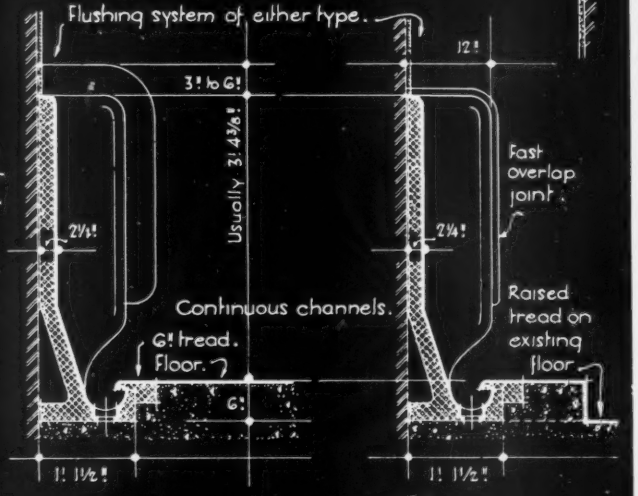


½" SCALE SECTIONS THROUGH STALLS :

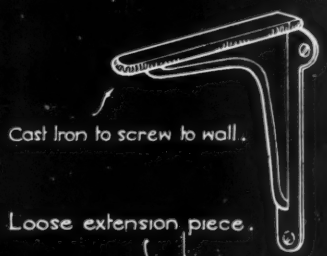




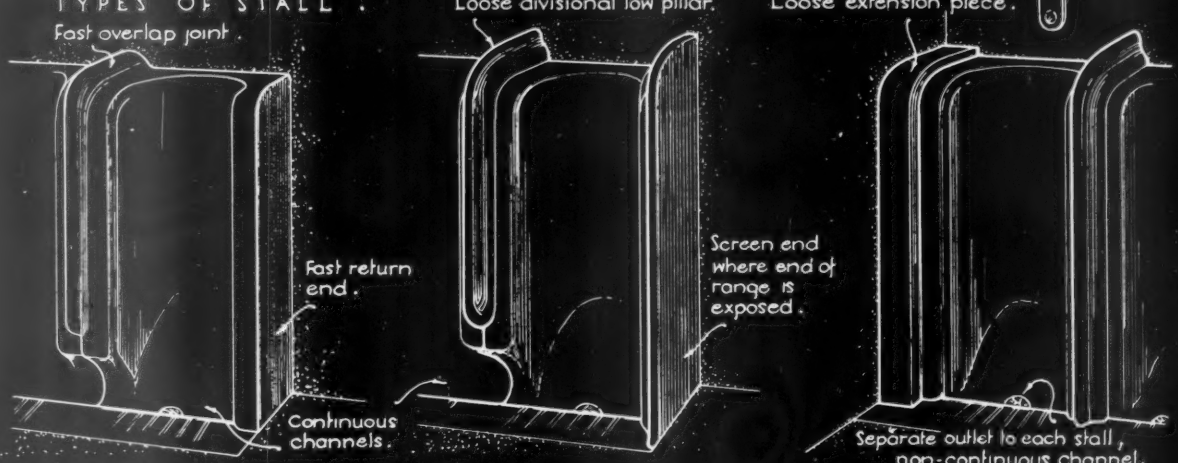
ABOVE :
½" SCALE PLAN THROUGH & ABOVE RUBY URINAL STALLS, with loose divisional pillar joints.



TYPES OF CISTERN BRACKET :



TYPES OF STALL :



Information from Associated Clay Industries Ltd. *(W.R. Pickup Ltd. Branch).*

INFORMATION SHEET : SANITARY FITTINGS • 2 • STALL URINALS.

SIR JOHN BURNET TAIT AND LORNE ARCHITECTS ONE MONTAGUE PLACE BEDFORD SQUARE LONDON WC1 • Alan E. Bates.

THE ARCHITECTS' JOURNAL
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INFORMATION SHEET

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FIRECLAY URINALS

Type of Product : Fireclay Urinal Stalls, White or Buff Glazed

Types :

Stall urinals are obtainable in four main varieties :

(a) Stalls with fast overlap joints.
(b) Stalls with loose divisional low pillars and continuous channels.
(c) Stalls with loose divisional high pillars and continuous channels.
(d) Stalls with separate outlets and non-continuous channels.

Sizes :

Stalls are made 2 ft. and 1 ft. 9 in. centre to centre and the average height is 3 ft. 6 in.

