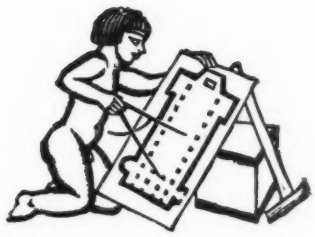
FLATS, GROSVENOR EMBANKMENT, WESTMINSTER

FIRST SECTION TO BE COMPLETED IN OCTOBER

A PERSPECTIVE of the river frontage of the flats now being built on the site of the Army Clothing Store, Grosvenor Embankment, Westminster. The block will, it is claimed, be the largest of its kind in Europe. The architects are Messrs. Gordon Jeeves. The first section will be ready in October. The cost of the scheme is £1,500,000, and the rents will range from about £85 to £280.

NEW FOREIGN OFFICE AT WARSAW

The Polish Ministry of Foreign Affairs was transferred in March to the Palais Bruhl, which had been largely reconstructed during a period of four years. The photograph shows one of the principal entrance halls in the renovated building.



SOUTHAMPTON AND THE ARCHITECT

WITH this week's issue of the JOURNAL we present not the conventional R.I.B.A. Conference supplement, but a section devoted to the place at which the Conference is held, which we believe will prove of more than ephemeral interest. This section gives the basic facts which should be available to anyone engaged in directing the economic or social life of a large town, or whose work will influence the current of affairs within it. A sketch of Southampton's history is followed by an economic and social outline and a special article dealing with one of the most important establishments in the town—the nation's map-making headquarters.

The economic and social survey, by Mr. Philip Massey, describes the situation of the town, its natural and acquired advantages and chief activities, the location of its principal commercial and industrial premises and the main developments of the post-war period. Read in conjunction with the map presented with it, the introduction to the survey gives a general picture of the things which an intelligent person would want to know about the town. The survey goes on to deal with Southampton as a port, with the occupations and industries of its inhabitants, their incomes and their housing.

The function of the architect is not merely the design of buildings. An architect, by the nature of his profession, has unique opportunity for the promotion of good living. Architects should be in a position to show governments and local authorities (who are generally lacking in a sense of the importance of planning and in the apparatus of planning) where they are at fault. The fact that governments, local authorities and business concerns have the power of making the actual decisions which determine the economic life of the nation, has unduly deterred architects from attempting to make their contribution to the shaping of those decisions. The architect has suffered from a sense of frustration. He has felt that he cannot show the powers that be exactly what he wants and why he wants it, and that his capabilities in other than the technical sphere are unrecognized.

To overcome this lack of appreciation, and his consequent sense of frustration, the architect must have at his disposal evidence to support his general argument that planning is good and the absence of it bad, and evidence which makes possible the formulation of a coherent positive policy for the future. In this issue we try to show the primary factors of which account must be taken, the basic lines of inquiry along which the collection of evidence should be directed.

Southampton represents a great opportunity for the architect. Developments are certain, but the direction they will take is uncertain. Here we do not give a plan, we give an objective description, together with a few tentative suggestions as to the lines along which development is likely. Even without conscious planning, such tendencies may be discerned. A danger of "planning," it may be pointed out, is that it may try to force development along unnatural lines. Such "planning" is not planning at all. Planning means far more than laying things out in a predetermined manner. It means putting things in the places best suited to them over the long term, while individualism means putting things in the places best suited to them over the short term. The theory of the hidden hand, operating in a community in which each is striving for his own interest, making somehow for the general welfare, is manifestly a myth today. It is a matter of doubt if it were anything more when it was originally put forward and accepted with joy by the business men of the day. In avoiding the chief danger of an unfettered individualism (the danger of sacrificing the future for the sake of immediate advantage), the opposite danger, that of creating a conscious plan which simply does not work, will not be avoided unless account is taken of *all* the relevant factors—of the nature and location of the working lives and of the home lives of the people, of their incomes, of changes taking place in each of these factors, as well as of the physical conditions with which the architect's technique is necessarily concerned.

We present in this issue a survey which shows, for the particular town at which this week's Conference is meeting, the main factors which need to be considered in deciding on the developments of the future. This material is not in itself a plan, though it contains the evidence on which a plan could be constructed. We suggest that local authorities and business firms might well consider the advantages to be derived from possessing material of this nature regarding the localities with which they are concerned.

The Architects' Journal
Westminster, S.W.1
Telephones: Whitehall
9212-7
Telegrams
Buildable
Parl
London

NOTES & TOPICS

BIRTHDAY HONOURS

IT is very interesting to see that the knighthood of Mr. Guy Dawber, which was announced last Tuesday, has been due in part to his work for the Council for the Preservation of Rural England.

*

All architects will be pleased at this honour on personal grounds, and will feel that Mr. Dawber's long struggle to keep the vernacular tradition alive was more than sufficient to earn its bestowal.

*

A public recognition that the C.P.R.E. is doing vital work and that an architect has been responsible for much of its success, is even more encouraging. Mr. Dawber has done a great deal towards emphasizing that an architect can be socially useful outside individual building operations.

MR. JAMES GREY WEST

That the chief architect of the Office of Works should be honoured with a knighthood is an occurrence which, fortified by good precedents, might almost seem a matter of course. In Mr. West's case it certainly should not be so ; for in his (so far) short tenure of his great position, he has shown very special abilities.

*

Exposed as they are to the biting winds of every kind of criticism all over the world, the architects of H.M.O.W. are unable to be as dashingly progressive as many of them would like—the more acrimonious architectural disputes are frowned on in high places. But little by little the Government buildings have been getting better and better, until now their general good standard is universally admitted.

*

I am left hoping, remembering the Ministry of Pensions' building at Acton, that the Office of Works occasionally allows its chief architect time to design a building all by himself—*pour encourager les autres.*

THE LUTON COMPETITION

We owe a lot to Professor W. G. Newton. As the result of the Luton competition we owe more.

For years nothing much has happened in school design which can be called progressive. Isolated examples of better schools have entirely failed to affect the dreary mediocrity of the normal output. Then two open competitions were announced.

*

The result of Luton, the first of the two, has shown that the open competition *is* the ideal way to get new and vigorous ideas in planning, and to make them known to the architectural public. But to obtain these ideas both progressive competitions and a progressive assessor are needed.

*

In the Luton competition both ingredients were present, and the general level of school planning must rise enormously in consequence.

THE CAMBRIDGE SCHOOL

The present modest advertisement for applicants for the post of head of the Cambridge School of Architecture brings to a conclusion, and, the whole profession will hope, to a new beginning, a long and strangely complicated story.

*

For a great while and particularly during the last year rumours and counter-rumours have been doing their most mysterious about the affair of Cambridge. Concerning all the details of the matter architects in general will not be very intrigued. The problem's essence is far simpler.

*

It is felt that it would be a calamity for architecture if Cambridge, with its unique advantages for a school of any kind and especially for an architectural school, were ever to decide to do without one. And it is felt that the contribution of Cambridge to any branch of knowledge cannot afford to be anything less than first-rate. There can be nobody in architecture who will quarrel with these statements.

*

Yet the work of the new Principal will be for some time acutely difficult. It would be a waste of opportunity for the Cambridge School merely to compete step by step with other three-year schools ; whilst at the same time a great deal of what is learned in those other schools must be incorporated in the Cambridge curriculum.

*

Upon its new Principal's blending of the academical and the professional, of the wider and the narrower educations in architecture, the school will stand or fall. For doing this he should be granted full authority over staff, students and appointments to the staff.

ARMSTRONG COLLEGE

Talking of schools reminds me of how soon one really ably directed can rise to a position of distinction. A friend who was a member of the Armstrong College School at Newcastle-upon-Tyne over ten years ago tells me of the changes to be seen in the surroundings of his youth.

*

In his day the school was a modest affair in three rooms which the University authorities didn't really know whether to encourage or not.

*

And then Mr. R. A. Cordingley arrived on the scene with a determined expression on his face.

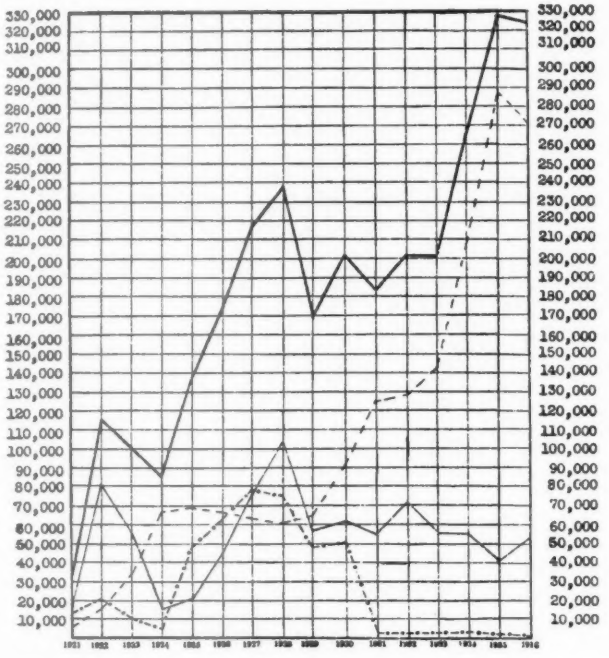


Table showing the number of houses provided in England and Wales in the years ending March 31, 1921 to 1936.

And now Professor Cordingley is at Manchester, but under Mr. W. B. Edwards the Armstrong College still goes on from strength to strength; Liverpool and the A.A. can no longer have just a mild little bicker over the big architectural prizes all to themselves.

*

Newcastle is beginning to be quite proud of the school presented to it. It may even in time give it some encouragement.

*

As a suggestion from myself: why does the City not ask its School to prepare sketch plans showing the possibilities of the various suggested sites for its problematical town hall? It might help inhabitants to make up their minds. (A great-aunt of mine came from Northumberland; she used to tell me that the town hall problem was a bitter one in her young days—the same town hall.)

EAST WINDS

The Wash cannot, as I advocated some time ago, be reclaimed. There is strong opposition. At least one harbour-master in Norfolk is strongly against the whole idea. It would, one gathers, hamper him in his duties.

*

And looking over the piles of withies on one side of the harbour and over the mountain heaps of creels, panniers, and pottles on the other, I, too, realized the urgent importance of keeping our channels clear.

*

Architects and town-planners may sometimes indulge in romance and sentiment, but a harbour-master never forgets that he is a MAN.

Talking of harbours reminds me that I was told the other day at the Surrey Docks that High Wycombe, whose industries grew there solely because it was near the beech-covered hills of Buckinghamshire from which they drew their supplies, now imports some 7,000,000 cub. ft. of timber a year, of which about 3,000,000 cub. ft. is beech.

PRESENT-DAY PROBLEMS

The one hundred years ago column in the *Observer* last Sunday reminded one of how old some of our pressing problems are. "Buy British" seems to be an old cry, for it is specially mentioned that the dresses worn by the Queen and the Duchess of Kent at some function were entirely of British manufacture.

*

Another interesting note headed "Improvement of the Metropolis" records that the traffic congestion in certain streets was such as to make them almost impassable and sets out the proposals for many new streets made in the House of Commons by Mr. Alderman Wood.

*

One of his proposals, to quote from the note, "to form a new street from Southwark Bridge to the Bank of England, which would be very convenient for persons coming from the West End into the city," indicates that even in those days people avoided going round the loop of the river by cutting across the south side.

*

It is sad to relate that only one of the Alderman's improvement schemes has been carried out, and that only in part—some 80 years or so after he proposed it.

GENTLEMAN ARCHITECT . . .

There was a time when earnest students of architecture, with a leaning towards literary research, combed the fiction of the day for minor characters who were architects.

*

Nowadays the film publicity men do all the necessary research and broadcast to the world whenever an architect appears as a film character, minor or major. The title "architect" would appear to have some subtle snob-value. Probably because the suburbs are seldom designed by architects.

. . . IN FILMS

So I am waiting with some interest the general release of "Dangerous," a drama, we are told, of a beautiful human woman and an architect hero.

*

There was some difficulty in casting the hero. A man was sought who had "high-class-good-looks," who was an "A1-first-class-gentleman" and who could be relied upon not to bite his finger nails until driven to it.

*

And then the casting-director thought of Mr. Franchot Tone, a man who has had a succession of gentleman's parts, who knows exactly when a slight grimace is permissible, and moreover a man who is at present reading for an M.A. at Cornell (University).

*

All these things, the publicity men tell us, make him the perfect choice for the part of the architect. Well, gentlemen?

ASTRAGAL

NEWS

POINTS FROM THIS ISSUE

PHILHARMONIC HALL, LIVERPOOL

The poll which has been taken of the members of Liverpool Philharmonic Society to decide whether the erection of a new concert hall to replace the one burned down some years ago shall be put in hand, has resulted in a large majority voting in favour of proceeding with the scheme for a new hall. The new hall is estimated to cost £38,000 and will provide accommodation for 2,200. The architect is Mr. Herbert J. Rowse, whose plans were illustrated in the JOURNAL for June 4 last.

WATERLOO BRIDGE

Sir W. Davison, on consideration of the London County Council (Money) Bill in the House of Commons last week, moved an Instruction to the Committee on Unopposed Bills to omit the part of the Bill which authorizes the L.C.C. to borrow in respect of the expenditure incurred in pulling down Waterloo Bridge and erecting a new one.

After a prolonged debate, the motion was rejected by 186 votes to 96.

ROYAL INCORPORATION OF ARCHITECTS IN SCOTLAND

Mr. William B. Whitie, speaking at the annual Convention of the Royal Incorporation of Architects in Scotland, held in Aberdeen last week, said that architects welcomed very strongly the idea expressed by the Secretary of State for Scotland that housing schemes would be expedited if local authorities more fully used the services of the private members of the architectural profession in getting their schemes prepared. Local authorities had been rather dilatory in getting on with their housing schemes, and he hoped that the Secretary of State's efforts would have the desired effect of expediting the dealing with the slum question.

Dealing with the appointment of standing tribunals in connection with town and country planning, Mr. Whitie said that the only snag he saw in it was that local authorities were the only people who could object to any scheme which was not suitable and did not come up to a certain standard of design. He did not know if they could admit that local authorities were qualified to deal with that matter. One wondered whether this section of the Act would meet the difficulty that it anticipated. However, they must wait and see how it worked. One would have wished that the adjoining proprietors in the area should have powers to express their opinion on the buildings which were proposed.

THE ARCHITECTS' DIARY

Thursday, June 25

R.I.B.A. CONFERENCE. *At Southampton. Until June 27. For programme, see page 986.*

ROYAL ACADEMY, *Burlington House, Piccadilly, W.1. Summer Exhibition. Until August 8.*

SOCIETY OF PAINTER DECORATORS. *At the Building Centre, 158 New Bond Street, W.1. Exhibition of work executed by members of the Society. Until June 27. 10 a.m. to 6 p.m.*

EXHIBITION OF PERSIAN ARCHITECTURE. *At the R.I.B.A., 66 Portland Place, W.1 (organized by the American Institute for Persian Art and Archæology). Until June 26.*

ROYAL SCOTTISH ACADEMY. *At Edinburgh. Until September 5.*

CHEMICAL ENGINEERING CONGRESS. *At the Central Hall, Westminster, S.W. Until June 27.*

Friday, June 26

LONDON SOCIETY. *Visit to the Newspaper Library of the British Museum, 130 Colindale Avenue, N.W.9. 2.45 p.m.*

INDIA SOCIETY. *At the R.I.B.A., 66 Portland Place, W.1. "Persian Architecture." By Dr. Arthur Upham Pope. 5.30 p.m.*

NATIONAL ASSOCIATION OF BUILDING SOCIETIES

Sir Harold Bellman and Sir Enoch Hill have been re-elected Chairman and Deputy Chairman respectively of the National Association of Building Societies. Sir Enoch Hill, who is President of the Halifax Building Society, was Chairman of the Association for twelve years before retiring from office in 1933.

HOUSING

The Ministry of Health, in its half-yearly return on housing in England and Wales for the period up to March 31, 1936, states that, at March 31, a total number of 2,981,417 houses had been provided since the Armistice, 861,048 by local authorities and 2,120,369 by private enterprise (the total excludes 15,017 houses provided to rehouse persons displaced under improvement and reconstruction schemes under legislation prior to the Housing Act, 1930). During the half-year under review the total number of houses provided was 174,009—27,198 by local authorities with State assistance; 888 by local authorities without State assistance; 194 by private enterprise with State assistance; 145,729 by private enterprise without State assistance. Under the campaign for the clearance and improvement of slum areas, local authorities passed resolutions for the demolition of 26,261 houses; the number of persons to be displaced by the demolition of these houses was 101,798. During the same period approval was given for the provision of 27,455 houses; 20,782 new houses were completed; and 21,125 houses were demolished, closed or were not to be used for human habitation. During the half-year 20,782 houses were completed which were specifically approved under the Housing Act, 1930, making a total of 80,611 houses up to March 31.

At the end of March the number of houses under construction by local authorities was 53,929 of which 41,598 were definitely allocated to the Act of 1930. At the end of April these figures had increased to 55,455 and 42,411 respectively.

The return continues the more detailed information as to building progress in different parts of the country which was given for the first time in the last half-yearly return. These particulars cover the larger centres of population and those districts in which there has been a substantial amount of building.

Under the Housing Act, 1935, local authorities were required to report to the Minister by May 31 the result of their inspection of the working-class houses to show the amount of overcrowding in accordance with the standards laid down by the Act. Up to June 13 reports had been received from 1,319 local authorities out of a total of 1,536. The total number of houses surveyed was 8,269,130 out of which 316,455 were found to be overcrowded (3·8 per cent.). The figures for the different classes of local authorities are as follows :—

	Houses Surveyed	*Houses Overcrowded*	*Percentage.*
London (whole county) (29) ..	1,016,315	70,731	7·0
County Boroughs (77 out of 83)	2,803,415	114,405	4·1
Non-County Boroughs (251 out of 282) ..	1,515,712	42,712	2·8
Urban Districts (564 out of 657).. ..	1,659,945	51,571	3·1
Rural Districts (398 out of 485).. ..	1,273,743	37,036	2·9

Reports have so far been received from most of the large centres of population and it is not anticipated by the Minister that the outstanding reports which the local authorities are being urged to send in forthwith will substantially affect the above results.

ANNOUNCEMENTS

Mr. H. H. Powell, B.Arch., A.R.I.B.A., late Architectural Assistant to the County Borough of Derby, has been appointed Senior Architectural Assistant in the City Engineer and Surveyor's Office, Chester.

Mr. S. W. Appleyard, F.S.I., who has been chief assistant with Messrs. Harris and Porter, Chartered Quantity Surveyors, for the past 17 years, has established his own practice at Room 622, Cecil Chambers, 86 Strand, W.C.2, where he would be glad to receive trade catalogues.

A NEW COMPETITION

The Farnham Urban District Council invites architects practising in the United Kingdom to submit designs for proposed new council offices at a cost not exceeding £20,000. The assessor is Mr. E. Vincent Harris, O.B.E., F.R.I.B.A., A.R.A., and the following premiums are offered: £250, £150 and £100. The last day for questions

is August 31, and the last day for submission of designs is October 31.

Conditions, etc., are obtainable from Mr. A. A. Minns, Clerk of the Council, Council Offices, Farnham, Surrey. (Deposit, £1 1s).

THE SYDNEY COMPETITION

In the notice of the competition for the extension of St. Andrew's Cathedral, Sydney, in last week's issue we omitted to state that the competition is open to architects being British subjects and members of the Royal Australian Institute of Architects, the R.I.B.A. or of the Allied and Associated Societies.

THE FOLKESTONE COMPETITION

As we go to press we learn that Mr. Verner O. Rees, the Assessor in the competition for the proposed Harcourt Schools, Folkestone, has made his award as follows :

Design placed first: Mr. E. Walmesley Lewis, "Kia-Ora," Raditole, Weymouth.

Design placed second: Mr. K. H. Urquhart, 19 Wellesley Court, Strawberry Hill, Twickenham.

Design placed third : Messrs. Wicks and Huckle, 12 Portway, North Acton.

GLASGOW COMPETITION

The result of the competition for a five-apartment semi-detached cottage for the Glasgow Corporation was announced on Tuesday last as follows :

Design placed first : Mr. S. McColl, of Paisley.

Design placed second : Mr. M. Cormie, of Edinburgh.

Design placed third : Mr. R. McLuckie, of Falkirk.

Design placed fourth : Mr. H. Jackson, of Lenzie.

The competition was held in connection with the Housing and Health Exhibition to be held at the Kelvin Hall, Glasgow, in October. The assessors were Messrs. J. McKissack, W. B. McNab and J. H. Fernie.

HOUSE AT BRAMSHOTT

We regret that in the list of contractors for the additions, House at Bramshott, illustrated in our last issue, we omitted the name of Lenscrete, Ltd., who supplied the Lenscrete glass.

AIR-RAID PRECAUTIONS

Colonel W. Garforth, D.S.O., M.C., R.E. (retd.) of the Air Raid Precautions Department, Home Office, London, gave a lecture at the R.I.B.A. on Monday last, on the subject of "Some principles of protection in Air Raids."

Local authorities are busy building up organizations to deal with the menace of fire and decontamination work and also with the provision of first aid. Colonel Garforth stated that although everybody hoped the necessity would not arise for putting air raid precautions into operation, it was incumbent on all concerned to be prepared. The preparation of an A.R.P. Scheme, he added, does not mean the inevitability of an air raid any more than the taking out of a fire insurance means the inevitability of a fire. It was suggested that architects should study this important matter, and that there was a technical side to the problems which emerged which requires most careful consideration and attention.

Colonel Garforth explained that the Air Raid Precautions Department is a civil Department, and is part of the Home Office. A number of books and memoranda are under preparation by the Department. One or two have already been published and are obtainable at H.M. Stationery Office.

The book on Structural Precautions against Bombs and Gas, which is now under preparation, is a matter of special interest to architects. It was explained that a Committee consisting of representatives of the R.I.B.A. and of the Institution of Civil Engineers, the Institution of Mechanical Engineers, the Institution of Heating and Ventilating Engineers, the Institution of Structural Engineers, together with representatives of the Army, Navy and Air Force, a representative of the Building Research Department and Mr. Tudsbery, Civil Engineer of the British Broadcasting Corporation, is now at work on the preparation of this important book. Owing to the large subject and the many aspects which have to be examined, it is not expected that this book will be available for at least a year.

The book will detail what precautions can be taken in new construction and how old buildings can be adapted in accordance with the principles of protection. Such precautions are reasonable and in no way revolutionary. The book will also deal with the subject of town planning. Then, after a few remarks regarding the modern bombing aeroplane and the great difference between an air bombardment of the future to anything that took place in the last war, he proceeded to paint a picture of what an air bombardment would be like, giving particulars of the various weapons to be used. He then proceeded to describe what precautions can be taken to meet the resultant dangers and explained that although the cost of providing complete protection against direct hits by the heavier type of bombs was considerable, a great deal could be done to provide protection against the effects of splinters, blast and gas.

Colonel Garforth explained how the instructions in the use of Gas Masks, etc., could be obtained through the good offices of the Societies of the British Red Cross and the St. John Ambulance.

VISIT TO S.S. ORION

On Wednesday, July 1, a joint visit has been arranged by the Design and Industries Association and the Architectural Association to the S.S. *Orion* at Tilbury. The party will leave London at about 9.30 a.m. by launch. Lunch will be served on board the *Orion*, and ample time will be given to inspect the ship. On the return journey the launch will put in at Beckton, by invitation of the Gas Light and Coke Company, who are arranging to show the party round their chief producing plant. Application for tickets should be made to the Secretary of the A.A. Members, 10s. each. Guests, 12s. 6d. each (including return fare by launch from London, lunch and tips (exclusive of wines)).

R.I.B.A. ELECTIONS

At a general meeting of the Institute on Monday, June 22, the results of the annual elections to the Council and the Standing Committees were made public. Mr. Percy Edward Thomas, O.B.E., of Cardiff, was re-elected President. A list of the new Council and Standing Committee is printed below:

Past Presidents : Mr. E. Guy Dawber, R.A., F.S.A., and Sir Giles Gilbert Scott, R.A.

Vice-Presidents : Messrs. E. Stanley Hall, M.A.OXON; Stanley Hamp (Beaconsfield); Charles H. Holden; and Ingalton Sanders (Southampton).

Honorary Secretary : Mr. Henry M. Fletcher, M.A.CANTAB.

Honorary Treasurer : Lt.-Col. P. A. Hopkins, O.B.E. (Gerrard's Cross and London).

COUNCIL

Members of Council : Professor Patrick Abercrombie, M.A.LIVERPOOL; Professor S. D. Adshead, M.A.LIVERPOOL; W. H. Ansell, M.C., Henry V. Ashley, Robert Atkinson, John Begg (Edinburgh), E. C. Bewlay (Birmingham), Herbert T. Buckland (Birmingham), C. Cowles-Voysey, Joseph Emberton, H. S. Goodhart-Rendel, P. D. Hepworth, Professor C. H. Reilly, O.B.E. (Brighton and London); Professor A. E. Richardson, A.R.A., F.S.A.; Messrs. L. Sylvester Sullivan, Sydney Tatchell, Maurice E. Webb, D.S.O., G. Grey Wornum.

Associate Members of Council : Messrs. W. Naseby Adams, P. C. Blow (St. Albans), W. Austin Daft (Oxford), E. Maxwell Fry, B.ARCH.LVPL., R. Norman Mackellar (Newcastle-upon-Tyne), Norval R. Paxton (Leeds), Basil R. Ward, E. Berry Webber, and Charles Woodward.

Licentiate Members of Council : Messrs. H. L. Baker (Romford), Stanley A. Heaps, W. Alban Jones (Leeds), Francis R. Taylor, Percy J. Waldram, F.S.I., and S. Lunn Whitehouse (Birmingham).

Representatives of Allied Societies in the United Kingdom or the Irish Free State.

(1) *Six Representatives from the Northern Province of England :* Mr. Harold Oswald, J.P. (Northern Architectural Association), Lt.-Col. George Westcott, O.B.E., J.P. (Manchester Society of Architects; Messrs. Bernard Michael Ward (Liverpool Architectural Society), Harry Andrew (York and East Yorkshire Architectural Society), Victor Bain (West Yorkshire Society of Architects), J. C. Amory Teather (Sheffield, South Yorkshire and District Society of Architects and Surveyors).

(2) *Five Representatives from the Midland Province of England :* Messrs. Alfred Hale (Birmingham and Five Counties Architectural Association), Clement Stretton (Leicester and Leicestershire Society of Architects), George P. Allen (Northamptonshire, Bedfordshire and Huntingdonshire Association of Architects), Claude E. Howitt (Nottingham, Derby and Lincoln Architectural Society), and F. H. Swindells (East Anglian Society of Architects).

(3) *Six Representatives from the Southern Province of England :* Capt. E. E. Kemeys-Jenkin (Devon and Cornwall Architectural Society), Mr. W. J. Stenner (Wessex Society of Architects), Mr. A. Saxon Snell (Berks, Bucks and Oxon Architectural Association), Lieut.-Col. R. F. Gutteridge, T.D. (Hampshire and Isle of Wight Architectural Association), Mr. Hugo R. Bird (Essex, Cambridge and Hertfordshire Society of Architects), one representative to be nominated by the Council of the South-Eastern Society of Architects.

(4) *Four Representatives of Allied Societies in Scotland*, nominated by the Council of the Royal Incorporation of Architects in Scotland : Col. J. Maurice Arthur (Glasgow), and Messrs. C. G. Soutar (Dundee), W. J. Walker Todd (Edinburgh), and W. B. Whitie (Glasgow).

(5) *One Representative of Allied Societies in Wales*, nominated by the Council of the South Wales Institute of Architects : Mr. W. S. Purchon, M.A. (Cardiff).

(6) *Two Representatives of Allied Societies in Ireland :* Mr. J. J. Robinson (Royal Institute of the Architects of Ireland); one representative to be nominated by the Council of the Royal Society of Ulster Architects.

Representatives of Allied Societies in the British Dominions Overseas, nominated by the Council of each of the following : Royal Institute of Canada : representative to be nominated (representative in the United Kingdom to be nominated). Royal Australian Institute of Architects : representative to be nominated (representative in the United Kingdom to be

nominated). New Zealand Institute of Architects : Mr. W. Gray Young (representative in the United Kingdom : Mr. G. Grey Wornum). Institute of South African Architects : Mr. E. M. Powers (representative in the United Kingdom : Mr. Maurice E.Webb, D.S.O., M.C., M.A.CANTAB.). Indian Institute of Architects : Mr. P. P. Kapadia (representative in the United Kingdom to be nominated).

Representative of the Architectural Association (London) : Mr. L. H. Bucknell.

Representative of the Association of Architects, Surveyors and Technical Assistants.

Chairman of the Board of Architectural Education : Mr. T. A. Darcy Braddell.

Chairmen of the Art, Literature, Practice and Science Standing Committees.

Chairman of the Allied Societies' Conference : Mr. Ingalton Sanders (Southampton).

Chairman of the Architects' Registration Council of the United Kingdom : Mr. Sydney Tatchell.

Chairman of the Competitions Committee.

ART STANDING COMMITTEE

Fellows : Messrs. N. F. Cachemaille-Day, J. Murray Easton, C. Lovett Gill, Stanley Hamp, Charles H. Holden, Bernard A. Millar (Liverpool), Hon. Humphrey Pakington, Professor C. H. Reilly, O.B.E., and Messrs. T. S. Tait and G. Grey Wornum.

Associates : J. S. Allen (Leeds), George Checkley, W. Austin Daft (Oxford), Wesley Dougill (Liverpool), W. M. Keesey, M.C. (Birmingham), and Raymond McGrath, B.ARCH.SYDNEY.

Licentiates : Messrs. R. G. Brocklehurst (High Wycombe), A. S. Soutar, and S. Lunn Whitehouse (Birmingham).

LITERATURE STANDING COMMITTEE

Fellows : Professor Patrick Abercrombie, M.A. LVPL., Mr. H. Chalton Bradshaw, C.B.E., Professor L. B. Budden, M.A.LVPL. (Liverpool), Messrs. H. S. Goodhart-Rendel, P. D. Hepworth, H. C. Hughes (Cambridge), Sydney D. Kitson, M.A. (CANTAB.) (Kidlington), Basil Oliver, Verner O. Rees, and Professor A. E. Richardson, A.R.A., F.S.A.

Associates : Messrs. S. E. Dykes Bower, M.A. OXON, W. G. Holford, B.ARCH.LVPL. (Liverpool), John Summerson, Rodney F. Tatchell, Grahame B. Tubbs, and Miss Elizabeth Scott.

Licentiates : Miss Jocelyn F. Abram, and Messrs. W. W. Begley (Selsdon), and Basil Ionides.

