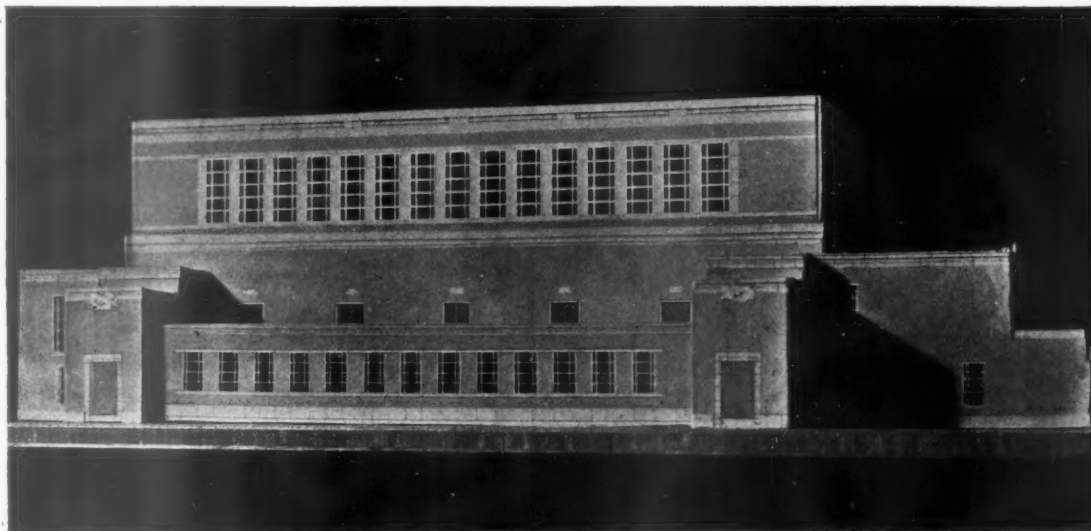


NEW LIBRARY AT SWANSEA

THE FINAL SCHEME

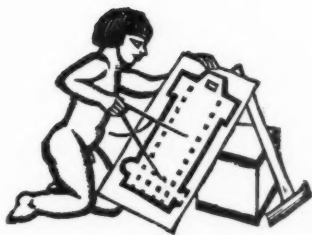


WORK is about to begin on the new library for the University College of Swansea, designed by Verner O. Rees. The model shown above, prepared in the architect's office, shows the building in its final form save for a small increase in the depth of the clerestory windows.



3,500 FT. SPAN

The forty foot lamp-posts at the side of the roadway are the only indication of the immense scale of the George Washington suspension bridge over the Hudson River: the tower at the end of the perspective rises nearly 400 feet above the roadway. Photograph by Margaret Bourke-White from "The Architectural Record."



D I F F E R I N G V I E W S

OUR leading article of last week expressed the opinion that all was not well with the existing competition system. In this view discussions which have been taking place during the last few months would seem to show that we are not alone.

It is felt by many architects, as we have stated, that a system which should offer a continuous opportunity for the evolution of higher architectural standards, that should result in the profession's continuous refreshment by bold and progressive ideas, is patently failing to do so.

Most architects will admit that this is no overstatement of the present position, and that architectural standards will necessarily suffer if they depend for their raising on the rare occurrence of a single architect being entrusted with an important building by clients leaving him absolute freedom as to the form of his solution, and to the still rarer coincidence of that architect being granted sufficient time and endowed with enough thoughtful enthusiasm to try out alternative solutions in anything approaching the number provided by an open competition.

But though all these facts may be agreed, agreement ends with them. That the problem is one of great difficulty we have already granted. The mere repetition of difficulties, however, is not in itself constructive, and it was with that realization that we put forward last week a suggestion for reform of the whole procedure of assessment. In doing so it was not expected that adverse criticism would be escaped, nor has it been.

One of the letters printed on another page represents what is probably a common view—that the aim should be the improvement of the existing system rather than radical changes which would, in the opinion of our correspondent, make what is at present a lottery into a greater lottery still. This letter, in brief, maintains that the efforts of the profession should be concentrated on preventing promoters compelling by their conditions the adoption of possibly out-of-date plan forms.

We cannot see that the contentions of this correspondent are as destructive of, or as opposed to, our own as he would seem to feel.

We admitted, as he admits, the vital problem of the promoter. By the encouragement and if possible by the tactful guidance of promoters, the whole system obviously stands or falls. We hold, however, that the choosing by promoters of almost any architect they like as their assessor must be ended. And it would appear that this could best be achieved by the establishment of a roll of assessors by the R.I.B.A. With such a roll once published the task of persuading promoters that their assessor must be amongst those upon it would be infinitely easier.

Thus the final points in our contention are come to—that the adviser should not be the assessor, and that the assessor should be chosen after the designs are submitted.

We believe that if these were carried out promoters would have the advantage of the guidance of an adviser of their own choosing and would be able to express freely to him their views. At the same time competitors would not be harassed by speculations as to how much the adviser agreed with those promoters' views; and the adviser would have constantly in mind that his whole duty lay in the preparation of conditions precise in schedule but free as to potential solution.

As to the second point, this correspondent maintains, at least by implication, that knowledge of the assessor's name prevents a competitor wasting time on a design antipathetic in every respect to him who will judge it. This we do not deny; it is one of the strongest points in favour of our suggestion. By it our correspondent admits that competitors today "go for the man" every time; we maintain that competitions will never be a source of progress and inspiration until all competitors "go for the building" with their best knowledge and deepest conviction.

This can only be obtained satisfactorily, in our view, by the submission of designs before the name of the assessor is published. Under such a procedure present-day "go for the man" competitors may feel discouraged, they may feel, as our correspondent has implied, that this method would transform open competitions into a fantastic lottery. We consider that this feeling can be avoided in either of two ways.

As another correspondent suggests this week, the competitors themselves might elect their assessor by a voting paper sent in with their designs, thus eliminating in part, though not to the degree we feel desirable, any tendency to submit only what it is believed the assessor will favour. The second method, which, if opinion is generally unfavourable to a ballot we hold to be much the better, is that of the appointment of a jury of three assessors representing the various schools of thought concerning architectural design.

There are many architects who distrust the efficacy of the jury system, yet two of the most recent awards under this system, the Shakespeare Theatre and the R.I.B.A. building, are universally approved.

Finally there may be those who would object to the complication and extra cost of these reforms and contrast them with the simplicity of the present. To these the best answers would seem to be that the assessing of an open competition should be an honour not too highly rewarded in cash, and that the ensurance of the very best results from a system as basically fine as that of the open competition is well worth a little hard work and arrangement.



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N O T E S & T O P I C S

A TOWN PLANNING OFFICER FOR LONDON

THERE is growing surprise amongst those people who recognize the importance of Town Planning that the London County Council has not appointed a chief officer for Town Planning.

I always imagined that it was one of the essentials of a great enterprise that there should be a definite head to direct it, and I can't help thinking that the planning of London would benefit greatly by having one too, for without doubt this is one of the greatest enterprises the L.C.C. has ever undertaken.

At the moment, the duties which would fall upon a planning officer appear to be shared by the valuer and the architect, both of whom, prior to the resolution to town plan, were very busy men.

We know that many local authorities, much to their shame, do not realize how important a subject planning is, and are content to appoint an extra member to the borough engineer's staff to cope with it, but we expect a much broader outlook from the L.C.C.

To many people, including Astragal, this job appears to deserve the constant application of the best brain that can be found, and the sooner it is applied the better for us all.

MISINTERPRETATION

Two cases have been brought to my notice this week of the curious misinterpretation of working drawings. In the first case the detail drawing of a stone fireplace showed the usual diagonals to distinguish each stone... consider the architect's blank astonishment upon seeing the fireplace fixed with these diagonals incised on every stone.

In the second case the detail drawing of an extension

showed brown for wood, red for brick, and blue for glass... consider here the client's surprise on looking through his new window glazed with deep blue glass.

Does all this mean that the conventions of working drawings are becoming too technical and involved for ordinary intelligence? Or do builders nowadays receive all their training from outmoded textbooks?

The question is a serious one, for before long we may be confronted with floor levels dotted across the stonework, the flowing curves of door swings inlaid in our floors, wire centre lines suspended across our windows and perhaps even a neat little inscription about errors and omissions inset in the principal door jamb.

PARTY WALLS

A friend of mine who owns one of a number of low buildings in an important street mentioned a matter to me the other day which may be of interest to quite a number of owners of buildings.

One of his immediate neighbours has decided to rebuild his premises in Portland stone and proposes to raise his building two or three storeys.

The Town Planning authority has made it a condition of approval that the party wall, which will be visible above my friend's premises, shall also be faced in Portland stone.

Now my friend is wondering whether, when he comes to rebuild within the next year or so, he will have to pay for a Portland stone party wall.

HACKNEY MARSHES

According to the press, the opposition to the Hackney Marshes Housing Scheme is consolidating to protest at the enquiry against the seizure of 30 acres of open space.

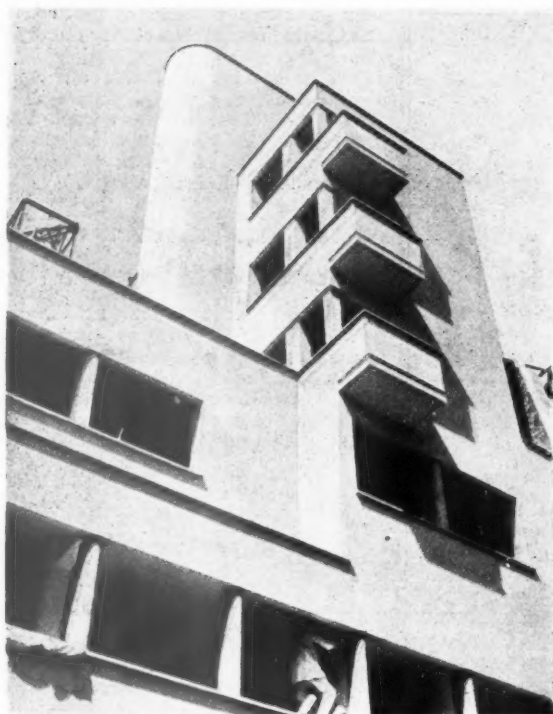
It would surely disarm all criticism if the L.C.C. would definitely undertake to provide 30 acres of useful open space in the east end of London in exchange. If it is going to plan properly it is bound to provide much more than 30 acres, so why not promise to do so now?

STOP AND GO

The news that a considerable number of contracts for public buildings and works, which were held over from the period 1931-1932, have been placed during the last six months at prices ranging from 5 to 15 per cent. above those of the tenders of the "depression," seems to point one moral: that the real common possession of State and private enterprise is their unfailing tendency to panic simultaneously.

It is obvious that postponed public work was as necessary in 1931-32 as it is today. Then the largest contractors would have keenly competed for the work; during the last few months tenders have been invited from contractors who, in many cases, were already supplied with good things to full efficient capacity.

To quite simple people all this seems very silly. For the big building firms of today a steady continuance of work bringing in a modest profit is the one essential requisite—



Fire Station in Paris. Designed by Mallet-Stevens.

far and away better than booms in which they may be compelled to refuse good contracts, succeeded by slumps in which they are compelled to finance schemes for themselves in order to keep their shops going.

If B.I.N.C. cannot entirely succeed in ending this inefficient alternation, it is to be hoped that government departments will at least take a leaf from the book of the Government of India. There, essential public works may be carried out in times of prosperity, but the bigger and more costly schemes are held in reserve—ready to be proceeded with immediately in times of famine or distress. And such reasonable farsightedness is the more excusable in that works so executed are also far cheaper.

THE COMPETITION BUSINESS

It is a good augury for a possible improvement in competition procedure that Mr. Percy Thomas should be President of the R.I.B.A. at a time when a lot of people are expressing strong opinions on the subject.

Mr. Thomas may almost be said to hold office by virtue of his ability as a competitive architect; and as assessor, competitor and winner of more competitions than most architects have entered for, his advice and guidance should be invaluable during the discussion of reforms.

Suggestions for securing more equitable results have never been lacking to those entrusted with the direction of competition procedure; but the real crux of the whole matter has always been the necessity for the delicate handling of promoters. The most perfect system imaginable (for architects) will fail if promoters cannot be persuaded to believe in its perfection also.

And, apart from all others more debatable, it seems very

necessary that, for their own good, promoters should be brought to agree to two changes.

Up to the present only half of the assessors of competitions have been appointed by the R.I.B.A., the remainder being selected by the promoters; and only about one in ten of assessors is appointed before the site is chosen for the proposed building.

It should not be beyond the bounds of possibility to persuade promoters that their local architectural favourite, though no doubt an excellent man, may not be of sufficient calibre to inspire confidence amongst competing architects that he will select the best design.

Equally, it might be pointed out to promoters that the selection of the most suitable site for a building is sometimes most of the battle, and that in this matter they might benefit from skilled advice.

A very big step towards better competitions would have been taken if the Competitions Committee could bring the public to a sweet and universal conviction upon these points.

WIT VERSUS WYTHENSHAW

The debate on housing that the B.B.C. staged the other night between Mr. Geoffrey Boumphrey and Sir E. D. Simon, representing flat development and cottage development respectively, was entertaining; but I, personally, found it made me very annoyed.

It is no doubt a splendid subject from the point of view of academic controversy, and the two actors played their parts ably and amusingly (though, to one listener, witty debating points and descriptions of a certain Lancastrian garden suburb seemed to constitute very many of the weapons on either side).

But has this irritating subject any reality at all apart from the solution of an actual, practical problem? "Flats or cottages" is rapidly becoming a standard subject of housing controversy, separating the profession into two schools, with which for some reason the followers of the left and the right respectively are obstinately identified; as though there was any sense at all in adhering to one belief or the other regardless of circumstances. One might just as well hold a debate on lobsters versus crabs.

CHANGING BLOOMSBURY

London news-hawks all seem busy churning out snappy little paragraphs about what Bloomsbury will look like when the new London University, the extensions to the British Museum and the Pharmaceutical Society's buildings are finished.

To the architectural eye Bloomsbury has been changing for years, long before Russell Square was disfigured with lumps of terra-cotta. The old small-paned windows have nearly all been replaced with plate glass, but the final metamorphosis I saw only last week—tall first-floor windows in plate glass being replaced by ever so arty horizontalism which looked worse than I could ever have believed possible.

ASTRAGAL

NEWS

POINTS FROM
THIS ISSUE

The Harrow Competition reviewed 584

"Many premiated (competition) schemes are indeed sound and practical, many are veneered with a genteel surface modernism, but all are planned with the conception of the past and never of the future." 592

The disadvantages of pisé de terre. 598

In 1933 there were 84 days when the temperature in London was over 70 deg. 603

LONDON COUNTY COUNCIL

The efforts and intentions of the Metropolitan Borough Councils in respect of the present campaign for slum clearance rehousing were discussed by the London County Council at its meeting on Tuesday last. Following are some extracts from the report presented by Mr. Lewis Silkin, Chairman of the Housing and Public Health Committee: "Since April, 1933, and up to the end of June, 1935, the Metropolitan Borough Councils have notified their intentions of considering proposals for dealing with over 4,100 properties under the provisions of Part I of the Housing Act, 1930. Altogether we anticipate that the Metropolitan Borough Councils, relying on the assurance that the necessary rehousing accommodation will, if desired, be provided by the Council, will, in response to the special appeal made by the Minister of Health in 1933, undertake schemes for the clearance of areas comprising in the aggregate upwards of 9,000 houses. These figures do not include houses and other properties on adjoining lands which may be acquired for redevelopment purposes, nor do they take into account the proposals of the Borough Councils for securing the demolition of individual unfit houses not included in clearance areas. We shall continue to keep in touch with the Metropolitan Borough Councils with a view to obtaining details of the progress which is being made."

BIRMINGHAM BUILDING TRADES
EXHIBITION

The Building Trades Exhibition at Bingley Hall, Birmingham, was opened last week by

THE
ARCHITECTS'
DIARY

Thursday, October 24

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.

NORTH LONDON HOME LIFE EXHIBITION. At the Alexandra Palace, N. Until October 26.

BUILDING TRADES EXHIBITION. Birmingham. Until October 26.

HOUSING AND HEALTH EXHIBITION. At Glasgow. Until October 26.

ROYAL ACADEMY OF ARTS, Burlington House, Piccadilly, W.1. "The Theory of Colour and its Application to Painting." By Professor A. P. Laurie. 4 p.m.

INSTITUTION OF STRUCTURAL ENGINEERS, 10 Upper Belgrave Street, S.W.1. Presidential address by Dr. Oscar Faber, O.B.E. 6.30 p.m.

INSTITUTION OF ELECTRICAL ENGINEERS, Savoy Place, Victoria Embankment, W.C.2. Inaugural address by J. M. Kennedy (President).

SOCIETY OF ANTIQUARIES, Burlington House, Piccadilly, W.1. "Medieval Figure Sculpture in Winchester Cathedral." By T. D. Atkinson. 8.30 p.m.

ROYAL ACADEMY OF ARTS, Burlington House, Piccadilly, W.1. Exhibition of Students' Work. Also October 25. 11 a.m. to 4 p.m.

Friday, October 25

INSTITUTION OF HEATING AND VENTILATING ENGINEERS, London and District Branch. At the Borough Polytechnic, Borough Road, S.E.1. Discussion on "Installation Problems." 7 p.m.

INSTITUTION OF SANITARY ENGINEERS. At the Caxton Hall, Caxton Street, S.W.1. "Ventilation." By C. B. Jackson. 7.30 p.m.

INSTITUTION OF MECHANICAL ENGINEERS, Storey's Gate, Westminster, S.W.1. Presidential address by Col. A. E. Davidson. 8 p.m.

ROYAL ACADEMY OF ARTS, Burlington House, Piccadilly, W.1. "Early Methods of Oil Painting." By Professor A. P. Laurie. 4 p.m.

Monday, October 28

INSTITUTE OF WELDING, North-Eastern (Tees-side) Branch. At the Cleveland Scientific and Technical Institute, Middlesbrough. "Welding Shop Efficiency." By T. A. Swindell. 7.30 p.m.

GOLDSMITHS' COMPANY'S LECTURES. At Goldsmiths' Hall, E.C. "The Metallurgy of the Alloys of Gold and Silver." By Donald MacDonald. 7 p.m.

Tuesday, October 29

ARCHITECTURAL ASSOCIATION, 36 Bedford Square, W.C.1. Presidential address. By the Hon. Humphrey Pakington, F.R.I.B.A. 8 p.m.

Wednesday, October 30

INCORPORATED ASSOCIATION OF ARCHITECTS AND SURVEYORS, London and Home Counties Branch. At 43 Grosvenor Place, S.W.1. Annual General Meeting. 7 p.m.

Mr. P. J. Hanlon, M.P. The Exhibition will remain open until October 26.

Mr. Hanlon said there was hardly any branch of public activity which had played so great a part in the development of social life since the war as the building trades. "Their contribution to the housing of the people occupies a position almost phenomenal in the march of modern progress," he added. "When you realize that the building trades of this country—and I am speaking now of private enterprise—have invested £550,000,000 in building schemes, it indicates the extent to which public spirit and the spirit of adventure has animated the industry in making that contribution to the expansion and development of the amenities of life.

"The building trades," he continued, "much as they have accomplished in the past, have a still larger sphere of activity in the future. We have to deal with the

slum-clearance problem of this country, and in that respect the building trades have been discharging their obligations in the most remarkable way. We are at the moment effecting slum clearance at the rate of two thousand houses a week. When the Overcrowding Act comes into operation the building trades will have further responsibilities placed upon them."

BRIGHTON RECONSTRUCTION

The Brighton Town Council last week approved, in principle, a scheme to spend £250,000 on improving the front between the two piers. The plan proposes a wider road divided by a grass strip, and gardens between the road and a widened promenade. At either end of the improved area shops and flats are proposed. The lower esplanade and a wide stretch of beach will disappear, and beach-trading stands, taxi stands and car parks on the front will be abolished.

SOMERSET COUNTY HALL

The new Somerset County Hall at Taunton, designed by Mr. E. Vincent Harris, was opened last week by Sir Fredk. Berryman, a former chairman of the Somerset County Council.

FUTURE OF RANELAGH

A meeting last week of members of the Ranelagh Club decided to ask the Minister of Health to help to secure the town planning of the club's grounds as a private open space.

A few hours before the Club's annual meeting, a member obtained an injunction in the Chancery Division to restrain Ranelagh Club, Ltd., the owners of the property, from disposing of any portion for building. The annual meeting was postponed until November 1.

On October 18, the action relating to the Club's future was adjourned for a week, and an undertaking was given that the Company meanwhile would not interfere with the amenities of the members.

GUILDFORD CATHEDRAL

The Council of the Cathedral and New Churches Fund has decided to make a start at once with preparations for the building of the new Cathedral, in order that the Archbishop of Canterbury may lay the foundation stone next July. The architect for the building is Mr. Edward Maufe, F.R.I.B.A., whose design was placed first in a limited competition held some two years ago.

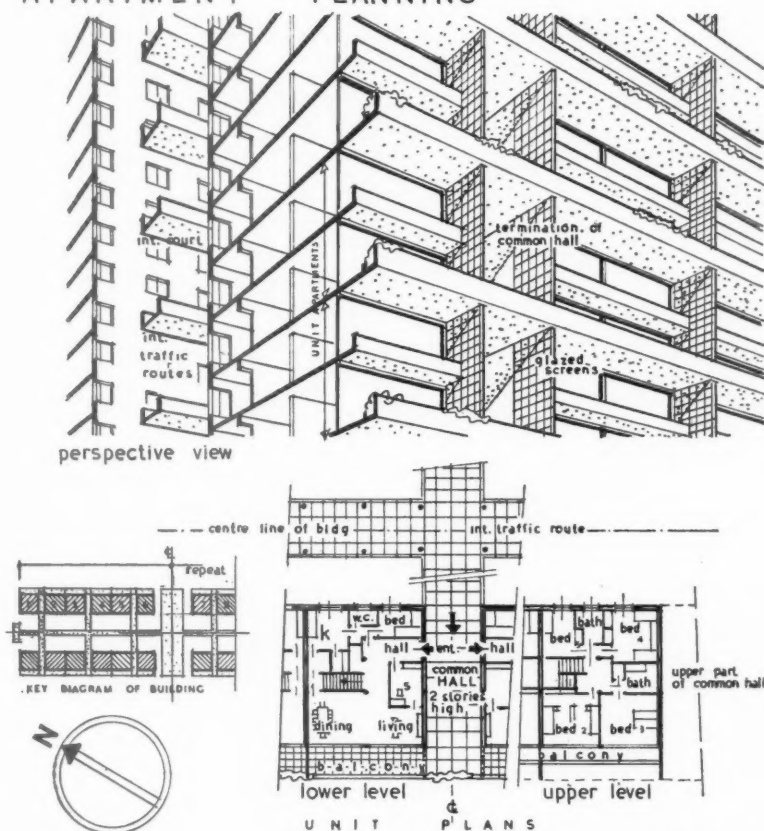
ARCHITECTS' REGISTRATION
COUNCIL

The fifteenth ordinary council meeting of the Architects' Registration Council of the United Kingdom will be held at 66 Portland Place, W.1, on Tuesday, December 17, at 5 p.m.