Extension Pieces :

These are for filling spaces at ends of ranges.

Treads :

May be 6 in. or 12 in. wide in Fireclay, Marble, Granite, Slate or Composition.

Divisional Pillars :

Divisional Pillars between each stall act as screens and are usually 3 in. to 12 in. higher than the stalls.

Angle Stalls :

Special angle stalls are used if the Urinal Range is to line more than one wall.

In such cases allow for angle stalls (on the walls forming angles) a distance of 2 ft. 6 in. on each wall for 2 ft. stall and 2 ft. 3 in. for 1 ft. 9 in. stall. The angle stall should always contain an outlet.

Outlets :

Are placed centrally in the stalls near the front and the position of the outlet should be plotted accordingly. It is recommended that there should be one outlet for every four stalls to ensure efficient draining.

Fall :

The stalls are made without fall in the channel. A fall of 1 in. in 96 in. is obtained by slightly tilting the stalls towards the outlet as indicated by fixing marks on the stalls. The tops of stalls, therefore, fall towards the outlet, but as the stalls vary slightly in height, the fall at the top will not correspond with the fall in the channel.

Cisterns :

May be either Fireclay or Cast Iron, and are usually automatic and fed from a pet cock, with drop by drop feed, but pull cisterns are insisted upon by certain water authorities.

Height of Cistern :

Recommended height : 7 ft. from floor to the underside of the cistern.

Capacity of Cistern :

Allow one gallon per stall.

Cistern Brackets :

Types—Fireclay corbels to build into wall. Cast Iron to screw or build into walls.

Flushing :

Distributing pipes and nozzles or adjustable face spreaders, should be in (a) copper (b) cupro nickel silver, or (c) stainless steel.

Dome Outlet Gratings :

Should be in gunmetal, with a 2 in. screwed body.

Traps :

The various types of trap suitable for use with urinals are set out on Information Sheet No. 246.

Bedding :

Concrete bedding should be provided and skimmed over with a good waterproof cement, the stalls should then be fixed in position dry and grouted with a waterproof cement, the joints finally pointed with Snowcrete, Parian, Keenes or Adamant. This method enables the fixer to obtain perfect jointing between stalls ; joints should never exceed $\frac{1}{8}$ in. in width. Fluid concrete or cement should not be poured in behind and between stalls after they are set in position.

General Data :

Urinal stalls are unglazed at the base for sinking into the floor.

When planning conveniences, provision and sufficient depth of floor should be allowed to accommodate the stalls. If this cannot be arranged the stalls can be laid on the existing floor and the base of stalls housed in cement to tread level. This forms a step up or raised tread to the urinal and should be of sufficient projection to enable the users to stand comfortably.

When ranges are to fit between walls allowance over and above the overall length of the stalls should be made to enable the stalls to be worked into position, $\frac{1}{2}$ in. at each end being sufficient. Lights should be arranged so as not to interfere with the fixing of the cistern and the urinal stalls. When possible window cills should never be less than 5 ft. from finished floor level. This will allow room for securing the horizontal pipes above the stalls. Cisterns should be central for ranges up to eight stalls, and two cisterns or more for ranges over, each cistern fixed centrally over the stalls it supplies.

Issued by : Associated Clay Industries, Ltd. (W.R. Pickup, Ltd., Branch)

Address : Horwich, Bolton, Lancs

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Telegrams : " Stonite Horwich "

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Telephone : Whitehall 4115

501.

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WALL INSULATION ONLY :

COMPARATIVE EFFECTS ON FUEL CONSUMPTION & HEATING PLANT.

DATA USED IN THE CALCULATIONS :

Average EXTERNAL temperature ..... 43° F.
October 1st to April 30th
Minimum EXTERNAL temperature ..... 30° F.