PRACTICE STANDING COMMITTEE

Fellows : Messrs. James R. Adamson (Bolton), Henry V. Ashley, Herbert T. Buckland (Birmingham), Arthur Keen (Limpsfield), E. Bertram Kirby, O.B.E. (Liverpool), William Milburn, B.SC., F.S.I. (Sunderland), Eric W. B. Scott (Norwich), Major C. F. Skipper (Cambridge), and Messrs. L. Sylvester Sullivan and Herbert A. Welch.

Associates : Messrs. T. S. Barnes, John Batty, P. Garland Fairhurst (Manchester), B. S. Hume, J. Maclaren Ross, M.C., and J. Douglas Scott.

Licentiates : Messrs. A. B. Hayward, Stanley A. Heaps, and Major F. W. Rees (Croydon).

SCIENCE STANDING COMMITTEE

Fellows : Messrs. R. J. Angel, Victor Bain (Leeds), A. H. Barnes (Croydon), W. E. Vernon Crompton (Southport), H. M. Fairweather, W. Alexander Harvey (Birmingham), Arthur J. Hope (Bolton), Alan E. Munby, M.A.(CANTAB.), Howard M. Robertson, M.C., and John Swarbrick (Manchester and London).

Associates : Messrs. A. E. Cameron, F. M. Cashmore, Walter M. Goodesmith, C. S. White, L. W. Thornton White, and R. C. White-Cooper, M.C.

Licentiates : Messrs. Oliver P. Bernard, O.B.E. (Godalming), Francis R. Taylor, and Percy J. Waldram, F.S.I.

THE LUTON COMPETITION

SECONDARY SCHOOL FOR BOYS

Professor W. G. Newton, F.R.I.B.A., the assessor of the competition for a secondary school at Luton, has made his award as follows :—

Design placed first (£200) : Messrs. Marshall and Tweedy, FF.R.I.B.A.

Design placed second (£100) : Messrs. Taylor and Davidson.

Design placed third (£50) : Mr. Paul Pascoe, A.R.I.B.A.

On this and the eight pages following we reproduce the premiated designs, a review of the designs submitted, the assessor's report and extracts from the report submitted by the authors of the winning scheme.

THE DESIGNS REVIEWED

By Our Competition Correspondent

WHEN the Luton Competition and its fellow at Folkestone (just out, I hear) were first advertised, I remember that this JOURNAL published a leading article concerning them. That article emphasized that, through a variety of causes most of which were outside the control of education architects, the design of our State-aided schools had been allowed to get hopelessly behind the times. The JOURNAL then pointed out that at long last the Government appeared to be ready to give to its schools some greatly needed attention and to spend some greatly needed money ; and that these competitions offered a chance to all architects to show what really could be done in the way of a quick breaking of a bad tradition.

How much that tradition needs breaking, how much the stream of repetitive school design needs interrupting by some schemes showing evidence of careful and original thinking, could be seen only last week in a newspaper report. There, an education committee congratulated its architect on producing plans for a £100,000 school "quicker than any other man had done before" and spoke of the quadrangles and of brick with stone cornice and facings. And so the stream has gone on, leaving progress in school planning to a dozen or so architects who have refused to give up struggling.

On the results, therefore, of these two competitions—and particularly on the result of Luton, the larger and more important—a great deal depended. If by them the architects of this country, in the face almost of all the rest of civilization, were to endorse the thousand dreary rectangles of the last seventeen years, the chance of producing something fit for real education might be postponed for another ten.

Because of these things a twinge of dread could not be suppressed in passing through the rather charming town of Bedford in a heat which barely failed to split the stones. What if Professor Newton had failed to live up to the science block at Marlborough ? What if all the thoughtful schemes had put themselves out of the running by dreadful extravagance in cubing ? For once a competition result was really exceptionally exciting.

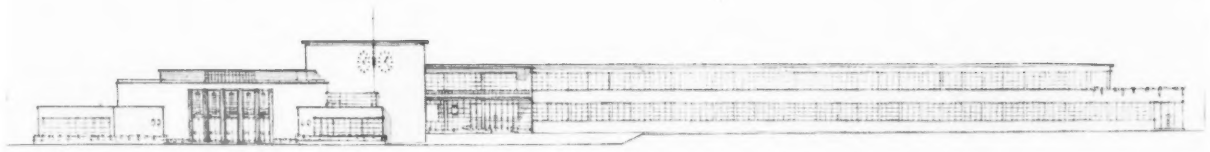
DESIGN PLACED FIRST

But inside the red-lead brick of the 1870 Shire Hall, these awful imaginings vanished at once. Professor Newton and the competitors have done architecture proud. And the R.I.B.A. might offer a small medal to the promoters. Messrs. Marshall and Tweedy have produced a plan which should have a splendid influence, and although the phrase is now somewhat hackneyed in use in reference to winning designs, the outstanding characteristic of their design is its simplicity.

The assembly hall is placed on an axial line at right angles to Badgers Hill Road, and practically the whole of the class room accommodation is placed on a line running north-east from the assembly hall group with the teaching rooms facing south-east. The drawbacks which have been repeated *ad nauseam* in the planning of State-aided schools in this country—the closed quadrangles, class rooms facing in almost any direction but south-east, halls placed so that all their noise is reflected into the working rooms—all those are swept away ; in addition the assembly hall becomes what progressive education authorities have for years been saying it ought to become : both the dominant feature of the whole plan and the fully equipped centre for all types of intelligent education in its widest sense.

A less courageous competitor might have been influenced by the apparent call in the Conditions for the division of the accommodation into separate groups, such as administration; class-rooms ; special rooms and laboratories ; gymnasium, etc. ; and assembly hall and kitchens, and several solutions submitted show attempts of varying merit to do this. In their single class-room block the winners have considered that simplicity, compactness and good aspect outweigh the advantages of a full separation of all units. The one drawback of the plan would seem to lie in the "smelly rooms" being intermingled with ordinary class-rooms ; but with the ample, one might almost say the maximum, window area incorporated in the winning scheme, smells will have little chance of reaching rooms less offensively occupied.

Apart from this mingling of the laboratories with the ordinary class-rooms the winning schemes observe the division of the accommodation into separate groups with great compactness and success. The



Main elevation of the winning design. By Marshall and Tweedy.

gymnasium group adjoins the playing fields, whilst the changing rooms are admirably placed to serve as retiring rooms for the assembly hall. It was stated in the Conditions that the assembly hall could be used as a dining room, and this possible saving on the cube proved an irresistible bait to a large number of the competitors. The winners have rejected it, and their land gains enormously by their so doing. The dining room and its service accommodation is placed well out of the way of the general traffic of the building, but immediately accessible from the main entrance hall and forming a block on one side of the main entrance which is balanced by a compact administration unit on the other.

The details of the planning can be seen in the reproductions illustrated, but amongst the undesirable features of school planning which have been mentioned above as having long threatened to be with us for ever, and as having been got rid of by Messrs. Marshall and Tweedy, one must not forget the continuous disregard of the sequence of movement of the boys. In this plan this sequence—entrance hall, cloakrooms and lavatories, assembly hall, and thence to class-rooms and special rooms—is arranged for in a way that compels admiration. And even movement from the class-rooms to the gymnasium is arranged for without scholars repassing the administration and assembly hall by a by-pass path across the re-entrant angle of the plan.

In the last few years it has rarely been possible to be jubilant over the result of a competition. So often a compromise which seems to have made all the proper acknowledgments to all the proper predecessors has scooped the prize. But Messrs. Marshall and Tweedy have for once done something in the way of planning which is really worth while. Their elevational treatment, which is shown in the accompanying illustrations, proves how informal plan arrangements offer really interesting architectural possibilities.

In any case, in competitions it is the plan that matters. If the plan is right elevations that may mollify the outraged feelings of education committees, or—far more often—the many critics of education committees, seem almost a justifiable concession. We must hasten slowly in education.

DESIGN PLACED SECOND

The solution of the authors of the second premiated design shows more caution. One may almost say that in setting forward one foot they have left the other implanted firmly on the precedents of former schools, and former winning competition designs—a method which in other competitions has shown all the wisdom of continuous success. But in this case it has been, perhaps, caution which lost them the highest prize; a reason in which their partial use of a three-floored plan may have played its part.

This is not to say that Messrs. Taylor and Davidson have produced a bad plan. Broadly, their plan is divided into two blocks parallel with Badgers Hill Road, the southern block containing the ordinary class-rooms, and the northern block the special rooms. The plan's failings would seem to lie in everything being too much on top of everything else, coupled with certain awkwardnesses in circulation.

For instance, the assembly hall has its front somewhat masked and confined by the administration group, whilst behind the stage the retiring rooms are separated from the stage by the principal corridor to the dining room; an arrangement which would certainly have grave disadvantages if visitors were being entertained to tea before witnessing some show in the school hall. The changing rooms and shower baths are also situated in the block farthest away from the playing fields, and not particularly near to the gymnasium.

In addition, the boys, on entering the lower ground floor and pausing at what, it must be confessed, looks a most excellent cloakroom and lavatory accommodation, have to climb to the next floor and pass the whole range either of the ordinary class rooms or the special rooms before reaching the assembly hall.

In brief, the second scheme fails by failing to be bold enough, and by failing to free itself from the cramped planning methods which have been far too general in the past. When the absence of such a boldness can be the quality which disqualifies a plan from winning an open competition the debt architects owe to Professor Newton for his assessing becomes very obvious.

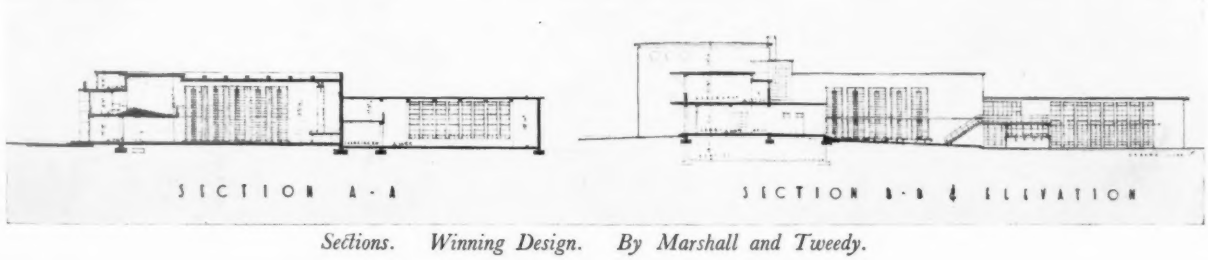
DESIGN PLACED THIRD

Coming to the third premiated design, one can only say that, if the second premiated design failed by not being bold and big enough, Mr. Paul Pascoe has failed by being too bold even for Professor Newton. And this is saying a great deal. Every architect of courage must feel a sharp regret that the third premiated design did not win; for at least as English schools go, Mr. Pascoe's conception is stupendous.

Mr. Pascoe has plunged for a fully open-air school—a school almost more fully open air than Suresnes; and if it is eventually recognized by education authorities that an intimate connection between class-rooms and the open air is as important for secondary schools as it is now generally recognized as being important for junior schools, progressive education committees will not be able to do better than to employ Mr. Pascoe.

In essence, the third premiated plan has all the simplicity of that of the winner, but with the units more widely separated. The assembly hall is on the central line, with single-floored ordinary class-rooms flanking it and facing south, whilst the gymnasium and special rooms blocks are at either end. By this arrangement, the circulation is easy and excellent, scholars moving around the dominating covered way about the central circular courtyard, past the cloakrooms and the assembly hall, and thence to their various class-rooms.

Elevationally, the third premiated design would be more than fascinating in execution. The dominating mass of the acoustically shaped assembly hall, with the terrific window to the foyer rising over the great circle of the entrance courtyard, must have made Luton a place of architectural pilgrimage, and to the effect in mass there would have been added the play of surface finishes varying from rubble and thin slabbing, to the glass-concrete windows of the staircases. One is left with the fervent hope that, if there is a competition organized for a fully open-air school in this country,



Sections. Winning Design. By Marshall and Tweedy.

Professor Newton will again be the assessor, and Mr. Pascoe once more a competitor.

OTHER SCHEMES

The hundred schemes which form the field in the Luton competition cover with joyous abandon or somewhat cautious precision almost every variety of plan form which it is possible to conceive. Of their total effect the predominant impression is that, despite the increasing volume of demand for courageous and thoughtful development in school planning, fully one-half of the competitors have paid not the slightest attention to the pleadings of men of eminence in the educational world. In this case, however, the half of the competitors whose plans may not be unjustly described as almost wholly imitative, have shown so masterly an exhibition of intellectual inactivity that even had Professor Newton been determined to place a conservative plan first, it is doubtful whether his will would not have weakened on the face of scheme after scheme incorporating almost every major fault in school planning. It should be mentioned, with the respect due to such an attitude of mind in 1936 that there is even a scheme submitted which shows the assembly hall with two-floored building abutting each of its four walls.

Of the more stimulating schemes there, ten or fifteen showed plan forms of considerable interest which for reasons of space cannot be dealt with fully, but four of them are shown here by diagrammatic sketches. It is sufficient to say that in achieving the best compromise which is always the winning plan of a competition, Messrs. Marshall and Tweedy had a field against them which made the Luton competition a real and rare success. All architects will hope that the example of the promoters will have many imitators.

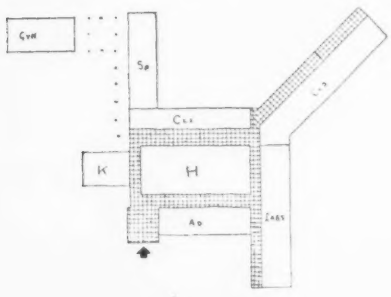
Amongst those who submitted designs were : Messrs. Crouch, Butler and Savage, Minoprio and Spencely, C. Cowles-Voysey, Gotch, Saunders and Surridge, Sir John Brown and A. E. Henson, and Clive Entwhistle.

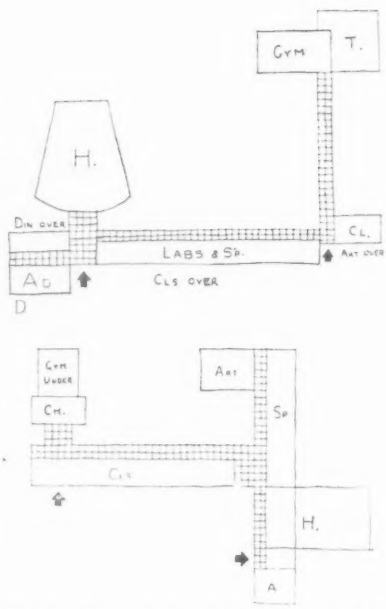
•

THE ASSESSOR'S REPORT

THE Education Committee have every reason to be gratified by the results of this Competition. No fewer than 102 sets of drawings were submitted, and a large number of the schemes were carefully worked out and well presented.

The two main difficulties in a problem of this kind are aspect and access. As far as possible all rooms occupied by pupils or staff should have an aspect allowing sunshine during some period of the day, and teaching rooms should have it in the morning rather than the afternoon. Access involves ease of distribution of 500 boys both on arrival and departure, and simplicity of movement and of supervision during the working day.





Sketch plans of the designs submitted by Rolf Hellburg (top); and Samuel and Harding (bottom).

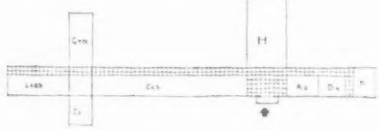
The site is an unusual and interesting one, falling away somewhat steeply in a north-westerly direction from Badger's Hill Road, where the main entrance was required by the Conditions to be placed.

The solutions submitted divide themselves into those which have the main axis of the building parallel to Badger's Hill Road, and those which conform to the land contours, and are therefore placed at an angle to the road.

The disadvantages of the first solution are that it involves waste in excavation and in building, as the level floor either thrusts into the rise of the ground or stands above its fall; and if the boys' entrance is in the lower ground floor, when they climb up on to the main floor they find themselves at the extremity of the building, so that their distribution is apt to be crowded and confused.

The solutions which pay regard to the contours are of two kinds, a rectangular type of plan placed athwart the site, and a plan in two parts of which one is aligned with the road and the other follows the contours.

An outstanding solution on these lines is submitted by Competitor No. 2 (Marshall and Tweedy), to whom I award the first place. Here the assembly hall, gymnasium, dining-room, and administrative quarters are grouped together at the entrance forecourt, and the long wing of teaching rooms is "refused" in a N.E. direction, roughly following the contours : in this wing are two separate entrances for boys. This solution has the basic merits of good access and distribution, and excellent aspect for almost all rooms. For example, the whole of the teaching wing faces south-east. There are no tortuous corners : the plan reads clearly and will work easily. No one could possibly lose his way. The length of corridor is considerable, but everything is straightforward, and the headmaster can easily be in touch with all that is going on. The various units are carefully and interestingly planned. The headmaster and offices are self-contained, yet accessible, and the headmaster's room is sunny and quiet. The dining room and kitchens are well thought out, but a little more room here would be an advantage. Other points to note are the roomy locker-bays in the ground-floor corridor, the changing-room, the roof terraces for the staff common-room and the school library, the prefects' room overlooking the playground, the class-rooms' outlook on to garden and grass, and not on a paved space. The whole scheme seems a smiling, gay, well-working arrangement, full of sunshine. Externally the long teaching wing with its array of windows is dominant, as it should be. At the south-west end it is gathered into a group made up of low clock-tower and the shadows of entrances and balconies. The hall entrance, flanked by the dining room and the headmaster's wing, has its own character and welcomes the visitor. The general exterior effect will be of brown brick, glass, and concrete, and seems to be the natural expression called for by the arrangement of the plan.



Sketch plans of the designs submitted by Percy Tubbs, Son and Duncan (left); by F. X. Velarde (top).

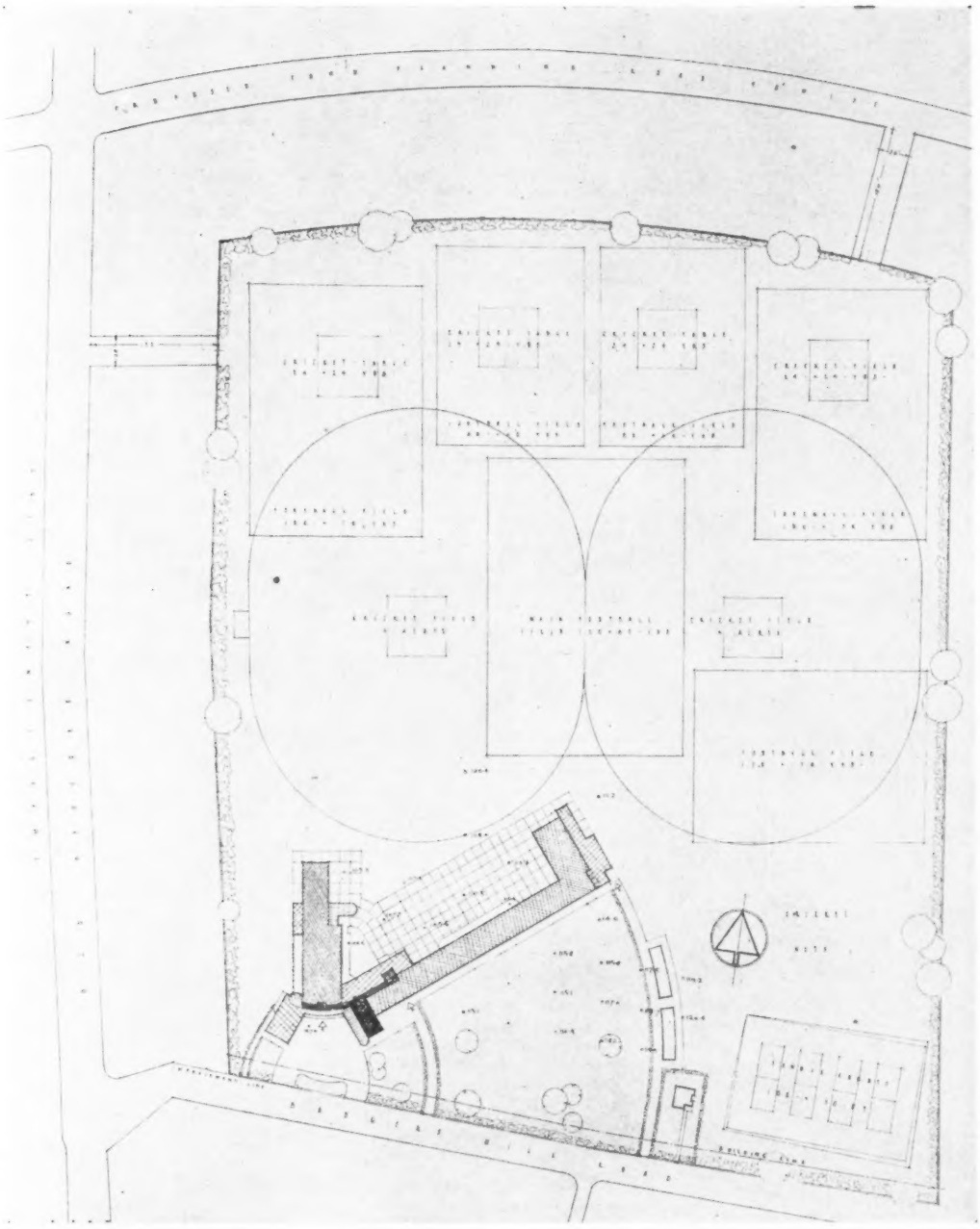
The following points of criticism occur to me. The covered playground is the wrong shape for physical drill, and it should be extended further over the open playground. The metal-work might be found a nuisance by the art-workers and prefects, and the forge should not be across a passage. Access must be provided to the timber store, by extending the boys' entrance-road. The balance room is not shewn lit, but can be top-lighted. The double entrance for boys may be thought illogical, but it has the advantage of dividing the crowd of 500 boys all coming at once; and the consequent duplicating of lavatories and coat-rooms allows the one set to be used in conjunction with the hall and the gymnasium.

I suggest to the Committee that it would be a wise economy to allow a little more money and make the hall and its approaches more generous : it is a common complaint that future enlargements of school accommodation are hampered by inadequacy in this particular. Future extensions of the teaching wing will be simple, and such work would not interfere with the use of existing school buildings.

As to cost, I consider that the work could be done for approximately the figure given by No. 2, at to-day's prices. His total is £45,313. The limit given in the Conditions is £45,000; but he has allowed for turfing 21 acres of playing-field. The amount of playing field actually required by the Conditions is about 10 acres, so that there is £700 or £800 in hand, on a strict interpretation, which brings him within the figure laid down, and allows something for the pavilion, which he has overlooked, and for the tennis courts, which he has priced too low.

I congratulate the Committee on the opportunity of building a school which should prove an example and an incentive to other authorities.

I place second, but in a different class, the scheme submitted by No. 86 (Taylor and Davidson). It seems the best of those handicapped by being placed parallel to Badger's Hill Road. It has a sedate elevation and the relation to the playing-fields is pleasantly arranged. It suffers from the access disabilities inherent in this solution, and a certain amount of waste building. The laboratories have a N.W. aspect, but get sunshine through clerestories. Additions would be difficult, as new



Site plan of the winning scheme. By Marshall and Tweedy.

building upon existing wings would interfere with the work of the school.

I place third No. 36 (Paul Pascoe), an interesting sketch of an open-air scheme. Such a solution has the advantage of being independent of contours, and easily added to. In this scheme, isolated class-rooms and other units are grouped about a circular playground, where are the hall, the administrative unit, the dining hall, library, staff common room, and cloak-rooms.

It is inadequately worked out in detail, and far too much is left to the Assessor's imagination. The following are criticisms of detail. The kitchen is ill-placed, above the latrines and on the first floor—coat-rooms are inadequate—the access to gallery and projection-room of hall are not worked out, and there are no secondary hall exits or arrangements for private access to the stage. The playground surroundings are too polite for a boy's kick-about. The exterior appearance of the larger units shows a lack of sympathy and of scale.

But it is an interesting idea which it would have been worth while to work out more thoroughly. It should be brought to the notice of the Board of Education.

Of the other ninety and nine many show great care and industry, and I wish it were within my powers to recommend further pecuniary compensation for so many weeks of hard work.

THE WINNERS' REPORT

The following are some extracts from the Winners' Report :—

CONSTRUCTION

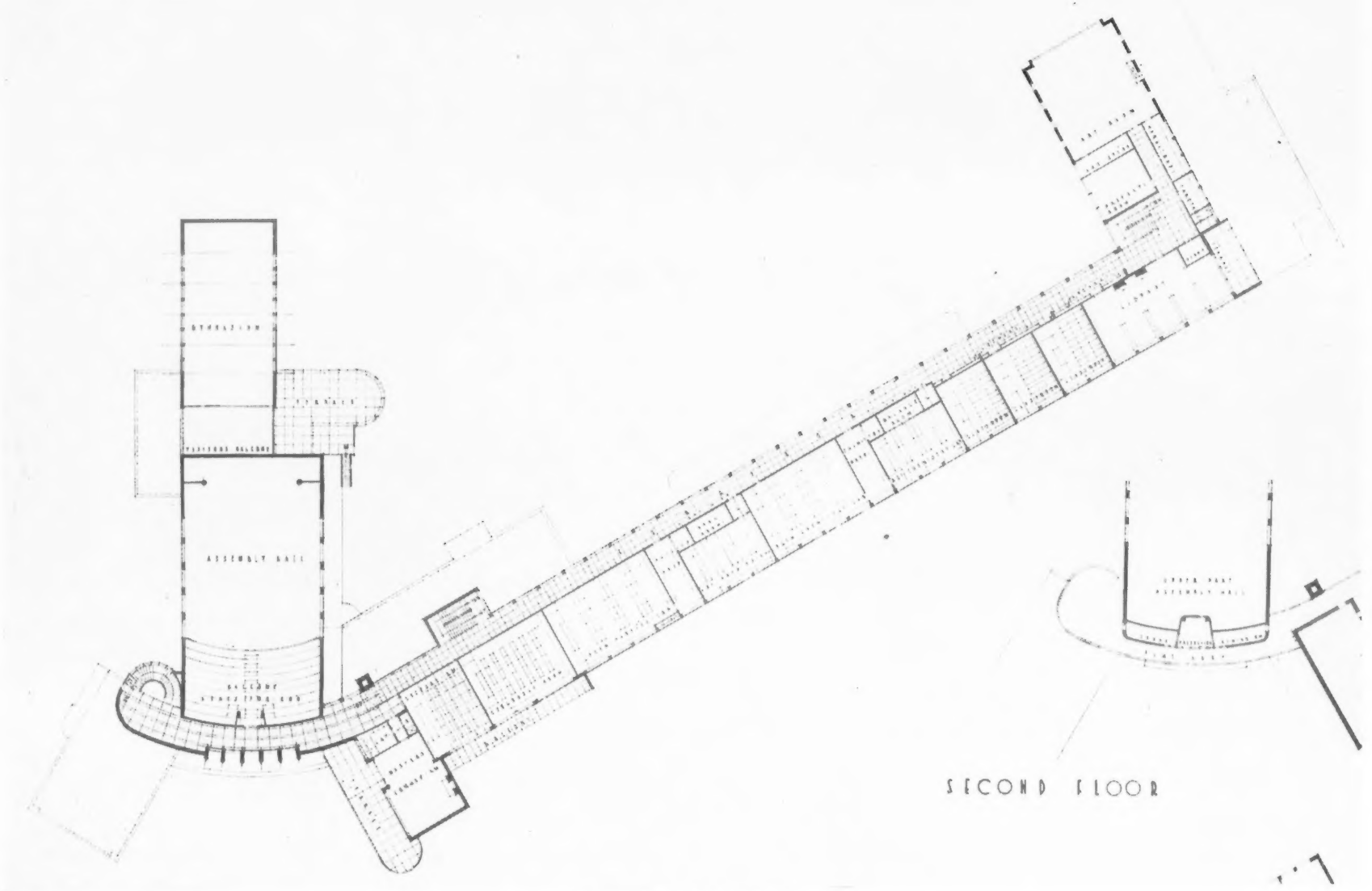
The construction has arisen from consideration of costs of the elements of the structure : walls, roofs, partitions and the finishes.

The design lends itself to construction in either steel or reinforced concrete, or a composite building using both media.

The assembly hall would be more practicable in constructional steel, and the remainder of the building in reinforced concrete.

In the class-rooms generally the construction consists of hollow tile floors and roofs not more than 5 ins. deep, spanning on to beams which frame on to beams and columns : the internal columns are of R.C. or steel, and the external columns of brick where brick piers are conveniently available.

The fact that the floors are of hollow tile construction lessens the dead loads to be carried appreciably, and therefore cheapens the framework and the foundations. In addition, the ribs of the tile form an excellent key for the plaster. The advantages to be gained from this

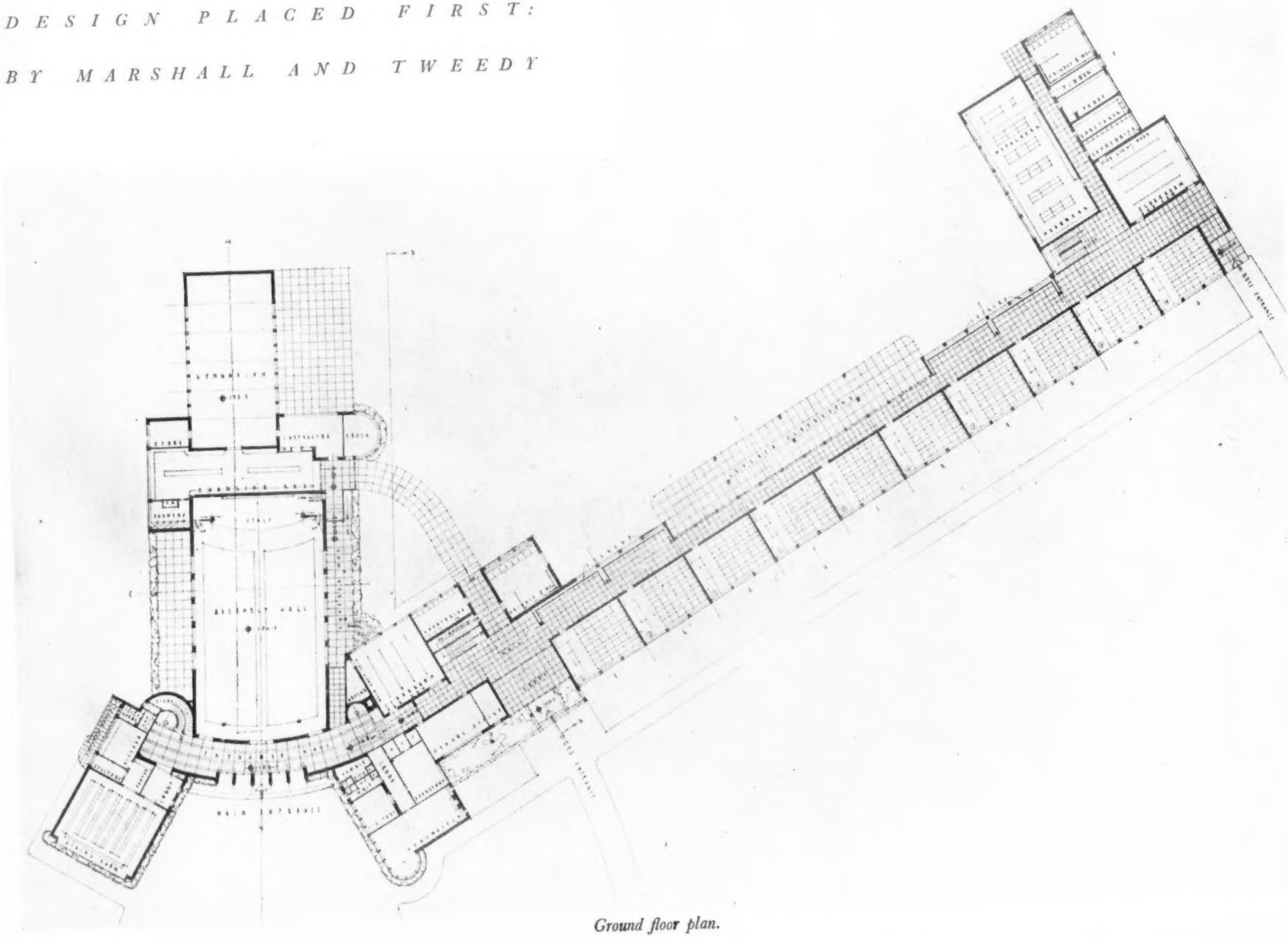


First and second floor plans.