PROPOSED FLATS FOR HAMPSTEAD

Sir Reginald Blomfield and Sir Raymond Unwin will address a meeting to be held at Hampstead on October 28, to protest

APARTMENT PLANNING



An Italian project. Designer: Vito Latis.

against the L.C.C.'s decision, after previous refusals, to allow the erection of flats at the rear of Belsize Avenue.

The Mayor of Hampstead, Mr. B. S. Townroe, will preside at the meeting, which will suggest that the power to decide should be given to the Metropolitan borough councils.

THE NATIONAL FEDERATION OF HOUSING SOCIETIES

The Housing Act, 1935, while maintaining the principle that the primary responsibility for ensuring proper housing conditions must continue to rest with the local authorities, contemplated that the fullest advantage should also be taken of the co-operation of voluntary housing associations in dealing with the housing problem. With this object the Act provided that if a central body were established for the purpose of promoting the formation and extension of housing associations, and of giving them advice and assistance, the Minister of Health should be able to recognize that body, and, subject to Treasury approval, to make an Exchequer grant in aid of its expenses.

Sir Kingsley Wood has now formally recognized the National Federation of Housing Societies, a body which was incorporated in June last to promote, encourage and assist the formation and work of housing societies; and he has informed

the Federation that, should they wish him to take any action under his power to contribute from Exchequer funds, he assumes that they will address their application to him in due course.

The first steps towards the formation of The National Federation of Housing Societies were taken at a national conference of housing societies held in London in September, 1934, and its exact constitution has been the subject of long and careful deliberation. To enable all the societies to have a voice in determining the constitution, regional conferences were arranged in the early part of this year in London, Birmingham, Manchester and Newcastle. Throughout the formation of the new body, close touch has, it is understood, been maintained with the Garden Cities and Town Planning Association, one of whose objects has always been the assistance of the housing societies. The Federation's first general meeting was held on September 20 last, when 51 housing societies had already become members.

MINISTRY OF HEALTH

Consequent on the retirement of Mr. I. G. Gibbon, C.B., C.B.E., Director of the Local Government Division, which will take effect on January 1, 1936, the Minister of Health has made the following appointments as from that date: Mr. H. W. S.

Francis, O.B.E., to be Director of the Local Government Division; Mr. J. C. Wrigley, to be Director and Principal Assistant Secretary of the Housing and Town Planning Division; Mr. R. B. Cross, O.B.E., to be a Principal Assistant Secretary; Mr. E. D. Macgregor and Mr. H. H. George, M.C., to be Assistant Secretaries.

LECTURE BY PROF. LAURIE

Following are some extracts from a lecture entitled "The Decoration in Colour of Interior Walls coated with Plaster and External Walls coated with White Cement," given by Professor A. P. Laurie at the Royal Academy of Arts on October 17.

"Owing to the change in fashion and the development of the modern style of architecture the old practice of painting designs and decorations on walls is of growing importance.

"The method of Buon Fresco, laying pigment mixed with water on wet plaster, which was followed by the great Italian fresco painters of the fifteenth and sixteenth centuries, is not only difficult of execution in modern conditions, but has not proved durable in this damp climate, with the atmosphere in our cities loaded with soot and tarry particles and impregnated with sulphur acids which rapidly corrode lime surfaces. The method followed in many cases of laying and cementing canvas on the walls and painting with oil or varnish colours mixed with wax, is cumbrous and expensive, and tends to the painting of oil pictures rather than to decorating wall surfaces.

"The need is for something simple, easily used and sufficiently permanent in the way of paint, which is available on the market.

"For some three years the Art Students at the Royal Academy School have been experimenting on various products prepared today for the house painter on large plaster panels. In these experiments we have had much advice and assistance from the chemists of one of the leading firms of paint manufacturers. We have found the most practical solution of the problem is the use of the flat drying oil paints at present on the market.

"The panel is primed with a white containing a certain admixture of a Tung Oil preparation to protect it from injurious alkaline salts which may be contained in the plaster, and the painting carried out with the ready mixed paint is thinned with a special medium supplied by the paint manufacturer and with turpentine.

"With a little practice a perfectly flat matt surface, firmly adhering, is obtained. The use of these paints has the advantage that it compels the technique of the old fresco painters, thin washes of colour on a white ground, direct and final painting, and not more than one layer of paint laid over another.

"While this is suitable for internal wall decoration, it is necessary to pay attention to the plaster used on the walls. Old lime plaster is quite safe, and the slow setting varieties of plaster of paris at present on the market. Portland cement and Keene's cement, as has been demonstrated by the researches of the Building Research Committee, may cause trouble. The danger is not due to the presence of lime, but the

setting free of soluble alkaline salts, under certain conditions.

"Attention is being directed not only to internal but external wall decoration in colour owing to the extended use of white Portland cement. There are several paints on the market, depending probably on the use of Tung Oil, which are quite good, but the aim in my opinion should be to incorporate the pigment with the cement.

"This necessitates the choice of pigments which will stand the combined action of the weather and Portland cement and are at the same time reasonable in price. Red, yellow and green can be obtained, but there is no blue on the market which, according to my experiments, stands these conditions and is not prohibitive in price. I am searching for such a blue at the present time.

"Another possible direction is the use of granulated coloured glass, thus reviving in a new form the methods of mosaics. This needs the production of a variety of colours of sufficient opacity to produce the right effect, and the selection of colours which will be suitable to our grey skies.

"The problem is difficult but not insoluble, and I have derived much assistance in searching for a solution by investigating old recipes of long-forgotten pigments."

R. I. B. A.



ORDINARY GENERAL MEETINGS

Following is a list of the ordinary general meetings of the R.I.B.A. for the current session :

November 4.—8.30 p.m. President's inaugural address. Unveiling of portrait of Past-president.

November 18.—"Housing and the Re-development of Central Areas," by Mr. L. H. Keay, O.B.E., F.R.I.B.A.

December 2.—"The Work of Beresford Pite and Halsey Ricardo," by Prof. H. S. Goodhart-Rendel, F.R.I.B.A. Presentation of the London Architecture Medal 1934, to Messrs. Sir John Burnet, Tait and Lorne, F.R.I.B.A.

January 13.—Award of prizes and studentships. Criticism by the Hon. Humphrey A. Pakington, F.R.I.B.A., on works submitted for prizes and studentships.

January 27.—8.30 p.m. Address to Students by the President. Presentation of medals and prizes.

February 24.—"Sculpture," by Mr. Frank Dobson.

March 9.—"Some Recent Bridges," by Mr. H. Chalton Bradshaw, C.B.E., F.R.I.B.A.

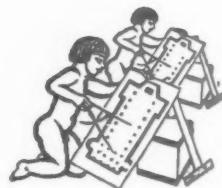
March 23.—"Architectural Education," by Mr. W. H. Ansell, M.C., F.R.I.B.A.

April 6.—8.30 p.m. Presentation of the Royal Gold Medal.

April 20.—"Library Planning," by Mr. Harold A. Dod, M.A. LVPL., F.R.I.B.A.

Each lecture will begin at 8 p.m., except where otherwise stated.

COMPETITION NEWS



THE HARROW COMPETITION

The Conditions Reviewed

January 24.—*Sending-in Day.* Proposed offices for the Harrow U.D.C. (Open to architects of British nationality.) Assessors: C. H. James, F.R.I.B.A., and S. Rowland Pierce, A.R.I.B.A. Premiums: £350, £250 and £150.

The conditions and instructions to competitors, together with site plans, may be obtained on application to Mr. Vernon Younger, Clerk of the Council, Council Offices, Stanmore, Middlesex. (Deposit £2 2s.) The latest date for submission of designs is January 24. Last day for questions is November 4, 1935.

THIS competition, judged from what has been necessarily a somewhat quick survey of the conditions, may be described as a good, straightforward, all-comers' competition, and one that is likely to be popular.

It is a competition for municipal offices only, and therefore the air is immediately cleared of all the anxious problems that result from the presence of an assembly hall. In addition, the site is ample, even though its shape will probably make block plans play a large part in the competition.

The conditions are singularly free from stipulations of the kind which tends to narrow from the outset the range of solutions submitted. In fact, bearing in mind the difficulties of this achievement and the very strong views which promoters so naturally and frequently hold, the assessors are to be congratulated upon their success in this matter. But some general stipulations there are bound to be, and Harrow is no exception to the rule.

As regards the site (shown on the facing page), it is required that all building should be kept back to the 100 ft. line from Boxtree Road and that the principal front and main entrance shall be "towards" this road. The next statement merits full quotation: "It is possible that at some future date the northern portion of the site will be occupied by other public

buildings." Competitors may desire to ask how much weight is to be attached to this clause.

Other points to be noted in regard to the site are that no rights of light need be assumed in connection with surrounding buildings; and the levels. From the extreme northern to the extreme southern end of the site there is a fairly uniform fall totalling 36 ft., and the 300 ft. immediately north of the building line has a north to south fall of about 16 ft. A large house which is to be demolished at present occupies part of the site.

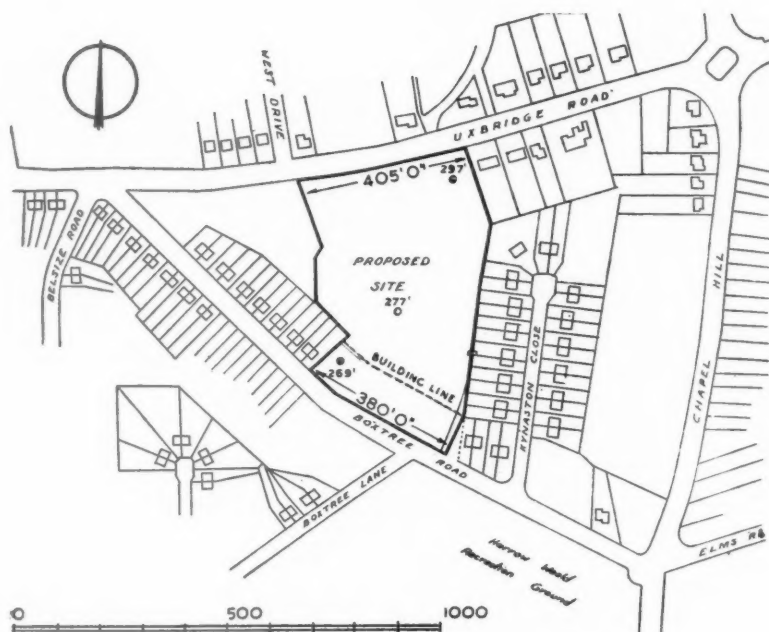
The proper utilization of the site, which competitors are encouraged to visit, will also be controlled by the condition that the building should not exceed three storeys in height, exclusive of any basement.

The plan form of designs submitted is left entirely free. Symmetrical and asymmetrical schemes will be equally considered on merit, but the following guides are given in points of planning detail: deep and narrow offices should be avoided, nor should offices be lit only from small areas; heights must not be less than 11 ft. floor to floor, nor corridors less in width than six feet; entrances should be as few as possible and those used by the public easy of access; and construction throughout must be fireproof.

The reticence of conditions concerning elevational treatment is now universal, as are the terms dignified and simple. To this policy of the non-committal the Harrow conditions add that a tower is not required and that flat or pitched roofs will be equally acceptable. The facing material is to be of brick, with an optional and sparing use of stone dressings.

From these general considerations the competitor is enabled to pass with an open mind to the accommodation required and to its disposition.

The first impression derived from the schedules is that the number of departments is fewer than usual, and the



Competition for proposed offices, Harrow : site plan.

accommodation required for each larger. This is explained by the grouping of many semi-independent departments under a few general headings.

The total of superficial areas requested are shown hereunder (though the accuracy of the reviewer's simple addition is not vouched for) :—

	Feet super.
Council suite	5,650
Clerk's department	3,550
Treasurer	7,850
Medical officer	4,500
Valuation	2,200
Engineer	7,950
Stores, etc.	2,200
	<hr/> 33,900

Review of this accommodation in detail is unnecessary as many requirements are normal. One or two points, however, would seem worth mention.

In the Council suite a request for sufficient gallery seating for 100 members of the public is distinctly out of the ordinary, and is by no means made more ordinary by the fact that a separate entrance from outside is not required for this possibly obstreperous multitude.

A rates office of 3,000 super feet is desired as against a Council chamber of 2,250, but the latter figure does not include the public gallery.

No stipulations are made as to the placing of departments, save in the case of the treasurer (rates), which is required on the ground floor. A feature of great assistance in the conditions is that the number of the staff likely to occupy any particular room is given in

addition to the area desired—a welcome help to competitors which ought to become standard. In no case are more than three rooms desired to be intercommunicating, and this only twice, so that the portion of the various departments which perform "plans itself" is kept low.

Miscellaneous requirements include a staff dining room to seat about 40, kitchen suite (preferably on the top floor and communicating easily with a service room adjoining the Council suite), and caretaker's quarters inside the building. To this list there are the usual additions of lavatories (two grades), cleaners', porter's and telephone rooms, as well as covered accommodation for 75 cycles and 20 cars.

Finally, provision is to be made for a future extension, the same height as the rest of the building, amounting to a grand total of 10,000 super feet.

So much for what is wanted. The amount which it is desired to pay for it is £65,000; or rather, in the usual phrase, the Council "have in mind the expenditure of a sum not exceeding" this.

At first glance this presumption appeared optimistic, but closer study would seem to prove only that competitors must design with a careful economy. A preliminary cube based on the schedule of accommodation, and suitably expanded to cover outstanding items, gives a total of 710,000 cubic feet; a result which I trust, but cannot guarantee, is not wildly inaccurate. At a rate of 1s. 9d. per cubic foot, this gives a cost for the building of £62,000.

To be executed in fireproof construction at this price, it would seem necessary for the winning scheme to embody very fully the assessors' recommendation of simplicity, especially since the total cost must include for any fixed furniture, the Council seating, and the fencing and lay-outs of site and forecourt.

Lastly there are the drawings required. In this list the most encouraging discovery is the absence, let us hope permanently, of that last-minute bugbear, the half-inch detail. As, however, the principal elevation must be drawn instead to $\frac{1}{4}$ th scale, there may be those who doubt the advantage gained. But, on the whole, it is a step in the right direction.

The remaining drawings, to $\frac{1}{4}$ th scale save for the block plan, may be in pencil or black ink line, and a grey wash over doors and windows, together with conventional shadows, is permitted. Black on white prints will be allowed, but not the use of tracing paper. This latter stipulation would seem unfortunate, since white semi-opaque tracing paper mounts as presentably as cartridge and saves a lot of time.

With this isolated and possibly individual criticism, the drawings required are as few and simple as they could well be made.

Concerning the competition generally, there may be the usual feeling that the promoters might have secured an even better site; but this is the limit of disapproval. The assessors have come finely out of the paradoxical struggle involved in the conditions of all competitions—of making those conditions precise and rigid yet flexible. They will almost certainly receive their only possible reward in a full entry from all "schools" of planning.

Other Competition News

COMPETITION RESULT

The result of the competition (promoted by the Management of the Birmingham Building Trades Exhibition), for designs for a block or blocks of flats for working men in Birmingham was announced last week as follows :

Design placed first (£60) : John Harrison, of "Shottle," Somerville Road, Sutton Coldfield.

Design placed second (£30) : A. A. Stewart, of Beaconsfield, Bucks.

Design placed third (£20) : A. V. Pilchowski, of 9 Great Russell Street, London, W.C.1.

Commended : R. Price, of "Yelverton," Thornton Road, Higher Bebington, Cheshire; J. H. and R. S. Gledhill, of 3 (North) King's Bench Walk, Temple, E.C.4;

Charles G. W. Smith, of 57, Castletown Road, West Kensington, W.14.

The assessors were : Messrs. W. T. Benslyn, F.R.I.B.A., Alfred Hale, F.R.I.B.A., and J. B. Sunman, F.R.I.B.A.

PAVILION, SOUTHEND

The Southend Town Council has decided to promote a competition, open to British architects, for a design for an entertainment pavilion on the sea front at Westcliff.

The building will contain a concert and lecture hall, tea terraces and reading, rest and sun rooms and a tepid swimming bath in the terraced gardens.

CENTRAL OFFICES, HERTFORD

We understand that the result of the competition for proposed central offices at Hertford will probably be announced on October 26.

NORTH BRITISH ARCHITECTURAL STUDENTS ASSOCIATION

The North British Architectural Students Association invites members (i.e. members of schools and/or allied societies at Manchester, Glasgow, Edinburgh, Leeds, Sheffield, Hull and Newcastle) to submit, in competition, designs for : 1. A church of England Chapel; and (2) A Control Tower and Waiting-room for an Aerodrome.

Conditions of the competition may be obtained on application to the Hon. General Secretary, N.B.A.S.A. School of Architecture, Armstrong College, Newcastle-upon-Tyne. The latest date for submission of designs is January 31, 1936. Some extracts from the conditions are printed below :

No. 1. A CHURCH OF ENGLAND CHAPEL. Assessor : H. L. Hicks, Esq., F.R.I.B.A. Prize : 10 guineas (presented by the London Brick Co. and Forders, Ltd.) Members are invited to submit designs for a small Chapel for the Church of England. The building is to serve as a Mission Church for a colliery district and is to have a seating capacity of 200. Brick is to be the principal material used and it may be assumed that funds are somewhat limited. The style of the building is left to the competitor, but emphasis is laid on its special character and the requirements for public worship. The site is a corner one in a housing scheme and measures 120 ft. by 80 ft. and is approximately level. There is a road on the west and the south.

Drawings Required.—These may be presented in any medium and should be on either one double elephant or two imperial sheets, and should comprise plans, sections and elevations, to a scale of $\frac{1}{8}$ in. to one foot, together with a $\frac{1}{2}$ in. detail.

Note.—The total prize money is to be apportioned as the assessor may think fit.

No. 2. A CONTROL TOWER AND WAITING-ROOM FOR AN AERODROME. Assessor : R. Bradbury, A.R.I.B.A. Prize : 10 guineas (presented by the Cement Marketing Co., Ltd.). Owing to the size of the landing grounds of some aerodromes, it is often necessary to have a small control tower and waiting-room away from the club house out on the landing ground. The present problem is concerned with such a building. The building, which is to be constructed of reinforced concrete, is to contain the following accommodation : (1) A small waiting-room with minimum lavatory accommodation for both sexes ; (2) A covered verandah with seats also for waiting ; (3) A small baggage store with weighing machine ; (4) A first-aid room with accommodation for one stretcher case ; (5) The control room, which is to be on

the first floor, and is to have an unobstructed view of all parts of the landing field. This room will also serve as an instrument room ; (6) A searchlight, either in a glass-surrounded room or mounted on a platform. The searchlight should be able to cover all parts of the field ; (7) A clock and a wind direction indicator should be incorporated in the building, although the latter should not be of the usual "stocking character."

The building is to be taken as situated in a corner of the aerodrome so that the range of the searchlight and control room need only be one hundred and eighty degrees. A road leads from the main aerodrome building to the control tower.

The drawings required, which are to be contained on one double elephant sheet, or two imperial sheets, and may be to any scale thought suitable by the competitor, are as follows : (1) Plans of each floor ; (2) A cross section, and (3) A perspective, isometric or other projectional view, in colour.

As the problem is of a new type of building, and since the material has almost limitless scope, the competitor should exploit all the possibilities of presentation and design.

Consideration should be given to the outward appearance of the structure ; and the exterior should be treated to incorporate the various artistic finishes which can be produced by the use of the white and coloured cements supplied by the Cement Marketing Company. Information regarding these matters will be supplied on request to the Technical Department, the Cement Marketing Co., Ltd., Portland House, Tothill Street, Westminster, S.W.1.

TWO SCHOOLS AT BOLDMERE

Mr. A. C. Bunch, F.R.I.B.A., the assessor in the limited competitions for two schools at Boldmere, for the Sutton Coldfield Town Council, has made his awards as follows :

1 : SENIOR BOYS' AND GIRLS' SCHOOL : Design placed first (£100) : T. Wayne Thomas, of Birmingham.

Design placed second (£50) : C. M. Armstrong and A. H. Gardner, of Coventry.

Design placed third (£30) : Rolf Hellberg, of Coventry.

2 : JUNIOR MIXED SCHOOL AND INFANTS' SCHOOL : Design placed first (£100) : C. M. Armstrong and A. H. Gardner, of Coventry.

Design placed second (£50) : C. Redgrave, of Coventry.

Design placed third (£30) : Rolf Hellberg, of Coventry.

The competitions were limited to members of the Birmingham and Five Counties Architectural Association.

Competitions Open

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. Designs must be sent to the Town Clerk, Guildhall, York, not later than November 1.

November 16.—Sending-in Day. Lay-out competition for Lumps Fort site, for Portsmouth T.C. Assessor : E. Prentice Mawson, F.R.I.B.A. Premiums : £350 and further £200 divisible. Designs must be sent to the Town Clerk, Guildhall, Portsmouth, not later than November 16.

November 30.—Sending-in Day. Public baths and public health offices for the

Coatbridge Town Council. (Open to architects resident and practising in Scotland for a period of at least two years.) Assessor : Wm. B. White, F.R.I.B.A. Premiums : £250, £150 and £75. Conditions, etc., are obtainable from the Burgh Surveyor, Coatbridge. (Deposit £2 2s.) Last day for submission of designs : November 30.

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 24.—Sending-in Day. Proposed offices for the Harrow U.D.C. (See page 584.)

January 31.—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.

Obituary

EDGAR WOOD

It is with deep regret we record the death of Mr. Edgar Wood, a former president of Manchester Society of Architects, which took place at his home at Porto Maurizio, Italy, on October 12. He was seventy-five years of age.

Mr. Wood was articled to Mr. James Murgatroyd, and became an Associate of the Institute in 1885. He practised in Manchester for several years and, in 1900, entered into partnership with Mr. J. Henry Sellers. Their work included many houses at Middleton, Hale and elsewhere, two elementary schools at Middleton, the Wesleyan Church at Middleton and the Christian Science Church in Victoria Park, Manchester. He was president of the Manchester Society of Architects in 1911-12, and at one time president of the Northern Artworkers' Guild. He was also a member of the Manchester Academy.

Shortly after the war Mr. Wood retired and lived in Italy.

CORRECTION

The advertisement of the Northern Aluminium Company, published in our issue for October 10, should have mentioned the name of Messrs. A. Gardner and Gardner-McLean, who were the architects for the British Oxygen Co.'s Glasgow works.

SHOWROOM IN WIGMORE STREET, W.1



DESIGNED

BY G. A.