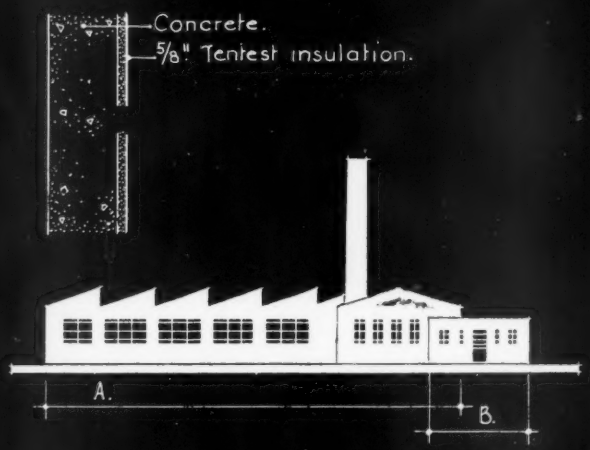
THERMAL CONDUCTIVITY :

(B.T.Us. per hour per sq. ft. per °F. for 1" of thickness).
Tentest (N.P.L. test.) ..... 0·38

TRANSMISSION COEFFICIENTS :

5" Concrete wall ..... 0·83
5" Concrete wall with 5/8" Tentest permanent shuttering ..... 0·352

Diagram showing the sections A and B and the wall construction considered in this analysis.



ANALYSIS OF TEMPERATURE REQUIREMENTS.

SECTION OF BUILDING	TYPE OF WALL.	SQUARE FEET OF WALL SURFACE.	HGT. OF MIDDLE OF WALL ABOVE FLOOR.	DITTO ABOVE BREATHING LINE (5' 0")	TEMPERATURE AT BREATHING LINE.	2% RISE FOR EACH FOOT OF HEIGHT ?	AVERAGE WALL TEMPERATURE	TEMP. DIFF. INTERNAL & EXTERNAL.	
								max.	av.
A.	5" CONC.	10,000	11' 0"	6' 0"	55° F.	6·6° F.	61·6° F.	31·6° F.	18·6° F.
B.	5" CONC.	1,800	5' 0"	0	62° F.	0	62° F.	32° F.	19° F.

? Note - The 2% rise in temperature is taken for each foot of height between the Breathing line & the middle of the wall.

NOTE : An annual heating period of 5,000 hours has been assumed (October 1st to April 30th) with an effective heating capacity of 6,000 B.T.Us. per pound of fuel and a heat output from hotwater pipes and radiators of 160 B.T.Us. per hour per square foot.

SECTION A.		ANALYSIS OF INSULATION.	SECTION B.	
UNLINED.	5/8" TENTEST.		5/8" TENTEST.	UNLINED.
	£. s. d.	CAPITAL COST OF WALL INSULATION. Tentest at	£. s. d.	
●	92. 11. 10.	1/8 d. per sq yard for 10,000 sq. feet.	16. 13. 4.	●
57·43	24·36	ANNUAL FUEL CONSUMPTION In tons of coal.	4·48	10·56
£. s. d.	£. s. d.	VALUE OF FUEL CONSUMED.	£. s. d.	£. s. d.
71. 15 10.	30. 9. 0.	at 25/- a ton.	5. 12 0.	13. 4. 0.
	£. s. d.	SAVING IN COST OF FUEL PER YEAR.	£. s. d.	
●	41. 6. 10.	over unlined wall.	7. 12. 0.	●
£. s. d.	£. s. d.	CAPITAL COST OF HEATING INSTALLATION.	£. s. d.	£. s. d.
368. 16. 7.	156. 8. 4.	at 4/6 d. per sq. ft. of heating surface.	28. 10. 3.	67. 4. 7.
	£. s. d.	SAVING IN CAPITAL COST OF ABOVE.	£. s. d.	
●	212. 8. 3.	over unlined wall.	38. 14. 4.	●

Information from the Tentest Fibre Board Co. Ltd. (5.)

INFORMATION SHEET : COMPARATIVE THERMAL INSULATION OF BUILDINGS.
SIR JOHN BURNET TAIT AND LORNE ARCHITECTS ONE MONTAGUE PLACE BEDFORD SQUARE LONDON W.C.1. *Oscar A. Bayne*

THE ARCHITECTS' JOURNAL
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INFORMATION SHEET

• 256 •

THERMAL INSULATION

Product : Tentest Fibre Board

General :

This is the fifth of a series of Sheets in which the insulating value of various forms of construction are being analysed.

For this purpose a common type of building has been taken ; a factory having a small office block and a larger workshop.

This typical building forms the basis on which all Sheets are calculated ; the analysis given on one Sheet is therefore comparable with those given on any other Sheet.

As will be seen on this Sheet, only the walls of the buildings are dealt with as various types of roofs have been analysed in previous Sheets. This method, by separating entirely the calculations for the roof from those for the walls, will allow the figures for any type of roof to be used in conjunction with the figures for any type of wall, in order to determine the combined effect.