First and second floor plans.

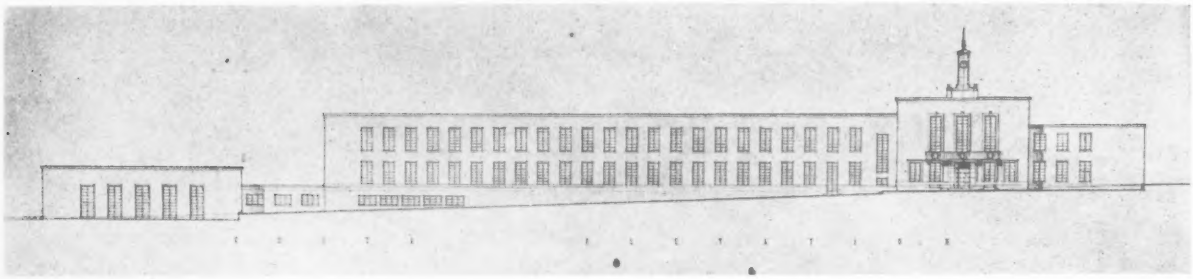
DESIGN PLACED FIRST:

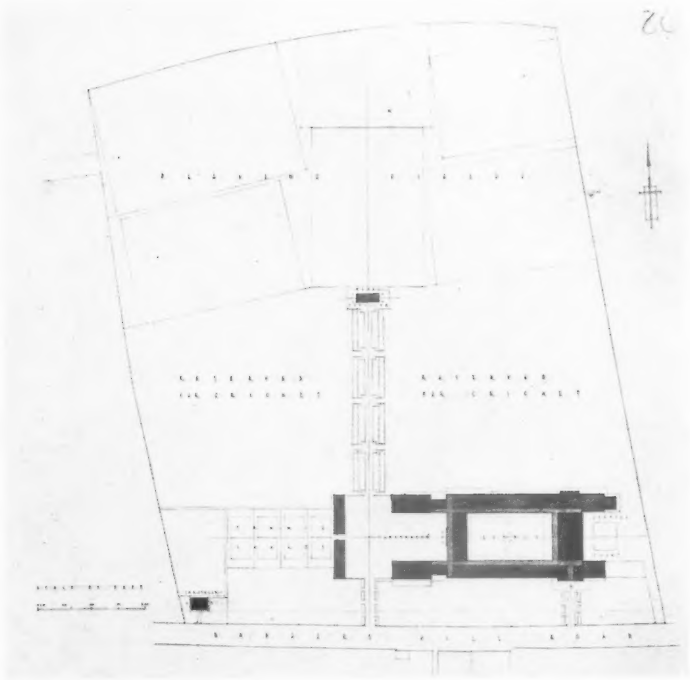
BY MARSHALL AND TWEEDY



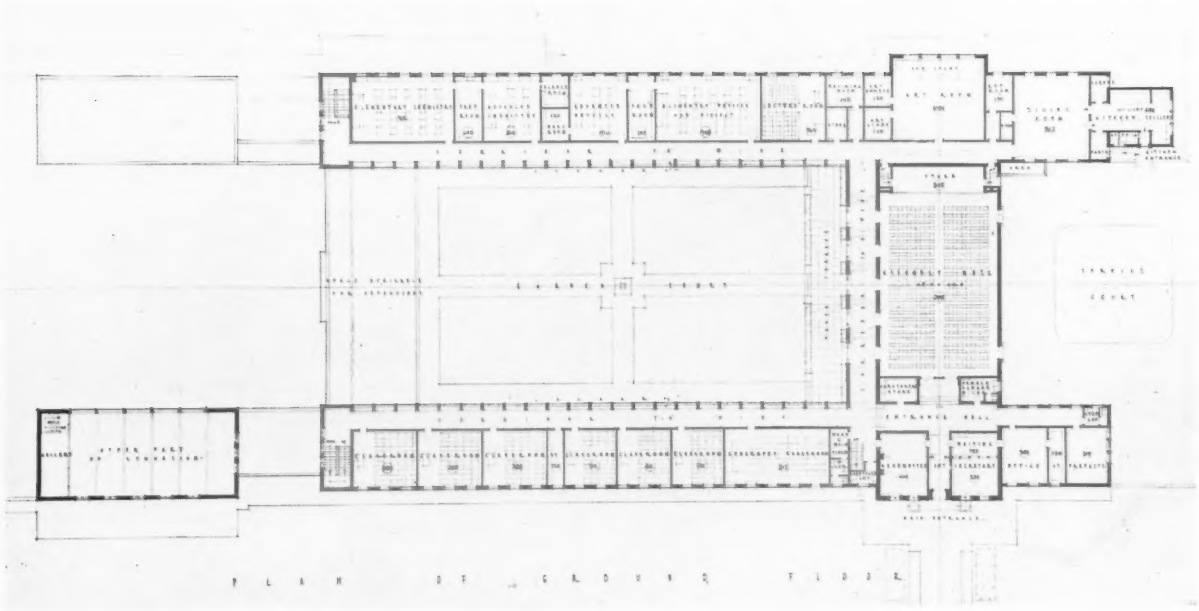
Ground floor plan.

COMPETITION FOR SECONDARY SCHOOL,

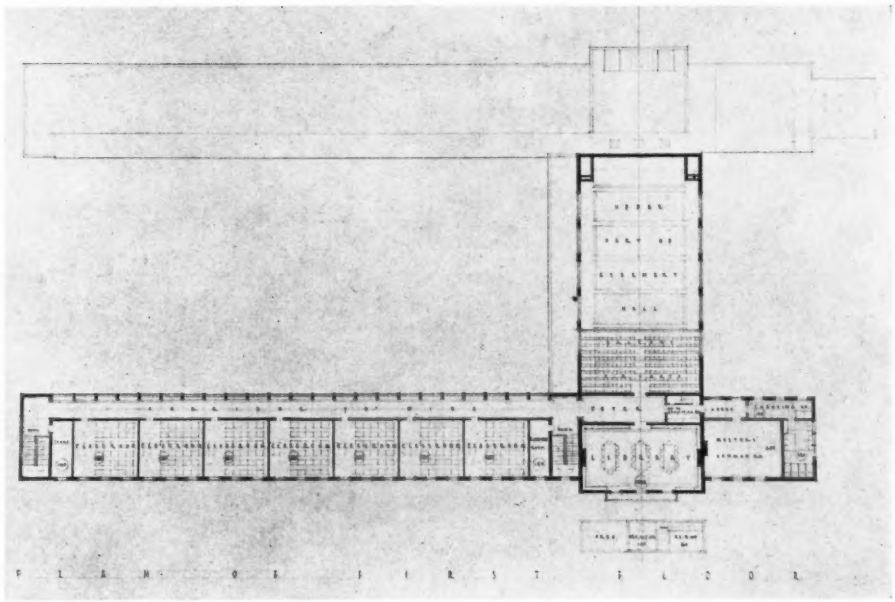


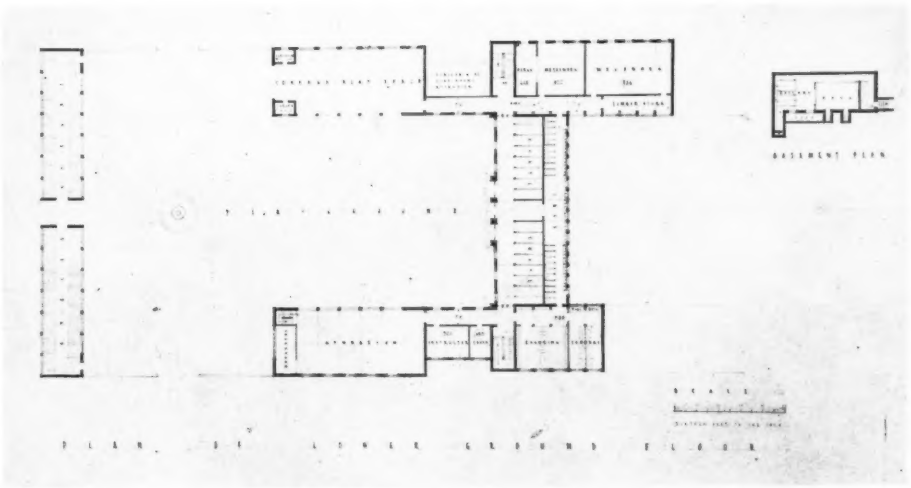


DESIGN PLACED SECOND: BY TAYLOR AND DAVIDSON



LUTON: DESIGN PLACED SECOND





form of construction from the viewpoint of sound and heat transmission as well would recommend it.

The external panel filling consists of 11 in. cavity walling with grey-brown facing bricks and Fletton bricks internally; partitions 4½ in. in Flettons. A small amount of artificial stone is employed around the entrance doors, assembly hall, windows, etc., and as copings. The whole of the windows would be of a heavy section metal. The flat roof would be waterproofed with three-ply bituminous sheeting, on which 3 in. of gravel is placed for insulation.

The whole of the school floors would be covered with Granwood blocks. The assembly hall floor would be covered with oak wood blocks, and the gymnasium floor with oak strip flooring.

The walls generally would be plastered and finished in washable distemper or a flat paint finish.

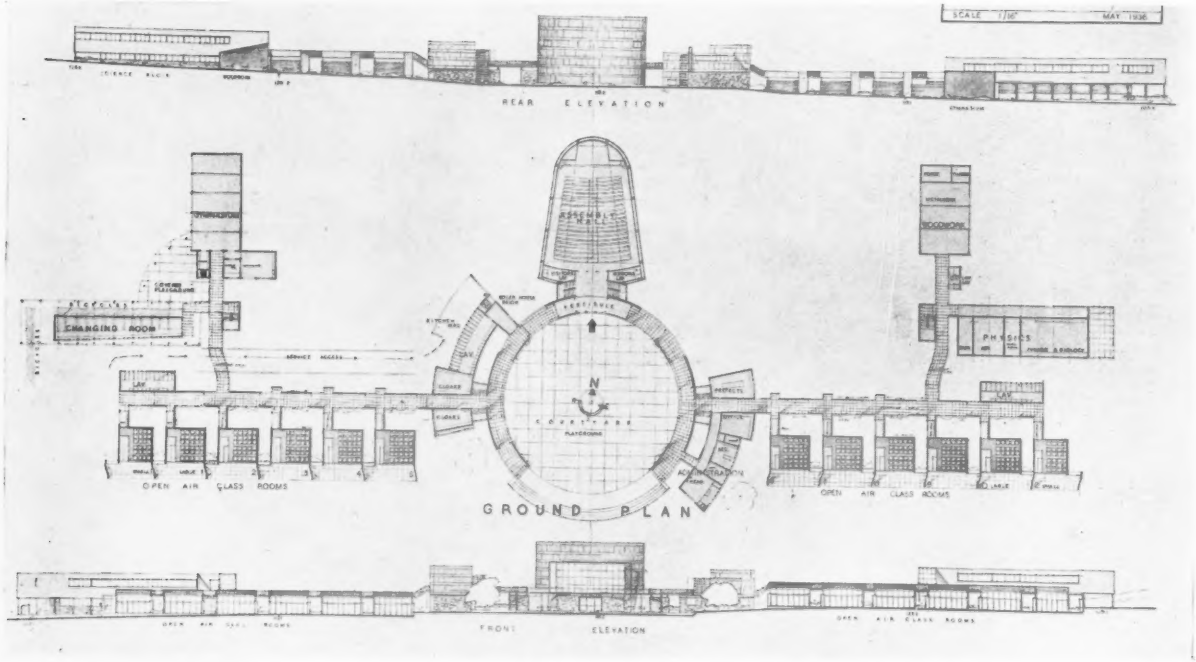
VENTILATION

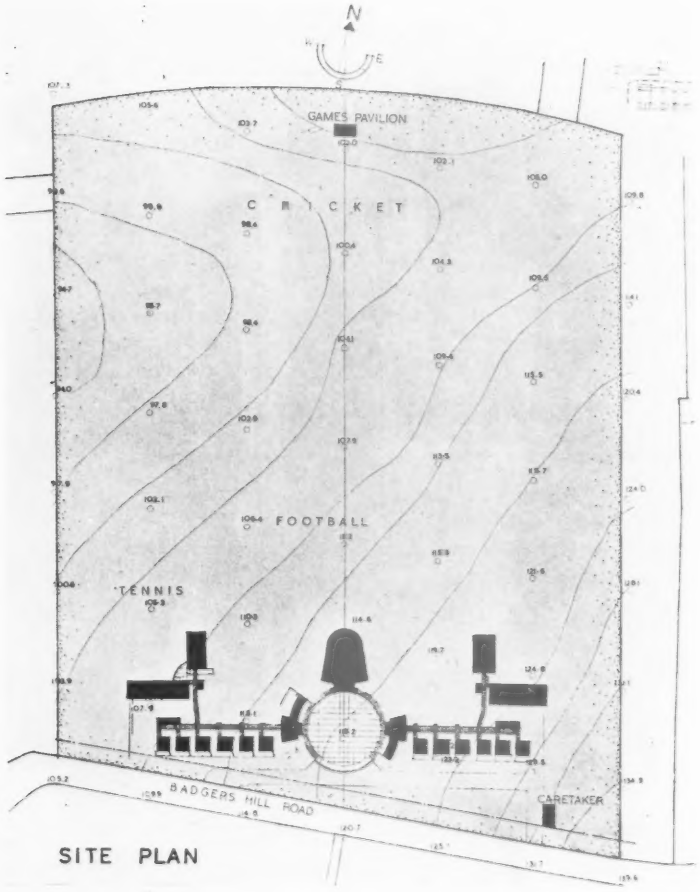
The class-rooms have ample window space on the south-east side, and on the side adjoining the corridor have smaller windows placed high in the wall to give ventilation across the corridor. On the upper floor the corridor is kept low so that there is direct cross-ventilation to the laboratories, etc.

ESTIMATE OF COST

	Cub. ft.	Cost per cub. ft.	Cost
1. Dining room, kitchen, covered space ..	20,200	1/3	£1,263
2. Headmaster's quarter, masters' common-room (1- and 2-storey high part)	36,420	1/5	2,580
Tanks over first floor ..	11,750	8d.	391
3. Main entrance foyer before assembly hall, including circular stair (except areas of rewinding, projector and store rooms) ..	25,000	1/3	1,562
4. Assembly hall, including projector room, etc.	130,200	11d.	5,966
5. Main school block from headmaster's quarter	405,500	1/3	25,343
6. Instructor and covered entrance way, couch room, showers and store	33,060	1/4	1,537
7. Gymnasium, visitors' gallery, changing room under	55,800	9d.	2,092
8. Cycle shed and covered playground	33,500	5d.	696
9. For simple wrot iron fencing including gates on Badger's Hill Road			300
10. For chestnut pale fence and quickset hedge			280
11. For two wrot iron gates at the 30 ft. wide openings			20
12. For turfing 21 acres			1,470
13. Levelling tennis courts			30
14. Playgrounds, forecourt and entrance ways			1,133
15. Gardening, lawn to forecourt ..			50
16. Caretaker's cottage			600
Total			£45,313

THE LUTON COMPETITION



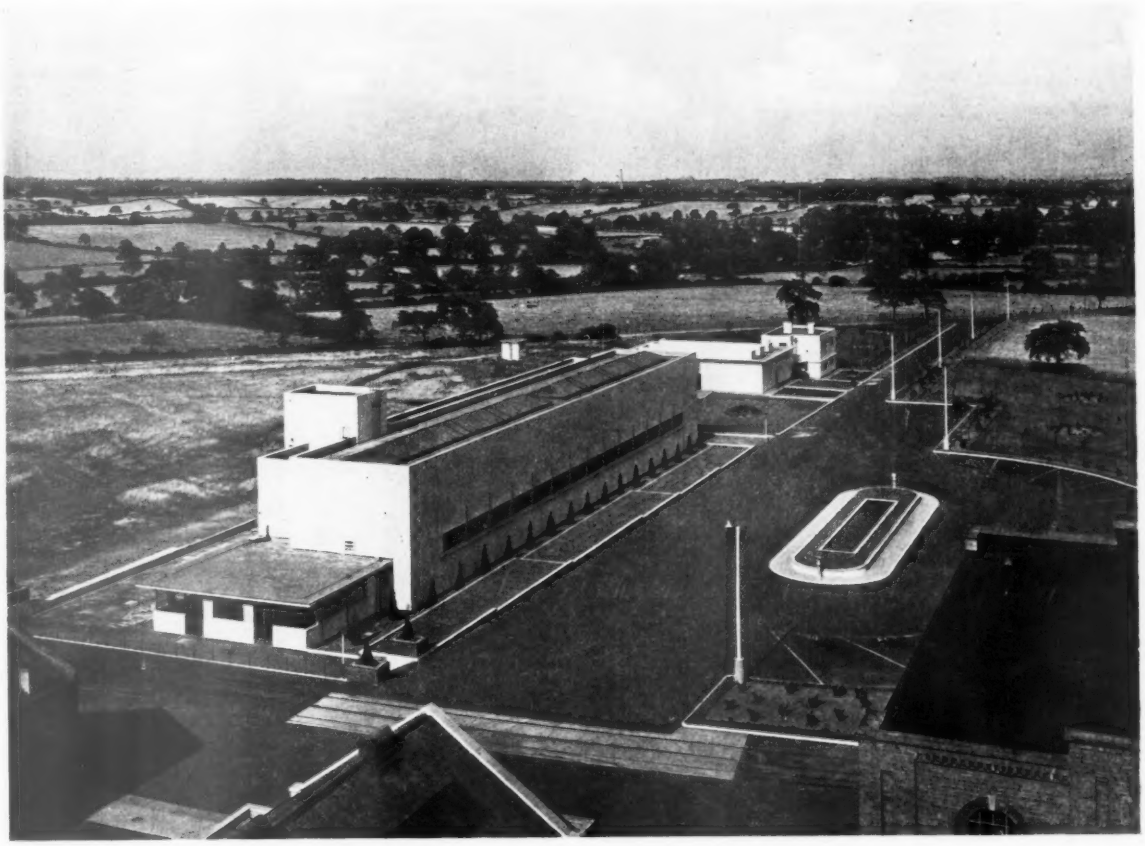


SITE PLAN

DESIGN PLACED THIRD: BY PAUL PASCOE

Above: front and rear elevations and ground floor plan; left, site plan.

PITHEAD BATHS, COVENTRY



ARCHITECT

W. A. WOODLAND

GENERAL PROBLEM.—*Pithead baths and canteen, provided by the Miners' Welfare Fund, at Coventry Colliery (Warwickshire Coal Company, Ltd.). The chief architect to the Miners' Welfare Committee is Mr. J. H. Forshaw, M.A., F.R.I.B.A.*

SITE.—*At Keresley, four miles from Coventry, in the midst of wooded and unspoilt countryside, typical of the county of Warwickshire. The colliery company has preserved the amenities of the landscape by careful consideration in all their surface developments. Recognizing the added amenity to be derived from the baths, the Company made use of the occasion for carrying out other improvements, including a bus park and service roads and extensive planting harmonizing with and adding to the existing attractiveness of the surface lay-out.*

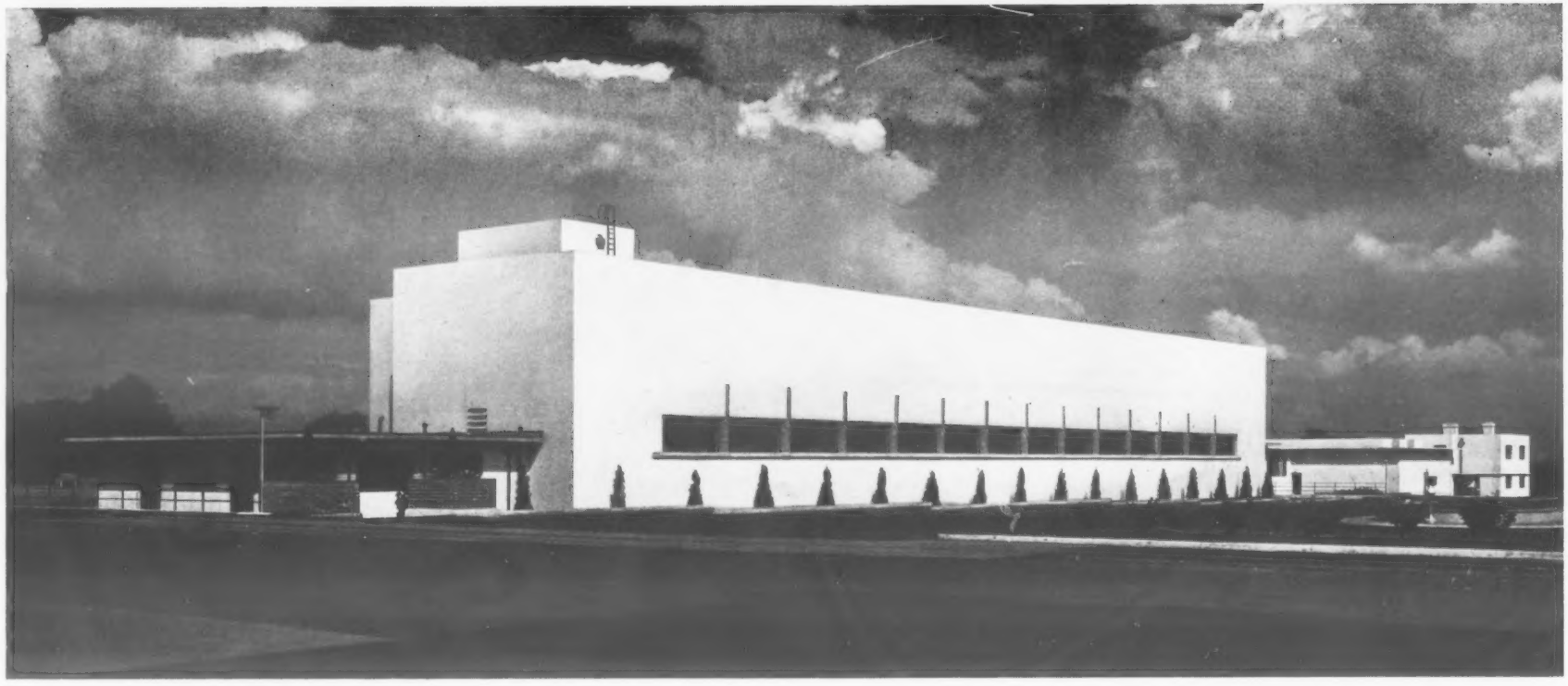
CONSTRUCTION.—General : *Reinforced concrete frame, floors, roofs and staircases all in concrete.* Walls : *14 in. and 11 in. cavity brick filling between columns and beams. Exterior is treated with ivory white cement rendering scraped finish. The plinth is in black cement rendering floated finish. Mullions to windows red glazed bricks.* Roofs : *All concrete flats finished with ¾ in. asphalt, gutters and outlets formed in the flats.* Windows : *All metal, and the lighting and ventilation to top floor by means of concrete pavement lights and span and lean-to patent glazing.* Doors : *Interior wood framed and sheathed with galvanized metal faced plywood. Observative panels in glass. Exterior all metal and glazed with ¼ in. Georgian polished plate.* Floors : *Locker rooms and bath-house on both floors finished with 1 in. specially hardened asphalt. Ambulance room, first-aid room, and canteen have coloured tile and coloured concrete paviors. Pit entrance, boot cleaning and greasing rooms have black granolithic paving and black cement skirtings. Remainder of floors throughout, granolithic.*

FINISHES.—*Walls to pit entrance end tiled to dado height with black tiling with coloured coping. Pit staircase pale yellow tiling. Clean entrance and staircase grey tiling, black coping tiling. Bath-house, ambulance room, and first-aid room, white glazed tiles to dado height, and bath cubicles white glazed to match up wall tiling. Canteen dadoes are in 12 in. by 8 in. putty coloured tiles with 1 in. red tile band insets. Walls and ceiling above dadoes in canteen, ambulance room, and first-aid room are plastered and painted with gloss paint. Locker room dadoes and concrete balustrades to staircase are treated with cream cement-glaze background stippled with pale green. Remainder of internal walls throughout are carried out with cream-coloured distemper, and all internal pipework and electric conduits are painted in contrasting colours to assist easy identification.*

Above is an air view taken from the south-west ; at the further end of the baths are a cycle store, and a pair of cottages, provided by the colliery company and designed by the Company's architect, Mr. T. D. Griffiths, in consultation with the Welfare Committee's architects.

D

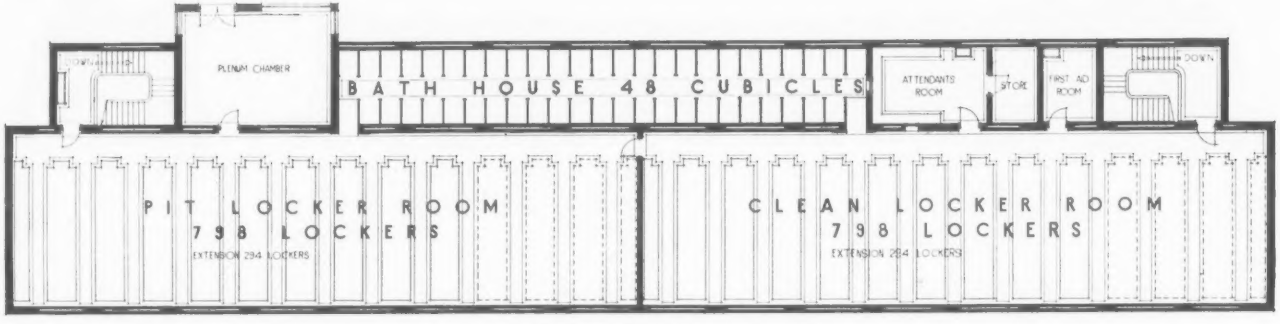
PITHEAD BATHS, COVENTRY



ACCOMMODATION.—*1,890 men, 96 shower cubicles. Arranged to allow of an extension for 294 men.*

COST.—*£17,010, including sewage and water treatment plants, equivalent to £9 per man accommodated. Canteen, £1,190. A contribution of £4,000 was made by the colliery company towards the cost of the baths, canteen, and ambulance room.*

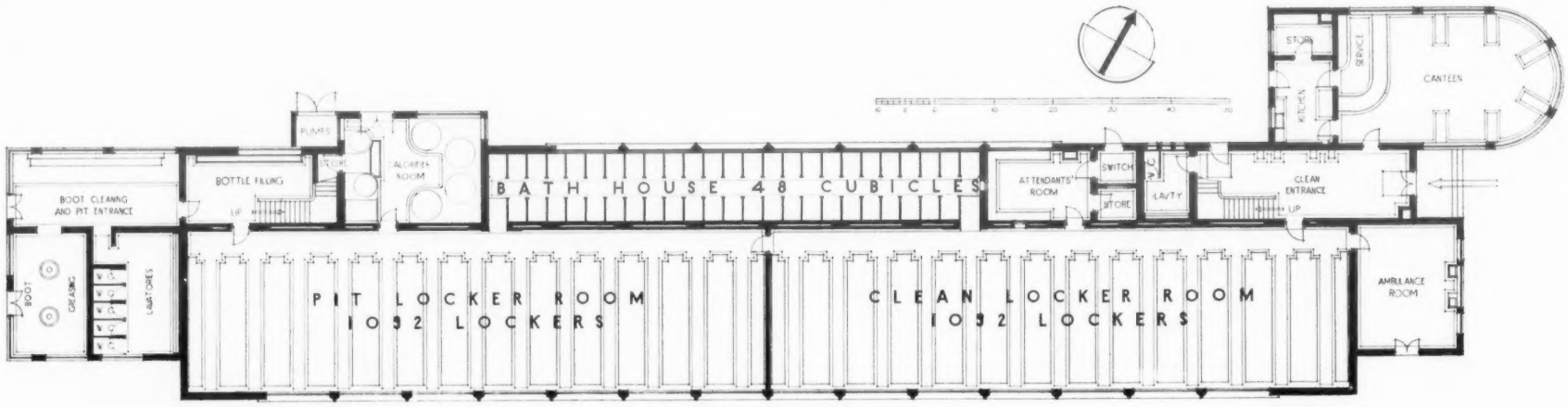
The photograph is taken from the south-west and shows the boot-cleaning and pit entrance, and the long window treatment of the locker rooms.



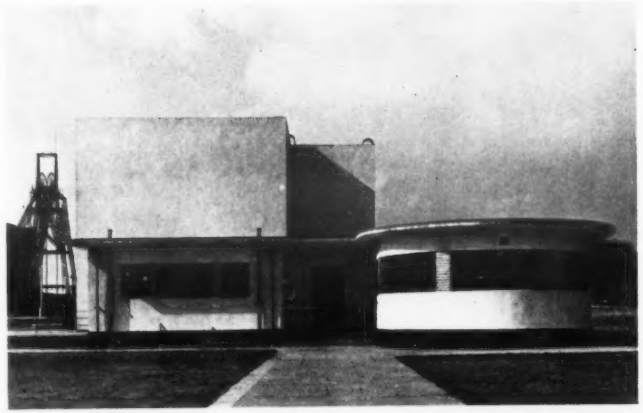
FIRST FLOOR PLAN

locker rooms.