JELLICOE

(RICHAIRD

WILSON

ASSISTANT)

GENERAL PROBLEM AND SITE.—The showrooms are intended for the display of furniture and fabrics, and for offices for the use of staff and interviews. It was desired that the show space should be so subdivided as to allow of the display of furniture in spaces suggestive of rooms, and with varying backgrounds. In addition the lay-out adopted was required to be as flexible as possible.

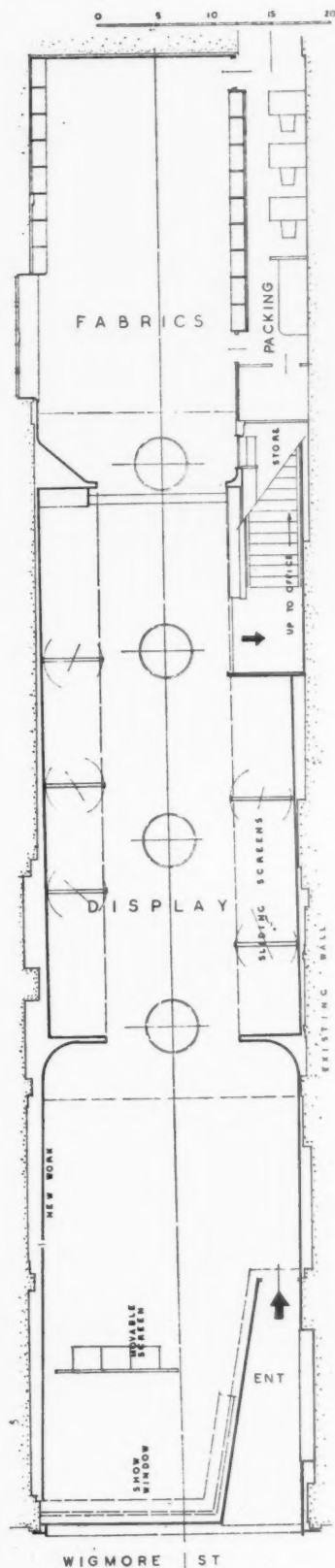
The showrooms occupy the ground floor of a deep building with a narrow street frontage.

ELEVATIONAL TREATMENT.—The shopfront is kept very simple in finish. A narrow deal frame painted white projects 3 ins. from the fascia surface around the show-window and entrance. The fascia is finished in chocolate brown cement rendering, and the lettering is cellulosed lead colour, with pale blue neon tubes in front.

COST.—The contract price of the alterations was £1,140.

Above is reproduced a general view of the shop front by night. On the four pages following are reproduced plan and photographs of the interior; also, an exterior view and plan of the firm's factory at Park Royal.

SHOWROOM IN WIGMORE STREET, W.1:


$$\begin{array}{ccccccccc} R & & I & & C & & H & & A & & R & & D \\ W & & & I & & & L & & & S & & O & & N \\ (& A & & S & & S & & I & & S & & T & & A & & N & & T &) \end{array}$$

THE PLAN.—A fabric showcase is placed in the deep entrance to attract the public to side window for a better view of the shop interior. The window display feature is designed to merge with those in the centre and, with the addition of the floodlit fabrics upon the back wall, to attract customers into the body of the shop. The staff offices and lavatories are on the first floor.

The fabric department is placed at the rear of the shop in order to be seen by daylight from the large side window. The central display bays are subdivided by sliding and revolving screens on which various wall and curtain fabrics can be shown, and which can be moved to allow the showing in separate bays of furniture for rooms of varying sizes.

Above : the shop before alteration ; left : the ground floor plan.

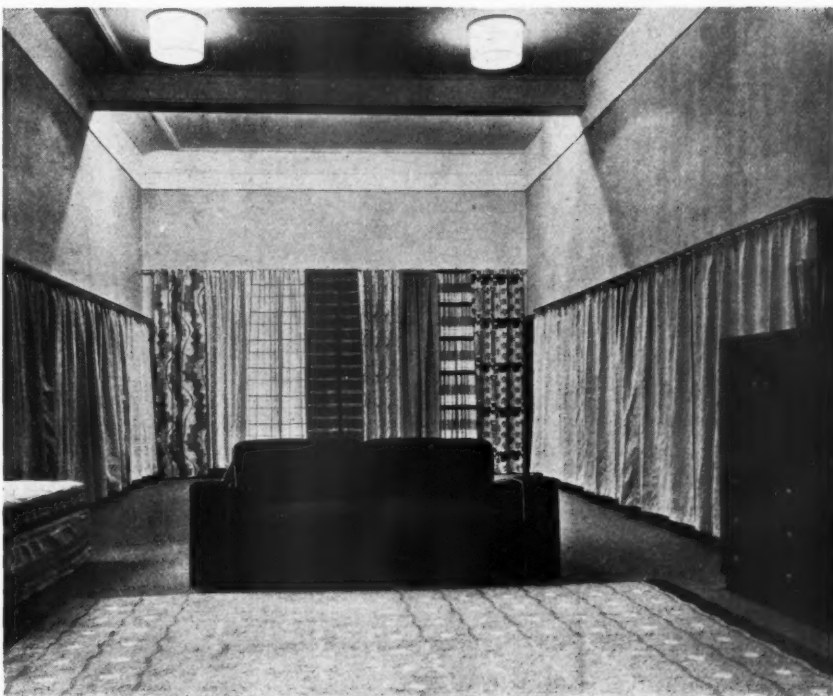
DESIGNED BY G. A. JELLICOE

**CONSTRUCTION AND FINISH.**

—The ceilings and walls generally are of lath and plaster papered and finished with one coat of distemper and eggshell varnish; elsewhere, walls are of flexible paper board mounted on wall-board, secured to studding and similarly finished. The moving screens are of hardwood, plywood faced and papered. Shelving is of polished French walnut. Curtain rails are of stainless steel, and floors generally close-carpeted.

HEATING AND LIGHTING.—Heating is from previously existing radiators with bronze frames and square mesh grilles. Access panels are provided in wallboards. Additional heating from portable electric radiators. The front portion of the shop is lighted indirectly from three floor standards. The centre portion, from four 3 ft. 8 in. diameter lunettes of opal obscured glass, with standard lamps additional. The fabric department is lighted by industrial type fittings against the ceiling.

Above: a general view towards the back of the shop; right: a detail of the fabrics room.



SHOWROOM IN WIGMORE STREET, W.1



BY G. A. JELLICOE
RICHARD WILSON, ASSISTANT

*A detail of the entrance
to the first floor stairway.*

AND FACTORY AT PARK ROYAL

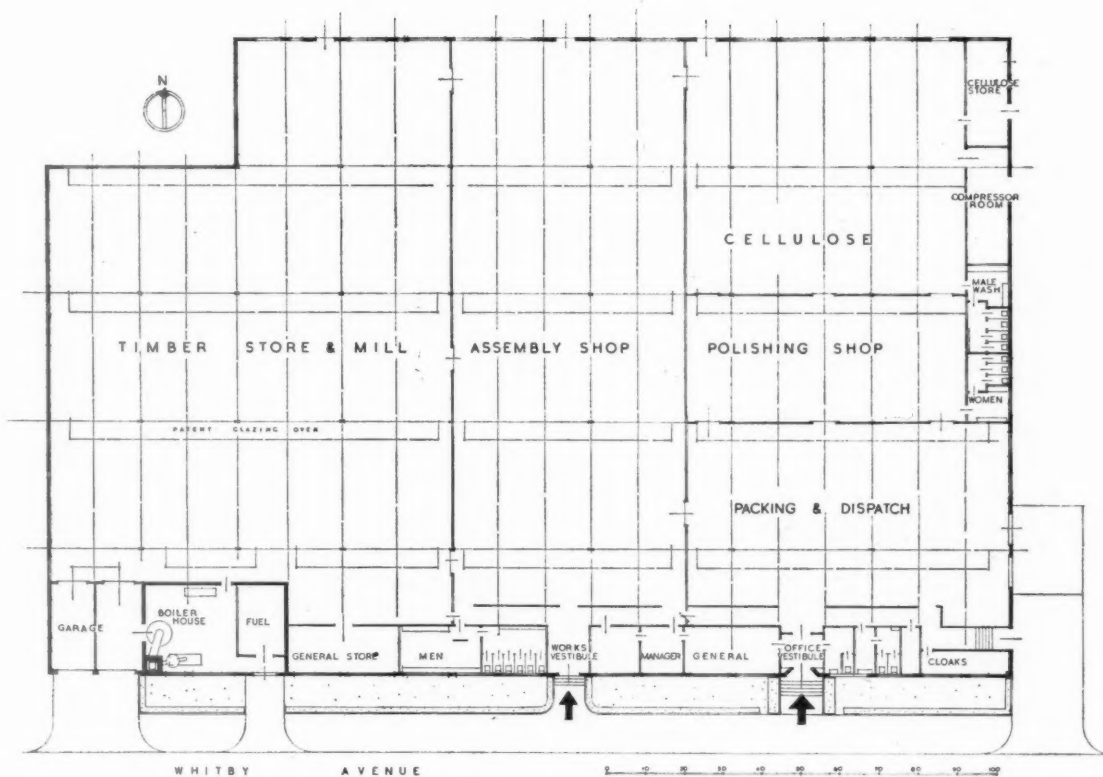
G. A. JELlicoe

ARCHITECT FOR

THE EXTERIOR

ASSISTANT:

M. J. H. BUNNEY



GROUND FLOOR PLAN.

PURPOSE.—Factory for the production of radio cabinets. Lay-out was to be flexible for easy adaptation to other forms of "clean" manufacture.

SITE AND LAY-OUT.—The production flow was required to be uninterrupted through the various processes, and the lay-out was therefore governed by the necessity for all entrances to be from the south front. The various entrances are: office, male workers, female workers, fuel, materials in and dispatch.

CONSTRUCTION.—Standard steel factory-type roofing with solid brick walls and all internal partitions movable.

ELEVATIONAL TREATMENT.—The south wall of the low

office string was raised both to mask the factory roofing and also to provide a background for the clients' standard sign, and the external treatment had to comply with the standards already arrived at by the contractors on previous work.

MATERIALS.—Brown-red stock brick; concrete steps, string and cills; door surrounds cement rendered. Windows are standard steel casements, painted cream. The lettering and sign are of wood, save for the circular saw of the sign which is of steel. The faces of the lettering are painted cream and the edges bright blue. The sign is finished in blue, cream and grey.

Above, a general view of the south front.

LETTERS

FROM

READERS

The Competition System

SIR,—I suggest as a small improvement upon your excellent scheme for appointing an assessor that he should be chosen by vote by the competitors—a copy of the proposed roll of assessors, less any who may themselves be competing, should be posted to each architect who has sent in plans, and he should mark with a cross the man he believes to be most suitable.

Selecting by lot presupposes that every assessor is equally capable of judging every type of building.

A. RANDALL WELLS

SIR,—The leading article in your last issue, entitled "The Competition Problem," indeed puts forward a studied alternative, but what an alternative! Your proposal is a half-hearted measure which penetrates but skin deep into the evil core of the present system.

You suggest that the promoters may select an adviser for the drawing up of the rules of the competition; that after the receipt of competition drawings, he should retire from the field to leave it clear for an assessor selected by lot from a "roll of assessors"; that this roll should be established by the President of the R.I.B.A. One can well imagine the impractical and superficial result of such an innovation, attempting the

Unity of disunited adviser-assessor,

Flexibility of the fixed roll,

Impartiality of the biased men.

What is to be gained by such contradictory results? Nothing!

The present system has been constantly improved, and is to be admired for the high and honest level of opportunity it provides for all who enter. That such opportunity is negative and not positive, is the deep-rooted evil that is inherent in that system.

A competition comes out, hedged in by restrictive and preconceived conditions as to height, materials and style. From the outset, promoters, assessors and competitors follow one path, the path of traditional planning. Many premediated schemes are indeed sound and practical, many are veneered with a genteel surface modernism, but all are planned with the conception of the past and never of the future.

This plea is not for a wild-cat array of all that young men may produce; it

is for a display of reasoned and unrestricted solutions. How is this to be achieved?

By strong and comparatively youthful assessors, each of whom would call for completely free interpretations of his conditions, stipulating that any departure from traditional planning practice should be supported by full diagrams, reports and data; that competitors should be given no other indications than the particulars of site, promoters' initial requirements, and their desire for a building expressive of the reality of their time.

"PAXTON"

A. RANDALL WELLS

"PAXTON"

ELIZABETH DENBY

Housing

SIR,—In your report last week of my recent talk at the Housing Centre, I am quoted as instancing two examples of bad north-country cottage development.

May I say that only one of my examples was drawn from the north country. The other was from the multi-storey development (the equivalent of, and including, flats) in a London borough. I tried to show that "flats or cottages" is an unimportant battle. The real issue is that, if a community is planned to serve *all* needs, the type of development will naturally be dictated by economic and functional necessity.

ELIZABETH DENBY



SOCIETIES AND INSTITUTIONS

NOTTS, DERBY AND LINCOLN ARCHITECTURAL SOCIETY

"Modern Architecture" was the subject of an address given by Mr. Claude E. Howitt, A.R.I.B.A., President, at a meeting of the above Society held recently at Nottingham.

The present century, he said, had marked a struggle for supremacy between traditionalist and modernist, and there was no doubt that the latter had become securely

established. But although modern science had produced materials of extreme durability, the prevailing lightness of their colour could never attain that mellowness that came with age and was such an attribute of past domestic architecture. Brickwork would still predominate for many years to come.

It seemed, however, that already there were rumblings of another change. American aeronautical engineers had pointed out the need for central houses that would act as landing places for aircraft and minimize the dangers of air currents and eddies. Streamlined houses had even been suggested. Surely something should be done to nip this suggestion in the bud, and the best method seemed to be ridicule. Could one imagine a streamlined town hall or church?

A HUNDRED NEW TOWNS

On October 10 Mr. A. Trystan Edwards delivered a lecture entitled "A Hundred New Towns" at a meeting of the Sheffield, South Yorkshire and District Society of Architects and Surveyors.

Mr. Edwards stated that it was now acknowledged by competent authorities that no fewer than 2,000,000 new houses should be built if decent conditions for family life were to be provided for every citizen in the land. Of the 2,000,000 houses which were needed he suggested that we should build half in new towns, leaving the other half to be supplied in existing towns for the benefit of those who could not leave them. He pointed out that a town of 50,000 people was most suitable. Within two miles of one of these compact towns no fewer than 5,000 people might each of them have four acres of land. This meant that the hundred new towns scheme might enable several hundred thousand people to work on the land under the only conditions which would appeal to our city-bred population.

The total cost of the scheme, he added, was estimated to be £1,000,000,000 spread over ten years.

NATIONAL HOUSING AND TOWN PLANNING COUNCIL

The National Housing and Town Planning Council announces that the speakers at the National Conference to be held at Scarborough during the week-end November 29 - December 2 will include Dr. Thomas Adams, F.R.I.B.A., F.S.I., M.T.P.I., who will introduce a paper dealing with important problems arising out of the administration of the Town and Country Planning Act, 1932. Dr. Adams will also give a lantern lecture entitled "Parkways and Ribbon Development."

ROYAL INCORPORATION OF ARCHITECTS IN SCOTLAND

At a recent meeting of the Council of the Royal Incorporation of Architects in Scotland, held at Edinburgh, Mr. John Begg was appointed the representative of the Royal Incorporation to serve on the committee to be set up under the National Trust for Scotland to consider the advisability of forming a special Trust to hold and administer old properties in Edinburgh of national, historic, or architectural interest.

WORKING DETAILS : 347

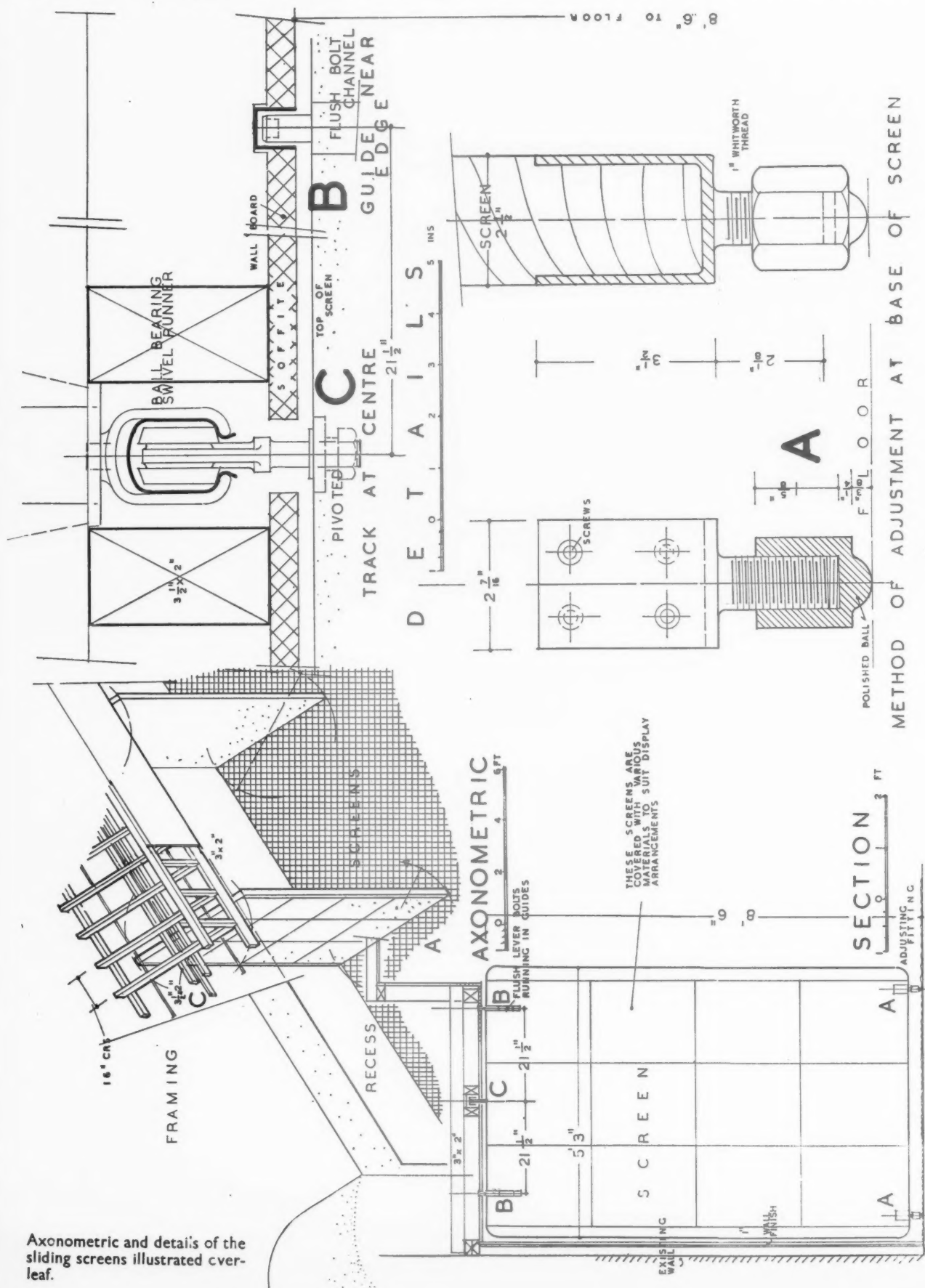
SLIDING SCREENS • SHOWROOM IN WIGMORE ST., W. • G. A. JELlicoe



The sliding screens illustrated above are arranged down both sides of a showroom for the display of furniture and fabrics. The screens are pivot-hung from a central sliding track and have adjustable feet: vertical bolts running in guides allow the screens to pivot when necessary. An axonometric and details are shown overleaf.

WORKING DETAILS : 348

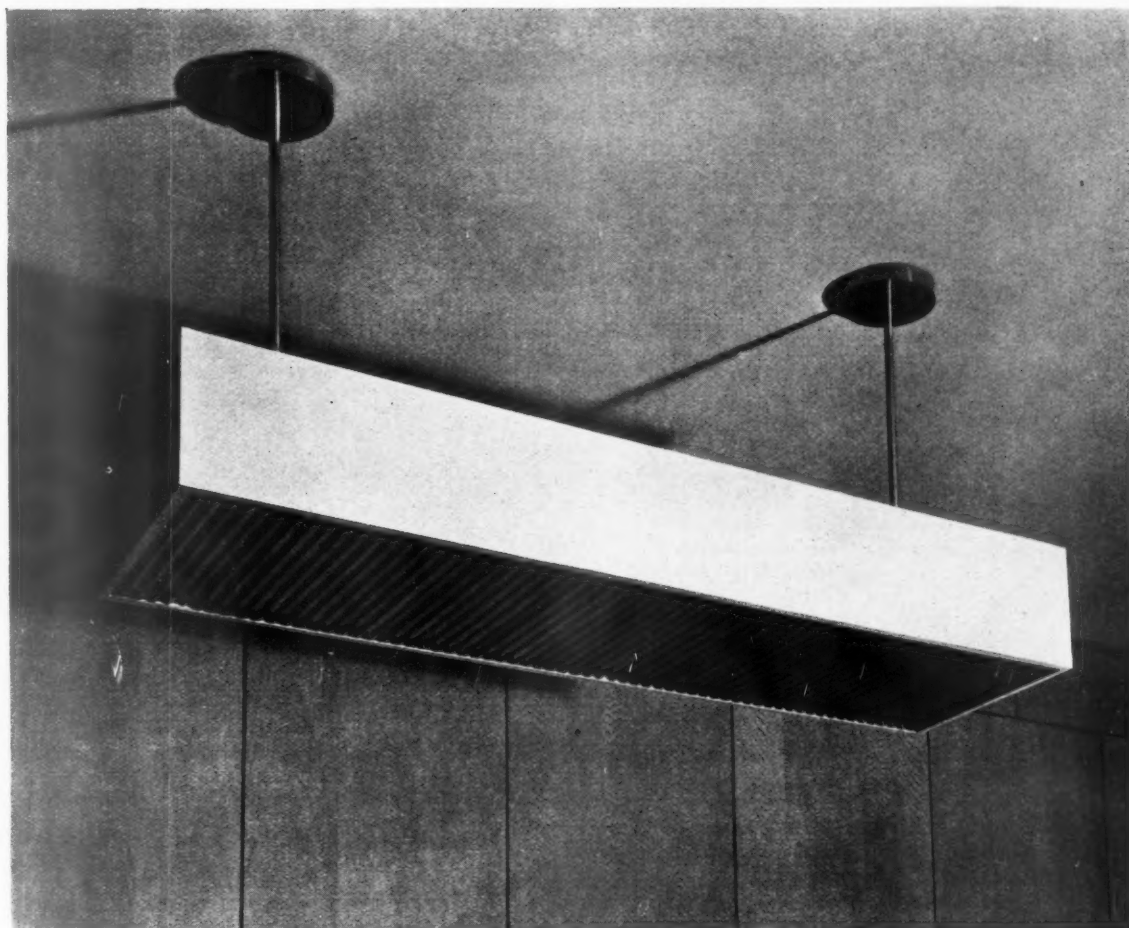
SLIDING SCREENS • SHOWROOM IN WIGMORE ST., W. • G. A. JELICOE



Axonometric and details of the sliding screens illustrated overleaf.