Basis of Calculation :

The figures used as the basis of these calculations are set out on the face of this Sheet, and normal practice and figures have been followed throughout. The coefficient of conductivity of concrete is taken as 12·0 B.T.U. per sq. ft., per 1" thickness, per hour, per °F.

Area of Walls :

In determining an arbitrary but reasonable figure for the wall area of the factory the following method has been employed :—

In previous Sheets of this series a roof area of 20,000 sq. ft. has been used ; this area might represent a factory say 200 ft. long by 100 ft. wide.

Assuming that side walls contain windows, that end walls are solid, and that the average height of the walls throughout is 22 ft., the wall area will be :—

End walls—100′ × 22′ × 2 = 4,400 sq. ft.
Side ,, including windows—200′ × 22′ × 2 = 8,800 sq. ft.

If the side walls are taken as 30% window and 70% wall the wall area will be—

$\frac{8,800}{100} \times 70 = 5,280$ sq. ft. and the total area of all walls—4,400 plus 5,280 = 9,680 sq. ft.

For the purposes of this analysis, therefore, 10,000 sq. ft. has been taken as a reasonable figure for the wall area not including windows.

The wall area of the office block (section B) was determined in a similar manner.

Average Temperature of Walls :

In calculating the average temperature of the walls, 2 per cent. of the temperature at the breathing line (5 ft.) is added for each foot that the mean height of the walls is above breathing line, i.e., in a wall 22 ft. high the mean height is $\frac{22}{2} = 11$ ft.

This is (11 ft.—5 ft.) = 6 ft. above the breathing line, so that the temperature rise to be added is 55° × 6 × 2 per cent. = 6·6° F.

As the office block is 10 ft. high there is no addition to be made.

Annual Fuel Consumption :

The fuel consumptions given are based on the calculations given in the tables above.

Lining :

It will be noticed that in giving the cost of insulation, variations in the cost of fixing have not been taken into account, the price given being the cost of the material itself.

Previous Sheets :

The previous Sheets of this series were Nos. 220, 230, 236 revised, and 250.

Information from The Tentest Fibre Board Co., Ltd.
Address : Astor House, Aldwych, London, W.C.2
Telephone : Holborn 8018

Fuel Consumption for one Fuel-Year (calculated for the walls only).

$$\text{Fuel Consumption in tons} = \frac{\text{Area in sq. ft.} \times \text{Transmission Coeff.} \times \text{Average Temp. diff.} \times \text{hours per year.}}{\text{B.T.U. per lb of fuel} \times 2,240}$$

Section A.		
5 in. concrete walls uninsulated	$\frac{10,000 \times 0·83 \times 18·6 \times 5,000}{6,000 \times 2,240}$	= 57·43 tons.
Ditto insulated with $\frac{5}{8}$ in. Tentest permanent shuttering	$\frac{10,000 \times 0·352 \times 18·6 \times 5,000}{6,000 \times 2,240}$	= 24·36 tons.
Section B.		
5 in. concrete walls uninsulated	$\frac{1,800 \times 0·83 \times 19 \times 5,000}{6,000 \times 2,240}$	= 10·56 tons.
Ditto insulated with $\frac{5}{8}$ in. Tentest permanent shuttering	$\frac{1,800 \times 0·352 \times 19 \times 5,000}{6,000 \times 2,240}$	= 4·48 tons.

Capital Cost of Heating Installation (calculated for the walls only).

$$\text{Capital cost} = \frac{\text{Area in sq. ft.} \times \text{Transmission Coeff.} \times \text{Max. Temp. diff.} \times \text{cost per sq. ft.}}{\text{Heat output per sq. ft. radiation.}}$$

Section A.		
5 in. concrete walls uninsulated	$\frac{10,000 \times 0·83 \times 31·6 \times 4·5}{160 \times 20}$	= £368 16 7
Ditto insulated with $\frac{5}{8}$ in. Tentest permanent shuttering	$\frac{10,000 \times 0·352 \times 31·6 \times 4·5}{160 \times 20}$	= £156 8 4
Section B.		
5 in. concrete walls uninsulated	$\frac{1,800 \times 0·83 \times 32 \times 4·5}{160 \times 20}$	= £67 4 7
Ditto insulated with $\frac{5}{8}$ in. Tentest permanent shuttering	$\frac{1,800 \times 0·352 \times 32 \times 4·5}{160 \times 20}$	= £28 10 3