FIRST FLOOR PLAN



GROUND FLOOR PLAN



ARCHITECT: W. A. WOODLAND

The photographs are: left, looking from the west: above, the "clean" entrance and the semi-circular window of the canteen.

PITHEAD BATHS, COVENTRY

ARCHITECT, W. A. WOODLAND

The photographs show, top, the canteen; centre, a locker room; right, bath house cubicles; and, left, the ambulance room.

For list of general and sub-contractors see page 1010

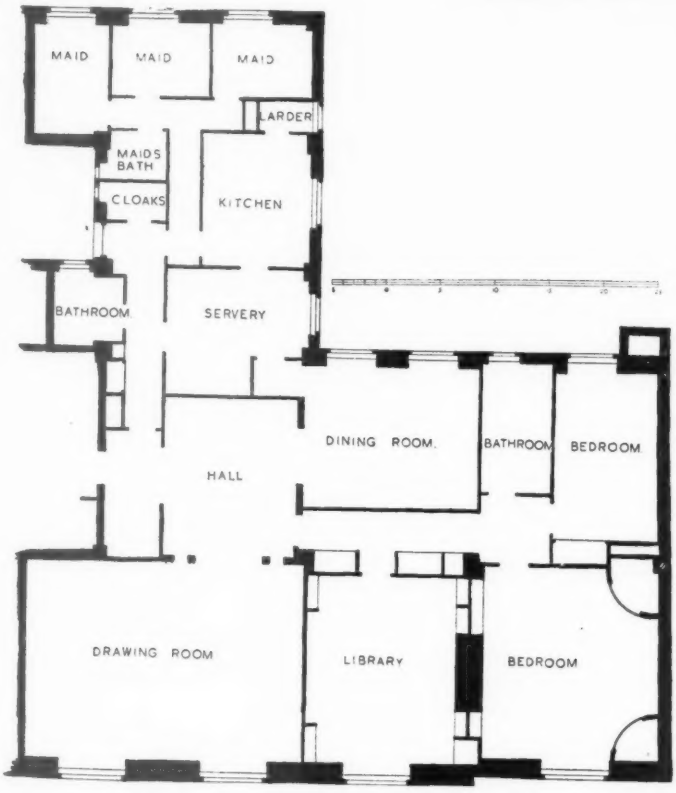
FLAT IN STRATTON HOUSE, PICCADILLY, W

GENERAL PROBLEM.—*A flat in Stratton House, Piccadilly, W.1.*

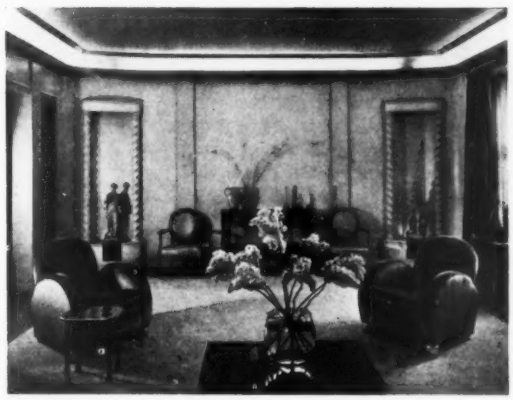
TREATMENT.—*In the reception rooms the treatment of the walls has been kept subdued to form a calm background for furniture and objets d'art of varying periods. At certain focal points the detail is more insistent, such as the ends of the drawing-room. Here, at one end, are two niches with twisted fibrous plaster columns, and at the other a blue belge marble fireplace. On either side of the opening leading from the hall into the drawing-room is a decorative steel grille. In the drawing-room, on the wall, between the two windows facing the hall, is a large silver mirror which enlarges the sense of space in the room.*

The treatment of the dining-room is plain and relies for effect on the cornice lighting and the marble floor. The floor is laid in squares and has a border and a skirting of blue belge marble. In the library are four bookcase fittings, of light oak, let into plaster recesses. The fireplace wall also is framed in light oak, and the marble surround to the open grate is surmounted by a large plaster panel brought forward from the wall and recessed in the centre to receive sculptured ornaments. The bedroom is treated in sycamore and a pale cream paint. Veneered wood is used for all doors and fitments. The main bathroom is in black and white Spanish tiles and has alabaster light fittings. Against one wall is a black marble dressing-table with a long silver mirror above.

The photographs are : right, looking from the hall into the drawing-room ; and, below, the drawing-room, showing the two niches with twisted fibrous plaster columns.



PLAN



DESIGNED BY STANLEY HALL AND EASTON AND ROBERTSON

FLAT IN STRATTON HOUSE, PICCADILLY, W

LIGHTING.—*An indirect system of general lighting has been adopted in all the principal rooms, using light troughs along the structural beams, as in the drawing-room and the dining-room, and over cupboard and shelf fitments, as in the library and the best bedroom. In all rooms the general lighting is supplemented by standard and table lamps. The entrance hall is lit from alabaster wall brackets.*

The photographs are: top, the drawing-room, showing the blue belge marble fireplace; right, a bedroom; and, below, the dining-room.

For list of general and sub-contractors see page 1010.

DESIGNED BY STANLEY HALL AND EASTON AND ROBERTSON

IN THAT CONTINGENCY

The following abstracts of enquiries 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 enquiry, and are not necessarily suitable for general application to all similar problems. Crown Copyright reserved.

Decay of Stonework

¶ *A FIRM of architects reported extensive decay of the internal stonework of a country house. The decay did not extend to more than 3 feet above floor level, and in many cases was entirely away from outside walls. The stonework appeared dry. Samples of stone which had flaked off the walls were submitted for examination.*

The fact that the decay is confined to a height of a few feet above floor level suggests that it is probably due to the absorption of moisture carrying salts derived from the soil and to the subsequent crystallization of these salts near the surface of the stone. The absence of a damp-proof course or a defective damp-proof course would provide a capillary path for the passage of moisture. The sample submitted has been found to contain magnesium sulphate and a proportion of nitrate, which tends to confirm this view. This cause could operate without dampness being clearly apparent.

To remedy a defect of this character properly, it would be necessary to insert an adequate damp-proof course and to replace with new stone all the blocks that had become contaminated by the salts. It is probable, however, that the former procedure would be impracticable but a partial cure may be effected by washing the affected stone with clean water, repeating the process at intervals of a week or so until white salts cease to appear at the surface when the stone dries. The object is to bring to the surface and remove the greater part of the salts now present in the stone, and it may take a long time to do this. If, thereafter, the washing is repeated at six monthly intervals the further accumulation of salts may be kept in check and subsequent decay reduced to a minimum. On no account should paint or other form of surface treatment be applied. The application of an impermeable coating will serve only to drive moisture and salts to a higher level and thus to extend the area of decay.

Injury to Plaster by Oxychloride Flooring

¶ *A CONTRACTING firm stated that, having completed a job in which oxychloride flooring had been laid with a skirting round the walls making contact with the plaster, they found that the chloride solution had crept up the plaster and consequently difficulties had been experienced in painting the wall. Information was sought as to possible treatment to neutralize the effect of the chloride solution.*

No method can be suggested which is likely to be effective in neutralizing the effect of magnesium chloride which has found its way into the plaster adjoining the composition.

The only satisfactory procedure will be to cut out the plaster to a distance well beyond the range of the chloride-penetration and re-plaster. Even so, there is a possibility that chloride may have penetrated the backing material and hence may find its way into the new plaster.

If at all possible, it would be advisable, when plastering down to the cove skirting, to insert a dividing strip between the plaster and the composition and thus avoid any further creep of the chloride.

The Bedding of Tiles

THE problem of bedding tiles on walls and floors was dealt with at some length in this series a few years ago. As the volume of enquiries on this subject received at the Building Research Station is still very considerable it seems opportune to review it afresh and to incorporate the results of some later investigations. It sometimes happens that areas of floor tiling, particularly when laid on concrete floors, become hollow and occasionally "arch." One common characteristic of failures of this kind, both with wall and floor tiling, is that the tiles come away very cleanly from the mortar bed, indicating that satisfactory adhesion between tiles and mortar has not been obtained. This lifting of the tiles may not occur until several years after they are fixed, and the sudden development of the defect may then be very puzzling.

Some experiments have been carried out at the Building Research Station, particularly with regard to the lifting of floor tiling, and the following are considered to be the most important causes of these failures.

1. A state of compression of the floor tiling due to :—
   (*a*) Shrinkage of the concrete floor on which the tiles are laid.
   (*b*) Shrinkage of the mortar bedding on which the tiles are laid.
   (*c*) Deflection of the floor under load.

2. Poor adhesion of the tiles to the mortar bed due to :—
   (*a*) The nature of the tile body itself.
   (*b*) The lack of any useful mechanical "key" on the underside of the tile.
   (*c*) Errors in technique of laying.

3. The shape of the tiles themselves, as for instance :—
   (*a*) Slightly arched form.
   (*b*) Slightly splayed edges.

These factors may tend to cause "arching" when the tiles are in state of compression.

The experiments have shown that if the adhesion of the tiles to the mortar bed is good the likelihood of failure is very much reduced, also that if the effect of the splayed edges can be eliminated an improvement will result.

This implies some modification in the present practice of tile manufacturers and tile layers alike. So far as the manufacturing aspect is concerned, the provision of some sort of mechanical "key" on the underside of the tiles would obviously be advantageous, but this would have to take the form of a definite undercut if it were to be effective. The usual patterns of shallow grooves, with no undercut, are of negligible value.

Tiles are often laid with joints so fine that they can only be filled with a cement grout or with scum or laitance worked up from the mortar bed. This appears undesirable, and if the joint is to be of any real value it should be filled with properly consolidated mortar of the same consistence as the bed.

It seems desirable to divide up large areas of tiling by means of jointing strips, and where there is a pattern in the floor this can probably be arranged without much difficulty. One difficulty in obtaining good adhesion of floor tiles to the bed is due to the very dense, non-absorptive nature of the tile body. These characteristics, however, are almost inevitable when it is considered that the desire for hard wearing, non-absorptive surfaces is the main reason for using tile floors.

In laying the tiles, the normal rules applying to concretes and mortars should be observed. Previous investigations at the Building Research Station have shown that in joining new concrete to old, when the old concrete has a dense hard surface, the application of a cement grout to the old concrete had a most useful effect. (See Building Research Bulletin No. 9, H.M. Stationery Office, price 3d.) By analogy it was thought that the application of a cement mortar grout to the tiles might assist in obtaining good adhesion to the mortar bed. Some experiments were accordingly made on these lines.

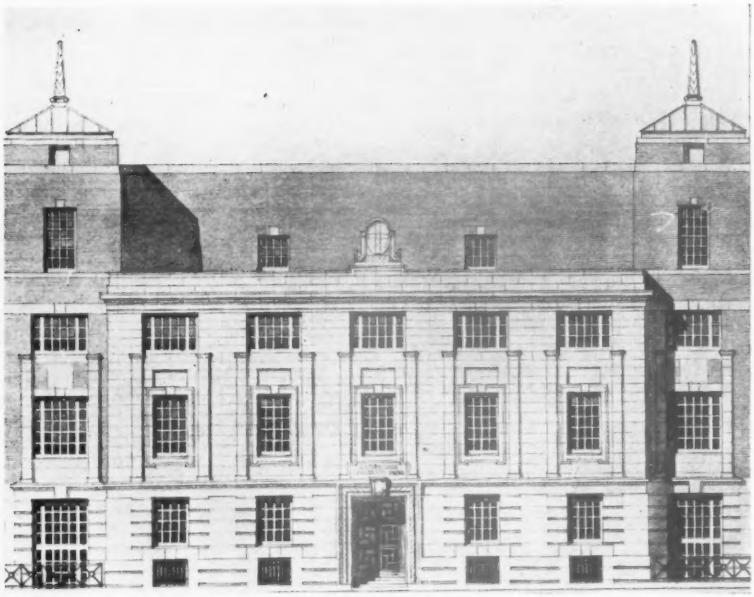
Three areas of wall-tiling were laid upon a normal cement mortar screeding. The tiles were white glazed with a very dense body, and the three areas were treated as follows :—

1. After soaking, the tiles were bedded on cement mortar in the ordinary way.

2. After soaking, a cement grout of cream consistence was brushed on to the back of the tiles and one hour after application of the grout the tiles were bedded on cement mortar.

3. After soaking, a cement mortar grout of cream consistence was brushed on to the back of the tiles, and the tiles were bedded on cement mortar in the ordinary way, 24 hours after the application of the grout.

Six weeks after the tiles were bedded a rough test was made of their adhesion to the mortar bed by removing them by the insertion of a cold chisel at one edge. Tiles from areas treated as described in (1) and (2) above were removed with the greatest ease, coming away almost clean from the mortar bed. The tiles from the area, treated as (3) above, were removed with considerably more difficulty and tiles were broken in the process. No clean failure of adhesion occurred in any of the tiles bedded in this manner, and quite



Cambridge University Press, Euston Road, London. By W. Curtis Green, R.A., and Partners. (R.A. Exhibition No. 1343).

a considerable amount of mortar broke away and remained adhering strongly to the tiles.

The question of the amount of soaking of the tiles before the application of the grout is of importance. If the tiles are not soaked sufficiently the suction may dry up the cement slurry, preventing proper hydration of the cement. If, on the other hand, the tiles are allowed to absorb too much water, there will be no suction left to carry the slurry into the pores of the tile. A film of water will tend to remain between the tile and the slurry, and poor adhesion will result. Owing to the great variation in absorption of tiles it is impossible to prescribe a definite dipping time. In order to arrive at the most beneficial period for soaking any particular type of tile, it would be advisable to set up a few small areas of tiling, in each of which the tiles would be soaked for different periods. After leaving the tiles for a few days, they could be removed by tapping at the edges with a chisel, and the results should give some idea of the most satisfactory period of soaking.

It may be mentioned that with one batch of glazed tiles, of the white biscuit type, such as are commonly used on walling, two minutes dipping gave the best results.

From the various observations and experiments that have been made it appears that the following procedure should aid in eliminating failures in the form of hollowness or arching of wall or floor tiles :—

1. In choosing tiles, those with a tendency to an arched form or splayed edges should be rejected. This can be tested by setting out a row of the tiles face upwards on a plane surface. If the row of tiles takes the form of an arch when pressure is applied to the ends, this can be taken as evidence that one or other of the above-mentioned defects is present.

2. The tiles could often be laid with a rather wider joint than usual. It is not possible to fill a joint with mortar of suitable consistence if it is narrower than about $\frac{3}{16}$ in. Under no circumstances should the joint be filled with cement grout or scum worked up from the bedding mortar.

3. The tiles should be soaked and a cement grout of cream consistence should be brushed on the back 24 hours before laying. They can then be laid on a cement mortar bed in the ordinary way.

By means of the method indicated above, it should be possible to secure a fairly good adhesion, and for tiling laid in small areas the strength should be adequate. No assurance can be given, however, that failures will not occur in large areas laid on a concrete bedding which may shrink. Cases have been reported to the Building Research Station, in which failure had occurred in spite of the fact that the tiles had been laid in accordance with the method described above.

Particular difficulty seems to arise in swimming baths, where large areas of closely jointed tiles are fixed to concrete. In such situations it seems that a rigid cement joint may be incapable of furnishing permanent adhesion.

The question of alternative methods of laying tiling has therefore been investigated. It was considered that a bituminous bedding material might be preferable, since it would allow a certain amount of movement to take place in the backing without forcing the tiles to leave the wall or floor, the joints of the tiling being slightly elastic. Fairly wide joints would be necessary, otherwise the whole object of this method of laying would be defeated.

Experiments were carried out in a similar manner to those on cement bedding. The material used was a bituminous emulsion, and this was mixed with Portland cement in order to absorb the water from the emulsion, leaving a mixture of set cement and bitumen as a bedding. The use of cement in the emulsion is considered necessary, since emulsions of this type depend upon dehydration for setting, and when applied between a tile with a glazed surface, and a damp concrete, no natural drying can take place.

In carrying out tests, various methods of application were tried out; of these the following gave the most satisfactory results :—

1. The tiles were soaked in water for two minutes. A bituminous emulsion was brushed into the back of the tiles. A bituminous emulsion was brushed into the concrete wall. The tiles were bedded with a mixture composed of 1 volume of emulsion to 1 volume of Portland cement.

After a period of three weeks the tiling was removed from the backing, using a chisel inserted along the edge of the tiles for this purpose. It was found impossible by this method to remove any of the tiles in large areas. The tile merely chipped off in pieces about 1 in. square. The adhesion was greater than that achieved in similar tests using a cement slurry, and a cement mortar bedding.

2. The tiles were soaked in water for two minutes. A bituminous bedding was brushed into the back of the tiles. The tiles were bedded with a mixture composed of 2 volumes of emulsion to 1 volume of Portland cement. The tiles were tested as before, and the adhesion was found to be very nearly as good as in (1) above, and was again very much better than that obtained by cement bedding.

From these results, it is considered that either of the above methods would be superior to the cement method of bedding tiles. The cost, however, would probably be greater, but this must be offset by the greater degree of security from failure which would be obtained. The method also has the advantage of providing a waterproof joint, which may be an important point, especially in swimming-bath construction.

It is possible that a compromise, using the normal cement bedding, and incorporating an expansion joint at intervals, would be preferable to the use of large areas of continuous tiling. By this means, stresses in the tiles set up by movement of the structural floor would be to some extent relieved at the expansion joints. To be effective, the special joints would need to extend from the tile face, down to the structural floor, and should not be less than $\frac{1}{4}$ in. in width.

To obtain any useful effect from this method it would be necessary to restrict the areas of continuous tiling between the special joints to 5 ft. square or less.

For the jointing material a composition of rubber latex and cement, or a bituminous mastic would be suitable.

•

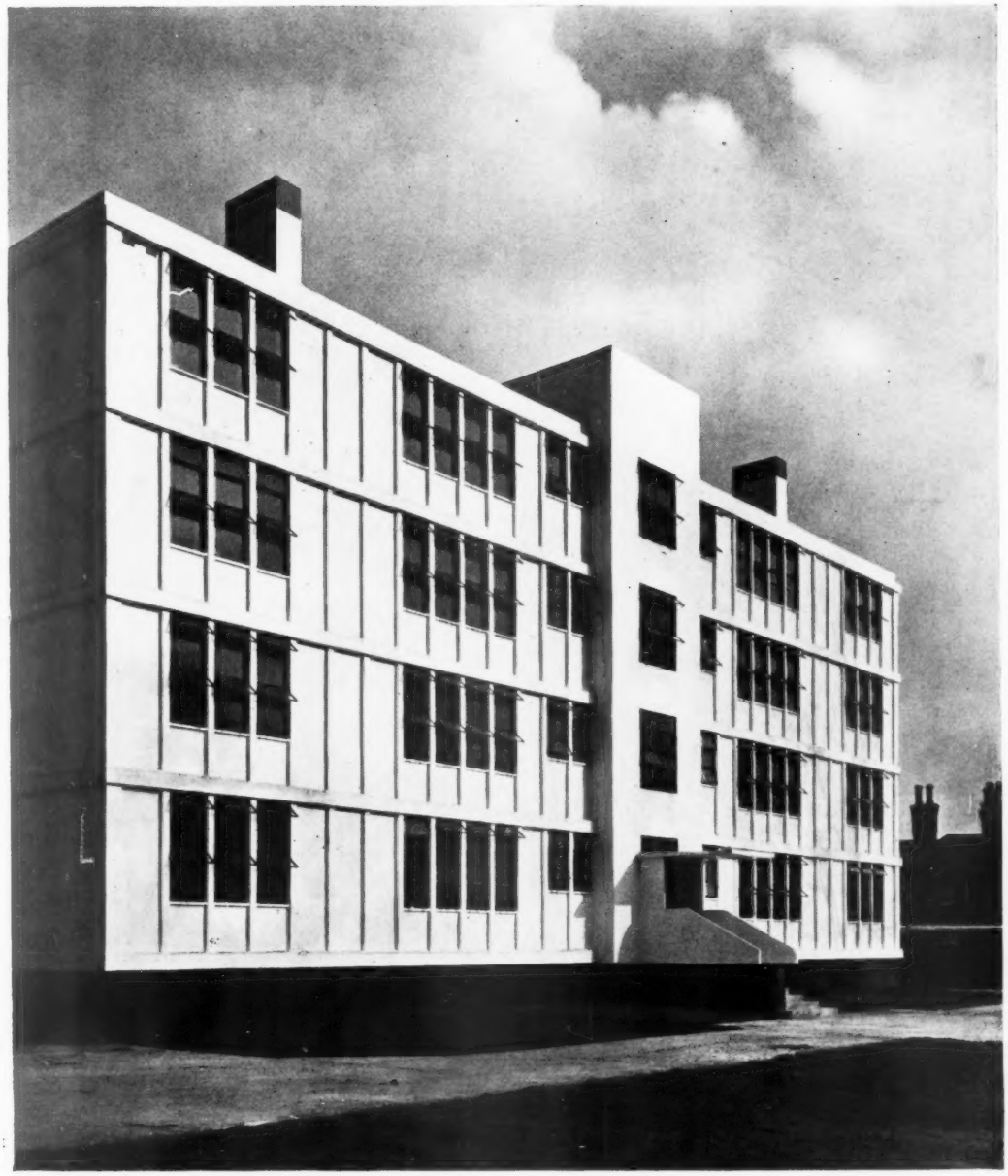
END OF ST. DUNSTAN'S

St. Dunstan's, Regent's Park, built by Decimus Burton, is to be demolished. Count Haugwitz-Reventlow has bought the ground leasehold interest, and intends to build a new house on the site.

The estate, of 12½ acres, is the largest residential property in London, with the exception of Buckingham Palace.

WORKING DETAILS : 443

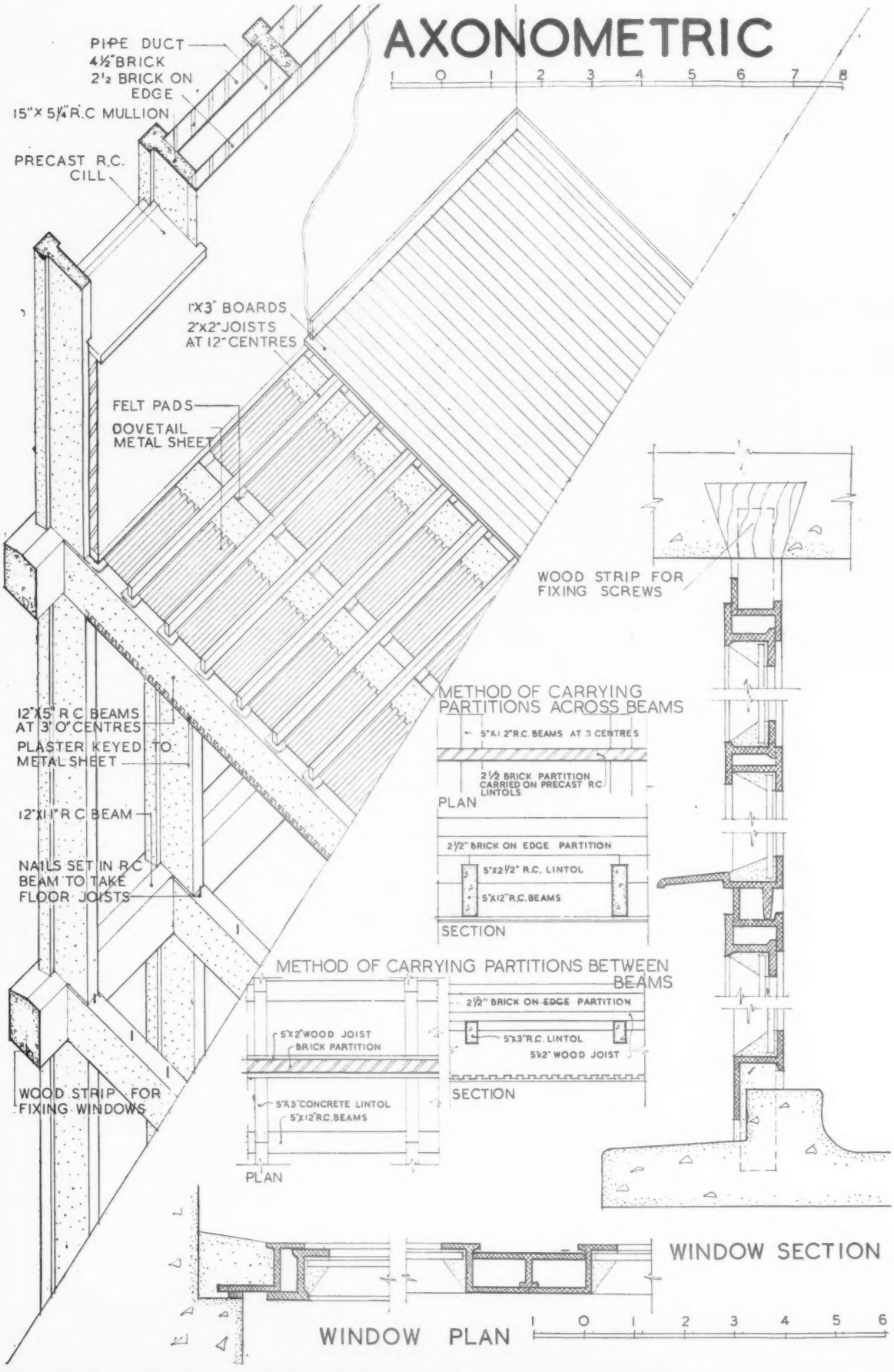
R. C. FRAME • FLATS AT STANMORE • SIR E. OWEN WILLIAMS, K.B.E.



The flat block illustrated above has a reinforced concrete frame with a brick infilling: the floors are carried by 12 in. by 5 in. beams at 3 ft. centres, nails being cast in the beams to take the floor battens, which rest on felt pads. Partitions are carried by R.C. lintols. An axonometric and details are shown overleaf.

WORKING DETAILS : 444

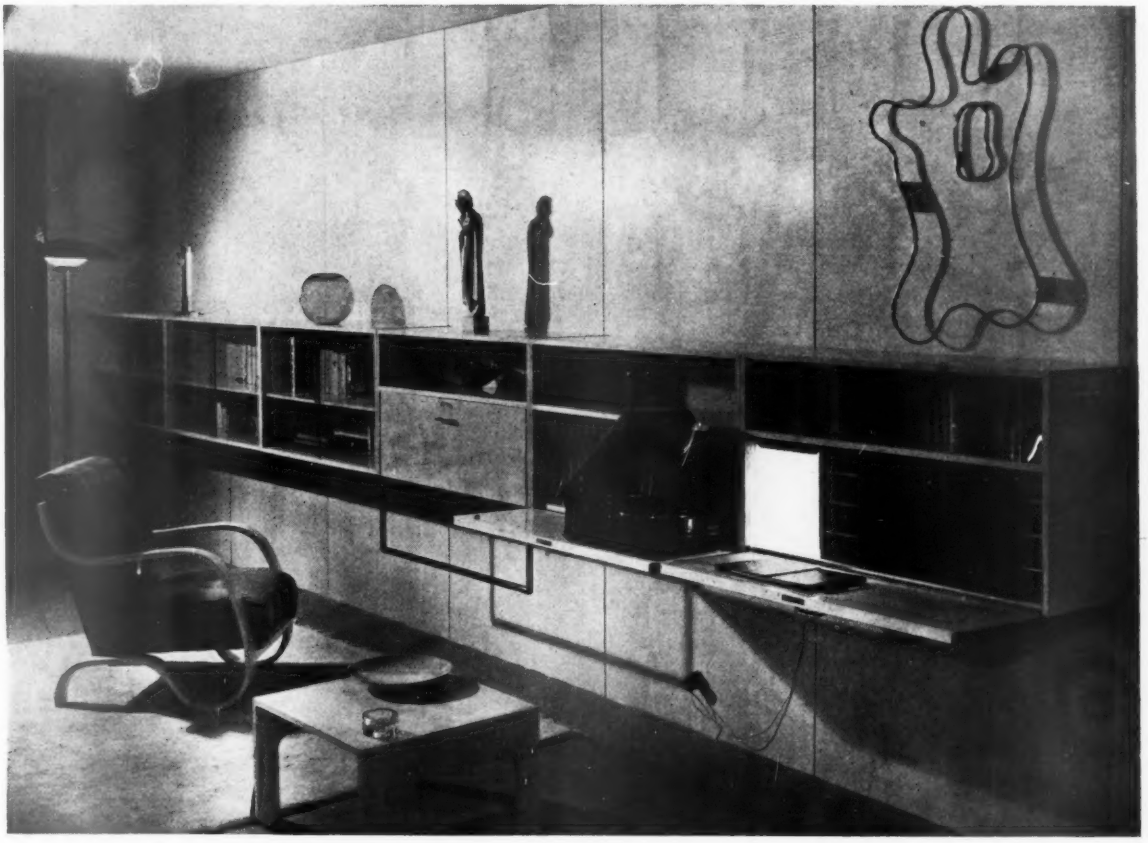
R'. C. FRAME • FLATS AT STANMORE • SIR E. OWEN WILLIAMS, K.B.E.



Axonometric and details of the flat block illustrated overleaf.