WORKING DETAILS : 349

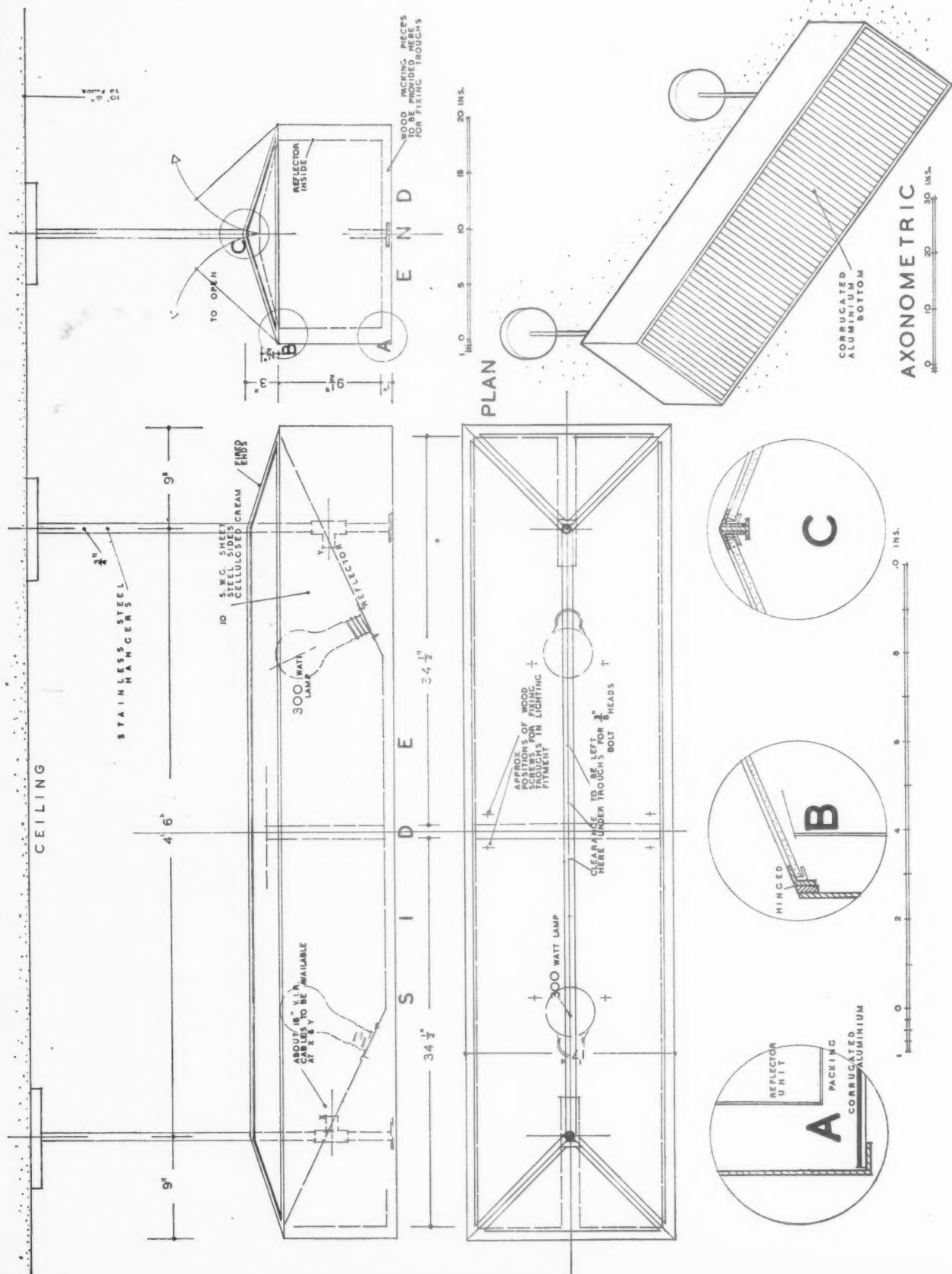
LIGHT FITTING • SHOP AT EALING, MIDDLESEX • CLIVE ENTWISTLE



This light fitting is boxed up from 10 gauge mild steel sheet painted white externally with two 300 watt lamps in a special reflector inside. The soffit consists of a single corrugated anodized aluminium sheet. Four of these fittings are used for a room approximately 46 ft. by 22 ft. An axonometric and details are shown overleaf.

WORKING DETAILS : 350

LIGHT FITTING • SHOP AT EALING, MIDDLESEX • CLIVE ENTWISTLE



Axonometric and details of the light fitting illustrated overleaf.

IN THAT CONTINGENCY

The following abstracts of inquiries represent a number of those recently submitted to the Building Research Station. The information given in the replies quoted is based on available knowledge. It has to be borne in mind that further scientific investigations may in the course of time indicate directions in which the replies might be supplemented or modified. Moreover, the replies relate to the specific subject of each inquiry, and are not necessarily suitable for application to all similar problems. [Crown Copyright is Reserved.]

Plastering on Chalk Walls

Q AN architect desired to know whether ordinary lime plaster could be used upon rough chalk walling, and whether any special precautions were necessary. The enquiry arose from the necessity of making alterations to a house built about 200 years ago in which a good deal of the interior walling was partly of chalk and partly of brick.

There is nothing inherently antagonistic between chalk and lime plaster. The latter in the process of hardening ultimately reverts, at least in part, to calcium carbonate, which, chemically, is the same material as chalk.

Experience with plastering over chalk walls suggests that the following precautions would be of assistance in obtaining a satisfactory result:—

1. A cement gauging be used with the lime and hair coarse stuff (about 1 Portland cement; 10 coarse stuff by volume).
2. Any abrupt changes of section be bridged by the use of expanded metal in order to avoid cracks. The same method would be useful on external angles.
3. If the chalk is very soft so as not to afford a strong foundation for plaster, expanded metal might be used generally with advantage.

Sound Insulation of Partitions

Q ARCHITECTS approached the Building Research Station with a request for comments on a proposed method of constructing partitions between various tenancies in a block of flats. The standard of insulation at which they were aiming was that provided by the ordinary nine-inch wall.

The method proposed was to build a hollow partition direct on to a cement screed laid on compressed cork insulation, as shown in Fig. 1.

In the absence of an actual test which would take into account the effect of the method of fixing adopted, it is a matter of some difficulty to compare the sound insulating efficiency of the partition illustrated in Fig. 2 with that of a 9 in. solid brick wall.

Sound transmission tests on similar cavity partitions have, however, been made and have given results slightly inferior to those obtainable with 9 in. solid brickwork. General experience and formal tests show that weight is an important requirement for good sound insulation in the case of a solid partition, and it appears that the weight of the slabs used in the hollow partition

may also have some bearing on its insulating efficiency. The following figures representing approximate sound reductions in decibels illustrate this:—

9 in brickwork	..	..	..	56
Cavity partition weighing 18 lb. per sq. ft. of surface	..	..	..	50
Cavity partition weighing 27 lb. per sq. ft. of surface	..	..	..	54

It must be realized, however, that the degree of structural isolation of the two leaves of a cavity partition is of great importance, and that connecting wall-ties must be omitted entirely. There is reason to suppose that the efficiency of double partitions is considerably increased by the provision of strips of insulation round the edges, and it would appear that in the present instance, with the proposed floor construction, such a method might most readily be incorporated in the manner illustrated below. With the inclusion of this it is to be expected that the partition will be as effective as a 9 in. brick wall.

It will be observed that the cork layer is relied upon to provide resilient support for the partition and it is assumed that this layer is intended to produce similar resilience throughout the floor and so insulate the rooms beneath from transmission of contact noises. Some advantage might be obtained in this way, but this would probably be slight. Recent research suggests that much higher resistance to structural

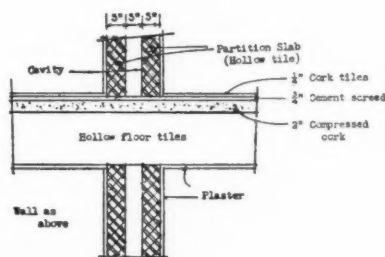


Figure 1

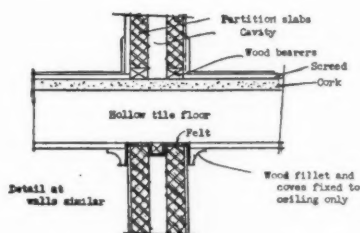


Figure 2

transmission is obtained when resilient supports are incorporated in the floor in the form of isolated pads rather than continuous sheets. It is difficult, however, to suggest how this principle might be applied in the present case without considerable modification of the design of the floor.

Corrosion of Steel by Plaster

Q A FIRM of contractors reported serious corrosion of electric conduits and switches on the internal partitions of a block of offices. The hemi-hydrate gypsum plaster was suspected as the cause, but in view of previous experience with these plasters such an effect was not expected. The details of the materials used gave no real clue to the cause and it was therefore decided to make an inspection and take any necessary samples for test.

The partitions had been erected in gault partition blocks about eight months previously. These were plastered with a sanded undercoat, using hemi-hydrate plaster, and finished with neat plaster (separate batches supplied by the makers for undercoat and finishing coat respectively). The decoration was in a typical oil-bound distemper. This was used because in a previous case similar trouble had occurred where a gloss paint was used and it was feared that the corrosion might have been caused by entrapment of moisture. Such conditions could hardly exist in the present case, for the construction, plastering and decoration had not been hurried and the distemper was quite permeable to moisture.

The general impression was one of severe corrosion due to damp conditions. The screws and clips fixing the conduits were badly corroded, the screws being little better than masses of rust. Wherever the conduit touched the wall was a band of brown stain. Salts and corrosion products had accumulated in the switches rendering them useless. One switch was so injured that the cover could not be unscrewed without breaking. In addition, streaks of brown stain and efflorescence had run down the wall from the points where rusting was worst. There was, however, no obvious source of damp. The partition was immediately below the roof slab, but this was in perfect condition. The premises were used as offices: there was no reason to fear condensation and no lavatories or closets were near.

It is known that when iron or steel is rusted by chlorides (for example, common salt) the rust is hygroscopic and it appeared therefore that chlorides must be the cause of corrosion here.

Samples were taken from the partition and also of blocks, plaster and sand from consignments received by the contractor at about the date of the batches that were used in the partition.

Chemical examination of the rust, brown stains and efflorescence confirmed that chlorides had caused the corrosion. The investigation was accordingly directed to discover in which of the constituent materials they had

their origin. The following results were obtained:—

Sample.	Chloride Content
Finishing coat, removed from partition.	Slight.
Sanded undercoat, removed partition.	0.103 per cent. sodium chloride (this being considered a considerable contamination).
Eight other fragments of sanded undercoat.	Chloride present everywhere in appreciable, but varying quantities.
Gault block, removed from partition.	Slight.
New gault block.	Slight.
Pit sand, similar to that used in undercoat.	0.148 per cent. sodium chloride.

Some plaster, taken from the contractor's stock and made by the manufacturer of the plaster used in the partitions showed a trace of chloride. Eight other samples of plaster, from the stock at the Building Research Station, and including representatives of all the main types showed proportions varying from "trace" to "slight." Sodium chloride is a very widely distributed substance and traces are present in a great variety of materials unless they have been specially purified. No significance is attached therefore, to the presence of the traces of chloride mentioned above. The considerable proportion in the sanded undercoat is the significant feature and this evidently arose, not from the plaster, which was at first suspect, but from the sand.

It was learned later that the presence of salt in the sand was ascribed to the use of brackish water for washing the sand. In view of the serious troubles that can arise through the contamination of sand by soluble salts, greater attention to this point is desirable. Evidently the fact that a sand is stated to be a "washed" sand, does not entirely eliminate the possibility of trouble.

Durability of Pisé de Terre Dwellings

AN enquiry was received from a Dominion Government Office for information on the possibility of pisé de terre for native housing. Reference was made to the experimental cottages erected at Amesbury in 1920-21, and a request for details as to the subsequent behaviour of these dwellings. The matter is of some general interest and the information given is reproduced as follows:—

The experimental cottages erected jointly by the Department of Scientific and Industrial Research and the Ministry of Agriculture and Fisheries at Amesbury included two chalk-pisé cottages. The one consisted of rammed chalk with straw and the other of a mixture of chalk and gravel. Certain other cottages at Amesbury were erected by the Ministry of Agriculture.

This Department's cottages were critically inspected at the age of about six years, and the results of this inspection are given in the Annual Report of the Building Research Board for 1927, page 106. Since that time only occasional reports of these cottages have been received, but it is believed that they have not deteriorated to a significant extent except for the mischance of a water butt being carried away in a gale and taking with it a portion of the length of rain water pipe leading from the roof. It seems that there was delay in repairing the pipe, with the result that the wall became saturated and the corner of the building then fell out. This was repaired in brickwork. A chimney stack in rammed chalk was affected in the same way, and had to be rebuilt.

Reference should also be made to Building Research Special Report No. 5, "Building in Cob and Pisé de Terre." This and the Annual Report referred to above may be obtained from H.M. Stationery Office. There is an introduction to Special Report No. 5, which any interested parties should read, which places the earth wall in a very fair perspective, and nothing

has emerged since the date of its publication in 1922 to suggest any modification of the view there expressed.

No experimental work on pisé or rammed chalk has been carried out at this Station of late years, but the information collected leads to the following conclusions:—

1. A certain amount of cracking is almost inevitable, but in thick walls this does not necessarily allow moisture to penetrate to the inner face.

2. In view of the importance of protecting the walls from getting sodden generous eaves overhang is very desirable.

3. It is difficult to provide effective protection for chimney stacks above roof level and they are probably best carried out in brick or other alternative material.

4. Rammed earth walling is not a satisfactory background for strong plasters and renderings. The shrinkage of a cement rendering, for instance, is almost certain to cause it to break away from the wall. Thin coatings such as slurries or lime washes are to be preferred, but these will require renewal at regular intervals.

5. In general it will be necessary to carry out repairs to buildings as soon as defects become apparent. Delay with rammed earth walling may result in collapse, as in the case of the broken rain water pipe already mentioned.

Mould on Internal Decoration

ASAMPLE of painted lining paper was submitted for examination by a firm of decorators. The paint was green and the surface was discoloured by a greyish or purplish mottling. The paper was taken from an old wall which had been locally replastered and then decorated. The stains appeared principally over the old plaster, but always within 12 in. of the new plaster.

The walls had been redecorated by stripping and lining and painting in three coats of oil paint.

The sample of painted lining paper was examined microscopically. The examination showed the presence of fungus in the paint film and in the lining paper, and this fact is sufficient to account for the stains. (The term "fungus" covers the class of organisms generally referred to as "moulds," and the growth doubtless was of this kind.)

The appearance and growth of fungus on painted and papered surfaces is fortuitous and is not to be ascribed to the use of any particular type of material. Any organic matter, e.g., paper, paste, size and vegetable oils such as linseed oil, provides a suitable medium for the growth of moulds, and the latter are thus liable to develop on decorated surfaces whenever the conditions are suitable, dampness being particularly favourable to the growth.

In the present case it appears possible that the old plaster was already infested with mould, although the latter may not have been in an active state of growth if the condition of the walls and room was dry. The moisture introduced in the new plastering and papering work, however, may have started active growth and the decorations thus became infested. The suggestion that the old plaster was the source of infection is made in view of the distribution reported. Infection of paper, paint, etc., may occur not only through direct contact with an infested surface, but also by access of the minute mould spores which are carried in the air from place to place.

Once fungus growth has started it is often difficult to check. It will hardly be possible to remove the stains by simple surface treatment since the fungus is now present in the lining paper and very probably in the plaster itself.

The only satisfactory treatment will be to

strip the affected area and redecorate. It will be necessary, however, to sterilize the plaster surface after stripping in order to prevent the new paint from becoming affected. This may be done by brushing on an antiseptic such as 1 per cent. solution of thymol in methylated spirit or a 1 per cent. solution of formalin in water. An alternative treatment would be to use zinc-magnesium silica-fluoride dissolved in water. Whatever treatment is used, the surface should be allowed to dry as thoroughly as possible before redecorating. In severe and persistent cases of mould growth it is sometimes necessary to use a special fungicidal paint such as several manufacturers of paint now supply.

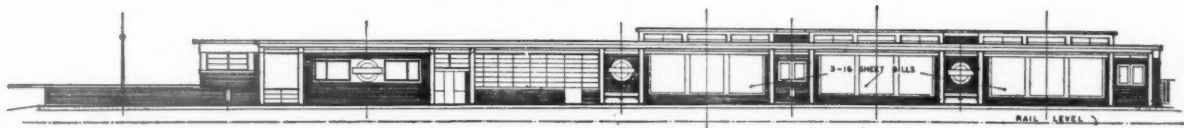
Housing Associations

Sir Kingsley Wood, the Minister of Health, speaking last week at the Housing Centre, London, dealt with the increasing importance and work of the voluntary housing associations and made a special appeal to them to engage with other agencies in the campaign for slum clearance and the elimination of the evil of overcrowding.

Sir Kingsley Wood said it was a wise policy in the active development of better housing in this country to use every possible agency. It was for that reason, and above all for their own work, he valued the voluntary housing associations, and he was glad that Parliament had recently given them further facilities by which their work could be extended. One of the guiding principles of present housing policy was that our efforts should be directed to those whose needs were the greatest, and it was in this connection that the voluntary associations could do much.

The maximum success of the voluntary associations could best be obtained in co-operation with the local authorities. The character of a housing association made it peculiarly suitable for helping people who were for the first time obtaining better conditions through the medium they possessed of personal contact with the tenants. They were particularly aware of their needs. They could do much in helping them to make full use of their new and better houses. We had been engaged in carrying out vast housing operations. The work of building new houses would continue. We all wanted their tenants to derive the very best advantages from the improved conditions which were being provided for them. Authorities were now enabled to transfer the work of reconditioning and management to housing associations and in this connection their experience would be most valuable. Increased facilities were also given for the raising of loans by housing authorities to finance their work. With the passing of the Act of 1935, we were at the beginning of a definite epoch in our housing activities. Our housing work so far as the public authorities and housing associations were concerned, was being concentrated on the needs of those whose needs were the greatest. It was a field which was likely to occupy their best efforts for a considerable period. Much of the work to be done gave special scope for the special character of voluntary associations, and he knew he could, with confidence, appeal to them to continue their good work in vigorously engaging in this great campaign.

S O U T H H A R R O W S T A T I O N



ELEVATION TO TRACKS

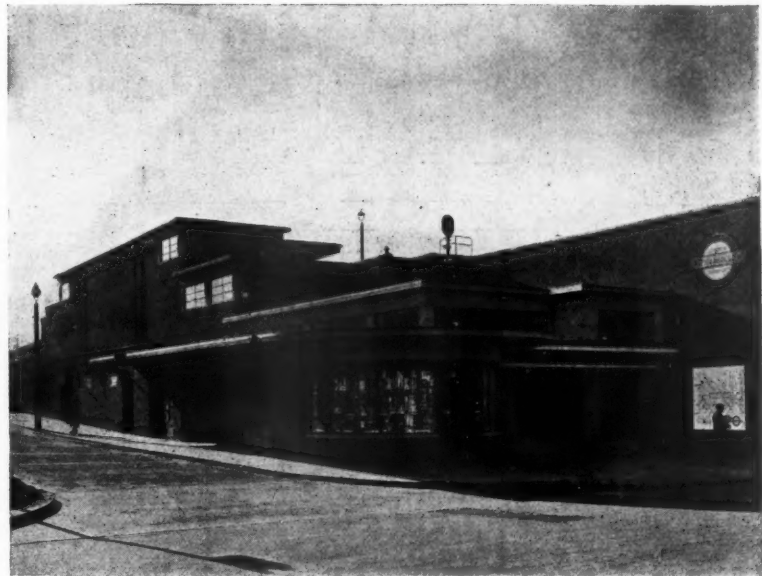
GENERAL PROBLEM.—The purpose of the scheme was the provision of a new Underground railway station in a more central position, with a forecourt for the use of buses.

SITE.—The site is sloping. The tracks are at high level, and cross a bridge over the adjoining roadway.

ACCOMMODATION AND PLAN.—The accommodation required included ticket hall, shops, staff rooms, bus waiting lobby, and lavatories, as well as extensions to the existing platforms.

The ticket hall is placed parallel to the main Northolt Road, from which two entrances allow passengers to enter direct, whilst an additional entrance is provided through the bus waiting room. The staircases to the platforms are at either end of the booking hall.

Right: general view of the station from the north.



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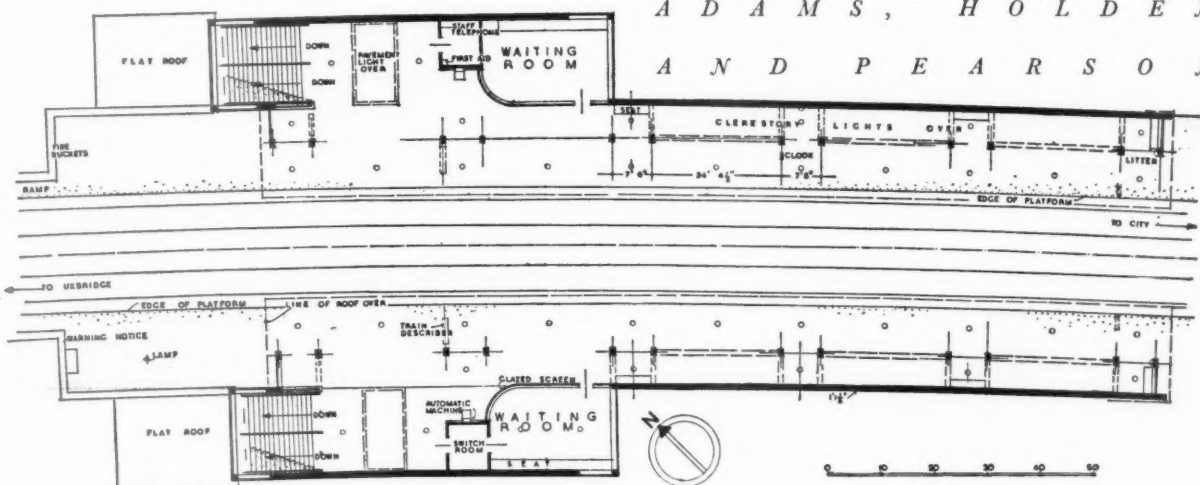
S . A . H E A P S

(Architect to the London Passenger Transport Board)

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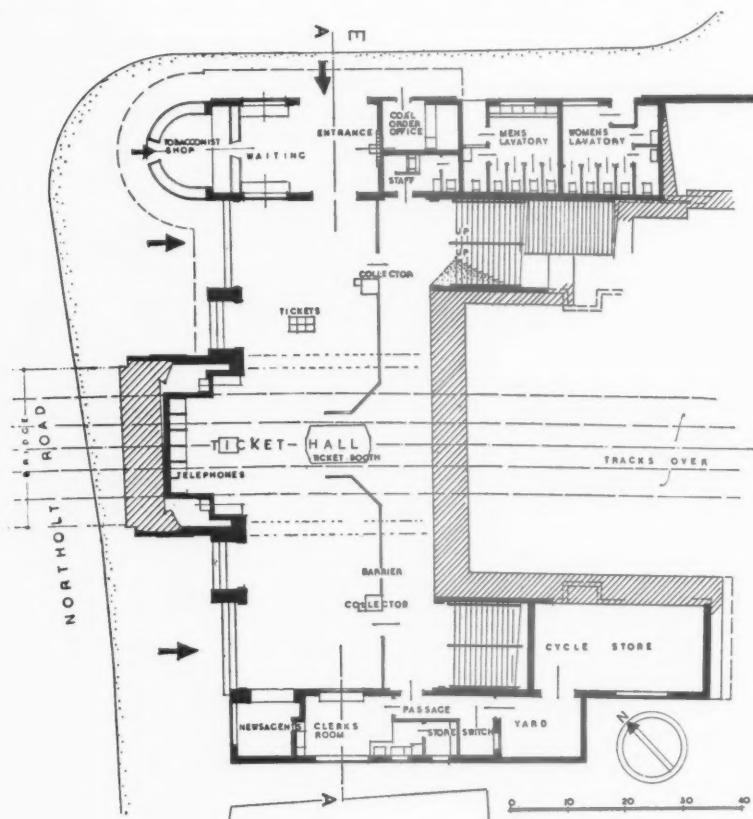
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PLAN AT TRACK LEVEL

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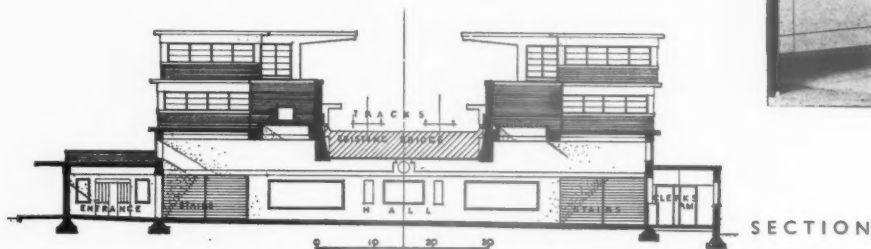
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PLAN AT GROUND LEVEL

CONSTRUCTION.—Reinforced concrete walls were necessary to retain the embankments to tracks. The R.C. bridge over the road was precast on an adjacent site and rolled into position to prevent interference with traffic. Walls generally are of brick, and the roofs of reinforced concrete; floors generally of concrete.

EXTERNAL FINISH.—According to the London Transport suburban station type. Lower buildings are faced with purple brick, with multi-coloured facings over. Friezes, cills and mullions of rubbed Portland stone aggregate concrete. Windows are in steel, signs in bronze and glass, poster frames in bronze and teak, telephone cabinets and seats in teak, and doors of flush teak.

Right : a detail of the bus waiting room.



SECTION

DESIGNED BY S. A. HEAPS



INTERNAL FINISH.—The ticket hall and waiting lobby are finished in faience wall slabbing 7 ft. 6 in. high, with a concrete ring beam with tile inset over and plastered walls above. The ceiling is of concrete, finished smooth and painted. The floors are of 12 in. by 12 in. white tiles, with $\frac{1}{2}$ in. carborundum joints and black composition borders. Staircases and platforms have wall finish of brick and cills and bands of rubbed concrete. The staff rooms have grano floors and cream wall tiling to door height, and steel locker equipment built in flush with tiling. Lavatories have terrazzo floors, grey wall tiling, and grey enamelled sheet-steel doors.

Above : a general view of the platforms ; right : a detail of the glazed screens to the waiting rooms.



S O U T H H A R R O W S T A T I O N



D E S I G N E D B Y

S . A . H E A P S

(Architect to the London Passenger Transport Board)

C O N S U L T A N T

A R C H I T E C T S :

A D A M S , H O L D E N

A N D P E A R S O N

Above : a view of the forecourt for buses to the north-east of the station, showing one of the lamps ; right : one of the louvered self-closing sheet-steel doors to the lavatories.



TECHNICAL SECTION: 36

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.

AIR CONDITIONING

THE science and art of air conditioning may be defined as that of supplying and maintaining a desirable atmospheric condition in occupied spaces, irrespective of external conditions.

The desired atmospheric condition usually involves a temperature of 60 deg. to 70 deg. F. in winter and 70 deg. to 75 deg. in summer; a relative humidity of about 50 per cent. to 60 per cent.; and a high degree of air purity. This requires different treatments according to climate, latitude, and season, but in temperate zones such as England it clearly involves:—

In Winter

A supply of air which has been cleaned and warmed. As the warming lowers the relative humidity, some form of humidifying plant, such as a spray washer with preheater and main heater whereby the humidity is under control, is generally necessary. Such a plant is illustrated in Fig. 205, reproduced on page 606.

In Summer

A supply of air which has been cleaned and cooled. As the cooling increases the relative humidity, some form of dehumidifying plant is essential and the apparatus should not be termed air conditioning where this is not supplied.*

This dehumidifying is generally accomplished by exposing the air to cold surfaces or cold spray, where the excess moisture is condensed and the air is left saturated at lower temperatures. The air then has to be tempered to a higher temperature, to give a more agreeable relative humidity. This can be done by warming or by mixing with air which has not been cooled.

Dehumidifying can be brought about by passing the air over certain substances which absorb moisture. Thus, in laboratories, a vessel is kept dry by keeping a bowl of strong sulphuric

acid in it, or a dish of calcium chloride, both of which have a strong affinity for moisture. Silica-gel, a form of silica in a fine state of division exposing a great absorbing surface is used also for drying air on this principle, but this process has its difficulties.

THE CASE FOR AIR CONDITIONING

It is often seriously contended that there is no case for true air conditioning, with means for cooling, in a climate like that in England.

It is not, of course, denied that there are many buildings where the necessity is not absolute, or that custom has not made us willing to accept, in hottest summer, conditions of extreme discomfort, while a similar divergence from comfort conditions in the opposite direction in winter would never be tolerated. This is partly because we are used to looking on an adequately warmed room as essential, and partly because the cost of warming is much less than the cost of cooling.

The question of the necessity for air-conditioning, then, is how great discomfort can be tolerated, and what can be afforded? It is largely bound up with the degree of concentration of people. The effect of this is not always understood, but perhaps the following example may make it clearer.

The authors had occasion to air-condition a banquet hall, 65 ft. by 50 ft. by 25 ft. high with a bay, containing 400 occupants, lighted (even in daytime) with electric lamps aggregating 7,800 watts. The heat released in the room in B.T.U.'s per hour may be calculated as follows:—

	B.T.U.'s per hour
1. *By occupants 400×400 B.T.U.'s..	160,000
2. By electric lights $7,800 \times 3,415$..	26,800
3. By heat transmission through walls and roof from outside and infiltration ..	31,000
Total ..	217,400

The cubic content was 91,700 cu. ft. The air necessary was estimated at 880,000 cu. ft. per hour (approximately $9\frac{1}{2}$ changes) so that the heat released

would raise the temperature by
 $\frac{217,400}{880,000 \text{ by } .019} = 13^\circ \text{ F.}$

This air delivery is at the rate of 2,200 cu. ft. per hour per occupant, or over double that called for in the L.C.C. theatre regulations, which require 1,000 cu. ft. per occupant. The introduction of such a degree of airchange into a room without causing draughts is one of the chief problems of air conditioning. Yet if the volume is much less and the temperature rise much more than 13 deg. F., difficulty is experienced in getting the air to mix, and cold currents result.

In England we occasionally have shade temperatures over 90 deg. F. in summer and often over 80 deg. F.; and in the twelve months ending November, 1933, there were, in London,

192 days when the temperature was below 60° F.
89 " " " " " " 60-70° F.
84 " " " " " " over 70° F.

If we add 13 deg. F. to these temperatures for the rise in the hall, it follows that without refrigeration or cooling there would be:—

192 days when conditions were comfortable
(i.e., under 73° F.).
89 days when it would be too hot (73° to 83°).
84 days when it would be dreadful (over 83°
and rising to 93° when the outside temperature is 80° F.).

Had there been only 40 people in a hall of the same size instead of 400, the heat released would only be 73,000 B.T.U.'s (i.e., one-third), so the temperature rise would be only about 4 deg. (with the same air volume). But we should then be delivering 22,000 cu. ft. of air per hour per occupant and the result would be too fresh for comfort. Some form of control is therefore necessary to adjust for such variation of conditions, automatically reducing the air volumes or raising their temperature. This, we think, exemplifies the case for refrigeration and the special need of it where great concentration of people occurs. Had the same floor area been crowded, as in a cinema, the possible occupants would be 800, and the temperature rise would reach 20 deg. F. approximately, making the internal temperature over 90 deg. F. on the 84 days when the external temperature is over 70 deg. F.

When these very high temperatures are reached the inward heat transmission through the building and the infiltration loss disappear, also the sensible heat released per occupant is lessened until at 98.4 deg. it ceases altogether. The difference is, of course, made up by the latent heat of the perspiration, or water vapour. Thus it is doubtful whether temperatures much in excess of 98.4 deg. F. would

* It may then be called ventilation, which is only a part of true air conditioning.

* See Article 1 (Jan. 10) page 95.

ever be attained. But if anyone derives much comfort from this thought, they are surely entitled to it. To us it would be cold comfort—though perhaps "cold" is not a happily chosen word.

One of the old London theatres* which is not even ventilated sent a thermometer up to 92 deg. F. in the personal experience of one of the authors.

Anything much above 70 to 75 deg. F. is, in summer, generally considered outside the range of comfort conditions, particularly if it is accompanied by a high relative humidity (see comfort chart, page 240, article 5, February 7). Hence the case for refrigeration is proved wherever concentrations of people occur.

Let us now consider the case of important city offices. The installation of air conditioning enables the following advantages to be obtained.

1. The use of basements as fully occupied offices with light and ventilation as perfect as above ground (and in summer often more so). This can enormously increase the value of a building on a site of limited size.

2. Windows can be kept closed, and can indeed be double, so excluding the noise of outside traffic which often makes concentration and telephoning impossible, and excluding the dirt invariably associated with city air.

It is not without interest that the new Bank of England is to be air conditioned throughout so as to obtain these advantages and that the dirt is extracted from the air before delivery. Another example which is being similarly treated is Princes House, also in the city, this being particularly interesting as it represents the conversion of an old building to modern standards, it being found that conditions with open windows were rapidly becoming intolerable.

Complete air conditioning of buildings will have an increasing field of application as its merits become better appreciated. At present it is in its infancy in this country.

In the United States recent statistics show that in 27 of the principal cities there were at work on January 1, 1935, 3,528 air conditioning plants with refrigerating machinery aggregating 228,000 horse power. There it has been found that air conditioning has a money value, particularly in theatres, shops and restaurants where, without it, customers simply do not come in hot weather. Similarly in office buildings the output of work has been found to fall off so much in summer that the installation soon pays for itself. Flats, houses, trains and steamships are being fitted with plants with beneficial results.

Admittedly in this country our conditions are less severe, but where plants have been installed they have quickly proved a necessity rather than a

* Wild horses would not drag the name from us.

luxury. Theatre managers bemoan the fact that they cannot fill their theatres in summer, yet how many have tried the obvious remedy? It is not to be expected, in these days, that people will sit for three hours or so in the appalling conditions which still obtain in most of our places of entertainment.

In the restaurants, the same applies. Most people lose their appetite in a hot stuffy atmosphere and the result is obvious. A number of proprietors have put in air conditioning and cooling plants, and always find an increase in their takings.

As air conditioning becomes more general, those who are without it will discover they are out of date and that they must either follow suit, or go out of business. So in the design of new buildings, particularly theatres, cinemas, hotels, restaurants and office blocks, the question of air conditioning should be carefully weighed at the start, otherwise the enterprise may be

behind the times before it is a few years old.

Air conditioning in industry is another immense field of application, but it cannot be dealt with here. The system had its origin, in fact, in this branch, and the success of many manufactures depends on it. Conditioning of air for comfort in buildings followed.

SIMPLE VENTILATION

Where the cost of complete air conditioning cannot be afforded simple ventilation is the alternative.

This may be natural—open windows, flues, or roof turrets—in which case the result depends on wind and temperature.

Or it may be mechanical, consisting simply of an exhaust fan in the roof—such as is often used in the cheaper cinemas—but which usually causes draughts near the doors or other inlets.

Alternatively it may consist of both inlet and extract systems complete with air cleaning and washing plant,

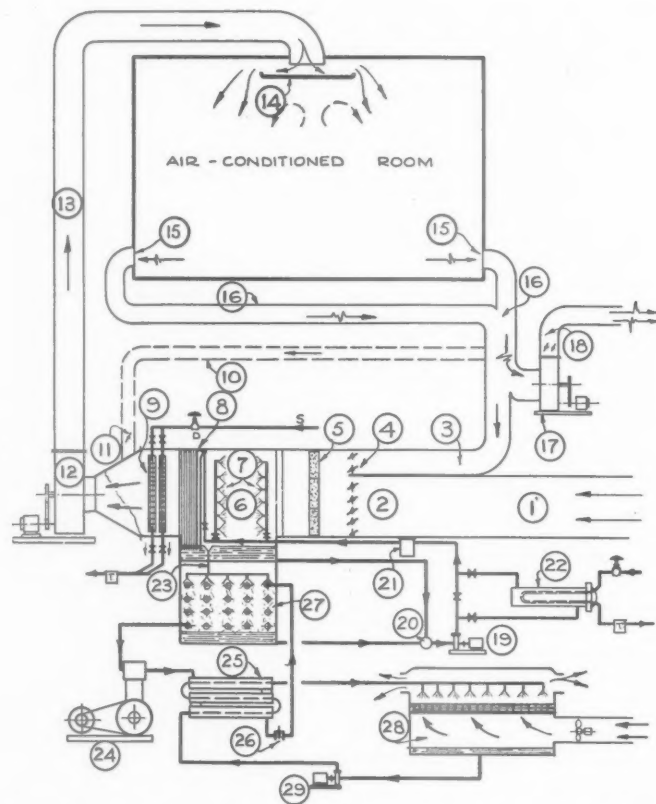


Figure 206. Diagram of a complete air-conditioning system employing air-washer and dehumidifier. 1. Fresh air intake. 2. Fresh air louvers. 3. Recirculated air intake. 4. Recirculated air louvers. 5. Air filter. 6. Air washer and dehumidifier. 7. Sprays. 8. Scrubber and eliminator plate. 9. Heater batteries. 10. Recirculated air by-pass. 11. By-pass dampers. 12. Inlet fan. 13. Inlet duct. 14. Inlet diffuser in ceiling. 15. Extract gratings near floor. 16. Extract duct. 17. Extract fan. 18. Extract louvers and discharge. 19. Washer pump. 20. Automatic mixing valve. 21. Filter. 22. Spray-water heater. 23. Water outlet to cooling-coils. 24. Refrigeration compressor. 25. Condenser. 26. Expansion valve. 27. Evaporator or cooling coils. 28. Atmospheric Water cooler. 29. Cooling-water pump. "S" denotes steam supply. "D" denotes diaphragm valve. "T" denotes condensation trap.

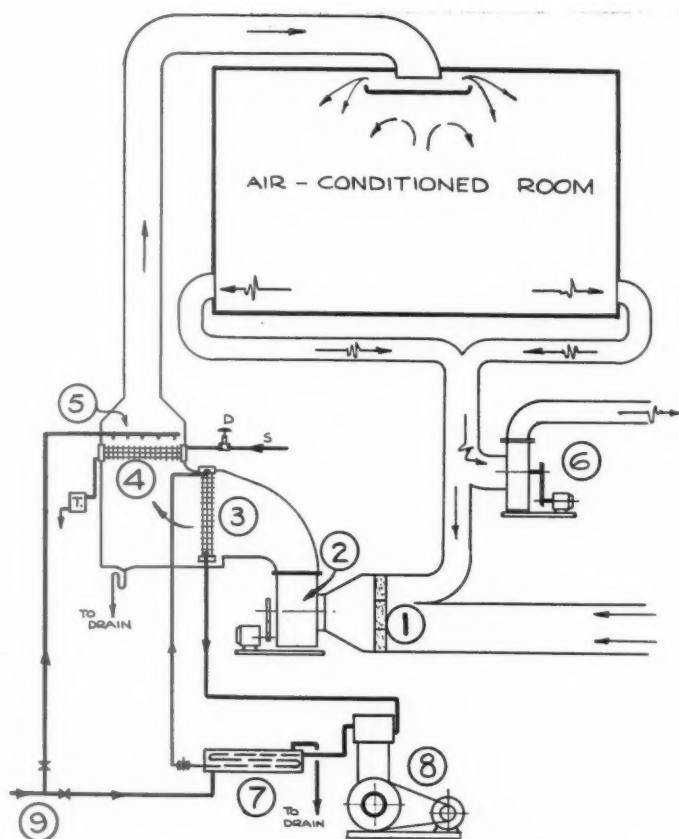


Figure 207. Diagram of an air-conditioning system employing direct expansion. 1. Air filter. 2. Inlet fan. 3. Direct expansion coils containing refrigerant gas. 4. Heating coil. 5. Humidifying sprays for winter use. 6. Extract fan. 7. Condenser cooled by main supply. 8. Refrigeration compressor. 9. Cold supply. Other parts not described as are Figure 206 (q.v.)

heaters, etc., just as would be provided for a full air-conditioning system, but without refrigeration. This is the best that can be done where a cooling plant cannot be afforded, or where there is no case for it.

By increasing the air flow through a building sufficiently the air can obviously be kept as near the outside temperature in summer as is desired, the limit being fixed by what can be tolerated in the matter of air movement, and by cost of fan power. No amount of air can, of course, reduce the inside temperature below that outside.

This statement needs to be qualified by saying that with water spray washers using recirculated water it can be reduced to somewhere near the wet-bulb temperature, which may be 10 deg. F. or so below the dry bulb, but the air is then delivered saturated, and is quite as oppressive as that at the higher initial temperature, but lower relative humidity.

PLENUM HEATING

Before concluding this preliminary review under the heading Air Conditioning it is necessary to refer to what is known as the Plenum system, if only to point out that it is not air condition-

ing and should not be confused with it.

Plenum heating uses air as the medium for heat transmission and any ventilation which it provides is only incidental and accidental. Warm air is blown by fans over steam or hot water heated batteries through ducts into the building, and of necessity the air must be introduced considerably above the working temperature, often 110 or 120 deg. F. being necessary. This causes a deadness or stuffiness in the atmosphere and the system is nowadays out of favour except for factories or large space heating. For these it is by far the cheapest of all methods to install.

For fuel economy, means of recirculation of the air are generally provided.

The word plenum means "pressure," and a true plenum system is one in which air is blown into the building, so creating a pressure inside, and no means are provided for its escape other than what happens to occur under doors or through windows. All leaks should thus be outward and a good distribution of warm air should result. This effect is, however, negated by a strong wind on one side of the building, and unfortunately, great irregularities of temperature often occur.

The plenum system is primarily for

winter use, but it may be used to give some relief in summer by creating a certain amount of air movement.

PROBLEMS IN CONNECTION WITH AIR CONDITIONING

Two of the problems have already been referred to—

1. Air distribution without draughts.
 2. Control to meet varying conditions.
- Others are as follows :—
3. Calculation of air quantities and cooling load.
 4. Necessity for building insulation and means for sun exclusion.
 5. Design of ducts, fans, washers, heaters, and their accommodation.
 6. Necessity for duct insulation.
 7. Elimination of noise due to machinery, air flow, or intercommunication between rooms via the ducts.
 8. Selection of refrigerating plant.
 9. Cost of installation and running of such plant.

10. Disposal of heat from the condenser of the plant, i.e., that extracted from the building.

11. Method of cleaning the incoming air to rid it of impurities.

12. The case for treatment of air by ozone or other process.

13. The proper selection of the position for the fresh air intake.

14. The method of warming the building in winter and how this is affected by the air conditioning system.

It is not possible to discuss all these matters fully within the scope of these articles with a view to describing a complete method of design. In touching on them briefly, however, it is hoped that those who have previously regarded air conditioning as something of a mystery may become more familiar with it and will be able to place the problems associated therewith in proper proportion.

AIR-CONDITIONING DESCRIBED

Figs. 206 and 207 show two types of air conditioning plant. The first is complete and is suitable for all types and size of building. The second is limited in capacity and is thus applicable only to small jobs, such as single rooms, small restaurants, etc. It does not give such complete control over conditions as the previous plant, but the results are generally sufficiently near the ideal to be satisfactory. It is obviously much cheaper in first cost.

A third system shown in part in Fig. 208 is a combination of the two above, having direct expansion coils inside the air washer so that the water is sprayed over them, thus eliminating the separate evaporator coils. It is applicable to medium-sized installations, but a separate compressor is really necessary for each unit.

Dealing with Fig. 206, it will be seen that the fresh air represents only a portion of that supplied, the remainder being made up by recirculated air from the room. This reduces the amount of cooling or warming necessary since

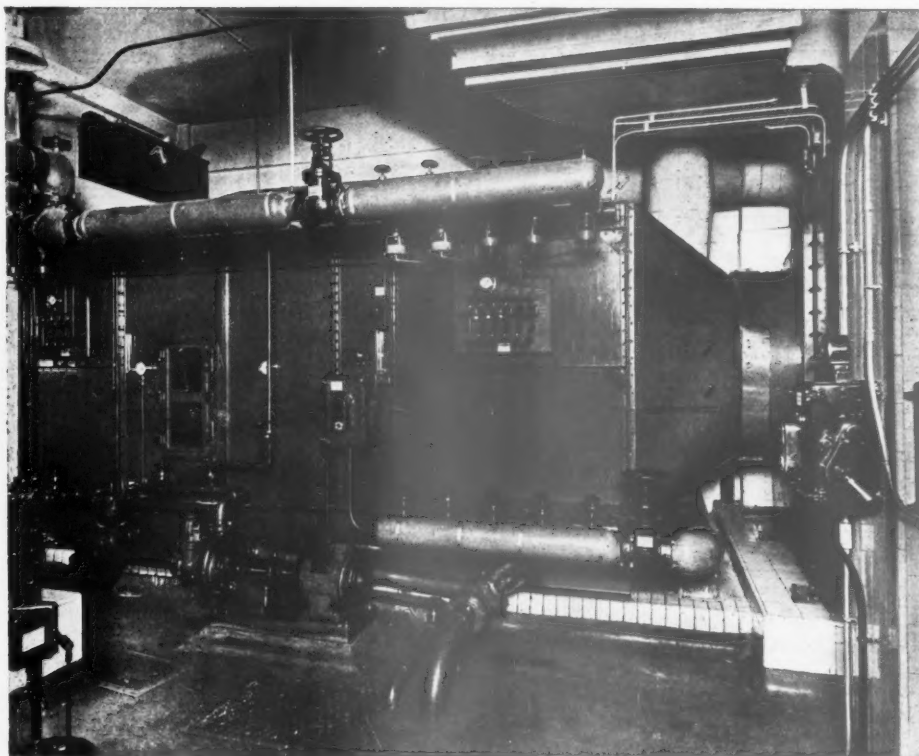


Figure 205. Air-conditioning plant, showing air washer, pre-heater, main heater and fan (on the extreme right). The heating is by hot water.

the return air has already been conditioned) at the same time allowing a low temperature increment in the room. The amount of fresh air is limited to that called for by regulations where these exist (such as the L.C.C. 1,000 cu. ft. per hour per occupant) or otherwise by what is considered the safe minimum, generally about 600 to 750 cu. ft. per hour per occupant. This may only be a third or less of the total air supply.