WORKING. DETAILS: 445

WALL CABINET • HEAL'S EXHIBITION • MARCEL BREUER AND F. R. S. YORKE

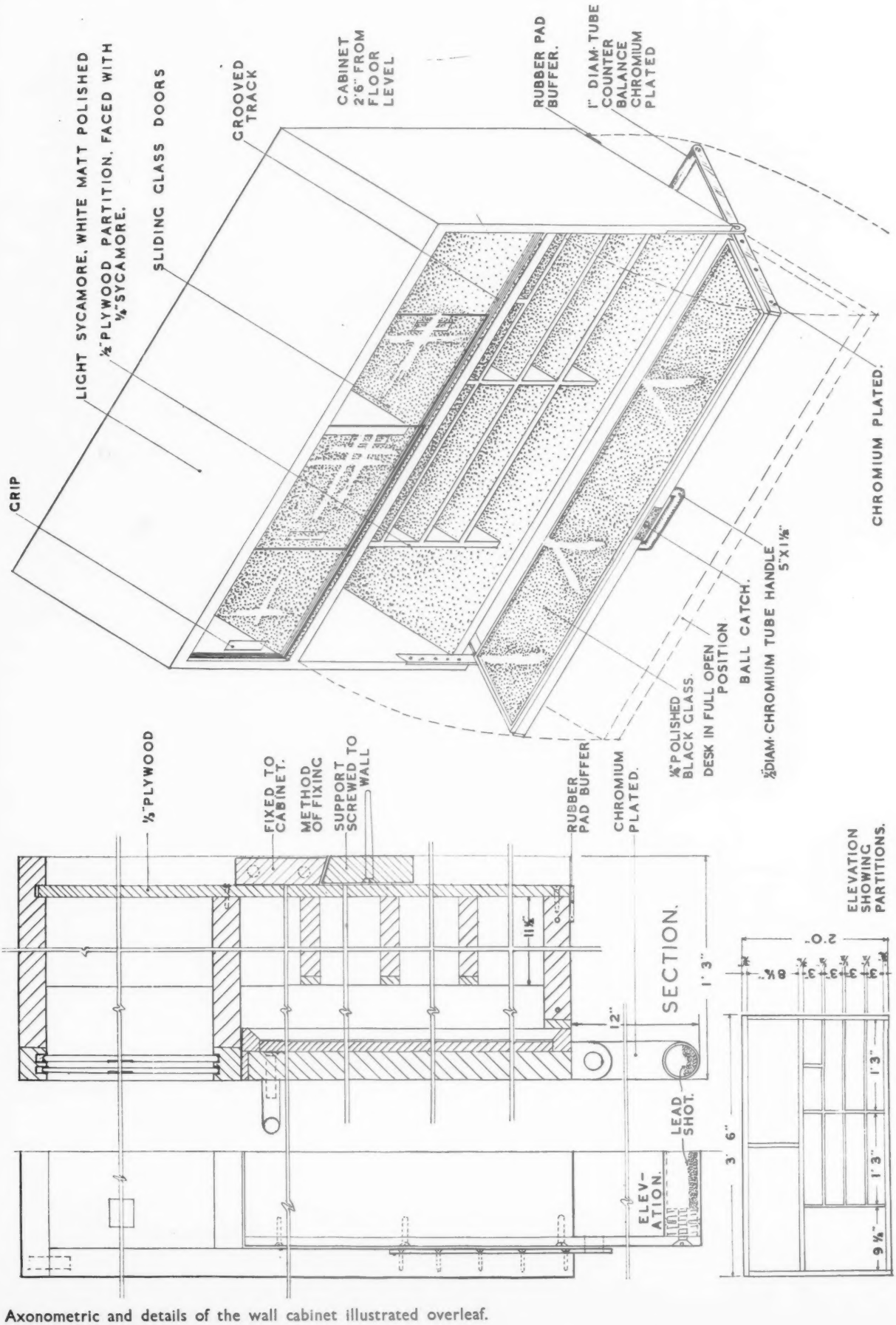


The cabinet illustrated above is hung from a continuous batten screwed to the wall engaging with another batten fixed to the back of the cabinet. The hinged front, which is covered in black glass, is counterbalanced by a steel rod filled with lead shot. An axonometric and details are shown overleaf.

FILING REFERENCE:

WORKING DETAILS : 446

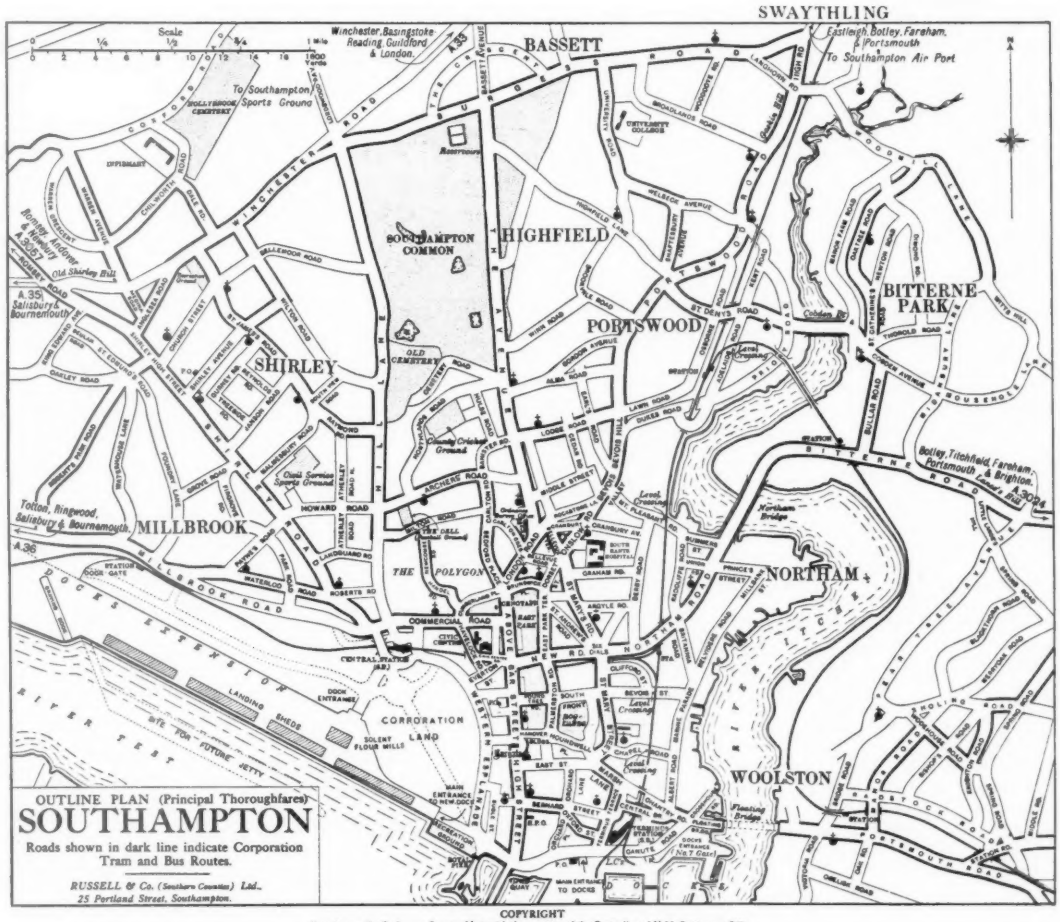
WALL CABINET • HEAL'S EXHIBITION • MARCEL BREUER AND F. R. S. YORKE



Axonometric and details of the wall cabinet illustrated overleaf.

SOUTHAMPTON

SEAT OF THE R.I.B.A. CONFERENCE



ABOVE is an outline map of Southampton, showing the principal thoroughfares. On the pages following are illustrated articles dealing with the history of the town and one of its most important establishments—the Ordnance Survey Office; and an economic and social survey. This survey describes the situation of the town, its natural and acquired advantages and chief activities, the location of its principal commercial premises and the main developments of the post-war period.

CONFERENCE PROGRAMME

The R.I.B.A. Conference opened at Southampton yesterday, when an informal reception was held in the Chantry Hall, St. Mary's Street (a general view of which is reproduced above). The Conference headquarters is at the Civic Centre, and the arrangements for the three days (June 25 to 27) are as follows :—

THURSDAY, JUNE 25.—10.30 a.m. : The Conference will assemble in the Chantry Hall for the Inaugural Meeting, and will be welcomed by His Worship the Mayor of Southampton. The Inaugural Address will be delivered by the President of the Institute, to be followed by short Addresses by Mr. G. A. Jellicoe [*A.*] on "The Architecture of To-morrow," and Professor W. G. Holford, B.Arch. Liverpool [*A.*], on "The Planning of a Great Seaport." 12.30 p.m. : Assemble in the Chantry Hall grounds, where the Conference photograph will be taken. 2.15 p.m. : *Alternative Visits :*

Visit A : SOUTHAMPTON AND DOCKS. This tour will start with a short drive round the town, ending at Town Quay, where members will board a steamer for a two hours' cruise in Southampton Water. The ship will steam down stream past the Old Docks and will turn off Netley Castle. Tea will be served on board and the ship will sail up past the Floating Dock and as far as the King George V Dock. Here the party will disembark and be met by representatives of the Southern Railway, who will explain the docks. The coaches will return to the Civic Centre past the "Old Walls." (Cost per head, including tea, 6s.)

Visit B : WINCHESTER. Motor coaches leave the Civic Centre at 2.15 p.m., and drive to Winchester via Chandlersford and Otterbourne, arriving soon after 3 p.m. Members will be shown over Winchester College and will then proceed to the Cathedral, which will be inspected. Tea will be provided in Winchester and the party will drive back via the West Gate and Hursley. (Cost per head, including tea, 5s. 6d. ; cost to members using own cars, 2s. per head.)

Visit C : WINCHESTER. Motor coaches leave the Civic Centre at 2.15 p.m., and members will be taken over St. Cross Hospital and afterwards proceed to the Castle and West Gate. Tea will be provided and the return will be by way of Hursley. (Cost per head, including tea, 5s. 6d. ; cost to members using own cars, 2s. per head.)

Visit D : ORDNANCE SURVEY. Members wishing to be taken round the Ordnance Survey Office should be at the Main Gates, London Road, at 2.45 p.m. This visit will last about an hour and a half. Members will make their own arrangements for tea. (No charge.)

Visit E : SOUTHAMPTON CIVIC CENTRE. Members wishing to see over the Civic Centre, now in course of erection, should meet there at 2.45 p.m. Members will make their own arrangements for tea. (No charge.)

Visit F : SOUTHAMPTON AIRPORT. Motor coaches will leave the Civic Centre at 2.30 p.m., and drive to Swaythling, where members will be taken over the Aerodrome. Flights over Southampton to see the town from the air will be arranged during the afternoon, and facilities will be given to those taking part in visits D and E to make flights later on if desired. (Cost per head, 1s., or 5s. including flight.)

7.30 p.m. for 8 p.m. : Banquet. Conference Banquet on board the Royal Mail Line s.s. "Asturias." The guests will be received by the President of the Institute and the President of the Hampshire and Isle of Wight Architectural Association. Cost of dinner (exclusive of wines and cigars), 16s.

FRIDAY, JUNE 26.—*Alternative Whole-day Tours.* (All coaches will start from the Civic Centre, the Conference Headquarters.)

Tour No. 1 (9.45 a.m. to 5.30 p.m.) : Steamship to Portsmouth and round the Isle of Wight. Members will embark from Southampton Royal Pier at 9.45 a.m., and the ship will sail down Southampton Water to Portsmouth, where H.M.S. "Victory" will be seen. After sailing round Portsmouth Harbour, the ship will proceed round the Isle of Wight, through the Needles, and back to Southampton. Lunch and tea will be provided on board. (Cost per head, including lunch and tea, 12s. 6d.)

Tour No. 2 (9.30 a.m. to 6 p.m.): Motor coach to Romsey, Salisbury, and the New Forest. This tour will start from the Civic Centre at 9.30 a.m., and drive up the Test Valley, stopping at Romsey, where the Abbey will be seen. Passing through the "Wallops," the coaches will drive to Park House, Amesbury, after which Stonehenge will be visited. Lunch will be taken at Salisbury, and members will have an opportunity of seeing the Cathedral. The tour will continue to Downton, with its Saxon Church, and Ringwood, where tea will be provided, and will return to Southampton through the New Forest. (Cost per head, including lunch and tea, 11s. 6d. ; cost to members using own cars, 5s. 6d. per head.)

Tour No. 3 (9.30 a.m. to 6 p.m.): New Forest, Wimborne, Poole (Carter's Tile Works), Bournemouth, Lyndhurst. Coaches will leave the Civic Centre at 9.30 a.m. and drive through the New Forest to Ringwood and Wimborne, where members will be able to see the Minster. From Wimborne members will be driven to Corfe Mullen and then to Poole. Lunch will be provided at Sandbanks, overlooking Poole Harbour. After lunch the party will proceed to Messrs. Carter's Tile Works, over which they will be shown, and where they will be given tea. The coaches will return to Southampton through Bournemouth and Lyndhurst. (Cost per head, including lunch and tea, 10s. 6d. ; cost to members using own cars, 5s. per head.)

8 p.m. to 1 a.m. : Reception and Dance given by the Mayor and Corporation of Southampton on the Royal Pier.

SATURDAY, JUNE 27.—*Informal Visits.* Private parties to other places of interest. Members to make their own arrangements.

HISTORY

[BY REV. FRANCIS DAY, B.A.]

THERE are special reasons why an Architects' Conference meeting in Southampton should find itself happily placed. It is not only that there are here some remarkable buildings, of great interest in themselves. It is rather that the town itself eminently supplies that setting of past and present human activity which it is one great function of architecture to express. I am concerned here especially with the historical side.

Considerable Roman remains, if somewhat vague in character, mark the site of the camp at Clausentum, in the district where Bitterne now lies. But the present town was founded by the West Saxons, probably soon after their arrival on the shores of the Southampton Water, traditionally under Cedric and Cynric, in 425. We find "Hamtun" mentioned in the Anglo-Saxon Chronicle against the year 837. It would seem that the prefix "South" was added after the annexation of Wessex to Mercia, by way of distinction from the Midland Hampton known as Northampton at the present day.

NINTH AND TENTH CENTURIES

The ravages of the Danes in the ninth and tenth centuries have at least left us the story of Canute rebuking the waves, of which much misinterpreted action Southampton is said to have been the scene. The building called Canute's Palace, in Porter's Lane, is a fragment of a Norman house, and therefore has no right to its popular name. But we still have Canute Road and Canute Point, where the incident may quite well have occurred. There is reason to believe that it was only in the Danish period that Southampton was consolidated on its present site. A tradition assigns it in earlier times to an area more to the north-east, in the direction of the present St. Mary's Church. This would throw some light on subsequent relations between the different churches and parishes, and especially on the dispute between Philip de Lucy, Rector of St. Mary's and the Priory of St. Denis, concerning its dependent chapels, to which last further reference will be made. As *Hantune* the town finds mention in the Domesday Book.

With the visit to Southampton of Henry the First our narrative assumes a more connected form. Here, too, we meet the ecclesiastical interest that always furnishes one approach to the history of any really ancient town. For Henry's most important act locally was to found, in 1154, St. Denis' Austin Priory, which lay two miles to the north-east. The instrument of foundation expressed the pious motive that underlay the Sovereign's act. The monastery was to be built "on the parcel of land between Portswood and the Itchen, for the health of (the King's) soul, of the souls of his father and mother, Maud his wife and William his son."* This last poignant reference probably enshrines the chief reason for the King's action—to secure perpetual masses for the victim of the tragedy of the *White Ship*. Only the merest fragment of the Priory remains. It has given its name to a local railway station and to a modern church.

One way in which this foundation permanently affected the history of Southampton was through Henry the Second's grant to the Austin Canons of the chapels of St. Michael, the Holy Rood, St. Lawrence and All Saints. Of these four "chapels," St. Michael's alone remains today. The present Holy Rood is modern apart from the fine tower and spire. In the old church, Philip of Spain attended mass three times in one morning, on his way to Winchester to marry Mary the Queen. St. Lawrence has disappeared. All Saints is represented by the eighteenth-century building in the Grecian Classic style that stands at the corner of East Street at the present time. But more must be said of St. Michael's, the oldest and easily the most interesting church in the town.

THE OLD TOWN

But first we may pause and take our bearings in the Old Town itself. If anyone will turn to a map of Southampton and confine his attention to the portion below Bargate, between the river Test on the west, and Upper and Lower Canal Walk on the east, he will have the limits of medieval Southampton before his eyes.

The present High Street was "English" Street in those far-off days. Parallel on the west lies French Street, still retaining its ancient name. Further west again is Bugle Street, and if we walk up this last thoroughfare we shall arrive at St. Michael's Square and Church. Beyond the buildings north of the Square is Simnel Street, where we find the "Undercroft," a lower apartment of a fourteenth-century rest or pittance house for the benefit of pilgrims on their way to St. Swithun's tomb at Winchester and to Canterbury's more famous shrine. This is remarkable for its ribbed vaulting, hooded fireplace, and ball flower ornamentation. To the north again lay formerly the Castle, with its subsidiary buildings, quay and watergate.

On the left are reproduced portraits of the four vice-presidents of the Conference: 1, the Rt. Hon. Lord Mottistone, P.C. (Lord Lieutenant of Hampshire); 2, Lt.-Col. R. F. Gutteridge, F.R.I.B.A. (President of the Hampshire and Isle of Wight Architectural Association); 3, K. H. Vickers, M.A. (Principal of University College, Southampton); 4, Alderman T. H. Sanders (Mayor of Southampton.)

* See *Victoria County History: Hampshire.*

Returning southward we pass at the foot of the old walls, still almost intact on this side, the so-called "King John's Palace," possibly the oldest surviving fragment of Anglo-Norman domestic architecture to be found.* We notice especially the "arcaded" portion of the walls, probably a means of making the most of scanty material when strengthening the upper defences after the French attack in 1338. At first these walls were washed by the waves at high tide, but later there was here the West Quay, a busy centre of trade. We pass the West Gate, still well preserved, silent witness of the departure of the victors of Crecy and Agincourt, and crossing the lower entrance of Bugle Street reach the Wool House, monument of Southampton's past rôle in trade and war. For here the wool was weighed before exportation, and here, later, French prisoners were confined. Some of them have left records of their captivity in the shape of names and dates carved on the beams of the first floor.

To the east of the High Street lies East Street, which led to the now demolished East Gate. The walls on this side, too, are almost entirely gone. Some traces of them can be seen as we walk down at the Back of the Walls where we ultimately reach the South-Eastern Tower, built over the sluices of the ancient moat which ran along the course of what is now Canal Walk.

On the north the Old Town was bounded by the North Wall, with the Arundel and Polymond Towers, and, supremely, the Bar Gate. This, as the main entrance to ancient Southampton, witnessed much of its history, and more of its ordinary life. Here dues were collected and, later, the Trade Guilds met. The Guildhall was over the gateway and the Police Court was held there until quite modern times. Here came kings and queens and through Bar Gate traitors were carried to the block.

If this outline is fairly clear, it will be seen that St. Michael's dominated the Norman French quarter of the Old Town. The very name "English" Street seems to imply that the neighbouring district was, by contrast, something else, and some of the street names of this quarter tell their own tale. Here are French Street itself; Le Demichevalier; and Le Cheyne, now Porters' Lane.

But naturally all parts of the town were in mutual contact, and we find the district round St. Michael's playing an increasingly important part in the general life of the place. It was a great shopping centre for one thing. Besides Simnel Street—the street of the bakers—there were Pepper Alley, where the grocers did business, and Butchers' Row; while the fish market was carried on in St. Michael's Square. The chimes in the tower gave Southampton its time, but sometimes so unmusically that an entry in the Court Leet for 1575 records that "the chyme dothe not goe, which is a very comfortable hearing to all the inhabitants."†

This is not the place to speak in detail of

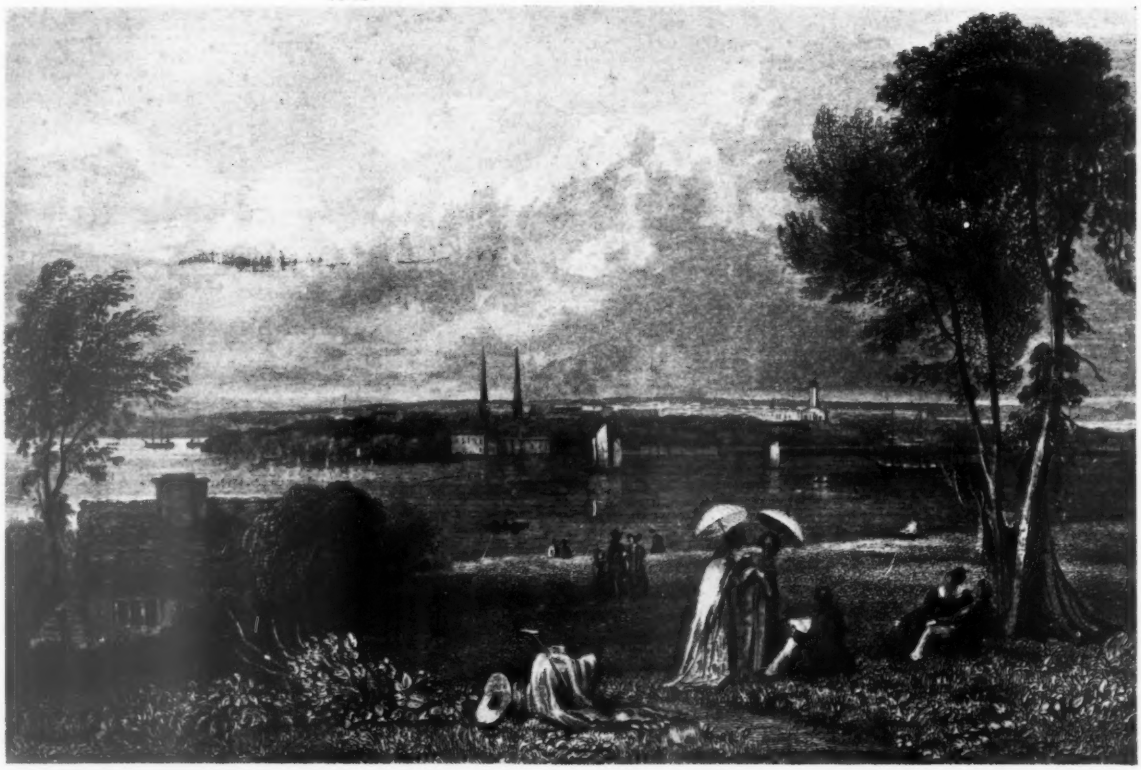
Above, The Bar Gate, past and present. The engraving (c. 802) executed by W. Byrne and I. Sparrow, was drawn by T. Hearne. It bears the following inscription: "To the Rt. Hon. Thomas Orde Powlett Lord Bolton, Lord Lieutenant of the County of Hants, this view of the Bar Gate, Southampton, is inscribed by his Lordship's most humble servant, William Byrne."

Below (left), the thirteenth-century Bridewell Gate and God's House Tower. On the right of the illustration is the fifteenth-century South Tower.

Below (right), Tudor House Museum, erected about 1530 at the corner of Bugle Street and St. Michael's Square.

* For a full account of this and also of Tudor House, to be mentioned later, see a pamphlet-guide to be obtained in the Tudor House Museum.

† Quoted with other facts, by kind permission, from *The Church of St. Michael, Southampton*, to be obtained in the church itself.



Two early-nineteenth-century engravings of Southampton. Top, looking across the River Itchen, c. 1820 (drawn by D. Cox and engraved by J. C. Allen); bottom, another view across the same river, c. 1826 (drawn by W. Westall and engraved by W. B. Cooke).

The South Gate and Tower (c. 1750).

The Water Gate (c. 1784).

the church itself. A striking feature is the mark of the Wool Staplers' Guild in the wall of the Lady Chapel, once more showing St. Michael's to have been a centre of civic life. It is interesting to note that its more than local importance was carried down to modern times, when the spire was made higher to be a guide to vessels entering the port. And it was in this parish that the modern educational facilities of the town began, both the original grammar school and the first national school being founded here.

If much of what we have just mentioned can be traced to the Priory of St. Denis we must now speak of another ecclesiastical foundation whose interest in the town was shown in a very practical way. This was the community of Grey Friars, whose Friary was partly where Gloucester Square now lies. These good Franciscans had obtained permission to enclose the fountain of Calwell in the manor of Shirley with a stone wall and to convey the water ultimately to their church and house. In the presence of the King's Lieutenant they solemnly granted the use of this water to the people of Southampton, allowing the burgesses to carry one pipe with a key into English Street through the Friary wall. This was the beginning of a series of practical efforts to secure a water supply for the town. The friars constructed two water heads, one at Spring Hill, and one near the present St. Peter's Church in Commercial Road, where it can be easily inspected to-day.

Southampton's spirit of gentle charity to the afflicted has its roots far back in the past. The leper hospital of St. Mary Magdalen was on the broad space of the Marlands, on a part of which the Civic Centre now stands. Better known as God's House, still to be seen in Winkle Street, with its old gateway, close to the South-East Tower. Founded for pilgrims, its transitional Norman church was given over by Elizabeth to the use of Huguenot and Walloon refugees.

If Southampton was a scene of much military movement, of ecclesiastical life, and charitable work, her part in commerce has formed her chief title to fame. We have seen traces of her vigorous internal trade in mediæval times. Not that this always ran smoothly, for we hear of strained relations between the town and the barbers, who were said to have been "often of a froward mind."* But the growth of the port is the outstanding feature of this aspect of the town's life. It is to the proximity of Royal Winchester that its early importance was due. Prosperity came through the wine trade in the twelfth and fifteenth centuries. There was much business with Italy in the fourteenth century and with Newfoundland later on.

An Act of Parliament of 1803 succeeded in changing the Southampton of that period from a leisurely spa into the beginnings of the commercial centre it has since become. The year 1836 saw the incorporation of the Dock Company, and 1838 the modern docks themselves. In 1840 came the decisive event of the completion of the railway to London, followed two years later by the opening of England's then largest tidal dock. Further extension took place in the seventies, and more again after the purchase of the docks by the London and South Western Railway Company in 1892. In the same year the Duke of Connaught opened the new pier, centre for the Isle of Wight traffic and also full of pleasant associations in the social life of the town.

Mention must just be made of the Ordnance Survey, with its vast but unassuming work reaching back nearly one hundred and fifty years; also of the Chamber of Commerce, which, in 1851, commenced a vigorous and successful career.

Southampton's parks and public places nearly all have a history of their own, often of considerable interest in themselves. Thus, Queen's Park was originally Porters' Mead, the recreation ground of the Guild of Porters of former days. The Common is "ancient and modern" at the same time. Here the Court Leet originally met to deal with minor offences; also with common nuisances, trade regulations and town defence. At the same time it is a modern recreation ground, such as few towns possess.

There must have been schools in Southampton in mediæval times; but no trace of them seems to remain. The beginnings of the Modern Grammar School have been mentioned, and to this must be added

A general view of St. Michael's Church, the oldest church in Southampton. The spire was originally a landmark (built about 1745) for navigators, and was specially heightened for that purpose. The interior view (left) shows the mark of the Wool Staplers' Guild in the window reveal of the Lady Chapel.

* See *A Short History of Southampton*, by F. J. C. Heanshaw and F. Clarke.

An impression of the Town and Port of Southampton. The drawing was executed in 1844 on the occasion of the Royal Agricultural Show being held for the first time in Southampton. It is of exceptional interest because it shows the important natural advantages of the site on which the town is situated. Note its peninsula formation bordered with two ancient rivers, the Test and the Itchen, flowing down towards the sea.

[*Illustrated London News*

The Western Shore, Southampton. This view is reproduced from a photograph taken 34 years ago, from the tall chimney stack at the Electric Power Station. In the foreground is the original swimming bath which was opened in 1892. The Royal Pier, Town Quay and Docks can also be seen distinctly in the middle distance, with Southampton Water beyond.

Alderman Taunton's Foundation in 1760, the School of Arts and Crafts dating from 1856; and especially the University College. Originally founded by the Hartley Bequest in 1862 it was for many years in the High Street, where it occupied the best of the modern pre-war buildings in the town. Having recently been sold, this may not be standing much longer in its present form.

Distinguished visitors have honoured Southampton with their presence from time to time. Henry the Fifth here assembled his army for the invasion of France. Henry the Eighth is said to have stayed at Tudor House in Bugle Street, one of the architectural and archæological treasures of the town. Queen Elizabeth held Court here, and James the First fled to the borough to avoid the plague. The Pilgrim Fathers "called here for a fortnight" on their way to found their New England home. Cardinal Newman passed through and wrote to a friend "they are building a palace hotel here," referring to the South-Western Hotel that we know today. Queen Victoria was here in 1892. After the Boer War, General Buller, Lord Kitchener and Lord Roberts came in succession to receive the freedom of the town.

Some well-known names in Literature and Art are associated with the place. Here belonged Wriothsley, Earl of Southampton, to whom Shakespeare dedicated his sonnets, and here William Sotheby kept a veritable "Holland House" at Bevois Mount. Isaac Watts was born here, and the sight of green fields across the estuary is said to have inspired one of his most popular hymns. If the Burnham mud supplied Turner with his sunsets, the more easterly borough furnished Frederick Lee Bridell with his seas and skies. Sir Hubert Van Herkomer acknowledged freely that to Southampton he owed his inspiration and his career.

Perhaps it is the blend of antiquity with progress, and again of cosmopolitanism with quiet English civic life, that endears this town to those who know it best.

AN ECONOMIC AND SOCIAL SURVEY

By PHILIP H. MASSEY
B.SC. (ECON.), F.R.Econ.S.

This outline survey of economic and social conditions in Southampton is divided into five main sections :—Introduction, The Port, Occupations and Industries, Incomes, and Housing. A number of notes on various particular items of importance are also included.

INTRODUCTION

SOUTHAMPTON is a County Borough, and a County of a Town, lying in the geographical county of Hampshire. It is 75 miles from London by road and 78 by rail.

The town originally developed in the peninsula between the Itchen and the Test. It has spread northwards, westwards (Freemantle and Shirley were incorporated in 1895), and eastwards (across the Itchen, which is crossed by the floating bridge leading to the Portsmouth Road). These eastern parts are also within the borough boundary, which was extended in 1920 to include South Stoneham, part of North Stoneham, Swaythling, Bitterne, Sholing, Itchen and Woolston, and Weston and Newtown. The area across the Test to Marchwood and Hythe, none of which is within the boundary, is sparsely populated, but may be developed in the future in connection with the industrialization of the area reclaimed on the north of the Test.

Southampton's principal natural advantages are the sheltered harbour and double water front, double tides, flatness of the area close to the rivers, and closeness to London.

It is the chief port for express transatlantic passenger services. As a cargo port the town has made comparatively slow progress, though it is likely that the southward trend of industry and the industrialization of the area reclaimed in connection with the work of docks extension will increase this branch of the traffic. The absence of an industrial hinterland is being overcome to some extent by the port creating a hinterland.

The west bank of the Itchen, which is a relatively narrow river, is a mass of "heavy" industrial premises to above Northam Bridge, while the east bank contains several large undertakings. On the land formerly adjoining the tidal mudlands of the Test are two particularly large undertakings, Pirelli's cable works and the Corporation electricity generating station. The Solent Flour Mills of Joseph Rank, Ltd., have been established on the reclaimed land, which is likely to be taken up by more companies in the near future.

Light industries are scattered, but mainly situated between the Itchen wharves and the main thoroughfare of the town (High Street and Above Bar), in the V between Shirley Road and Millbrook Road and to the west of the curve of the Itchen above Northam Bridge.

Commercial premises are mainly situated in or close to High Street and Above Bar. High Street (or Below Bar) has been the chief thoroughfare for centuries. Its continuation above the Bar Gate seems to be gaining pre-eminence so far as shopping and amusements are concerned, at least. It is difficult to foresee how this tendency, which was probably set in motion by the movement of population to the north and west and the establishment of the new Civic Centre in the upper part of the town centre, will be affected by the industrialization of the new docks extension estate.

It is possible that the area to the west of Above Bar and south of the Civic Centre will become of considerable commercial importance. Part of this area contains houses built when the town was a fashionable resort ; those nearer to the main thoroughfare have been largely converted for office use and may well be demolished, to make way for business premises proper, in the future. The loss of water front by the residents further away from the main thoroughfare is likely to assist in the conversion of the area to business purposes.

The influence of the main routes running roughly north-east to south-west across the northern part of the borough area, but well to the north of the town centre, is already being felt in both residential and industrial development, particularly at Shirley, where the main road from the north-west intersects, and which will also become more attractive for industrial purposes in connection with the docks extension.

The line of open spaces running from south-east to north-west across the old part of the town, and continuing (not so marked) to the Common, has divided the northern movement of shops into two parts, towards Shirley and towards Portswood. North of the Ordnance Survey Office, the main thoroughfare, which then becomes "The Avenue," is practically devoid of shops, while in the old town the High Street and St. Mary's Street lines are linked only by East Street. The suburban shopping centres will gain greatly in importance as the population moves out and as the main thoroughfare becomes increasingly a business, luxury and amusement centre.

Suburban development is proceeding rapidly in the north and west, but not so rapidly across the Itchen. But the old town remains very well filled, indeed, too well filled, with dwelling-houses, though housing conditions in the main compare very favourably with those of big industrial towns. Slum clearance and the pressure of business premises are causing a steady fall in the population of the old part of the town.

The northern part of the town centre is crossed, as already shown, by the line of open spaces. At the junction of Commercial Road and Above Bar the parks spread in three directions. The Common, the most southerly point of which is about a mile and a quarter from the Bar Gate, is one mile in length and consists of about 375 acres of well-wooded forest land, with open spaces of grass. Still further north, adjoining the borough boundary, is the Civic Sports Centre, about 268 acres. The amount of open spaces in the south and east of the town area is inadequate, but in future policy the most important point in this connection will be to provide for such spaces in the development of the western, northern and eastern suburbs.

•

Tables on the facing page show the area, population, etc., of the County Borough of Southampton.

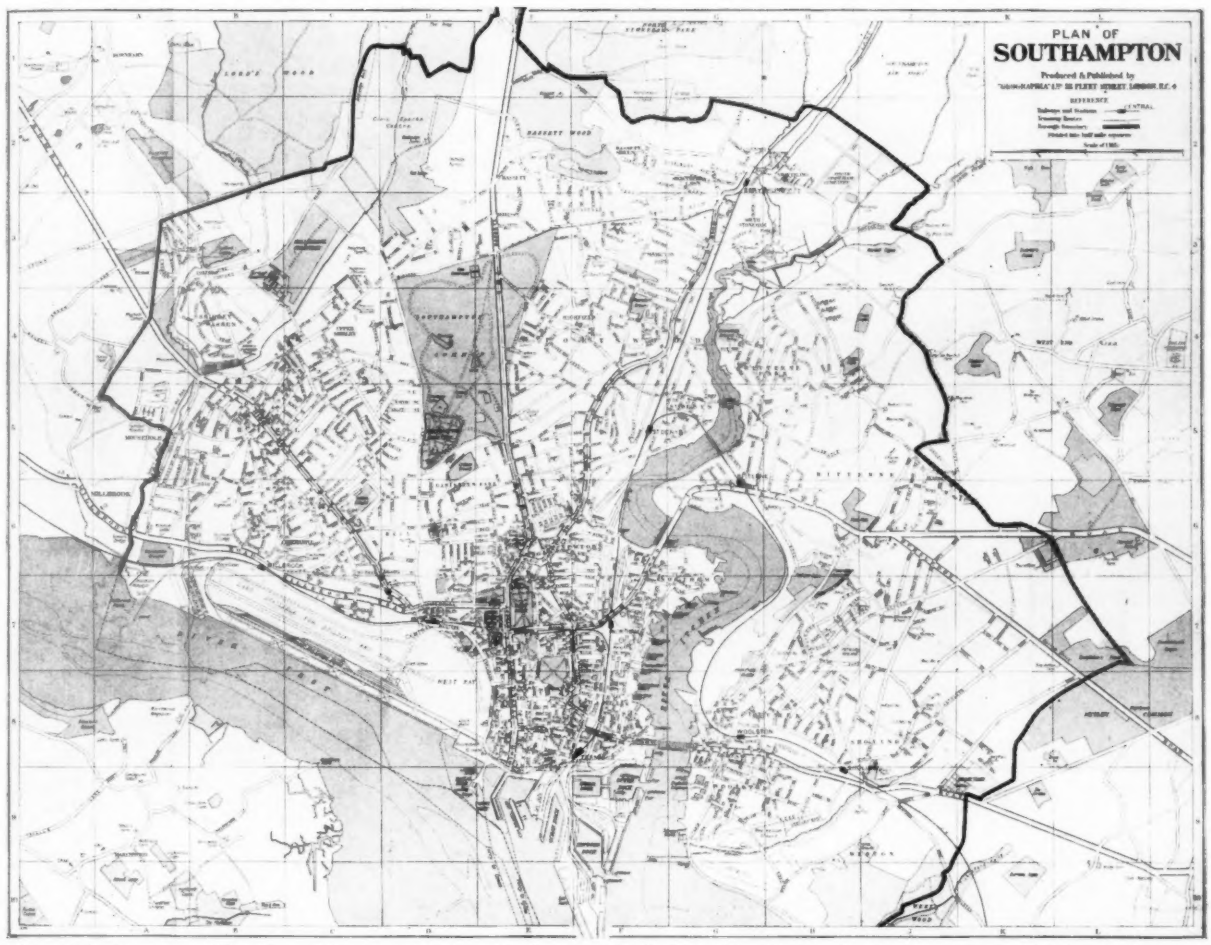
Statistics relating to the housing conditions of the population and their occupations and industries and statistical and other information relating to Southampton as a port are to be found in the sections of the survey specifically devoted to these subjects.

AREA

The area of land and inland water is 9,599 acres ; including tidal water and foreshore 11,109 acres. Before the 1920 extension the respective acreages were 4,604 and 5,817. The recent reclamation of tidal mudland has increased the "land and inland water" acreage from 9,192 to 9,599, without, of course, affecting the larger figure.

POPULATION INCREASE 1871-1931

The following table shows the population of Southampton, *that is, of the area as constituted in 1931*, at each of the last



Plan of Southampton. The borough boundary is shown by the heavy black line. (Based upon the Ordnance Survey Map by permission of the Controller of H.M. Stationery Office. Copyright Geographia, Ltd.)

seven censuses, together with the intercensal variations.

	Population	Intercensal increase per cent.
1871 ..	70,900*	—
1881 ..	83,092*	17·2
1891 ..	94,136*	13·3
1901 ..	122,884	30·5
1911 ..	145,096	18·1
1921 ..	160,994	11·0
1931 ..	176,007	9·3

* Estimated.

The intercensal increases of 11.0 and 9.3 per cent. in the last two intercensal decades compare with increases of 5.0 and 5.5 per cent., respectively, in the population of England and Wales as a whole.

RESIDENT POPULATION
1921-1934

The estimated resident population at the middle of the years 1921, 1931 and 1934 has been :—

1921 ..	162,200	
1931 ..	175,600	increase 13,400 (8·3 per cent.); natural increase 11,432 ; by migration 1,968.
1934 ..	177,000	

BIRTH, DEATH AND INFANTILE MORTALITY RATES

The following table shows the birth, death and infantile mortality rates for Southampton and for England and Wales as a whole in the year 1934.

	Southampton	England and Wales
Crude birth rate ..	15·8	14·8
Crude death rate ..	12·0	11·8
Infantile mortality rate	54	59

THE PORT

Southampton is the premier passenger port of the United Kingdom, dealing with about 35 per cent. of the ocean passenger traffic.

The docks are owned and managed by the Southern Railway Company. Administration of the port and harbour is vested in the Southampton Harbour Board, a statutory body comprising representatives of the Admiralty, War Office, Trinity House, Board of Trade, Southampton Borough Council, Southampton County Council, Southern Railway Company, Southampton Chamber of Commerce, shipping companies, traders, and waterside frontagers.

The area of the Harbour Board's jurisdiction is defined as extending north of a straight line across the entrance to Southampton Water from Stansore Point to Hill Head up to Redbridge and Eling on the Test, Woodmill on the Itchen, and Bursledon Bridge on the Hamble.

The natural advantages of the port enable the largest liners in the world to berth alongside deep-water quays at any time. The double tides have the effect of prolonging the period of high water to about two hours during which there is practically no tidal flow or fall. The channel of Southampton Water has been dredged to afford a minimum depth of 35 ft. and width of 600 ft. and a six years' dredging scheme now in progress includes further deepening and widening in Southampton Water and also in the Solent.

The closeness to London and the rapid transport possible over the flat country, allied to the rapid discharge at the port, owing to absence of tidal or lock difficulties, has made for the importance of the port as a distributing centre, particularly for cargoes of a perishable nature. The whole of the berths at the docks are equipped with modern sheds provided with railway sidings and full provision is made for

warehousing cargoes. There are 62 miles of railway linked with the Southern Railway system. The docks and quays are fully equipped with loading, discharging, and operating appliances, and facilities for the rapid bunkering of steamers, whether consuming coal or oil.

Principal imports are foodstuffs, and raw materials destined for the industrial centres of Britain and the Continent. The export trade consists chiefly of manufactured products from the north and midlands and transit goods from the Continent.

The extensive transit cargo trade is due to the position of the port on the trade routes of the world and to the ease and speed with which traffic can be transferred from one ship to another at the docks. A system of electric level-luffing cranes is installed for discharging cargo, and electric runabout trucks transfer the traffic across the quays. The railway lines running inside the transit sheds and the dockside railways laid alongside each quay are all interconnected.

THE SOUTHERN RAILWAY DOCKS AND QUAYS

Summaries of accommodation at the wet docks and quays and at the dry docks are shown in separate tables.

The Outer Dock is now used almost exclusively by the cross-channel steamers of the Southern Railway Company.

The Inner Dock is chiefly used by grain, timber and fruit vessels. There is a coal depot at the extreme end.

The Empress Dock is mainly used by pleasure cruising ships, "A" class vessels trading to South America, and for troopship traffic and banana cargoes.

The Ocean Dock is the recognized European terminal for a number of the world's largest liners engaged on the North Atlantic services, and is also used for vessels trading with Australia, New Zealand and Canada. A big trade is carried on at the timber shed at this dock.

The Itchen quays are used extensively by vessels trading to Canada, the Dutch East Indies and Far East, South America and South Africa, the South Quay for the continental services and large transhipment cargoes, the Test quays for mail and passenger services to South Africa, the discharge of perishable cargoes to the premises of the International Cold Storage and Ice Co., Ltd., and timber importing.

THE DOCKS EXTENSION SCHEME

Work on this scheme was begun in 1927 and the new quay with berthing accommodation of 7,000 ft. was completed in 1934. The quay extends in a straight line along the Test to Millbrook Point, and is separated from the other docks by the Town Quay and Royal Pier. Accommodation is provided for eight of the largest ships afloat. The quay is now used by transatlantic liners and many vessels engaged on pleasure cruising, etc., and for the discharge of grain shipments to the Solent Flour Mills.

The scheme involved the reclamation of a bay of 407 acres of tidal mudland stretching from the Royal Pier to Millbrook Point. At the western end of the new industrial estate formed by this work, sites for two large graving docks were reserved. The first of these, the King George V Graving Dock, is completed and is capable of accommodating a ship up to 100,000 tons.

The reclaimed area affords ample space for dock premises and for industrial sites having direct access to sea, rail and road transport. Road approaches from the town will exist at three main points. At present the only road is from the Western Esplanade near the Royal Pier, from which a 40-ft. road has been constructed along the whole length of the new quay. The whole of the new accommodation is lighted by electricity.

The scheme includes the construction in the future of a jetty parallel to the quay, which will add a further 8,500 ft. of berthing, providing accommodation for some twelve more vessels of the largest size.

•

In addition to the docks traffic, statistics of which are shown in a

WET DOCKS AND QUAYS

	Outer Dock	Inner Dock	Empress Dock	Ocean Dock
Water area, acres	16	10	18½	15½
Length of quays, feet	2,621	2,575	3,809	3,807
Width of entrance, feet	150	Open at high tide only	165	400
Average depth, L.W.O.S.T., feet	18		26	40
	Itchen Quays	South Quay	Test Quays	Docks Extension
Length of quays, feet	3,758	425	4,219	7,000
Average depth, L.W.O.S.T., feet	28	30	32	40–45

DRY DOCKS

	Overall length feet	Width at entrance feet
No. 1	401	66
No. 2	281	51
No. 3	523	80
No. 4	479	56
No. 5 (Prince of Wales Dock)	745	91
No. 6 (Trafalgar Dock)	912½	100
No. 7 (King George V Dock)	1,200	135

SOUTHAMPTON DOCKS TRAFFIC

Inward

	1913	1925	1935
Tons of Shipping (gross)	8,784,032	13,071,266	17,800,000
Tons of Shipping (net)	4,420,904	6,792,612	9,520,000
Tons of Cargo	722,298	626,554	638,000
Number of Passengers	178,158	202,354	259,000
Mails and Parcels Post	69,217	240,511	168,000

Outward

	1913	1925	1935
Tons of Shipping (gross)	8,774,545	13,144,606	17,750,000
Tons of Shipping (net)	4,415,564	6,828,657	9,534,000
Tons of Cargo	597,225	496,759	389,000
Number of Passengers	200,759	243,867	274,000
Mails and Parcels Post	278,022	669,431	593,000

In the World War the port was Britain's No. 1 port of embarkation and during that period the traffic dealt with at Southampton docks was :—

Ships handled	16,291
Personnel	7,689,510
Horses and mules	856,492
Guns and limbers	14,770
Vehicles, all kinds	177,953
M.F.O. parcels and mailbags	7,436,916
Stores, ammunition	3,381,274 tons

separate table, a considerable trade is carried on at the Town Quay (cargo), the Royal Pier (passenger), and at private wharves on the banks of the Itchen and down the estuary.

THE TOWN QUAY

The Town Quay is situated between the old docks and the new ones, and forms a straight continuation from High Street. The quay belongs to the Harbour Board itself and the bulk of the coasting trade of the port is centred there. Four large warehouses are built on the quay itself and four on the road frontage adjacent. A fireproof warehouse has recently been erected. The quay is rail-connected, both with the docks and the Southern Railway main line, and the whole of the berths and approaches are lighted by electricity.

The total cargo traffic at the Town Quay in 1934 was 137,300 tons and in 1935 143,500 tons.

THE ROYAL PIER

This is chiefly used, so far as shipping is concerned, for the Isle of Wight and South Coast passenger traffic. It is owned and managed by the Harbour Board and provides accommodation for about ten large paddle steamers. There are special landing stages for yachts and other small craft. The Royal Pier is also an amusement centre.

The passenger traffic at the Royal Pier has amounted to approximately 1,000,000 passengers in each of the last two years.

PASSENGER TRAFFIC OF THE PORT

The number of passengers to or from places outside Europe and not within the Mediterranean Sea (excluding persons travelling on pleasure cruises between the United Kingdom and places out of Europe, particulars of which are not required to be furnished) embarking or arriving at *Southampton* in the last two years was as follows :—

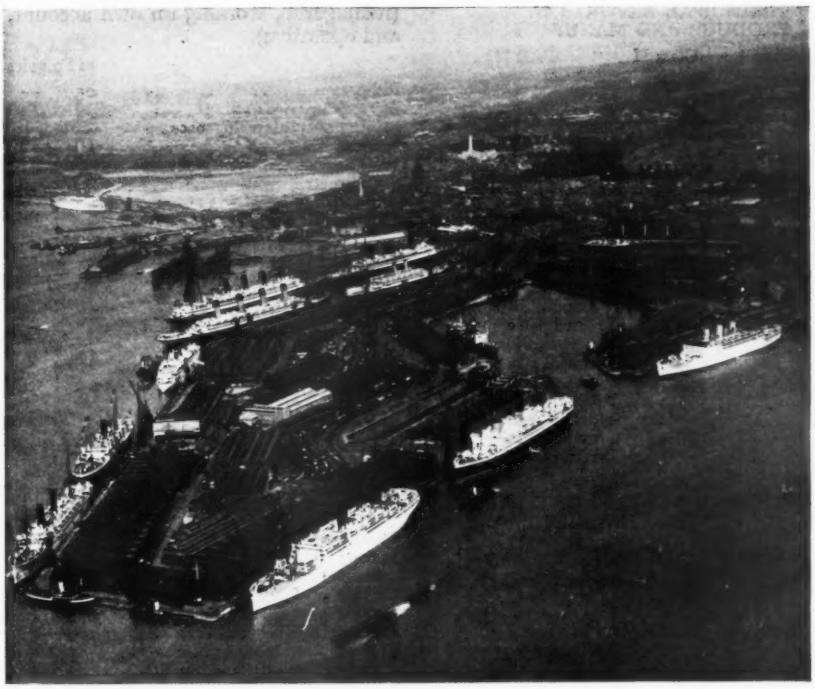
1934		1935	
Outward ..	79,504	Outward ..	98,518
Inward ..	67,604	Inward ..	75,933

Corresponding figures for *all ports in the United Kingdom* :—

1934		1935	
Outward ..	195,754	Outward ..	209,270
Inward ..	205,290	Inward ..	216,029

The number of passengers to or from the Continent (including the Channel Islands and all ports within the Mediterranean Sea and including the numbers travelling on pleasure cruises to the Mediterranean and to other parts of Europe) embarking or arriving at *Southampton* in the last two years was as follows :—

1934		1935	
Outward ..	146,536	Outward ..	145,147
Inward ..	155,274	Inward ..	154,927



This view shows thirteen liners berthed at the docks. In the distance can be seen the Civic Centre Tower.

Corresponding figures for *all ports in the United Kingdom (including also passengers by air)* :—

1934		1935	
Outward ..	1,210,313	Outward ..	1,345,740
Inward ..	1,243,578	Inward ..	1,375,453

In the case of Southampton the Channel Islands traffic accounts for about three-fifths of the "continental" traffic.

FOREIGN AND COASTING TRADE OF THE PORT

For the purpose of the Customs, Southampton is defined as "From Christchurch Head to the Needles, thence to the Brambles off Cowes, thence to Hill Head, including the whole of Southampton Water."

In terms of this definition, the net tonnage of British and foreign vessels (steam, motor and sailing) that arrived and departed, with cargoes and in ballast, at Southampton in 1934, was :-

Arrived, in the foreign trade ..	10,349,421
Departed, in the foreign trade ..	10,217,102
Arrived, in the coasting trade ..	1,659,390
Departed, in the coasting trade ..	1,758,794

The total net tonnage of vessels arriving was thus 12,008,811. The *number* of vessels arriving was 15,759—2,648 in the foreign trade and 13,111 in the coasting trade.

•

A statement of the values of imports and exports in 1934 is shown in a separate table, and a list of principal articles included is given below.

PRINCIPAL IMPORTS

Class I	Class II	Class III
Dairy Produce	Hides and skins	Scientific instruments, etc.
Fruit	Crude petroleum	Machinery, etc.
Vegetables	Wood & timber	Copper and manufactures thereof.
Grain	Wool	Refined petroleum.
Meat		Books, etc.
Tobacco		

VALUES OF SOUTHAMPTON IMPORTS AND EXPORTS IN 1934

		Imports	Exports of U.K. Produce and Manufactures	Exports of Imported Merchandise
		£	£	£
Class I.	Food, drink and tobacco	9,725,955	2,078,716	577,234
Class II.	Raw materials, etc.	9,349,474	104,796	3,907,180
Class III.	Articles wholly or mainly manufactured	6,075,254	17,757,298	904,700
Class IV.	Animals, not for food	80,685	30,640	871
Class V.	Parcel post	423,462	2,605,509	—
	Totals	25,654,830	22,576,959	5,389,985

PRINCIPAL EXPORTS OF U.K. PRODUCE AND MANUFACTURES

Class I	Class II	Class III
Spirits	—	Boots, etc.
Tobacco		Hats, caps, etc.
		Hosiery
		Other apparel
		Chemicals, etc.
		Cotton manufactures
		Electrical goods and apparatus
		Leather and manufactures thereof
		Machinery, etc.
		Iron and steel and manufactures thereof
		Refined petroleum
		Paper, cardboard, etc.
		Artificial silk yarn and manufactures
		Road and air vehicles
		Woollen and worsted manufactures
		Books, etc.

PRINCIPAL EXPORTS OF IMPORTED MERCHANDISE

Class I	Class II	Class III
Meat	Hides and skins	Chemicals, etc.
	Wool	

OCCUPATIONS AND INDUSTRIES

The enumerated population of Southampton at the 1931 Census was 176,007. The following table is essential as preliminary to an examination of occupational and industrial groupings. (N.B.—Census statistics of 1931 relate only to persons aged 14 and over.)

	Males	Females
Population	85,478	90,529
Under 14 years	20,779	20,122
Over 14 years	64,699	70,407
In work :—		
Managerial	3,424	507
Working on own account	2,977	1,397
Operative	41,084	16,111
Total occupied (excluding those out of work)	50,485	18,015
Out of work (all classes)	8,031	1,402
"Occupied" (including those out of work)	58,516	19,417
Unoccupied and retired	6,183	50,990
	64,699	70,407

Tables relating both to the occupational and to the industrial classifications of the population are shown. A worker is classified *occupationally* according to the nature of the work he performs (regardless of the nature of the product to which his labour contributes); he is classified *industrially* according to the nature of the factory or business in which he is employed (regardless of his occupation).

OCCUPATIONS OF MALES AND FEMALES, COUNTY BOROUGH OF SOUTHAMPTON, 1931

Persons "out of work" are included in the occupied, along with all in work (managerial, working on own account, and operative).

	Males	Females
Fishermen	25	—
Agricultural occupations	843	18
Mining and quarrying occupations	26	—
Workers in the treatment of non-metalliferous mine and quarry products	62	—
Makers of bricks, pottery and glass	104	5
Workers in chemical processes; makers of paints, oils, etc.	67	2
Metal workers (not electro-plate or precious metals)	6,018	87
Workers in precious metals and electro-plate	25	3
Electrical apparatus makers and fitters (not elsewhere enumerated) and electricians	1,136	285
Makers of watches, clocks and scientific instruments	69	2
Workers in skins and leather, and makers of leather and leather substitute goods (not boots or shoes)	31	12
Textile workers	25	25
Makers of textile goods and articles of dress	609	837
Makers of foods, drinks, and tobacco	776	399
Workers in wood and furniture	2,543	161
Makers of and workers in paper and cardboard; bookbinders, etc.	37	85
Printers and photographers	562	166
Builders, bricklayers, stone and slate workers; contractors	2,484	1
Painters and decorators	1,659	7
Workers in other materials	49	8
Workers in mixed or undefined materials (not elsewhere enumerated)	748	21
Persons employed in transport and communication	15,306	339
Commercial, finance, and insurance occupations (excluding clerks)	7,130	3,311
Persons employed in public administration and defence (excluding professional men, clerical staff, and typists)	910	6
Professional occupations (excluding clerical staff)	1,392	1,572
Persons professionally engaged in entertainments and sport	425	112
Persons engaged in personal service (including institutions, clubs, hotels, etc.)	2,084	8,352
Clerks and draughtsmen; typists	4,261	2,485
Warehousemen, storekeepers, and packers	994	431
Stationary engine drivers, dynamo and motor attendants	741	1
Other and undefined workers	7,375	684
Total occupied	58,516	19,417
Retired or not gainfully occupied	6,183	50,990
	64,699	70,407

INDUSTRIES OF MALES AND FEMALES, COUNTY BOROUGH OF SOUTHAMPTON, 1931

In the industrial classification, those out of work are excluded, and the following figures relate, therefore, to the 50,485 males and 18,015 females in work (managerial, working on own account, and operative).

	Males	Females
Fishing	25	—
Agriculture	576	112
Mining and quarrying, and treatment of non-metalliferous mine and quarry products	132	8
Manufacture of bricks, pottery, glass, etc.	129	12
Manufacture of chemicals, dyes, explosives, paints, oils, grease	362	66
Manufacture of metals, machines, implements, conveyances, jewellery, watches	8,576	837
Manufacture of textiles and textile goods (not dress); cellulose	91	65
Preparation of skins and leather, and manufacture of goods of leather and leather substitute (not clothing or footwear)	22	11
Manufacture of clothing (not knitted)	582	607
Manufacture of food, drink, tobacco	1,602	1,320
Wood working; manufacture of cane and basket ware, furniture, fittings (not elsewhere enumerated)	601	135
Paper making; manufacture of stationery and stationery requisites; printing, bookbinding and photography	589	235
Building, decorating, stone and slate cutting and dressing, and contracting	5,332	44
Other manufacturing industries	229	52
Gas, water, electricity	1,184	36
Transport and communication	12,301	442
Commerce and finance	10,059	4,354
Public administration and defence	3,801	1,257
Professions	1,138	1,305
Entertainments and sport	453	281
Personal service (including hotels and catering, but excluding Government and Local Authority)	2,454	6,794
Other industries—or industry not stated	247	42
	50,485	18,015

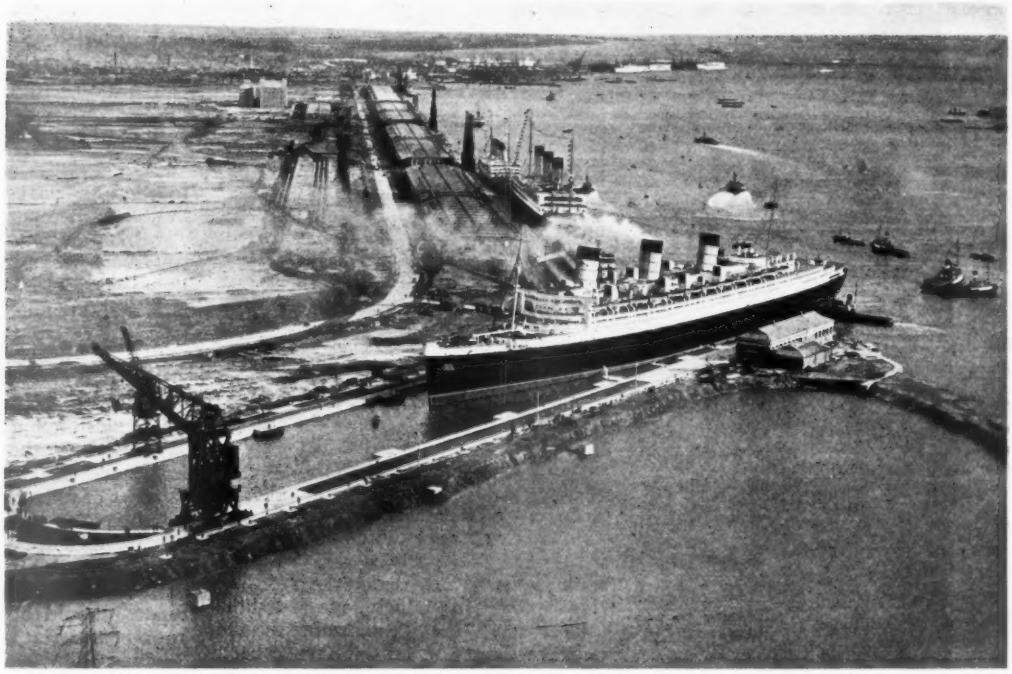
INCOMES

Seamen, dock workers, ship-repairers and shipbuilders form a large part of the working population, and in these trades, and in trades directly dependent on them, employment is unsteady over the long term, seasonally, and, for a great many workers, from day to day. The very great majority of the working population is engaged either in these trades or in trades serving the local market, the fortunes of which depend to a greater or less extent on the prosperity of the primary industries.

In connection with the *Civic Survey*, Mr. P. Ford (Lecturer in Charge of the Department of Economics and Commerce at the University College) carried out in 1928 an income analysis of families with dependent children.

Information was obtained in respect of 21,538 families; the survey was practically complete. The basis of assessment was the earnings or other direct income of the head of the family. The following schedule shows the classification used.

Description	Income (shillings per week)
I. Lowest class of occasional labour	—
II. Casual	20–30
III. Intermittent and seasonal	20–40
IV. Small regular earnings	30–42
V. Regular standard earnings	42–50
VI. Skilled	50–80
VII. Supervising and clerical	80 & over
VIII. Middle class	100 & over



Aerial view of the "Queen Mary" entering the King George V Graving Dock, the world's largest dry dock. Behind the "Queen Mary" is the "Majestic."

The following table shows the numbers and percentages of families falling into these income classes.

Income Class	Number of families	Percentage of families
I–IV	2,692	12·5
V	5,194	24·1
VI	9,356	43·5
VII–VIII	4,296	19·9
Total ..	21,538	100·0

While 12·5 per cent. of families fell into Classes I–IV, 13·8 per cent. of children did so. A close indication of the allocation of families between the four low income groups is provided by the fact that the children were allocated Class I 0·2 per cent., Class II 2·0, Class III 2·0, Class IV 9·6, Total I–IV 13·8.

The numbers of families in the different wards and the percentages falling into the respective income classes are shown in the table "Income-analysis 1928."

The *Civic Survey* contains a map, reproduced also in Mr. Ford's own book *Work and Wealth in a Modern Port*, showing distribution of income by streets, and the latter also contains an account of a sample household inquiry carried out in order to obtain more precise information as to insufficiency of income, housing, etc.

UNEMPLOYMENT

The number of insured persons aged 16 to 64 inclusive in the area of Southampton, Southampton Docks and Woolston Exchanges in July 1935 was 61,270. The number of *unemployed persons on the registers* on May 25, 1936, expressed as a proportion of this number of *insured persons*, was 12·4 per cent. This compares with 13·5 per cent. for Great Britain as a whole.

A year before the Southampton rate was 15·8 per cent. and the rate for Great Britain as a whole 16·3 per cent.

POOR RELIEF

The number of persons in receipt of poor relief (including dependants, but excluding persons in receipt of outdoor medical relief only and casuals) on April 25, 1936, in Southampton, was 5,971, equal to 337 per 10,000 estimated population. The average rate for the 42 County Boroughs in England and Wales for which monthly figures are published was 480 per 10,000, and the total of persons 499,135.

Of the 5,971 persons in receipt of relief 1,292 were in receipt of indoor relief and 4,679 of outdoor. Corresponding figures for the 42 County Boroughs were 45,005 and 454,130. For outdoor relief only, therefore, Southampton shows a still more favourable position.

Compared with a year before the Southampton rate had decreased by 4 per 10,000.

HOUSING

The total population of Southampton at the Census of 1931 was 176,007, compared with 160,994 in 1921. The area of land and inland water was 9,192 acres, and the average number of persons per acre was 19·1.