The mixed intake is filtered through a "dry" air filter, which may be of oil-coated or other type, as discussed later. The purpose of this is to remove the major portion of the dirt in the atmosphere.

Following this it passes through the air washer and dehumidifier. This is an enclosure containing one or more "banks" of water sprays forming a

fine mist; followed by a series of zig-zag plates known as the scrubber plates, over which a stream of water is maintained; followed again by the eliminator plates. These are intended to catch the free moisture entrained in the air stream, and allow it to return to the tank at the base of the washer for re-use.

The spray or mist regulates the amount of moisture in the air supply. In winter when the entering air is cold and dry, moisture needs to be added, and the spray is accordingly warmed in the heat exchanger on the pump delivery. The circulation through the cooler is then cut off and the water is simply drawn from the water tank by the pump and delivered back to the sprays via the heat exchanger. Alternatively a pre-heater is sometimes used for warming the air before entering the washer. The number of spray

nozzles in use in winter is generally limited to one bank, and often a small separate pump is provided, with a larger one for summer use.

As the water is evaporated into the air stream it is made up through a ball valve in the washer tank fed from the cold main.

The washer in winter thus acts as a humidifier.

In summer, when cooling is required, the sprays are supplied by the pump as before, but the suction is drawn from the cooled water tank as well as from the washer tank. The mixture is regulated by the mixing valve shown, so that the spray water arrives at the temperature necessary to maintain the desired conditions. In cooling the air it will have reduced both its temperature and moisture content, and the washer is then acting as a dehumidifier.

It should be understood that the spray saturates the air at practically the temperature of the water. Thus the air leaving the washer is always at the temperature of the dew point (or nearly so) and the automatic control of the spray water temperature is arranged to keep this constant according to the season of the year. This is known as "fixed dew-point" control. In winter the control is effected on the steam supply to the water heater and in summer on the cooled water inlet to the mixing valve.

Having established a fixed dew point the moisture content of the air is also fixed.

In addition to its function as a humidifier and dehumidifier the washer also assists in the cleaning of the air. The

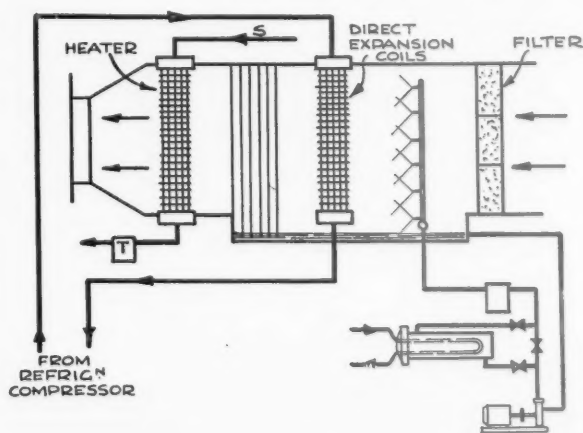


Figure 208. Direct expansion air-conditioner combining air-washer (for general description see Figure 206).

amount of dirt it collects depends largely on its composition. Thus soot, which will not mix with water, is not brought down in a washer to any extent, but dust and grit which has passed the dry screen will be caught in the water spray and carried on to the scrubber plates. These are constantly sprayed with water at the top so that any dirt caught on them is carried to the tank at the bottom, from which it can be removed by sludging out once or twice a week.

As a cleaning device the washer is not a great success, but that it does remove something from the air is apparent from the dirty state of the water after a few days' running. Some makers omit the scrubber plates as they have ceased to regard the washer as an air cleaner, but opinion on this point varies.

After leaving the washer the air is warmed in winter by the heater to 55 or 65 deg., i.e., to the temperature at which it will be breathed. This reduces the relative humidity to a figure depending on the dew-point setting. In summer the cooled and saturated air also requires to be warmed to reduce its relative humidity, and this is either done by using the heater, as in winter, or by mixing a proportion of return air, using the duct shown dotted on the diagram.

The air is delivered to the room in one of many ways referred to later, and, in passing through, is raised in temperature on account of the heat picked up from electric lights, occupants, and in summer from the walls, roof, glass, etc., which will be at a higher temperature outside than inside. The air will also be raised in moisture content owing to the evaporation from the occupants.

The air extracted is generally limited to about three-quarters of the inlet so as to cause any draughts from doors, etc., to be outward rather than inward. If this proportion is the same as the recirculated volume, no extract fan is necessary, but where this is not so the extract fan as shown is required to remove the surplus and discharge it to atmosphere.

The refrigeration portion of the plant, it will be seen, is independent of the air supply, and only comes in contact with the water from the washer tank. This equipment may be one of several types using various refrigerants. The heat removed from the water together with the power input of the compressor is dissipated to the cooling water of the condenser. In order to save the cost of wasting this water to drain in large plants it is generally cooled in an evaporative cooler on the roof as shown in the figure. Only the make-up water due to evaporation then has to be supplied.

Fig. 207 differs from the full system in that the refrigerant is passed through coils of gilled piping placed direct in the air stream, which become wet when

dehumidification is taking place. With this method the gas used must be innocuous, as any leakage would quickly be discharged into the room. Control of temperature is effected by starting and stopping the compressor.

In winter the heating battery is brought into use, being supplied with steam or hot water, and, in order to raise the humidity, water from the main supply is dripped over the warm coils. The amount of humidification by this method is not under control.

Where more than one conditioning plant is provided, a separate refrigerator must be supplied for each, whereas with the previous system several

units may be served from one machine.

The type of system shown in Fig. 208 uses direct expansion coils containing the refrigerant, placed in the air stream inside the washer casing, and so arranged that the water is sprayed over them. This gives an economical system since the transmission rate of the wetted surface is very high, so reducing evaporator area, and in addition the water to be pumped is somewhat reduced.

Again it can only be used with refrigerants which are not objectionable when breathed, and there is difficulty in applying it to more than one plant with a single compressor.

TRADE NOTES

[EDITED BY PHILIP SCHOLBERG]

Strongrooms

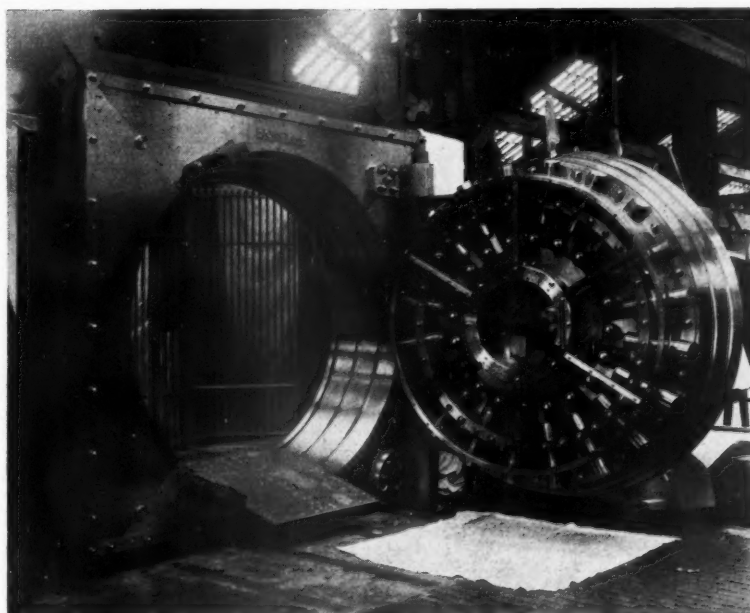
At a press visit last week to the works of John Tann, Ltd., I was very properly impressed by a new 8 ft. diameter strongroom door which this firm has just completed for a large Continental bank. A photograph of the door is reproduced on this page, and it seems to me to be of far greater interest than the applied art which the "big five" generally insist upon in public spaces.

Having no securities worth mentioning, I have never taken much trouble to find out exactly what the banks *do* do for safety's sake, but on this particular door at least four keys are necessary; two to release the hardened shields which cover the main keyholes, and two more to undo the locks themselves, quite apart from the usual time lock and a four-figure combination lock

which has so many million possible combinations that it would take I forget how many years to try them all.

The main purpose of the visit, however, was to demonstrate the qualities of Tann-steel, a new alloy which is impenetrable by ordinary mechanical tools, and which has a higher melting point than any other material so far produced for heat-resisting purposes. A high speed drill penetrated a sample of the steel to a depth of about $\frac{1}{8}$ in., but the end then rapidly turned blue and the cutting edge was destroyed.

From the point of view of heat resistance, the British Oxygen Company's largest cutting blowpipe was used, and made no impression whatever, while an oxygen lance would only keep alight for a few seconds, as it could not raise the steel to a



A steel door recently produced for a Continental bank by John Tann, Ltd. The diameter is 8 ft., and each of the 20 bolts weighs about half a hundredweight. (See note on this page.)



The Stand of the Silicate Paint Co., at the Birmingham Building Trades Exhibition.

high enough temperature. (The lance, by the way, penetrated seven inches of battle-ship armour-plate in a few seconds.)

These tests were merely a repetition of a more exhaustive series carried out by the British Oxygen Company in 1932, when seven day's work in the open air produced a hole only 3 inches deep in an 8 in. sample piece.

The only disadvantage of this steel is that machining is impossible, and all finishing has to be done by grinding, but this, of course, follows inevitably from the virtues of the steel itself.

Publications Received

Painting Specifications. Issued by Nobel Chemical Finishes, Ltd., Nobel House, Buckingham Gate, S.W.1. Twelve Information Sheets reprinted from the ARCHITECTS' JOURNAL.

Kitchen Plans and Monel Metal Sink Units. Two pamphlets issued by Henry Wiggin & Co., Ltd., Thames House, Millbank, S.W.1.

Ferroput. Issued by James Clark and Son, Ltd., Scoresby Street, Blackfriars Road, S.E.1. Notes on a new putty specially prepared for use with metal casements.

LAW REPORT

PREScription OF BUILDING LINE— COMPENSATION PAYABLE

Norris & Co. (Builders), Ltd., v. Surrey County Council—King's Bench Divisional Court Before the Lord Chief Justice and Justices Humphrey and Singleton.

THIS case, which came before the Court for argument on a special case stated by Mr. Hugh C. Webster, the Official Arbitrator, raised questions of much importance as to the measure of compensation to which persons whose land was affected

by the prescription of a building line were entitled to be paid.

The point raised was, did the compensation payable extend only to the injury to the land, or did it extend to the injury to the trade and business which were carried on in connection with the land?

The facts were as follows. Messrs. Norris & Co., the claimants for compensation, are builders and contractors carrying on business at Sunningdale, Berks, and in March, 1932, being the frontagers in possession of land at the junction of the Great South-West coast road and the Woking-Chobham-Ascot county road at Sunningdale, Surrey, they received from the Surrey County Council, acting under the powers conferred upon them by Section 66 of the Surrey County Council Act, 1931, of the Council's intention to prescribe a building line in relation to the frontage of property at the Great South-West road and the Woking-Chobham-Ascot road, at Sunningdale.

On March 8, 1932, Messrs. Norris signified to the Council that they did not object to the prescription of the building line subject to the payment of adequate compensation. On May 10, 1932, the Council served on Messrs. Norris notice that they had prescribed the building line and in these circumstances Messrs. Norris claimed £3,010 compensation. As the parties failed to agree about the amount of compensation payable, the matter was referred to the Arbitrator.

It appeared that Messrs. Norris at the end of 1931 had decided to erect upon the frontage to the Chobham-London road, a terrace of shops with flats above. Plans were prepared and submitted for approval to the Egham Urban District Council, both roads being under their jurisdiction. In consequence of that submission of plans, the Surrey County Council having received notice of it, prescribed the building line in question, which necessitated the setting back of the building frontage, which Messrs. Norris said increased the cost of

their projected buildings and as a consequence decreased their profit. This they contended should be taken into consideration in the assessing of the compensation payable by the Council to them. Their case was that the building line prescribed necessitated the setting back of the building frontage some 16 ft., which increased the cost of the gas and electric connections to the contractors and the cost of clearing the land at the rear.

The questions for the arbitrator were:—
(a) Whether Messrs. Norris were entitled to be paid compensation by the Surrey County Council on the basis that they were entitled to recover in addition to the value of the frontage lost by the prescription of the building line, the loss they had sustained by being deprived of their profit in respect of buildings they would have erected on such frontage, or (b) Whether Messrs. Norris were entitled only to be paid compensation in respect of the frontage they had lost, and were not entitled to recover compensation in respect of being deprived of their profit in respect of buildings they would have erected on such frontage.

The official arbitrator decided that if Messrs. Norris were entitled to compensation under (a) they were entitled to £1,925, and if under (b) to only £939. The question to be decided was which of these two amounts Messrs. Norris were entitled to in the circumstances.

Sir Stafford Cripps, K.C., and Mr. L. Heald appeared for the Surrey County Council, and Mr. Trustram Eve, K.C., and Mr. A. Buttons for Messrs. Norris.

After legal argument, the Court held that the compensation due to Messrs. Norris extended only to the injury to the land itself and did not extend to the injury of the trade or business carried on in connection with the land. They accordingly gave judgment for the finding of the arbitrators' award for £939.

THE BUILDINGS ILLUSTRATED

List of General and Sub-Contractors

SHOWROOMS IN WIGMORE STREET (pages 587-590). The general contractors were Messrs. George Shaw. The principal sub-contractors and suppliers included:—

Finishes and Equipment.—Streamlite Electric Lamp Co., Ltd., electric light fittings; George & Co., leather panels; Wood Processes, Ltd., flexwood; A. Sanderson and Sons, Ltd., grass paper and fabrics; Brilliant Sign Co., Ltd., neon; Wood Products, Ltd., Colouremex, Ensonit; Educational Supply Association, Ltd., sliding screen gear and fittings; Avery & Co., pleated blinds; E. Pollard & Co., Ltd., outside sign; Dryad Metal Works, Ltd., door furniture; North British Rubber Co., Ltd., rubber floor.

FACTORY AT PARK ROYAL (page 591). General contractors, Allnatt Ltd. and the Guinness Estate.

SOUTH HARROW STATION (pages 599-602). The general contractors were Prestige & Co., Ltd. The principal sub-contractors and suppliers included:—

Structure.—Limmer and Trinidad Lake Asphalt Co., Ltd., dampcourses, asphalt;

Prestige & Co., Ltd., excavation, foundations, reinforced concrete; Ames and Finnis, bricks; Malcolm Macleod & Co., Ltd., artificial stone; Rubery Owen & Co., Ltd., structural steel; J. A. King & Co., Ltd., roof lights; Siegwart Fireproof Flooring Co., Ltd., patent flooring; Doodson and Bain, Ltd., steel casements; *Finishes*.—Byron & Co., terra-cotta—internal slabbing; Carter & Co. (London), Ltd., wall tiling, tile partitions; Art Pavements and Decorations, Ltd., floor tiling; Prestige & Co., Ltd., plumbing, plaster; J. H. Bance & Co., Ltd., stairtreads; Light Steelwork (1925), Ltd., J. Starkie

Gardner, Ltd., and G. Johnson Bros., metalwork; Tucker Armoured Plywood Co., Ltd., joinery.

Equipment.—John Wright & Co., Ltd., gas fixtures; Signal Engineers, L.P.T.B., electric wiring, electric light fixtures, electric heating and telephones; Steel and Hampton, door furniture; Doodson and Bain, window furniture; J. Starkie Gardner, Ltd., folding gates; Heal and Son, Ltd., seats; E. Pollard & Co., Ltd., shop and office fittings; Roneo, Ltd., and Rubery Owen & Co., cloakroom fittings; Tylors (Water and Sanitary) Ltd., sanitary fittings.

for Mr. H. C. Powell; shops, Portland Road, for Mr. J. F. Jenkins; 30 shops, Sherwell Lane, for Cockington Trust, Ltd.; 95 houses, Marlton Road, for Premier Trust, Ltd.; eight houses, Congella Road, for Mr. F. White; 19 houses, Pine View Gardens, for Mr. H. J. T. Cruse; alterations, Unionist Club, Hoxton Road, for Committee; timber store, Temperance Street, for Messrs. Head & Co., Ltd.; three houses, Moor Lane, for Mr. H. W. Best; 16 houses, Moor Lane, for Mr. H. Ching; development, Oakfield estate, Meadfoot Road, for Messrs. Colborne and Thurley.

WEYMOUTH. *Development*. The Southlands Estate Co. is to develop the Old Castle estate, Weymouth.

MIDLAND COUNTIES

BIRMINGHAM. *Church*. Plans have been approved and work is to commence next month on the building of a new Catholic church at Northfield, for the Rev. P. Cassidy. The architect is Mr. E. Bower Norris, F.R.I.B.A., of London, Stafford and Manchester.

KETERING. *Houses*. The U.D.C. is to prepare plans for the erection of 100 houses on the Avondale estate.

NORTHAMPTON. *Houses*. Plans passed by the Corporation: 24 houses, Welford Road, for Mr. L. J. Pateman; eight houses, Kettering Road, for Messrs. Chownes, Ltd.; two houses, Foxgrove Avenue, for Mr. R. W. Messenger; nine houses, Boughton Green Road, for Messrs. H. Holloway and Sons; four houses, Rushmere Avenue, for Messrs. Stafford and Gutter; new wards and nurses' home extensions, Manfield Hospital, for governors; 17 houses, Briar Hill Road, for Mr. J. E. Lucas; four houses, Bush Hill, for Messrs. A. Glenn and Sons, Ltd.; 18 houses, Towchester Road, for Mr. S. G. Marsh; two houses, Tanner Street, for Mr. T. French; boot factory extension, Brockton Street, for Messrs. G. Webb and Sons; two houses, Ridgeway, for Messrs. E. Green and Son; alterations and additions, 40-4 Wellingborough Road, for Messrs. Redhead and Sons.

NORTHERN COUNTIES

CARLISLE. *Church*. St. Barnabas Church trustees are to erect a church in Shady Grove Road, Carlisle.

CARLISLE. *School*. The Education Committee is to erect an elementary school at Currock.

MANCHESTER. *Church*. Plans have been approved and quantities are in preparation for a church at Moston, to be carried out in reinforced concrete and brick. The architects are Mr. E. Bower Norris, F.R.I.B.A., and Mr. F. M. Reynolds, B.A., of Manchester.

ROTHERHAM. *Administrative Block*. The Corporation is to erect an administrative block at the Alma Road institution, by direct labour, at a cost of £12,000.

ROTHERHAM. *Houses*. Plans passed by the Corporation: four houses, Rencliffe Avenue, for Mr. E. Sutcliffe; alterations, Station Hotel, Westgate, for Tadcaster Tower Brewery Co., Ltd.; gymnasium and refreshment room, Millmoor football ground, for United Football Club, Ltd.; offices, Fullerton Road, for Wagon Repairs, Ltd.; four houses, Watson Road, for Messrs. McGeoch and Sons.

SEAHAM HARBOUR. *Swimming Baths*. The U.D.C. is to consider the provision of swimming baths.

SOUTH SHIELDS AND TYNEMOUTH. *Tunnel*. The Corporations of South Shields and Tynemouth recommend the scheme prepared by Messrs. Mott, Hay and Anderson for the construction of a tunnel for the river Tyne cross communication, at an estimated cost of £1,300,000.

TYNEMOUTH. *Tenements*. The Knott Housing Trust is in negotiation with the Tynemouth Corporation regarding its scheme for the erection of 140 tenements at a cost of £80,000 in Percy Square.

WALSALL. *School*. The Education Committee is to erect an elementary school for 800 at Harden.

THE WEEK'S BUILDING NEWS

LONDON & DISTRICTS (15-MILES RADIUS)

BALHAM. *Flats*. Mr. G. Kay Green has submitted plans for the erection of blocks of flats at the junction of Balham High Road, and Balham Park Road.

CLAPHAM (SOUTH). *Shops and Flats*. Plans by Messrs. Mathew Hall & Co., Ltd., for the erection of a block of shops and flats on the site of 207-223 Clapham Park Road, have been approved.

CLAPHAM. *Flats*. The Wandsworth B.C. has approved plans by Mr. Harold Bailey for the development of the White Square Area.

COULSDON. *Houses, etc.* Plans passed by the U.D.C.: Two houses, Keston Avenue, for Mr. A. Elliott; two houses, Placehouse Lane, for Blackmore Estates, Ltd.; four shops, Coulsdon Road, and eight houses, The Glade, for Firmus Constructions, Ltd.; 13 houses, Red Dow Road, for Mr. E. B. Clark; two bungalows, Coulsdon Road, for Mr. W. G. McGee; two houses, Lacey Avenue, for Taylor Woodrow Estates; two houses, Cearn Way, for Mr. W. J. L. Horsman; lime plant, Marpit Lane, for Messrs. Hall & Co., Ltd.; four houses, Westleigh Avenue, for Mr. B. M. Brown; two houses, Bradmore Way, for Mr. F. Sutton Smith.

EALING. *Hall, Shops, etc.* Messrs. Howis and Belcahm, have prepared plans (not yet approved) for the proposed erection of a dance hall, 10 shops, four flats and club premises at Uxbridge.

GARRATT LANE. *Houses*. The Wandsworth B.C. has approved plans prepared by Mr. E. G. Culpin, F.R.I.B.A., for the development of the housing site in Garratt Lane.

GREENFORD. *Flats*. Mr. F. H. Shearley, Orley Farm Road, Harrow, has prepared plans for the erection of three blocks, comprising 30 flats at The Ridings and Ashbourne Road.

PURLEY. *Shops, Houses, etc.* Plans passed for 14 shops and 10 houses, Old Lodge Lane, for Messrs. G. T. Crouch, Ltd.; 18 houses, Honiston Heights, and 34 houses, Eskdale Gardens, for Messrs. J. Laing and Son, Ltd.; four houses, Coombe Wood Hill, for Messrs. Butcher and Wilson; kitchen extension, County School, Godstone Road, for Surrey Education Committee.