Population in private families	166,306
Rooms occupied	207,236
Persons per room	0·80
Private families	45,550
Structurally separate dwellings occupied	38,080
Families per occupied dwelling	1·20
Excess of private families over dwellings occupied	7,470

INCOME-ANALYSIS, 1928

Numbers of Families and Percentages of Families in Income Classes, by Wards.

Ward	Number of families	Percentage of families in Income classes I–IV	V	VI	VII–VIII
1. Town	1,166	20·1	34·9	33·1	11·9
2. St. Mary's	1,330	44·7	17·5	27·6	10·2
3. Northam	1,541	16·0	41·2	37·4	5·4
4. Trinity	1,078	30·0	21·6	40·2	8·2
5. Newtown	864	1·6	26·8	54·5	17·1
6. All Saints	1,014	6·5	19·6	49·2	24·7
7. Bevois	862	2·0	27·6	43·0	27·4
8. Banister	795	1·1	7·6	40·6	50·7
9. Freemantle	922	10·5	18·7	49·6	21·2
10. Millbrook	1,833	18·0	16·7	48·1	17·2
11. Shirley	2,003	8·6	17·8	46·6	27·0
12. Portswood	1,403	2·8	17·2	32·5	47·5
13. St. Denys	1,382	1·4	21·4	52·4	24·8
14. Bitterne and Pear Tree ..	1,144	11·4	23·0	48·2	17·4
15. Bitterne and Sholing ..	1,610	9·8	48·2	35·2	6·8
16. Woolston	1,068	9·7	20·3	55·4	14·6
17. St. Nicholas	1,523	9·0	22·1	50·5	18·4
Total	21,538	12·5	24·1	43·5	19·9

Average size of occupied dwelling	5·44 rooms
Average family occupation	4·55 rooms
Average size of private family	3·65 persons

(Between 1921 and 1931 the number of private families increased by 8,336 and the number of occupied dwellings by 7,733. This slightly reduced the number of families per occupied dwelling, which was 1·23 in 1921.)

Dwellings occupied by one private family	31,566
Dwellings occupied by two private families	5,789
Dwellings occupied by three or more private families	725
Total dwellings occupied	38,080
Vacant dwellings furnished	342
Vacant unfurnished dwellings	783
Total dwellings occupied and vacant	39,205

(Of the dwellings occupied by two private families 12 were of two rooms, 39 of three, 393 of four, the rest of five or more. Of the dwellings occupied by three or more private families 9 were of three rooms, 23 of four, 96 of five, the rest of six or more.)

Families living over 3 persons per room	158
3 and over 2	824
Total over 2	982
2 and over 1½	2,876
Total over 1½	3,858
Persons living over 3 per room	1,054
3 and over 2	5,637
Total over 2	6,691
2 and over 1½	16,862
Total over 1½	23,553

(The number of families living in appallingly overcrowded conditions was slight, there being 84 families of four or more in one room, 23 of eight or more in two rooms, 3 of twelve or more in three rooms.)

The movement during the intercensal decade 1921-31 from the lower and central areas of the Borough, where congestion has always been most acute, is brought out by the following table showing population increases and decreases over this period by wards :—

	Decreases	Increases
Town	1,610	—
St. Mary's	2,228	—
Northam	1,694	—
Trinity	981	—
Newtown	687	—
All Saints	1,341	—
Bevois	748	—
Banister	—	491
Freemantle	885	—
Millbrook	—	2,244
Shirley	—	6,160
Portswood	—	1,603
St. Denys	—	555
Bitterne and Pear Tree	—	1,952
Bitterne and Sholing	—	2,788
Woolston	350	—
St. Nicholas	—	9,744
	10,524	25,537
		10,524
Net increase		15,013

•

The estimated number of structurally separate dwellings at the end of 1934 was 42,918, showing an increase since the census of 1931 of 3,713.

•

Housing conditions in the individual wards, shown in the table " Statistics of Housing, by Wards, 1931," should be compared with the income-analysis figures by wards.

More recent information is available in the report on the overcrowding survey carried out under the Housing Act, 1935, in which the Medical Officer states that " undoubtedly the overcrowding returns have been affected by the work done during the past three years under the Housing Act, 1930, involving as it did the demolition of so many of the small houses in courts and alleys."

One of two blocks of working-class maisonettes in Houndwell Place, opened in 1935. The rents are given in the third column under Houndwell.

•

The Corporation's present slum clearance plan involves 664 houses in 52 areas, of which 328 houses in 36 areas have been cleared. These areas are mainly between New Road and the docks. Rehousing both on the site and in the suburbs is being carried on. About 40 per cent. of the persons concerned have to live close to the docks. So far as possible tenants are given the choice in this matter, but they may have to move out first and return to dwellings in the central area at a later date.

The overcrowding survey yielded the following results :—

Number of houses enumerated	32,455
Number of families occupying houses	38,722
Number of overcrowded families	747
Number of families with maximum units for house or rooms	766

These statistics relate, of course, only to working-class houses, as the Act limited the inspections to such houses.

The survey was carried out in two stages—a preliminary enumeration of the number of rooms occupied by each family and the number of persons in the family over ten and between one and ten years being followed, after the application of a " disallowance factor " on the assumption that all the rooms would not have a floor area of 110 sq. ft. or more, by the obtaining of detailed information from all houses having a number of units equal to the permitted number.

The figures in the table " Overcrowding, by Wards, 1936," which has been extracted from the overcrowding survey report, should be compared with the 1931 census statistics and the income-analysis.

RENTS

Mr. Ford found from his sample household enquiry that the median rent paid by working-class households was 11s., rent being defined as full rent and rates less any rent received from sub-letting or from boarders.

Examples of rents of Corporation dwellings erected for rehousing purposes :—

Type	Butts Road (cottages)	Coxford (cottages)	Houndwell (maisonettes)
A2	6s. 0d.	6s. 9d.	8s. 3d.
A3	7s. 2d.	8s. 0d.	10s. 0d.
A4	—	—	11s. 8d.

POST-WAR HOUSING

The number of houses completed for occupation from the date of the Armistice to the end of the year 1934 was 13,017, of which 3,838 were erected by the Council and 9,179 by private enterprise.

STATISTICS OF HOUSING, BY WARDS, 1931

Ward	Private Families	Population in Private Families	Structurally Separate Dwellings Occupied	Rooms Occupied	Persons per Room	Persons per Acre
1. Town	2,157	8,004	1,620	7,698	1·04	81·0
2. St. Mary's	2,305	8,731	1,670	8,426	1·04	66·8
3. Northam	2,516	9,597	1,865	9,910	0·97	37·1
4. Trinity	2,305	7,863	1,644	8,577	0·92	101·1
5. Newtown	2,350	7,429	1,697	9,628	0·77	81·5
6. All Saints	2,214	7,159	1,755	9,871	0·73	32·3
7. Bevois	2,178	7,443	1,826	10,935	0·68	38·5
8. Banister	2,329	7,997	1,923	13,347	0·60	14·6
9. Freemantle	2,092	7,289	1,775	9,651	0·76	39·1
10. Millbrook	3,437	12,807	3,010	15,664	0·82	25·0
11. Shirley	4,351	16,454	3,955	20,810	0·79	17·2
12. Portswood	3,197	11,199	2,771	16,709	0·67	21·0
13. St. Denys	2,677	9,555	2,334	12,699	0·75	17·6
14. Bitterne and Peartree	2,863	10,769	2,455	13,017	0·83	21·0
15. Bitterne and Sholing	3,148	12,352	2,806	13,836	0·89	8·5
16. Woolston	2,060	7,670	1,823	10,278	0·75	11·2
17. St. Nicholas	3,371	13,988	3,151	16,180	0·86	7·5

OVERCROWDING, BY WARDS, 1936

Ward		Number of houses enumerated	Number of families occupying houses	Number of over-crowded families	Number of families with maximum units for house or rooms
1. Town	Corporation	111	119	6	9
	Clearance Areas	124	152	16	0
	Private ..	943	1,427	51	94
2. St. Mary's		1,491	2,052	92	78
3. Northam		1,827	2,581	52	67
4. Trinity		1,513	2,326	40	83
5. Newtown		1,548	2,107	15	58
6. All Saints		1,304	1,515	12	37
7. Bevois		1,560	2,050	9	17
8. Banister		768	863	2	12
9. Freemantle		1,323	1,469	10	11
10. Millbrook ..	Corporation	125	131	14	5
	Private ..	3,027	3,518	33	49
11. Shirley	Corporation	1,137	1,145	99	5
	Private ..	1,969	2,277	28	45
12. Portswood		1,487	1,659	15	23
13. St. Denys		2,310	2,598	10	26
14. Bitterne and Peartree	Corporation	534	534	25	1
	Private ..	1,931	2,108	30	23
15. Bitterne and Sholing	Corporation	269	280	6	4
	Private ..	2,773	2,987	54	44
16. Woolston		1,453	1,806	25	38
17. St. Nicholas ..	Corporation	1,774	1,778	98	22
	Private ..	1,154	1,240	5	15

MISCELLANEOUS NOTES

THE CIVIC CENTRE

The first two blocks of the Civic Centre—the Municipal Offices and the Law Courts and Police Offices—were opened in 1932 and 1933, respectively. The Guildhall is in course of construction, and the fourth and last block, which will comprise a Public Library, Art Gallery and School of Arts and Crafts, will be constructed in the near future.

THE MAIN THOROUGHFARE

The lower portions of the main thoroughfare, High Street and Above Bar, have been mentioned in the Introduction. New Road and Civic Centre Road form a busy junction with Above Bar.

Civic Centre Road was opened as an approach to the Centre itself and as part of a scheme for an arterial east-west road through the town, passing over the railway line to the Western Esplanade.

Further north is the central tramway junction, where Commercial Road, which leads to the central railway station and the western suburbs, joins Above Bar. Beyond this point Above Bar becomes London Road and turns slightly east. Then it becomes the Avenue, at the Ordnance Survey headquarters, and straightens itself again.

The Avenue is the main road to Winchester and London. It passes through Southampton Common and provides a very fine approach to the town. The Avenue serves also, of course, as the highway to the northern suburbs.

RATEABLE VALUE AND RATES

Rateable value (1st April, 1936): £1,498,627.

Rates (1936-37): 10s. 8d. in the £.

Product of penny rate: £5,760.

EDUCATIONAL INSTITUTIONS

The University College, which has some 1,300 students, and four halls of residence, is at Highfield.

Other educational institutions include the Southampton School of Arts and Crafts, King Edward VI School, Taunton's School, the Girls' Grammar School, Itchen Secondary School, four evening institutes, two Junior Instruction Centres, and some thirty-five public elementary schools.

GENERATING STATION

The Corporation's Generating Station, on the Western Esplanade, is one of fourteen existing selected stations for supplying the South-West England and South Wales grid scheme area. The output is about 107,000,000 units a year.

AIRPORT

The Municipal Airport at Swaythling is conveniently close to the town centre; services are already in operation with many airports in Britain, and are being developed rapidly; numerous aircraft construction and repairing companies are established on the ground.

BIRTHPLACES OF THE POPULATION

The following table shows the birthplaces of the 1931 population of Southampton. The figures are expressed per 10,000 of the population of each sex. The corresponding figures for England and Wales are also shown.

Place of birth	Southampton Males	Southampton Females	England and Wales Males	England and Wales Females
England	9,295	9,387	8,963	8,985
Wales	128	118	673	650
Scotland	180	119	94	89
Ireland	138	119	93	97
I.O.M. and Ch. Is.	79	82	8	10
Other British Dominions, Colonies, etc.	93	86	57	56
Foreign Countries	74	75	79	75
At Sea	2	2	1	1
Not stated	11	12	32	37

SOCIAL GRADES

According to *The Home Market*, in which social grades are defined according to the income of the chief income earner, the number of "A" grade families in Southampton is 2,300, of "B" grade 10,100, of "C" grade 34,500. Respective proportions are thus, 5·0, 21·5, and 73·5 per cent. of all families in Southampton. The corresponding percentages for Great Britain as a whole are 5·3, 21·3, and 73·4.

•

(*For list of acknowledgments, see page 1010.—Ed.*, A.J.)

Left, the Civic Centre; centre, new shops nearing completion in Above Bar; and, right, the Sailors' Hostel now in course of construction in Orchard Place.

A general view of the Ordnance Survey Office in London Road, Southampton.

THE ORDNANCE SURVEY

By Brig.-Gen. M. M. MacLEOD

Director General, Ordnance Survey Office

THE Ordnance Survey was founded in 1791 in order to prepare a map on the scale of one inch to the mile for the defence of Great Britain. The task being military, was entrusted to the Board of Ordnance* : hence the title "Ordnance" Survey, which the Department has retained ever since.

Some thirty years after its foundation, the Ordnance Survey was required to undertake the preparation of a map of Ireland on the scale of six inches to the mile, required in connection with the Government's policy of "land purchase." This map proved so useful that on its completion, in 1840, the Survey of Great Britain on the same scale was commenced.

In 1853, after prolonged discussion, it was decided to increase the scale of the Survey to 1/2500, or 25·344 inches to one mile. In 1872, when considerable progress had been made with the 1/2500 survey, it was decided to replace the original one-inch map with a new map prepared by reduction from the large-scale work. Subsequently, maps on still smaller scales than one inch to one mile were authorised.

METHODS OF WORKING ADOPTED BY FIELD PARTIES

The 1/2500 survey was not carried out as a single operation covering the whole country. It is in reality some forty separate surveys, each projected on its own meridian, and confined to a single county, or group of small counties. This system of projection was in accordance with contemporary surveying practice when the survey was started, and has the sole advantage that, by limiting the area included in each projection system, it is possible to ignore the curvature of the earth's surface. On the other hand it has the great disadvantage of breaking the continuity of the map at the boundaries in each projection system. This disadvantage has been greatly increased by the frequency of changes in the county boundaries. The 1/2500 survey is indexed and sold by counties, and any alteration in a county boundary entails the transference of some of the map from one projection to one of its neighbours, a very costly operation which often results in serious deterioration in the quality of the map.

The original survey was completed in 1895, but the need for periodical revision had become apparent long before that, and was authorized by the Treasury in 1882. It was intended at that time to revise each plan once every twenty years, and until the Great War this period was maintained. Counties were taken up for revision in strict rotation.

The method of revision is simple. The current edition is printed in red on tracing paper and cut into pieces of convenient size. The reviser takes these on to the ground, "cancels" in black ink all detail that has disappeared, and "supplies" any new features, entering these also in black, by a simple system of surveying, making use of old detail which has remained unaltered, and based upon the principle that three points in line on the ground must also be in line on the map. When much of the old detail has disappeared, leaving insufficient points from which to measure, the reviser can establish additional points by means of this "alignment" principle, which is also used by the superintendent of each revision section to check the work of individual revisers. It is a general principle throughout the whole range of work carried out by the Ordnance Survey that the work of any one individual is checked either by the work of another, or by a supervisor of some kind.

PRODUCTION

After completion of the field work, which includes verification of all administrative boundaries, names and other items often overlooked by the uninitiated, the traces are sent into Ordnance Survey headquarters at Southampton, where the plans are drawn in manuscript in a form suitable for reproduction. The drawing is carried out on the best quality Whatman's paper. The information on the traces is transferred and inked up in ordinary "Indian" (Chinese) ink. Names are stamped by hand. After the drawing of the outline and stamping of the names is complete, the plan passes to the "Areas" Branch, where the area of every parcel is calculated to three decimal places of an acre, and stamped upon the plan underneath the parcel number. The plan then proceeds to the Levelling Division, where bench marks and levels are inserted.

The 1/2500 plan does not show contours, but the bench marks are normally so numerous that in a built-up area there should seldom be any point more than two to three hundred yards distant from a bench mark. On the average there are about three miles of levelling in a 1/2500 plan of an urban district. The datum for modern levelling is Mean Sea Level at Newlyn in Cornwall. In some of the older plans the levelling is based on Mean Sea Level at Liverpool, but this datum, situated on a tidal river, was found to be unsuitable, and was abandoned some years ago. It is approximately eight inches above the Newlyn datum, but further corrections to the levelling based on Liverpool, besides that for datum, are required, as the methods adopted for the old levelling were capable of improvement. Whenever revised plans are now published, the opportunity is taken to correct all bench marks to the Newlyn datum. In addition to bench marks, which are marks cut upon buildings, etc., the altitudes of the ground surface are shown at suitable places, such as the lowest point of a hollow, or the top of a hill. These so-called "spot heights" are shown on the plan, but without the letters B.M.

Contours are shown on the six-inch map at 50, 100, 200 and thereafter at 100 feet intervals up to the 1000 foot level. Above 1000 feet the interval is 250 feet. These contours are pegged out instrumentally on the ground and then surveyed.

The 1/2500 map is drawn at the same scale, and is reproduced by the "vandyke" process, in which the plan is printed direct on to a sensitized zinc plate in much the same way as the photographic negative is printed on to a sensitized paper. All small-scale maps are based upon the 1/2500 survey, which is reduced photographically to some suitable scale, and is then redrawn for photographic reduction. In most cases the drawing is carried out at twice the scale of the published map. The reproduction in these cases is done by the process known as helio-zincography, which was invented on the Ordnance Survey. The map, instead of being printed direct on to zinc, is reproduced first on a glass negative, which is then printed, by a slight variation of the "vandyke" process, on to the sensitized zinc printing plate.

* At that time responsible for munitions.

The names and lettering on the six-inch maps are typed in the same way as on the 1/2500 scale, but on the smaller scales the names are written by hand. Every name appearing on an Ordnance Survey map is authenticated by some responsible person or authority.

THE WAR

During the War the revision of Ordnance Survey maps fell greatly into arrears, and on its conclusion, when the revision was resumed, certain social and economic changes such as the road development following the introduction of the motor car, and the housing campaigns, encouraged and sometimes subsidized by the Government, caused the face of the country to alter at an altogether unprecedented rate. At the same time that these developments were taking place, the strength of the Department was reduced as a measure of national economy on the recommendation of the Geddes Committee. The two things taken together made it quite impossible for the Department to continue revising at the twenty year intervals envisaged before the War. At first, the twenty-year period was confined to urban areas in which the changes were known to have been exceptionally great, but after a few years the "cyclic" system was abandoned altogether. Since 1928 the plans selected for revision have been those in which the greatest changes have taken place, irrespective of the counties in which they happen to lie. The effect of this has been to confine the revision to the plans in which most work has to be done, and to slow up greatly the output per reviser. Last year, less than 600 revised plans out of a total of some 52,000 were published. The question of overtaking the arrears of Ordnance Survey revision was eventually brought to a head by the passing of legislation in Parliament, like the Town Planning Act of 1929, Land Valuation and Finance Act of 1931, which could hardly be put into operation without accurate and up-to-date plans.

NEW LEGISLATION

A Departmental Committee was appointed in 1935 by the Minister of Agriculture and Fisheries to consider the measures required to deal with the problem created by such legislation, and the future programme of the Ordnance Survey generally. This Committee issued an Interim Report last December, dealing with the requirements under the Town and Country Planning Act, and is still considering what further measures are required to deal with the general problem of Ordnance Survey revision.

AIR PHOTOGRAPHY

A good many people have advocated the use of air photography as a means of overtaking the arrears of Ordnance Survey revision, but unfortunately few of them appreciate the practical difficulties involved. The use of air photography raises problems of two kinds, the one technical and the other administrative. The technical problems include the *photographic* problem of securing the photographs in the cheapest and most suitable manner, and the *cartographic* problem of interpreting and plotting these photographs so as to produce a complete and accurate map of the required scale. The *administrative* problem is that of training and equipping a sufficient staff in the use of methods entirely different from those in current use, and which require a considerable amount of special apparatus. Unless these methods offer substantial advantages, it would obviously be uneconomical to purchase a lot of special equipment and train a large staff in its use unless the methods are likely to become a normal feature of Ordnance Survey work.

The Ordnance Survey carried out an experiment in aerial survey in 1925 which showed that air photographic methods could only compete with the normal methods in very limited areas where intensive development had taken place recently, and there were few trees. Such areas, being limited in extent and scattered about all over the country, are difficult to photograph economically, especially in this country, where only thirty or forty days in each year are really suitable for air photography. The 1925 experiment made it clear that air photography could not then be regarded as a normal Ordnance Survey method.

The problem raised by the Town Planning Act, in which a large number of recently built-up areas had to be portrayed on the map in a short time, made it desirable to re-examine the possibilities of air photography, and a second and more extensive experiment was started last year. Unfortunately, owing to unavoidable delays, this experiment is not yet complete, and it would be premature to draw any definite conclusions from it. On the whole, it seems to confirm the experience of the previous experiment that air photography offers advantages in recently built-up areas. It suggests also, as might have been expected, that the best results from air photographic methods will only be obtained if a staff, both photographic and cartographic, experienced in the use of such methods is available. Whether, however, sufficient use can be found for such methods to justify the assembly and training of such a staff has yet to be decided.

THE FUTURE

It would be premature also to try to anticipate the final recommendations of the Departmental Committee. It is possible that it may recommend a re-arrangement of the 1/2500 survey on national instead of the present county sheet lines. Any such re-arrangement would create an opportunity for "gridding" the map. For the benefit of those unfamiliar with map grids it may be stated that a map grid is formed by a series of lines ruled on the map parallel respectively to the two axes of co-ordinates, and at uniform intervals therefrom. These lines form a network of squares, each side of which is at an exact and easily ascertainable distance from the appropriate co-ordinate axis. They enable the co-ordinates of any point to be ascertained or plotted, by measurement from the nearest grid line. If the grid squares are of suitable size, their use enables errors due to unavoidable expansion and contraction of the paper upon which the map is printed to be virtually eliminated. The grid provides also a simple and permanent reference system by which any point in it can be identified, or indicated, without ambiguity and to any desired degree of precision. Map grids were evolved and used extensively during the War, and now form an essential feature of military mapping in every country. There can be little doubt that when their use is understood by the public they will be found quite as valuable for civil as for military purposes.

To get full value out of a map grid it is obvious that it must appear on every map of the area, and since the scales of these maps vary it is impossible to rule the grid lines at the same interval on every scale of map. Owing, moreover, to the fact that our notation is a decimal one, it is essential that the interval between grid lines should be in a decimal relation to one another on every map. For example, if a point whose co-ordinate is 123456 has to be plotted, and the grid lines are placed at intervals of 1,000 units, the distance from the nearest grid line will be given at once by the last three figures of the co-ordinate, i.e., 456, which are measured from the grid line ruled at a distance 123000 from the axis. Similarly, if the grid lines are spaced at 100 units, the point will be 56 units from the grid line 123400. If the grid lines are spaced at any other than decimal intervals, such as 250 units, a small sum in multiplication or subtraction has to be done before the distance from the nearest grid line can be ascertained.

Owing to the necessity for this decimal relationship, it is impossible to secure a grid square of uniform size on every kind of map unless the relationship between the scales of map is exactly decimal also. It would, of course, be a great convenience to have a grid square of uniform size on every map, but unfortunately the range of scales of British maps—some of which, like the so-called twenty-five-inch, are natural scales (1/2500) and other scales of inches to one mile—makes this impossible. Nevertheless, if a grid system is introduced there would be great practical conveniences in having the grid squares on the various maps, if not exactly the same size, at any rate, exact and simple multiples of one another. It would, for example, be more convenient if the squares on one kind of map were exactly twice those of the next smaller scale, than if they were related in the ratio of say 25.344 to 6. The introduction of a grid system for the 1/2500 map would therefore make it desirable to consider whether a slight alteration in the existing scales such as the substitution of exactly 1/10000 for 1/10560, would not be advisable. The difference is only a little over 5 per cent., and would probably be inappreciable to the majority of the map-using public, whereas the advantages to those who require the map for precise work and who wish to use the grid system would be enormous.

THE PUBLIC

It is very remarkable how the British public has adapted itself to the existing map scales which have been in use for little more than fifty years. Fifty years is, however, a very short time in the life of a nation, and it is therefore regrettable that the public is on the whole very short-sighted in map matters, and tends to resist any alteration, such as a small change in map scales, even when it can be shown that in the long run great advantage may be secured thereby. Life is short, and perhaps everyone prefers to leave troublesome improvements to their successors.

ACKNOWLEDGMENTS

Acknowledgments for the section entitled "Social and Economic Survey."

"Southampton: A Civic Survey—Report of the Civic Survey Committee of the Southampton Civic Society," edited by P. Ford. (London: Oxford University Press).
"Work and Wealth in a Modern Port." By P. Ford. (London: George Allen and Unwin.)
"Southampton Docks—Handbook of Rates, Charges and General Information." (Southern Railway.)
"Southampton Docks—Official Sailing List and Shipping Guide." (Southern Railway.)
"Southampton and New Forest Official Guide." (Southampton: Russell & Co.)
"The Port of Southampton." By Brig.-Gen. Hon. Everard Baring. (Reprinted from "Brassey's Naval and Shipping Annual," 1926.)
"The Home Market." By Major G. Harrison and F. C. Mitchell. (London: George Allen and Unwin.)
"Annual Statement of the Trade of the U.K."
"Statistical Abstract for the U.K."
"Census of England and Wales, 1931":—
General Tables.
Industry Tables.
Occupation Tables.
Hampshire.
Housing: Report and Tables.
"Registrar-General's Statistical Review of England and Wales."
"Local Unemployment Index."
"Ministry of Labour Gazette."
"Board of Trade Journal."

"Annual Reports on the Health of the County Borough of Southampton and the Port of Southampton."
"Southampton County Borough Council Report on the Overcrowding Survey carried out under the Housing Act, 1935."

The map on page 1001 is reproduced by courtesy of Geographia Ltd.

I am grateful also for material supplied by officials of the Board of Trade, General Register Office, Ministry of Labour, Southern Railway Company, Southampton Corporation, Southampton Harbour Board and Southampton Chamber of Commerce.

P. H. M.

•

The blocks on pages 993, 999, 1003 and 1005 are reproduced by courtesy of Messrs. Russell & Co. (Southern Counties), Ltd., of Southampton, publishers of the official guide to *Southampton and the New Forest*. Other photographs in this issue are reproduced by courtesy of Messrs. Max Mills, Messrs. Chandler, Messrs. Gilberts, and Mr. W. A. Ashby, of Southampton, and *The Illustrated London News* (illustration on page 999 (top)).—Ed. A.J.

Owing to pressure on our space the usual weekly features, Trade Notes, Building News, etc. are held over from this issue. They will be resumed next week.

Two cinemas in Southampton: left, in Above Bar Street; right, in South Front.

THE BUILDINGS ILLUSTRATED

COVENTRY PITHEAD BATHS (pages 973-976). The general contractors were W. R. Lane and Son, Ltd., and the principal sub-contractors and suppliers included Matthews and Mumby, Ltd., steel reinforcement and steel work; James Gibbons, Ltd., metal windows; Hills Patent Glazing Co., Ltd., patent glazing and lantern lights; J. A. King and Co., Ltd., Glascrete roof lights; W. F. Furze & Co., electrical installation; G. V. Haden and Sons, Ltd., heating installation, plenum installation; Lion Foundry Co., Ltd., rain water heads, C.I. cesspool boxes, shirt and towel hooks; Messrs. Steelway, Ltd., galvanized steelway scrapper, mats-non-slip treads, channel plates, steel tables and stools; Sankey Sheldon, steel lockers; J. J. Thomson & Co., Ltd., galvanized wire mats; Bell and Smart, Ltd., boot greasing machines and cleaning; Durose and Sons, W.I. grills and metal ladders; Pearce and Cutler, Ltd., sanitary fittings; Universal Grinding Wheel Co., Ltd., non slip tiles; James Farquharson and Sons, cleaning equipment and curtain equipment; Bostwick Gate and Shutter Co., Ltd., collapsible gates; William Boby & Co., Ltd., water softening apparatus; Tuke and Bell, Ltd., sewage treatment and pumping plant; Stourbridge Glazed Brick and Fireclay Co., Ltd., tiling; Stills, coffee and tea urns; Hoyle, Robson, Barnett & Co., cement glazing; C. F. Casella & Co., Ltd., thermometers, etc.; Milner's Safe Co., Ltd., waste paper baskets, etc.; Eric Munday, commemorative tablets and directional signs; Bamber, Wilson & Co., Ltd., swilling down valves, etc.; Chas. Winn & Co., Ltd., hose pipe, etc., and bottle-filling valves; Girling's, Ferro Concrete Co., Ltd., concrete tiles; Turner's Asbestos Cement Co., Ltd., asbestos tiles; Walker and Wood, Ltd., ironmongery; John Unite, Ltd., cubicle curtains; A. J. Hawkins Co., Ltd., first aid and ambulance; Pyrene Co., fire extinguishers.

FLAT AT STRATTON HOUSE, PICCADILLY (pages 977-978). The general contractors were Holloway Brothers, who were also responsible for the decorative plaster, furniture, metalwork and joinery. The sub-contractors and suppliers included: Martin Van Straaten & Co., bathroom tiles; Bagues, Ltd., electric light fixtures; W. N. Froy & Sons, Ltd., sanitary fittings; J. Whitehead and Sons, Ltd., marble and mantels; D. Burkle and Sons, Ltd., furniture.

The Dock Buildings

Harbour Board Offices, Town Quay.

Part of the West Wall.