PUTNEY. *Flats*. Messrs. T. J. Lovell and Son are to erect a large block of flats on the site of 54, Putney Hill.

SANDERSTEAD. *School*. The Education Committee is acquiring land for the enlargement of the council school in Limpsfield Road, Sanderstead.

SOUTHFIELDS. *Factory Extension*. Messrs. Wallis, Gilbert and Partners are the architects in connection with the erection of additions to the premises of Messrs. Aluminium Plant and Vessel Co., at Point Pleasant.

SOUTHGATE. *Extensions*. The Corporation has approved plans for extensions at the isolation hospital.

STOKE NEWINGTON. *Flats, etc.* Plans passed by B.C.: Flats, Lordship Terrace, for Mr. Edward Armstrong, on behalf of the Ecclesiastical Commissioners; buildings, site of 88, Howard Walk, for Mr. J. Cannell; flats,

corner of Green Lanes and Woodberry Down, for Mr. Wallace J. Gregory; flats, site of 250 Green Lanes, for Mr. H. Kelsall Armitage; cinema, Stoke Newington Road, for Mr. W. R. Glen, architect to Associated British Cinemas, Ltd.; flats, Shelford Place, for Messrs. Arthur J. King, Ltd.; factory, Masons Court, for Messrs. Holland & Hannen and Cubitts, Ltd. STREATHAM. *Flats and Houses*. Plans have been approved for the erection of two blocks of flats at Mitcham Lane by Messrs. Fitt and Prior Hale; two blocks of flats and garages on the North-west side of Babington Road by Messrs. R. Cronk, Ltd., and 19 houses and 16 garages in road leading from Gracefield Gardens, by Mr. B. G. Utting.

SOUTHERN COUNTIES

COSHAM. *Church*. Work will soon be commenced upon the erection of a new church on the Highbury Estate, to accommodate 550 persons. The architect is Mr. F. N. Comper.

GRAVESEND. *Houses, etc.* Plans passed by the Corporation: Two houses, Prospect Place, for Mr. C. I. Barton; two houses, Sun Lane, for Mr. C. J. Howard; six houses, Abbey Road, for Mr. A. E. V. Newnham; three houses, Waterton Avenue, for Mr. G. W. Waterton; 10 houses, Trosley Avenue, for Mr. J. R. Pettman; two houses, Pine Avenue, for Mr. L. E. Burvill.

HASTINGS. *Houses*. The Corporation is to erect 97 houses on the Hollington Estate, at a cost of £38,474.

EASTERN COUNTIES

COLCHESTER. *Hospital Extension*. It is announced that a scheme is being prepared for the erection, at the Colchester Hospital, of wards for men and women, a new operating theatre, kitchens and domestic staff accommodation, and central boiler house. The estimated cost of the scheme is £40,000.

HALSTEAD. *Houses*. The U.D.C. are to erect a further 16 houses on the Fenn Road site.

NORWICH. *School*. The Education Committee is to erect an elementary school for 250 in the Catton Grove district.

YARMOUTH. *Houses, etc.* Plans passed by the Corporation: Four houses, Lawn Avenue, for Mr. G. W. Woods; four houses, Beatty Road, for Messrs. H. R. Middleton & Co., Ltd.; two houses, Lowestoft Road, for Mr. W. Downing; 12 bungalows, Crow Hall estate, Gorleston, for Mr. W. West; workshop, Lucas Road, for Mr. C. Platt; two houses, Burnt Lane, for Mr. W. Rodwell; alterations, 116-7, High Street, Gorleston, for Messrs. North Robin and Wilsdon.

YARMOUTH. *Clearance Areas*. The Corporation has asked the borough engineer to prepare plans for the re-development of all the clearance areas.

SOUTH-WESTERN COUNTIES

CHELTONHAM. *Houses*. The Corporation has arranged with Mr. C. Samson to erect 126 houses on the Whaddon Farm Estate, at a cost of £20,059 12s. 6d.

TORQUAY. *Houses*. Plans passed by the Corporation: 16 houses, Teignmouth Road,

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		II				I		II				I		II			
		s. d.		s. d.				s. d.		s. d.				s. d.		s. d.			
A ₁	A BERDARE ..	S. Wales & M.	1 5	1 1 1/2	A ₁	F ASTBOURNE ..	S. Counties	1 5	1 0 1/2	A	Northampton	Mid. Counties	1 6	1 1 1/2	A ₁	S T. ALBANS ..	E. Counties	1 5 1/2	1 1 1/2
A ₁	Aberdeen ..	Scotland	1 6	1 1 1/2	A ₁	Ebbw Vale ..	S. Wales & M.	1 5 1/2	1 1 1/2	A	North Staffs ..	Mid. Counties	1 6	1 1 1/2	A ₁	St. Helens ..	N.W. Counties	1 6	1 1 1/2
A ₁	Abergavenny ..	S. Wales & M.	1 5 1/2	1 1 1/2	A ₁	Edinburgh ..	Scotland	1 6	1 1 1/2	A ₁	North Shields ..	N.E. Coast	1 6	1 1 1/2	A ₁	Salisbury ..	S.W. Counties	1 3	11 1/2
A ₁	Abingdon ..	S. Counties	1 4 1/2	1 0 1/2	A ₁	E. Glamorgan ..	S. Wales & M.	1 5 1/2	1 1 1/2	A ₁	Norwich ..	E. Counties	1 5 1/2	1 1 1/2	A ₁	Scarborough ..	Yorkshire	1 5 1/2	1 1 1/2
A ₁	Accrington ..	N.W. Counties	1 6	1 1 1/2		shire, Rhondda				A ₁	Nottingham ..	Mid. Counties	1 6	1 1 1/2	A	Seunthorpe ..	Mid. Counties	1 6	1 1 1/2
A ₁	Addlestone ..	S. Counties	1 6	1 1 1/2		Valley District				A	Nuneaton ..	Mid. Counties	1 6	1 1 1/2	A	Sheffield ..	Yorkshire	1 6	1 1 1/2
A ₁	Adlestree ..	N.W. Counties	1 4 1/2	1 0 1/2	A ₁	Exeter ..	S.W. Counties	1 5	1 0 1/2						A ₁	Shipley ..	Yorkshire	1 6	1 1 1/2
A ₁	Adlington ..	Scotland	1 6	1 1 1/2	B	Exmouth ..	S.W. Counties	1 4	1 0						A ₁	Shrewsbury ..	Mid. Counties	1 5	1 0 1/2
A ₁	Aldersburgh ..	E. Counties	1 2	10 1/2											A ₁	Skipton ..	Yorkshire	1 5	1 0 1/2
A ₁	Altrincham ..	N.W. Counties	1 6	1 1 1/2	A ₁	F ELIXSTOWE ..	E. Counties	1 4 1/2	1 0 1/2						A ₁	Slough ..	S. Counties	1 5	1 0 1/2
A ₁	Appley ..	N.W. Counties	1 2 1/2	1 1 1/2	A	Filey ..	Yorkshire	1 4 1/2	1 0 1/2						A ₁	Solihull ..	Mid. Counties	1 5 1/2	1 1 1/2
A	Ashton-under-	N.W. Counties	1 6	1 1 1/2	A	Fleetwood ..	N.W. Counties	1 6	1 1 1/2						A ₁	Southampton	S. Counties	1 5	1 0 1/2
	Lyne ..				B ₁	Folkestone ..	S. Counties	1 3 1/2	11 1/2						A ₁	Southend-on-	E. Counties	1 5 1/2	1 1 1/2
B ₁	Aylesbury ..	S. Counties	1 3 1/2	11 1/2	B ₁	Frodsham ..	N.W. Counties	1 6	1 1 1/2						A	Southport ..	N.W. Counties	1 6	1 1 1/2
					B ₁	Frome ..	S.W. Counties	1 3	11 1/2						A	Stafford ..	Mid. Counties	1 4 1/2	1 0 1/2
															A	Stirling ..	Scotland	1 6 1/2	1 2
B ₁	B ANBURY ..	S. Counties	1 3 1/2	11 1/2											A	Stockport ..	N.W. Counties	1 6	1 1 1/2
B ₁	Banger ..	N.W. Counties	1 3 1/2	11 1/2	A	G ATESHEAD ..	N.E. Coast	1 6	1 1 1/2						A	Stockton-on-	N.E. Coast	1 6	1 1 1/2
A ₁	Barnard Castle	N.E. Coast	1 4 1/2	1 0 1/2	B	Gillingham ..	S. Counties	1 4	1 0						A	Tees-on-Trent	Mid. Counties	1 6	1 1 1/2
A ₁	Barnsley ..	Yorkshire	1 6	1 1 1/2	A	Glasgow ..	Scotland	1 6 1/2	1 2						B	Stroud ..	S.W. Counties	1 4	1 0
A	Barnstaple ..	S.W. Counties	1 4	1 0	A ₁	Gloucester ..	S.W. Counties	1 5	1 0 1/2						A	Sunderland ..	N.E. Coast	1 6	1 1 1/2
A	Barrow ..	N.W. Counties	1 6	1 1 1/2	A ₁	Goole ..	Yorkshire	1 5	1 0 1/2						A	Swansea ..	S. Wales & M.	1 6	1 1 1/2
A ₁	Barry ..	S. Wales & M.	1 6	1 1 1/2	A ₁	Gosport ..	S. Counties	1 5	1 0 1/2						A	Swindon ..	S.W. Counties	1 4 1/2	1 0 1/2
B ₁	Baslington ..	S.W. Counties	1 3 1/2	11 1/2	A ₁	Grantham ..	Mid. Counties	1 4 1/2	1 0 1/2										
A ₁	Bath ..	S.W. Counties	1 5	1 0 1/2	A ₁	Gravesend ..	S. Counties	1 5 1/2	1 1 1/2										
A ₁	Batley ..	Yorkshire	1 6	1 1 1/2	A ₁	Greenock ..	Scotland	1 6	1 1 1/2										
A ₁	Bedford ..	E. Counties	1 5	1 0 1/2	A ₁	Grimsby ..	Yorkshire	1 6	1 1 1/2										
A ₁	Berwick-on-	N.E. Coast	1 5	1 0 1/2	A	Guildford ..	S. Counties	1 4	1 0										
	Tweed ..																		
A ₁	Bewdley ..	Mid. Counties	1 5	1 0 1/2															
B ₁	Bicester ..	S. Counties	1 2 1/2	11	A	H ALIFAX ..	Yorkshire	1 6	1 1 1/2										
A ₁	Birkenhead ..	N.W. Counties	1 7 1/2	1 2 1/2	A	Hanley ..	Mid. Counties	1 6	1 1 1/2										
A	Birmingham ..	Mid. Counties	1 6	1 1 1/2	A	Harrogate ..	Yorkshire	1 6	1 1 1/2										
A ₁	Bishop Auckland	N.E. Coast	1 5 1/2	1 1 1/2	A	Hartlepool ..	N.E. Coast	1 6	1 1 1/2										
A	Blackburn ..	N.W. Counties	1 6	1 1 1/2	B ₁	Harwich ..	E. Counties	1 4	1 0										
A	Blackpool ..	N.W. Counties	1 6	1 1 1/2	B ₁	Hastings ..	S. Counties	1 3 1/2	11 1/2										
A ₁	Blith ..	N.E. Coast	1 6	1 1 1/2	A ₁	Hatfield ..	S. Counties	1 5	1 0 1/2										
B ₁	Bognor ..	S. Counties	1 3 1/2	11 1/2	A ₁	Hereford ..	S.W. Counties	1 4	1 0										
A ₁	Bolton ..	N.W. Counties	1 6	1 1 1/2	A ₁	Hertford ..	E. Counties	1 5	1 0 1/2										
A ₁	Boston ..	Mid. Counties	1 4 1/2	1 0 1/2	A ₁	Heysham ..	N.W. Counties	1 5	1 0 1/2										
A ₁	Bournemouth ..	S. Counties	1 5	1 0 1/2	A	Howden ..	N.E. Coast	1 6	1 1 1/2										
B ₁	Bovey Tracey ..	S.W. Counties	1 3	11 1/2	A	Huddersfield ..	Yorkshire	1 6	1 1 1/2										
A ₁	Bradford ..	Yorkshire	1 6	1 1 1/2	A	Hull ..	Yorkshire	1 6	1 1 1/2										
A ₁	Brentwood ..	E. Counties	1 5 1/2	1 1 1/2															
A ₁	Bridgend ..	S. Wales & M.	1 6	1 1 1/2															
A ₁	Bridgewater ..	S.W. Counties	1 4	1 0	A	I LKLEY ..	Yorkshire	1 6	1 1 1/2										
A ₁	Bridlington ..	Yorkshire	1 5 1/2	1 1 1/2	A	Immingham ..	Mid. Counties	1 6	1 1 1/2										
A ₁	Brighton ..	S. Counties	1 5	1 0 1/2	A ₁	Ipswich ..	E. Counties	1 5	1 0 1/2										
A ₁	Bristol ..	S.W. Counties	1 6	1 1 1/2	B ₁	Ile of Wight ..	S. Counties	1 3	11 1/2										
A	Brixham ..	S.W. Counties	1 3	11 1/2															
A ₁	Bromsgrove ..	Mid. Counties	1 5	1 0 1/2	A	J ARROW ..	N.E. Coast	1 6	1 1 1/2										
A ₁	Bromyard ..	Mid. Counties	1 2 1/2	11															
A ₁	Burnley ..	N.W. Counties	1 6	1 1 1/2	A	K EIGHLEY ..	Yorkshire	1 6	1 1 1/2										
A ₁	Burslem ..	Mid. Counties	1 6	1 1 1/2	A ₁	Kendal ..	N.W. Counties	1 4 1/2	1 0 1/2										
A ₁	Burton-on-	Mid. Counties	1 6	1 1 1/2	A ₁	Keswick ..	N.W. Counties	1 4 1/2	1 0 1/2										
	Trent ..				A ₁	Kettering ..	Mid. Counties	1 5 1/2	1 1 1/2										
A	Bury ..	N.W. Counties	1 6	1 1 1/2	A ₁	Kidderminster	Mid. Counties	1 5	1 0 1/2										
A	Buxton ..	N.W. Counties	1 5 1/2	1 1 1/2	B ₁	King's Lynn ..	E. Counties	1 3 1/2	11 1/2										
A ₁	C AMBRIDGE ..	E. Counties	1 5 1/2	1 1 1/2	A	L ANCASTER ..	N.W. Counties	1 6	1 1 1/2										
B ₁	Canterbury ..	S. Counties	1 3 1/2	11 1/2	A ₁	Leamington ..	Mid. Counties	1 5 1/2	1 1 1/2										
A ₁	Cardiff ..	S. Wales & M.	1 6	1 1 1/2	A ₁	Leeds ..	Yorkshire	1 6	1 1 1/2										
A ₁	Carlisle ..	N.W. Counties	1 6	1 1 1/2	A ₁	Leek ..	Mid. Counties	1 6	1 1 1/2										
B	Carmarthen ..	S. Wales & M.	1 4	1 0	A ₁	Lester ..	Mid. Counties	1 6	1 1 1/2										
B	Carnarvon ..	N.W. Counties	1 4	1 0	A ₁	Leigh ..	N.W. Counties	1 6	1 1 1/2										
B	Carnforth ..	N.W. Counties	1 6	1 1 1/2	B	Lewes ..	S. Counties	1 2 1/2	11 1/2										
A	Castleford ..	Yorkshire	1 6	1 1 1/2	A ₁	Lichfield ..	Mid. Counties	1 5	1 0 1/2										
A ₁	Chatham ..	S. Counties	1 4 1/2	1 0 1/2	A ₁	Lincoln ..	Mid. Counties	1 6	1 1 1/2										
A ₁	Chelmsford ..	E. Counties	1 4 1/2	1 0 1/2	A ₁	Liverpool ..	N.W. Counties	1 6	1 1 1/2										
A ₁	Cheltenham ..	S.W. Counties	1 4 1/2	1 0 1/2	A ₁	Llandudno ..	N.W. Counties	1 5	1 0 1/2										
A ₁	Chester ..	N.W. Counties	1 6	1 1 1/2	A ₁	Llanelli ..	S. Wales & M.	1 6	1 1 1/2										
A ₁	Chesterfield ..	Mid. Counties	1 6	1 1 1/2		London (12-miles radius)		1 7 1/2	1 2 1/2										
B ₁	Chichester ..	S. Counties	1 3 1/2	11 1/2		Do. (12-15 miles radius)		1 7	1 2										
A ₁	Chorley ..	N.W. Counties	1 6	1 1 1/2	A	Long Eaton ..	Mid. Counties	1 6	1 1 1/2										
B ₁	Cirencester ..	S. Counties	1 3 1/2																

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, adjust-

ment 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
Navy	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 0
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
Crushed Ballast	6 9
Building Sand	7 3
Washed Sand	8 3
Broken Brick	10 3
Pan Breeze	6 6
Coke Breeze	8 9

DRAINLAYER

BEST STONEWARE DRAIN PIPES AND FITTINGS

	s. d.	£ s. 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
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
Phorpro bricks	2 15 0
Cellular bricks	2 15 0
Stocks, 1st quality	4 11 0
and	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
Phorpro 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:	
Buffs and Creams, Add	1 0 0
Other Colours	2 0 0
2" Breeze Partition Blocks per Y.S.	5 10 0
2½"	1 7
3"	1 10
4"	2 1
5"	2 5

MASON

	s. d.
The following d/d F.O.R. at Nine Elms:	
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" x 12" Duchesses per M.	28 17 6
22" x 12" Marchionesses	24 10 0
20" x 10" Countesses	19 5 0
18" x 10" Viscountesses	15 10 0
18" x 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" x 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 lb.	1 4
Nails, compo	1 6
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 1
Figured	1 5
Austrian wainscot	1 6
English	1 11
Pine, Yellow	1 0
Oregon	4
British Columbian	1 3
Teak, Moulmein	1 2
Burma	2 3
Walnut, American	2 3
French	2 3
Whitewood, American	1 1
Deal floorings Sq.	18 6
1"	1 6
1½"	1 2 0
2"	1 5 0
2½"	1 10 0
Deal matchings	14 0
1"	15 6
1½"	1 4 0
Rough boarding	16 0
1"	18 0
1½"	1 6 0
Plywood, per ft. sup.	
Thickness	
Qualities	A B BB A B BB A B BB A B BB
d. d. d. d. d. d. d. d. d. d. d. d.	
Birch 4 2½ 2 5 3 2½ 7 5 4 8 6 5	
Cheap Alder 2 1½ 3½ 2 — — — —	
Oregon Pine 3 2½ 3 2½ 4 3½ — —	
Gaboon	
Mahogany 4 3½ — 5 4½ — 7 6½ — 8 7 —	
Figured Oak 6½ 5 — 7½ 5½ — 10 8 0 1½ — 9 —	
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.)

	1"	1½"	2"	2½"	3"
Tubes, 2'-14' long, per ft. run	4 5½	9½	11 1/10	12 1/10	13 1/10
Pieces, 12'-23" long each	10 1/11	11 1/11	2/8	4/9	5/10
Long screws, 12'-23" long	11 1/3	2/2	2/10	5/3	3/6
Bends "3"-11" long	8 11	1/7½	2/7½	5/2	5/2
Springs not socketed	5 7	1/11½	1/11½	3/11	3/11
Socket unions	2½	3½	5/6	6/9	10½
Elbows, square	10 1/11	1/6	2/2	4/3	4/3
Tees	1½	1/3	1/10	2/6	5/11
Crosses	2½	2/9	4/11	5/6	10/6
Plain sockets and nipples	3 4	6	8	1/3	1/3
Diminished sockets	4 6	9	1½	2/9	2/9
Flanges	2 2	2/9	4/11	5/6	10/6
Caps	3½	5	8	1½	2½
Backnuts	2 3	5	6	1/11	1/11
Iron main cocks	1/6	2/3	4/2	5/4	11/6
with brass plugs	—	4½	7/6	10½	21½

Discounts:

	Per cent.	TUBES.	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	12 9
Mild steel reinforcing rods,	10 6
"	10 3
"	10 0
"	9 6
"	9 6
"	9 6
"	9 6
Cast-iron rain-water pipes of ordinary thickness metal F.R.	8
Shoes each	2 0
Anti-splash shoes	4 6
Boots	3 0
Bends	2 7
with access door	6 3
Heads	10
Swan-necks up to 9" offsets	3 9
Plinth bends, 4½" to 6"	3 9
Half-round rain-water gutters of ordinary thickness metal F.R.	5 6
Stop ends each	6 6
Angles	1 7
Obtuse angles	2 0
Outlets	1 9

PLUMBER

	s. d.
Lead, milled sheets cwt.	26 3
drawn pipes	26 3
soil pipe	26 3
scrap	18 0
Solder, plumbers' lb.	9½
fine do.	1 0
Copper, sheet	8½
tubes	11
L.C.C. soil and waste pipes:	
Plain cast F.R.	1 0
Coated	1 1
Galvanized	2 0
Holderbats each	3 10
Bends	3 9
Shoes	2 10
Heads	4 8

PLASTERER

	£ s. d.
Lime, chalk per ton	2 5 0
Plaster, fine	1 10 0
fine	4 15 0
Hydrated lime	6 3 0
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	2 4
Laths, sawn bundle	3 9
rent	3 9
Lath nails lb.	3

GLAZIER

	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
rough cast; rolled plate	5½
wired cast; wired rolled	11
Georgian wired cast	11
Polished plate, n/e 1 ft.	10 to 11
"	11 2
"	12 3
"	12 9
"	13 7
"	15 11
"	15 0
Vita glass, sheet, n/e 1 ft.	1 0
"	1 3
"	1 9
"	1 0
"	3 0
"	4 0
"	5 0
"	6 0
"	7 6
"	2 6 and 3 6
"	8½
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.	8 6
Linseed oil gall.	2 3
Boiled oil	2 9
Turpentine	4 1½
Patent knotting	14 6
Distemper, washable cwt.	2 0 0
ordinary	2 0 0
Whitening	4 0
Size, double firkin	3 0
Copal varnish gall.	13 6
Flat varnish	14 0
Outside varnish	10 0
White enamel	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" deep 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	0
" " extra, only if left in	"	3	0
Hardcore, filled in and rammed	Y.C.	10	0
Portland cement concrete in foundations (6-1)	"	1	6
" " (4-2-1)	"	1	12
" " underpinning	"	1	16
Finishing surface of concrete, space face	Y.S.	7	0

DRAINLAYER

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

BRICKLAYER

	£	s.	d.
Brickwork, Flettons in lime mortar	Per Rod	26	10
" " in cement	"	27	12
" " Stocks in cement	"	34	0
" " Blues in cement	"	50	0
Extra only for circular on plan	"	2	0
" " backing to masonry	"	1	10
" " raising on old walls	"	2	0
" " underpinning	"	5	10
Fair Face and pointing internally	F.S.	1	1
Extra over fletton brickwork for picked stock facings and pointing	"	11	0
" " red brick facings and pointing	"	1	4
" " blue brick facings and pointing	"	3	6
" " glazed brick facings and pointing	"	7	6
Tuck pointing	"	10	0
Weather pointing in cement	"	3	0
Slate dampcourse	"	1	1
Vertical dampcourse	"	1	1

ASPHALTER

	£	s.	d.
1" Horizontal dampcourse	Y.S.	4	6
1" Vertical dampcourse	"	6	9
1" paving or flat	"	4	0
1" paving or flat	"	5	0
1" x 6" skirting	F.R.	1	0
Angle fillet	"	2	0
Rounded angle	"	2	0
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	0
" " thresholds	"	13	6
" " sills	"	1	0

SLATER AND TILER

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

CARPENTER AND JOINER

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

CARPENTER AND JOINER—continued

	£	s.	d.
1 1/2" deal moulded sashes of average size	F.S.	1	9
" " " " " "	"	1	11
1 1/2" deal cased frames double hung, of 6" x 3" oak sills, 1 1/2" pulley stiles, 1 1/2" heads, 1" inside and outside linings, 3/4" parting beads, and with brass faced axle pulleys, etc., fixed complete	"	3	7
" " " " " "	"	3	10
Extra only for moulded horns	Each	6	0
1 1/2" deal four-panel square, both sides, door	F.S.	2	0
" " " " " "	"	2	8
" " but moulded both sides	"	2	4
" " " " " "	"	3	0
4" x 3" deal, rebated and moulded frames	F.R.	1	0
4" x 3" " " " "	"	1	4
1 1/2" deal tongued and moulded window board, on and including deal bearers	F.S.	1	9
1 1/2" deal treads, 1" risers in staircases, and tongued and grooved together on and including strong fir carriages	"	2	6
1 1/2" deal moulded wall strings	"	2	4
" " " " " "	"	2	4
Ends of treads and risers housed to string	Each	1	9
3" x 2" deal moulded handrail	F.R.	1	3
1 1/2" x 1" deal balusters and housing each end	Each	2	0
1 1/2" x 1 1/2" " " " "	"	2	9
3" x 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.
Roller 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	6
Do., stanchions with riveted caps and bases and do.	"	19	0
Mild steel bar reinforcement, 1/2" 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	0
Wrot-iron caulked and cambered chimney bars	Per cwt.	1	10

PLUMBER

	£	s.	d.
Milled lead and labour in flats	cwt.	2	0
Do. in flashings	"	2	3
Do. in covering to turrets	"	2	9
Do. in soakers	"	1	15
Labour to welled edge	F.R.	3	6
Open copper nailing	"	4	0
Close " " "	"	4	0
Lead service pipe and fixing with pipe hooks	F.R.	10	1
Do. soil pipe and fixing with cast lead tacks	"	5	0
Extra, only to bends	Each	2	0
Do. to stop ends	"	1	0
Boiler screws and unions	"	3	3
Lead traps	"	3	9
Screw down bib valves	"	5	0
Do. stop cocks	"	8	0
4" east-iron 1/2-rd. gutter and fixing	"	11	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	0

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
1/2" screeding in Portland cement and sand or tiling, wood block floor, etc.	"	1	5
Do. vertical	"	1	7
Rough render on walls	"	1	2
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	0
Keene's cement, angle and arris	F.R.	6	0
Arris	"	3	0
Rounded angle, small	"	1	4
Plain cornices in plaster, including dubbing out, per 1" girth	"	3	6
1" granolithic pavings	Y.S.	3	6
6" x 6" white glazed wall tiling and fixing on prepared screed	"	17	6
9" x 3" " " " "	"	1	2
Extra, only for small quadrant angle	F.R.	2	8

GLAZIER

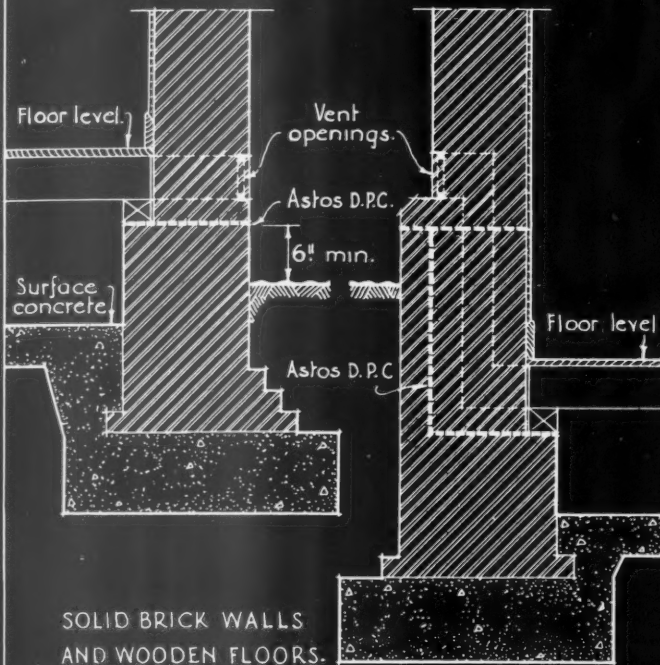
	£	s.	d.
21 oz. sheet glass and glazing with putty	F.S.	6	6
26 oz. do. and do.	"	7	6
Flemish, Arctic Figured (white) and glazing with putty	"	1	1
Cathedral glass and do.	"	1	2
Glazing only, British polished plate	"	7	0
Extra, only if in beads	"	2	0
Washleather	F.R.	4	0

PAINTER

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

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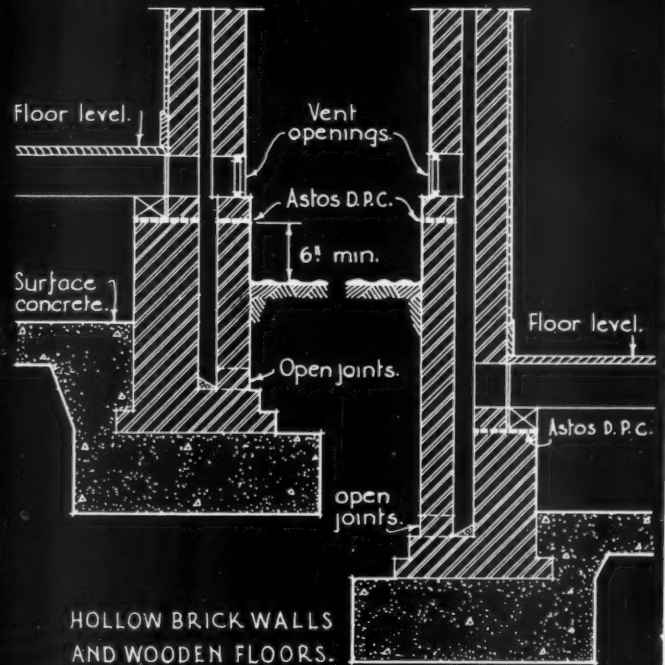
ASTOS MINERAL DAMPCOURSING FOR FOUNDATION WALLS : WOOD FLOORS.



SOLID BRICK WALLS AND WOODEN FLOORS.

(A) Shown with floor above ground level.

(B) Shown with floor below ground level.

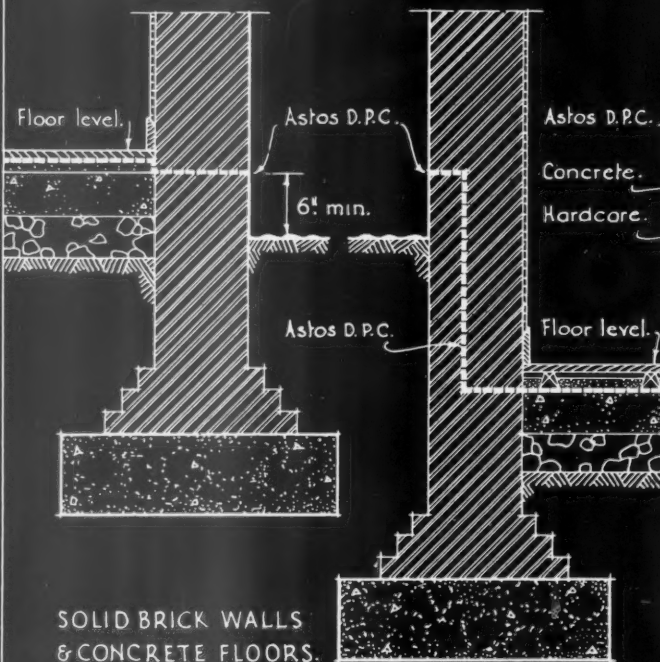


HOLLOW BRICK WALLS AND WOODEN FLOORS.

(C) Shown with floor above ground level.

(D) Shown with floor below ground level.

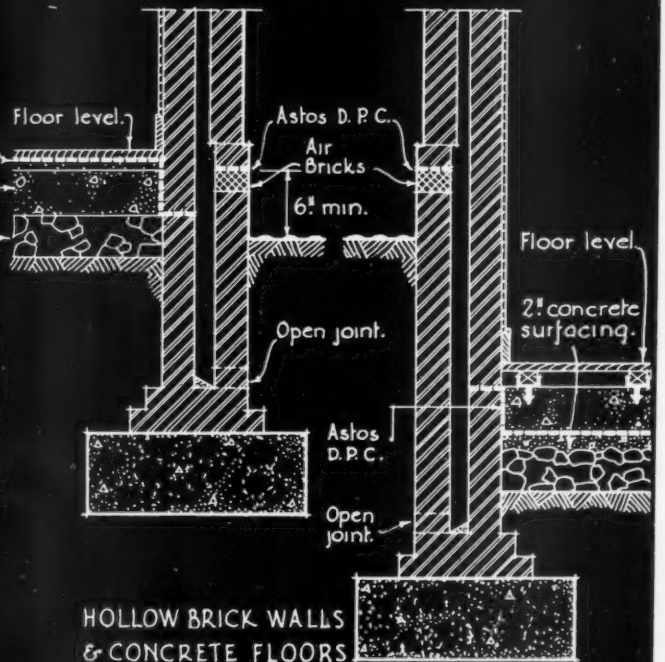
ASTOS MINERAL DAMPCOURSING FOR FOUNDATION WALLS : CONCRETE FLOORS.



SOLID BRICK WALLS & CONCRETE FLOORS.

(A) Shown with floor above ground level.

(B) Shown with floor below ground level.



HOLLOW BRICK WALLS & CONCRETE FLOORS.

(C) Shown with floor above ground level.

(D) Shown with floor below ground level.

Information from The Ruberoid Co. Ltd.

INFORMATION SHEET : ASBESTOS ASPHALT MINERAL DAMPCOURSE
SIR JOHN BURNET TAIT AND LORNE ARCHITECTS ONE MONTAGUE PLACE BEDFORD SQUARE LONDON W.C.1. Oscar A. Baynes.

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INFORMATION SHEET

• 267 •

DAMPCOURSES

Type of Product : "Astos" 100% Mineral
Dampcourse

General :

This Sheet sets out various methods of placing dampcourses in different kinds of wall under the different conditions met with in normal building work.

The relation of the ground level inside the building to the ground level outside and the level of the floors determines the placing of the dampcourse. In some cases the ideal placing of the dampcourse is difficult to achieve, and the many minor variations of usage cannot all be dealt with here, those given being intended to be representative of common practice.

Dampcourses :

Dampcourses may be divided into two main groups : (a) Rigid dampcourses ; and (b) Flexible dampcourses.

Rigid Dampcourses :

Under this heading are included a large variety of materials such as slate, stone work, mastic asphalt, blue brick, etc., which are usually bedded in cement. The heavier types are usually relatively costly. Rigid dampcourses are liable to crack in the case of settlements and sometimes in cases of heavy vibration.

Flexible Dampcourses :

Under this heading are included sheet lead, copper and a variety of bituminous products.

The bituminous dampcourses have in the past been bituminous coatings built up on a base of wool or vegetable fibre material or jute. When such dampcourses are of the best quality, well made throughout, and the base material well protected by outer coatings, they are very efficient and have a very long life. If, however, they are not of the best quality, faults may develop owing to damp reaching the fibrous base material or jute, the dampcourse may then fail owing to the failure of its own base material.

"Astos" 100% Mineral Dampcourse :

In the "Astos" dampcourse all vegetable or animal fibre and all destructible material has been eliminated. The base is pure asbestos fibre felted to give a sheet of asbestos of uniform thickness, and of sufficient strength to carry an adequate waterproofing of pure asphaltum or bitumen.

In order to stabilise the asphalt or bitumen, and to give the material a uniform consistency, a suitable quantity of fine asbestos fibre is incorporated in the asphalt, so as to give a composition of asphalt and asbestos from one surface to the other throughout the material.

By this means the material is better able to withstand pressures, and is made proof against fluctuating temperatures, rendering the material suitable for use at all temperatures.

Great tensile strength is not essential in a dampcourse, its chief function being to resist compression and moisture. Tearing tests of the dampcourse, therefore, indicate nothing, and as the material toughens with age, no advantage would be gained by attempting to increase the tensile strength of the dampcourse, although this could be readily accomplished if the additional cost could be justified.

Grades of "Astos" Dampcoursing :

The dampcourse is made in two grades—standard "Astos" as described above, and lead lined "Astos," which is identical with Standard "Astos" in all respects except that it has an additional lamination of sheet lead.

Weight and Thickness :

Standard "Astos" is approximately $\frac{1}{8}$ in. thick, and has an average weight of 7 lb. per yard super.

Lead-lined "Astos," exactly as above, but with a core of sheet-lead weighing 4 oz. per sq. ft. has a thickness of approximately $\frac{1}{8}$ in., and an average weight of $9\frac{1}{4}$ lb. per yd. super.

Lead-lined "Astos" is also supplied with the lead core in all weights up to 12 oz. per sq. ft.

Sizes :

"Astos" is provided in all wall widths up to 36 in. in rolls containing 8 lineal yards.

Tests :

The Building Research Station have conducted a series of tests on "Astos," including (a) Sliding Test, to determine resistance to shear. (b) Load-bearing tests under increasing load. (c) Load-bearing tests under sustained load. It is not possible to give here in full the results of the tests and the report of the Building Research Station. The following quotation is, however, taken from the introduction to the report :

1. A sample of bituminous dampcourse material, marketed under the name "Astos," was submitted by The Ruberoid Co., Ltd., for examination. A significant feature of the material is the use of asbestos fibre in place of the hair and vegetable fibre customarily used.

2. Tests for the resistance of bituminous dampcourse materials to decay are not available, but obviously the durability will be favoured by the use of asbestos fibre impregnated and coated with bitumen.

3. The capacity of "Astos" for bearing normal load, without serious compression or squeezing, is satisfactory. The nature of the materials used involved a low resistance to shearing forces.

4. The damp-proof course is robust in character, having a thickness of $\frac{1}{10}$ th inch and a weight of 12 oz. per superficial foot. It can be bent easily without any marked cracking.

A copy of the full report may be obtained from the company on application.

Manufacturers : The Ruberoid Co., Ltd.

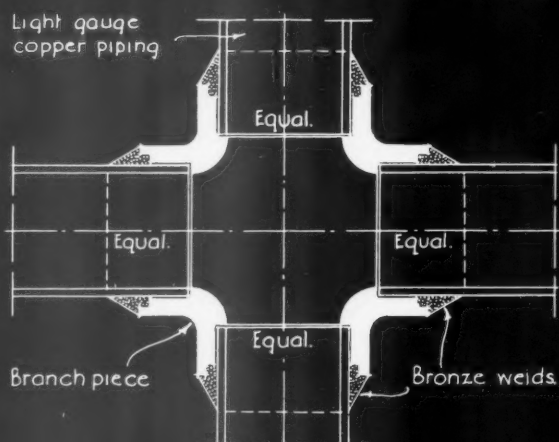
Address : Lincoln House, 296-302 High
Holborn, W.C.1

Telephone : Holborn 9501

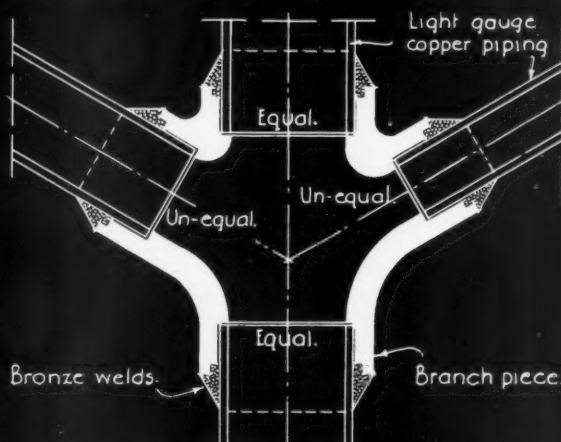
Branches at Birmingham, Manchester, Newcastle-on-Tyne, Granton (Edinburgh), Dublin and Belfast.

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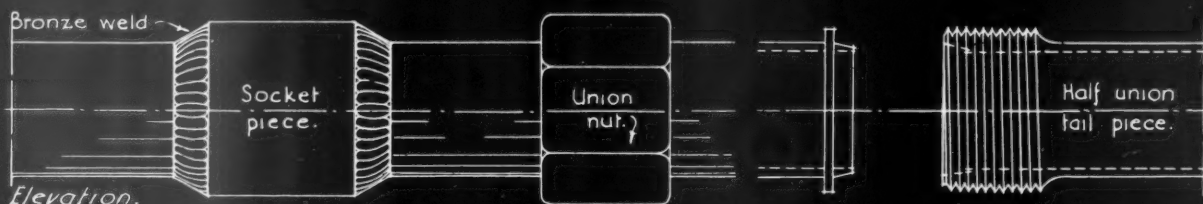
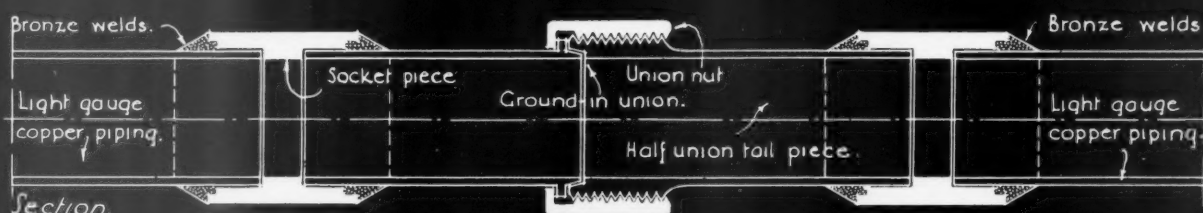
TYPES OF WELDABLE COPPER FITTINGS FOR BRONZE WELDING.



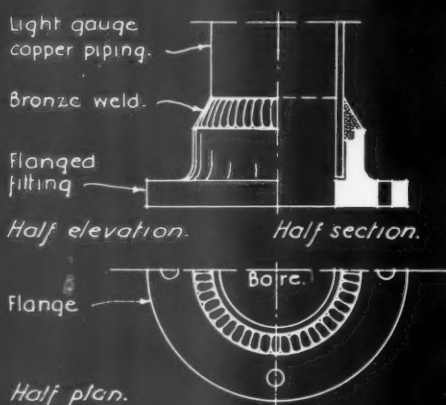
FOUR-WAY CROSS PIECE.
For connecting four metal pipes in true alignment.



FOUR-WAY UNEQUAL BRANCH PIECE.
For soil and waste inlets and connections.

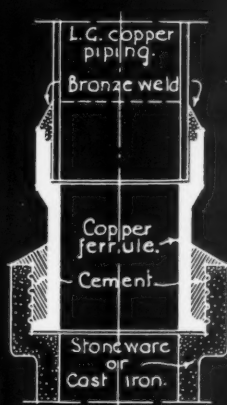


GROUND-IN UNION JOINT.
For disconnecting a system at any point and for extending or reducing a range of lavatory basins.

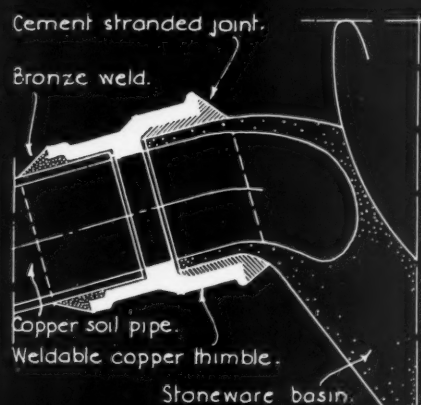


WELDABLE FLANGED COPPER FITTING. (British Standard Flanges)
For heating installations, high or low pressure.

Information from W. L. Kilburn, R.P.



JUNCTION BETWEEN L.G. COPPER & STONWARE.
A similar joint is formed with C.I.



JUNCTION BETWEEN COPPER SOIL PIPE AND W.C. BASIN
By the use of a weldable copper thimble.

Issued by British Oxygen Co. Ltd.

INFORMATION SHEET: PLUMBING IN WELDED COPPER. 6.
SIR JOHN BURNET TAIT AND LORNE ARCHITECTS ONE MONTAGUE PLACE BEDFORD SQUARE LONDON W. C. 1. O.K.A. G. Bayne.

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INFORMATION SHEET

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PLUMBING IN WELDED COPPER

This Sheet gives further details of the use of weldable fittings for junctions, for connections with plumbers' tail pieces and for connections to fittings.

Fittings :

The material, sizes, and varieties of the fittings and the general method of use were described in full in the fifth Sheet of this series (No. 259).

In Situ Work :

It should be pointed out that with the use of these fittings, perfect interior alignment is obtained by the average workman without any great care.

Joints may be made in any position, the weld on the lower end of a fitting placed vertically is made without difficulty by pre-heating the socket or coupling with the blowpipe until the coupling shows dull red, after which the pipe below the coupling is

slightly heated in the vicinity of the weld. The coupling should be hotter than the pipe to which it is to be welded. The deposit from the bronze rod will fly to the hottest position, which is the annular space in the socket prepared for it, and so long as the socket is slightly hotter than the pipe to which it is attached, there will be no difficulty in completing the overhead weld.

The weldable fittings facilitate the installation in many ways.

By use of weldable fittings the operator is able to get true alignment and may continue fixing and fastening the pipe line permanently. He does not require drifts and swages to open out the pipe. The operator simply inserts his couplings along the pipe line and completes the fixing of a section of the piping installation, after which the joints would be welded in situ. The operator, therefore, has no break in fixing the section of pipe line, and he has also no break in welding the same section of pipe line.

This Information Sheet is the sixth of a series showing methods of jointing light-gauge copper pipes.

The first Sheet (No. 225) gave a summary of the various methods; the second and third (Nos. 234 and 243) were devoted to the details of welding by the Bronze weld method; the fourth (No. 251) to the copper weld method, and the fifth to weldable fittings.

Issued by : The British Oxygen Co., Ltd.

Address : Victoria Station House, S.W.1

Telephone : Victoria 9225