CURRENT PRICES

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

WAGES

		s.	d.
Bricklayer	per hour	1	8
Carpenter	"	1	8
Joiner	"	1	8
Machinist	"	1	8
Mason (Banker)	"	1	8
" (Fixer)	"	1	9
Plumber	"	1	8
Painter	"	1	7
Paperhanger	"	1	7
Glazier	"	1	7
Slater	"	1	8
Scaffolder	"	1	4
Timberman	"	1	4
Navvy	"	1	3
General Labourer	"	1	3
Lorryman	"	1	5½
Crane Driver	"	1	7
Watchman	per week	2	10

MATERIALS

EXCAVATOR AND CONCRETOR

		£	s.	d.
Grey Stone Lime	per ton	2	2	0
Blue Lias Lime	"	1	16	6
Hydrated Lime	"	3	0	9
Portland Cement, in 4 ton lots (d/d site, including Paper Bags)	"	1	19	0
Rapid Hardening Cement, in 4-ton lots (d/d site, including Paper Bags)	"	2	5	0
White Portland Cement, in 1-ton lots	"	8	15	0
Thames Ballast	per Y.C.		6	6
¾" Crushed Ballast	"		7	0
Building Sand	"		7	6
Washed Sand	"		8	6
2" Broken Brick	"		8	0
¾" " "	"		10	3
Pan Breeze	"		6	6
Coke Breeze	"		8	9

DRAINLAYER

BEST STONEWARE DRAIN PIPES AND FITTINGS

		4" s.	d.	6" 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
¾" 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.
Fletton	per M.	2	15	0
Grooved do.	"	2	17	0
Phorpres bricks	"	2	15	0
" Cellular bricks	"	2	15	0
Stocks, 1st quality	"	4	11	0
" 2nd "	"	4	2	6
Blue Bricks, Pressed	"	8	17	6
" Wirecuts	"	7	17	6
" Brindles	"	7	0	0
" Bullnose	"	9	0	0
Red Sand-faced Facings	"	6	18	6
Red Rubbers for Arches	"	12	0	0
Multicoloured Facings	"	7	10	0
Luton Facings	"	7	10	0
Phorpres White Facings	"	3	17	3
" Rustic Facings	"	3	12	3
Midhurst White Facings	"	5	0	0
Glazed Bricks, Ivory. White or Salt glazed, 1st quality:				
Stretchers	"	21	0	0
Headers	"	20	10	0
Bullnose	"	27	10	0
Double Stretchers	"	29	10	0
Double Headers	"	26	10	0
Glazed Second Quality, *Less*	"	1	0	0
" Buffs and Creams, *Add*	"	2	0	0
" Other Colours	"	5	10	0
2" Breeze Partition Blocks	per Y.S.		1	7
2½" " " "	"		1	10
3" " " "	"		2	1
4" " " "	"		2	6

MASON

The following d/d F.O.R. at Nine Elms:

		s.	d.
Portland stone, Whitbed	F.C.	4	4½
" " Basebed	"	4	7½
Bath stone	"	2	10
York stone	"	6	6
" " Sawn templates	"	7	6
" " Paving, 2"	F.S.	1	8
" " " 3"	"	2	6

SLATER AND TILER

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

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

CARPENTER AND JOINER

		£	s.	d.
Good carcassing timber	F.C.		2	2
Birch	as 1" F.S.			9
Deal, Joiner's	" "			5
" " 2nds	" "			4
Mahogany, Honduras	" "		1	3
" African	" "		1	1
" Cuban	" "		2	6
Oak, plain American	" "		1	0
" Figured "	" "		1	3
" plain Japanese	" "		1	2
" Figured "	" "		1	5
" Austrian wainscot	" "		1	6
" English	" "		1	11
Pine, Yellow	" "		1	0
" Oregon	" "			4
" British Columbian	" "			4
Teak, Moulmein	" "		1	3
" Burma	" "		1	2
Walnut, American	" "		2	3
" French	" "		2	3
Whitewood, American	" "		1	1
Deal floorings, ¾"	Sq.		18	6
" ⅞"	"	1	1	6
" 1"	"	1	2	0
" 1¼"	"	1	5	0
" 1½"	"	1	10	0
Deal matchings, ¾"	"		14	0
" ⅞"	"		15	6
" 1"	"	1	4	0
Rough boarding, ¾"	"		16	0
" 1"	"		18	0
" 1½"	"	1	6	0

Plywood, per ft. sup.

Thickness	⅜" A	B	BB	½" A	B	BB	⅝" A	B	BB	¾" A	B	BB
Qualities	d.	d.	d.	d.	d.	d.	d.	d.	d.	d.	d.	d.
Birch 60 × 48	4	2½	2	5	3	2¾	7	5	4	8	6	5
Cheap Alder	–	2	1½	–	3½	2	–	–	–	–	–	–
Oregon Pine	–	2½	–	3	2¾	–	4	3½	–	5	4½	–
Gaboon Mahogany	4	3¼	–	5	4½	–	7	6½	–	8	7	–
Figured Oak	6½	5	–	7½	5½	–	10	8	–	1/–	9	–

Scotch glue lb. 8d.

SMITH AND FOUNDER

Tubes and Fittings

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

		¼"	½"	1"	1¼"	2"
Tubes, 2'–14' long	per ft. run	4	5½	9½	1/1	1/10
Pieces, 12"–23" long	each	10	1/1	1/11	2/8	4/9
" 3"–11½" long	"	7	9	1/3	1/8	3/–
Long screws, 12"–23½" long	"	11	1/3	2/2	2/10	5/3
" " 3" M–½" long	"	8	10	1/5	1/11	3/6
Bends	"	8	11	1/7½	2/7½	5/2
Springs not socketed	"	5	7	1/1½	1/11½	3/11
Socket unions	"	2/–	3/–	5/6	6/9	10/–
Elbows, square	"	10	1/1	1/6	2/2	4/3
Tees	"	1/–	1/3	1/10	2/6	5/1
Crosses	"	2/2	2/9	4/1	5/6	10/6
Plain sockets and nipples	"	3	4	6	8	1/3
Diminished sockets	"	4	6	9	1/–	2/–
Flanges	"	9	1/–	1/4	1/9	2/9
Caps	"	3½	5	8	1/–	2/–
Backnuts	"	2	3	5	6	1/1
Iron main cocks	"	1/6	2/3	4/2	5/4	11/6
" with brass plugs	"	—	4/–	7/6	10/–	21/–

Discounts

TUBES.

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

FITTINGS.

Gas 57½	Galvanized gas	47½
Water 52½	" water	42½
Steam 47½	" steam	37½

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

SMITH AND FOUNDER—*continued*

		s.	d.
Mild steel reinforcing rods, ⅜"	cwt.	9	6
" " ¼"	"	9	6
" " 1"	"	9	6
" " 1¼"	"	9	6
" " 1½"	"	9	6

		¾" s.	d.	4" s.	d.
Cast-iron rain-water pipes of ordinary thickness metal	F.R.	8		10	
Shoes	each	2	0	3	0
Anti-splash shoes	"	4	6	8	0
Boots	"	3	0	4	0
Bends	"	2	7	3	9
" with access door	"	—		6	3
Heads	"	4	0	5	0
Swan-necks up to 9" offsets	"	3	9	6	0
Plinth bends, 4½" to 6"	"	3	9	5	3
Half-round rain-water gutters of ordinary thickness metal	F.R.	5		6	
Stop ends	each	6		6	
Angles	"	1	7	1	11
Obtuse angles	"	2	0	2	6
Outlets	"	1	9	2	3

PLUMBER

		s.	d.
Lead, milled sheets	cwt.	24	6
" drawn pipes	"	25	6
" soil pipe	"	30	0
" scrap	"	16	0
Solder, plumbers'	lb.		9½
" fine do.	"	1	0
Copper, sheet	"		8½
" tubes	"		11

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

PLASTERER

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

GLAZIER

		s.	d.
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" × 10")	"	2	0
Flashed opals (white and coloured)	"	1 0 and 2	0
¼" rough cast; rolled plate	"		5½
¼" wired cast; wired rolled	"		9½
¼" Georgian wired cast	"		11
¼" Polished plate, n/e 1 ft.	"	†10 to ‡1	1
" " 2	"	†1 2 " ‡1	4
" " 4	"	†2 3 " ‡2	6
" " 8	"	†2 9 " ‡3	2
" " 20	"	†3 1 " ‡3	9
" " 45	"	†3 3 " ‡4	0
" " 100	"	†4 0 " ‡4	10
Vita glass, sheet, n/e 1 ft.	"		1	0
" " " 2 ft.	"		1	3
" " " over 2 ft.	"		1	9
" " plate, n/e 1 ft.	"		1	6
" " " 2 ft.	"		3	0
" " " 5 ft.	"		4	0
" " " 7 ft.	"		5	0
" " " 15 ft.	"		6	0
" " " over 15 ft.	"		7	6
"Calorex" sheet 21 oz., and 32 oz.	"	2 6 and 3	6	
" rough cast ⅛" and ¼"	"	8½ " 1	0	
Putty, linseed oil	lb.			3

* *Colours, 1d. F.S. extra.*

† *Ordinary glazing quality.* ‡ *Selected glazing quality.*

PAINTER

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

CURRENT PRICES FOR MEASURED WORK

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

EXCAVATOR AND CONCRETOR

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

DRAINLAYER

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

BRICKLAYER

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

ASPHALTER

		s. d.
½" Horizontal dampcourse	Y.S.	4 9
½" Vertical dampcourse	"	7 9
½" paving or flat	"	6 3
1" paving or flat	"	7 6
1" × 6" skirting	F.R.	1 0
Angle fillet	"	2½
Rounded angle	"	2½
Cesspools	Each	5 6

MASON

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

SLATER AND TILER

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

CARPENTER AND JOINER

		£ s. d.
Flat boarded centering to concrete floors, including all strutting	Sqr.	2 2 6
Shuttering to sides and soffits of beams	F.S.	7
" to stanchions	"	7
" to staircases	"	1 6
Fix 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
¾" deal sawn boarding and fixing to joists	Sqr.	1 14 6
1" " " " " "	"	1 17 6
1½" " " " " "	"	2 3 0
2" × 2" fir battening for Countess slating	"	9 6
Do., for 4" gauge tiling	"	12 0
Stout feather-edged tilting fillet	F.R.	4½
Patent inodorous felt, 1 ply	Y.S.	2 3
" " " 2 "	"	2 9
" " " 3 "	"	3 3
Stout herringbone strutting to 9" joists	F.R.	10½
1" deal gutter boards and bearers	F.S.	1 2
1½" " " "	"	1 6
2" deal wrought rounded roll	F.R.	8
1" deal grooved and tongued flooring, laid complete, including cleaning off	Sqr.	2 1 0
1¼" do.	"	2 10 0
1½" do.	"	2 17 0
1" deal moulded skirting fixed on, and including grounds plugged to wall	F.S.	1 6
1½" do.	"	1 9

CARPENTER AND JOINER—*continued*

		s. d.
1½" deal moulded sashes of average size	F.S.	1 9½
2" " " " " "	"	1 11½
1½" deal cased frames double hung, of 6" × 3" oak sills, 1¼" pulley stiles, 1¼" heads, 1" inside and outside linings, ⅜" parting beads, and with brass faced axle pulleys, etc., fixed complete	"	3 7
2" " " " " "	"	3 10
Extra only for moulded horns " " " "	Each	6
1½" deal four-panel square, both sides, door	F.S.	2 0
2" " " " "	"	2 8
1½" " but moulded both sides	"	2 4
2" " " " "	"	3 0
4" × 3" deal, rebated and moulded frames	F.R.	1 0
4½" × 3½" " " "	"	1 4
1½" deal tongued and moulded window board, on and including deal bearers	F.S.	1 9
1½" deal treads, 1" risers in staircases, and tongued and grooved together on and including strong fir carriages	"	2 6
1½" deal moulded wall strings	"	2 1
1½" " outer strings	"	2 4
Ends of treads and risers housed to string	Each	1 9
3" × 2" deal moulded handrail	F.R.	1 3
1" × 1" deal balusters and housing each end	Each	2 0
1½" × 1½" " " "	"	2 9
3" × 3" deal wrought framed newels	F.R.	1 3
Extra only for newel caps	Each	6 0
Do., pendants	"	6 0

SMITH AND FOUNDER

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

PLUMBER

		£ s. d.
Milled lead and labour in flats	cwt.	1 18 6
Do. in flashings	"	2 2 0
Do. in covering to turrets	"	2 7 6
Do. in soakers	"	1 13 3
Labour to welted edge	F.R.	3½
Open copper nailing	"	3
Close " "	"	4

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

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

PLASTERER AND TILING

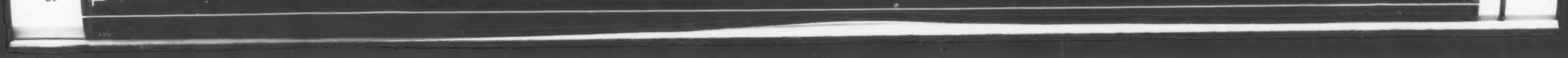
		s. d.
Expanded metal lathing, small mesh	Y.S.	2 0
Do. in n/w to beams, stanchions, etc.	"	2 9
Lathing with sawn laths to ceilings	"	1 3
½" screeding in Portland cement and sand or tiling, wood block floor, etc.	"	1 5
Do. vertical	"	1 7
Rough render on walls	"	1 2½
Render, float and set in lime and hair	"	1 9
Render and set in Sirapite	"	1 11
Render, backing in cement and sand, and set in Keene's cement	"	2 9
Extra, only if on lathing	"	4
Keene's cement, angle and arris	F.R.	6
Arris	"	1¾
Rounded angle, small	"	3
Plain cornices in plaster, including dubbing out, per 1" girth	"	1½
1" granolithic pavings	Y.S.	3 6
1½" " " "	"	4 6
6" × 6" white glazed wall tiling and fixing on prepared screed	"	17 6
9" × 3" " " " " "	"	1 2 6
Extra, only for small quadrant angle	F.R.	8

GLAZIER

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

PAINTER

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

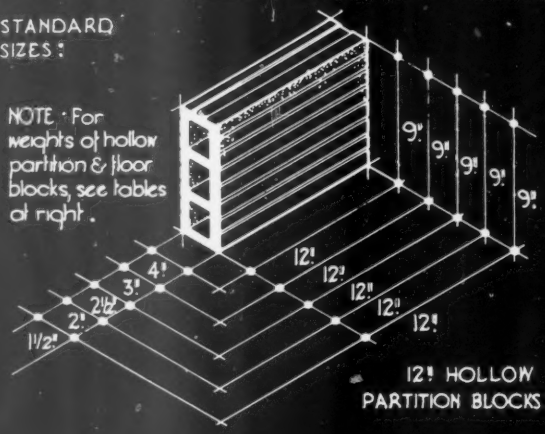


THE ARCHITECTS' JOURNAL LIBRARY OF PLANNED INFORMATION

PHORPRES HOLLOW PARTITION AND FLOOR BLOCKS:

STANDARD SIZES:

NOTE: For weights of hollow partition & floor blocks, see tables at right.



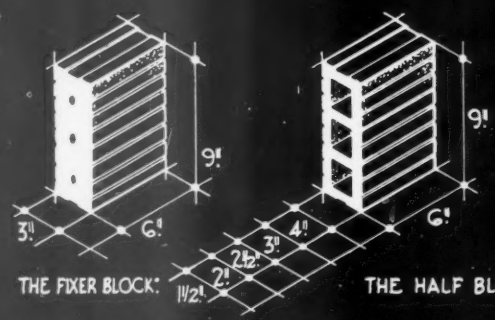
12" HOLLOW PARTITION BLOCKS:

HOLLOW PARTITION BLOCKS: WEIGHT & AREA:

SIZE in inches.	WEIGHT lbs. per sq. yd.	AREA No. of yards per ton.
12 × 9 × 1½.	63.	35.
12 × 9 × 2.	82.	27.
12 × 9 × 2½.	92.	24.
12 × 9 × 3.	116.	19.
12 × 9 × 4.	134.	17.

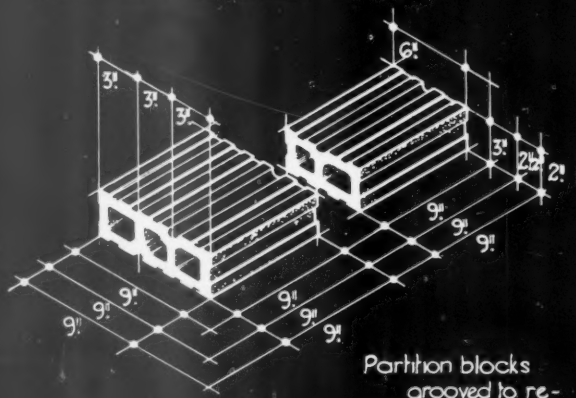
HOLLOW FLOOR BLOCKS: WEIGHT PER 1000

SIZE in inches.	WEIGHT per 1000.	SIZE in inches.	WEIGHT per 1000.
12 × 12 × 3.	6 Tons. 0 Cwts.	12 × 12 × 10	15 Tons. 11 Cwts.
12 × 12 × 3½.	6 " 15 "		
12 × 12 × 4.	7 " 2 "	10 × 10 × 3	4 " 16 "
12 × 12 × 4½.	7 " 12 "	10 × 10 × 3½	5 " 4 "
12 × 12 × 5.	7 " 17 "	10 × 10 × 4	5 " 10 "
12 × 12 × 5½.	8 " 9 "	10 × 10 × 4¾	6 " 2 "
12 × 12 × 6.	9 " 1 "	10 × 10 × 6	6 " 16 "
12 × 12 × 7.	9 " 14 "	10 × 10 × 7	7 " 10 "
12 × 12 × 8.	11 " 2 "	10 × 10 × 8	8 " 2 "

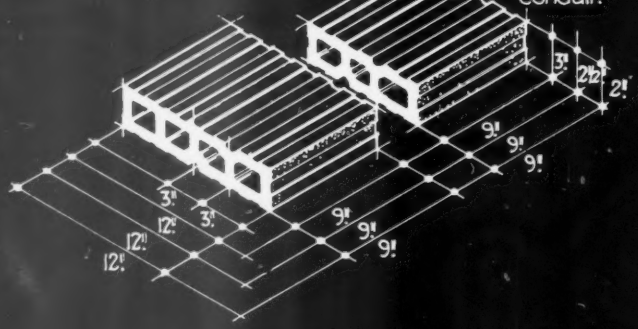


THE FIXER BLOCK: THE HALF BLOCK:

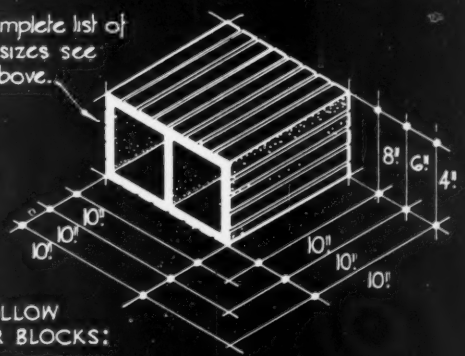
CONDUIT PARTITION BLOCKS:
(Patent and Registration Pending.)



Partition blocks grooved to receive electrical conduit.

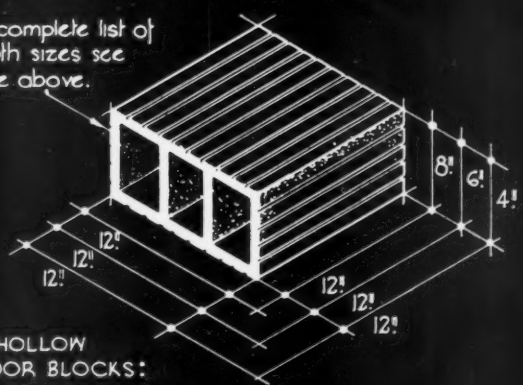


For complete list of depth sizes see table above.



10" HOLLOW FLOOR BLOCKS:

For complete list of depth sizes see table above.



12" HOLLOW FLOOR BLOCKS:

Information from the London Brick Company Limited.

INFORMATION SHEET: HOLLOW PARTITION AND FLOOR BLOCKS:
SIR JOHN BURNET TAIT AND LORNE ARCHITECTS ONE MONTAGUE PLACE BEDFORD SQUARE LONDON WC1.

THE ARCHITECTS' JOURNAL
LIBRARY OF PLANNED INFORMATION

INFORMATION SHEET

• 370 •

HOLLOW PARTITION AND FLOOR BLOCKS

Products : " Phorpres " Hollow Partition Blocks
" Phorpres " Hollow Floor Blocks

Materials :

The hollow blocks shown on this Sheet are manufactured from white-burning gault clay. This material with careful manufacture and a strictly controlled burning process produces a block of high insulating value, light-weight and great mechanical strength. The clay used contains no lime or other injurious salts, and the burning process renders the material entirely inert, thus preventing shrinkage or cracking taking place in the finished plastered surface.

Partition Blocks :

Weight :

12″ × 9″ × 1½″	= 63 lbs.	per sq. yd.
12″ × 9″ × 2″	= 86 lbs.	,, ,,
12″ × 9″ × 2½″	= 96 lbs.	,, ,,
12″ × 9″ × 3″	=117 lbs.	,, ,,
12″ × 9″ × 4″	=140 lbs.	,, ,,

Laying of partition blocks :

Blocks should be laid in cement mortar of the usual proportions, and, owing to the texture of the material, only the minimum amount of water need be used.

Crushing Strength :

The crushing strength of individual blocks tested on edge is :—

	Tons per sq. ft.	Lbs. per sq. in.
1½″ block	42.76	665
2″ block	32.30	500
3″ block	30.20	470
4″ block	22.48	349

A crushing test on a panel wall 9 ft. × 4 ft. 6 ins. wide set in 1 : 3 rapid hardening cement mortar gave failing loads of :—

2½″ block	27 tons
3″ block	30 tons
4″ block	35 tons

Sound Insulation :

A high degree of insulation is obtained, and copies of Test Reports issued by the National Physical Laboratory are available on request.

Thermal Insulation :

Tests have shown that a 4 ins. partition gives 1.22 B.T.U.s per sq. ft. per hour per 1 deg. F. difference in temperature between faces.

Plaster Key :

Partition and floor blocks are grooved on both faces and milled to provide additional mechanical key for plaster.

Conduit Partition Blocks (Patent and Registration Pending) :

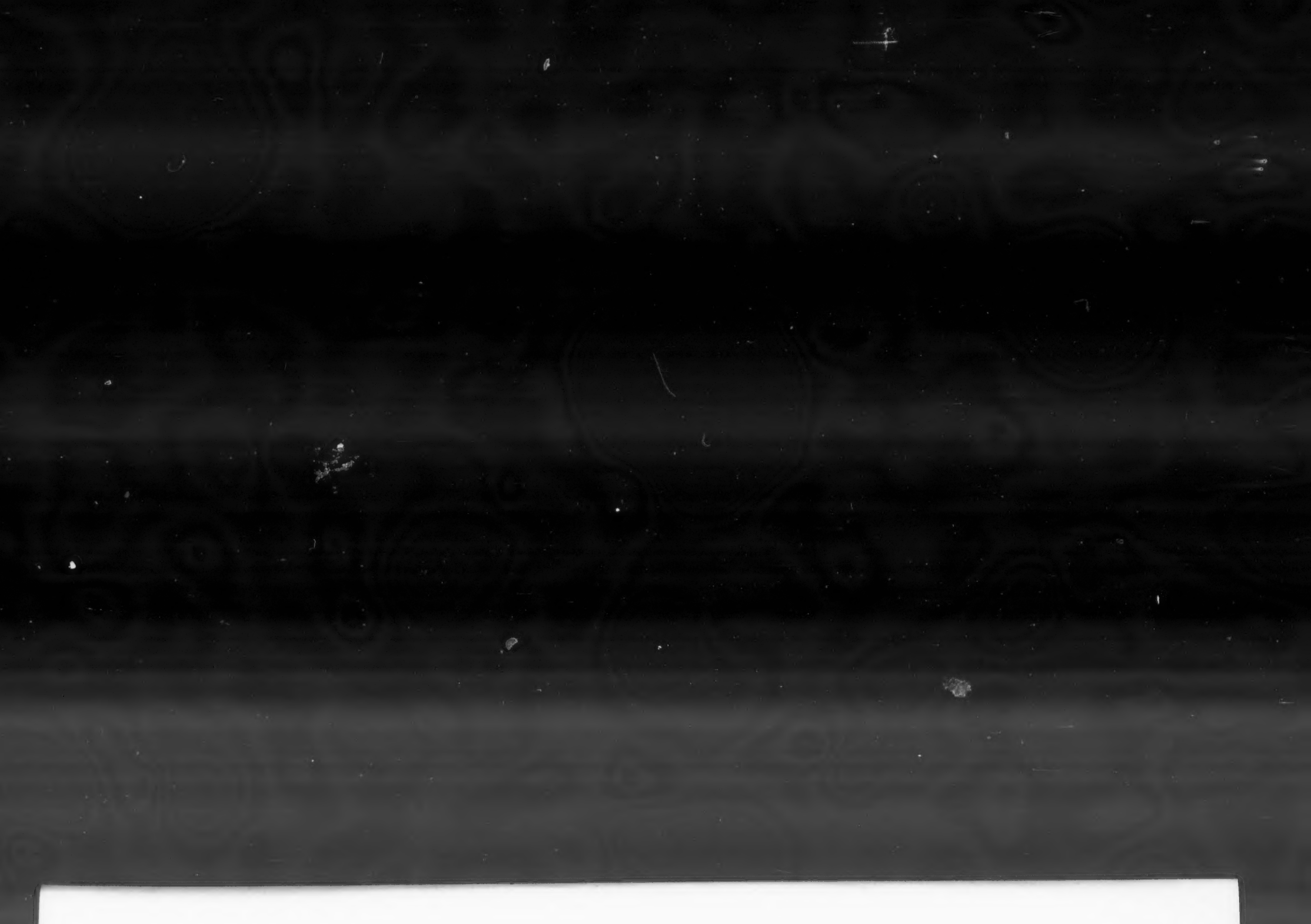
These blocks have been specially designed to eliminate chasing for electrical conduits in finished work and to bond in with main partition walls.

It will be noticed that the groove in each block coincides with that of the blocks above and below it to form a continuous channel. In this way a conduit can be provided for on one or both sides of the partition.

Fixing Blocks :

These are manufactured for use with the standard partition blocks, to be built in where required for fixing skirtings, picture rails, etc.

Information from : The London Brick Co., Ltd.
Address : Africa House, Kingsway, W.C.2
Telephone : Holborn 8282



S

T

THE ARCHITECTS' JOURNAL LIBRARY OF PLANNED INFORMATION.

SHORTER • WEATHERPROOF HARD TENNIS COURT CONSTRUCTION.

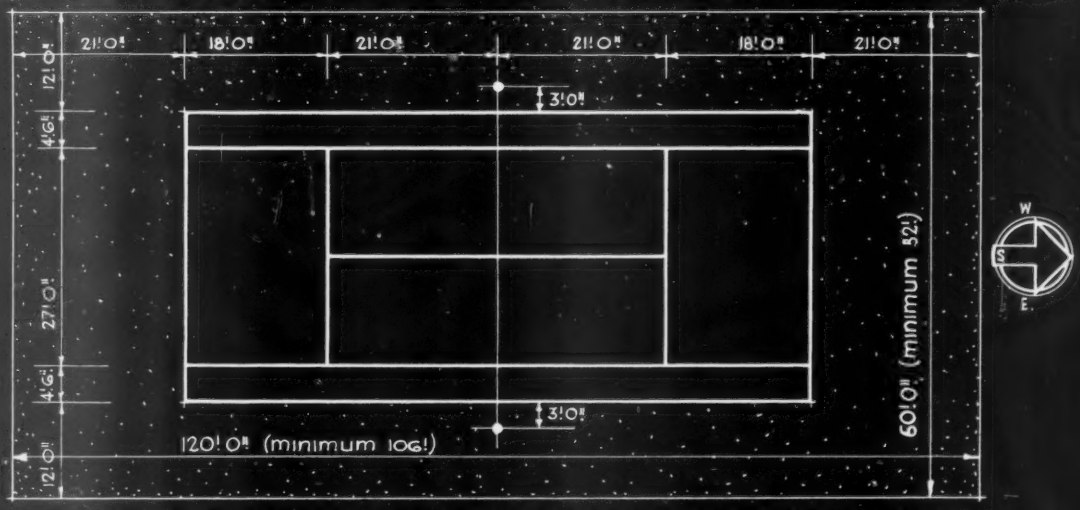
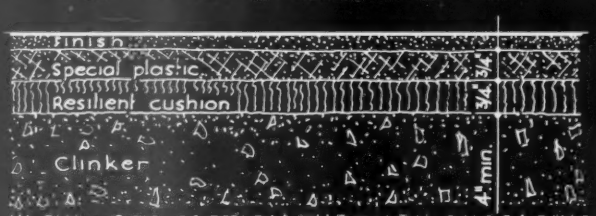


DIAGRAM OF DOUBLES COURT MARKINGS & AREA REQUIRED.
Area recommended 120' x 60' (minimum 106' x 52') for a number of courts allow 50' in width each.

SURFACE : The top surfacing is resilient & gives a perfectly true playing surface.
POROSITY : Surface water percolates through the various layers of porous, naturally absorbent materials & drains away through the channels.
COLOUR : The top surfacing is not artificially coloured but is a permanent natural Green.
MAINTENANCE : Being of weatherproof construction courts require no watering nor rolling, thus saving maintenance costs.



¼ FULL-SIZE SECTION THROUGH SURFACING

PREPARATION OF SITE : The site should be cleared of all bushes, turf etc. & can be formed level but preferably with a 6" fall lengthwise to assist drainage.
DRAINAGE : Check drainage is laid on the high side of the court (as shown) & sub-soil channels formed under the court & filled with clinker.
CONSTRUCTION : a/. A minimum thickness of 4" of coarse clinker with fine clinker to fill interstices.
b/. A ¾" resilient cushioning layer screeded to levels, bound & formed to allow water percolation.
c/. A mixed plastic layer of aggregate & solution screeded to levels & well consolidated forming a porous & resilient mass. This layer is worked up to a final surface with a special natural green finish.

DIAGRAMS OF ALTERNATIVE SUB-SOIL DRAINAGE ARRANGEMENTS (depending upon the contours of the site.)

Information from The Shorter Weatherproof Court Company.

INFORMATION SHEET : WEATHERPROOF HARD TENNIS COURTS.
SIR JOHN BURNET TAIT AND LORNE ARCHITECTS ONE MONTAGUE PLACE BEDFORD SQUARE LONDON · WC1 Oscar a. Bayne.

THE ARCHITECTS' JOURNAL
LIBRARY OF PLANNED INFORMATION

INFORMATION SHEET

• 371 •

WEATHERPROOF TENNIS COURTS

Product : The Shorter Weatherproof Tennis Court

General :

This tennis court is constructed on a principle different from all other hard courts, the method is patented and the patent is used only by the Company.

The particular advantages obtained by this patent construction are :—

1. The surface has a resilient character similar to a turf court.
2. The ball-bound obtained is almost equal to that given by a first-class grass court.
3. The natural green surfacing material permits a player to slide and allows the free foot movement required in first-class games.
4. The pores in the top plastic-bound under-surface allow water to percolate through by natural means to be carried off by the subsoil drainage channels.
5. The construction and surfacing provide a non-attention court, no watering, rolling or dragging being necessary, and hence no maintenance costs.
6. Owing to the correct adjustment of expansion and contraction in the construction, the courts are unaffected by winter conditions and do not crack. Courts may be played on without risk while frost is in, or thawing out of the ground.

Guarantees :

The Company guarantees courts constructed by them, for a period of two years from the date of completion.

Carriage Drives :

Road and carriage drive work is undertaken by the Company, who are agents and contractors to Messrs. Colas Products, Ltd., for this class of work.

Garden Work :

The Company undertakes contracts for garden work and will submit estimates, develop designs and co-operate with Architects as required for all garden work, including walling, paving, path work, etc.

Surveys and Estimates :

The Company will inspect, report on and survey sites and submit estimates to Architects when requested, free of charge.

Manufacturers : Shorter Weatherproof Court Company

Address : Willifield House, Willifield Way, N.W.11

Telephone : Speedwell 8111/2

Su

T

P
D
e
b
r

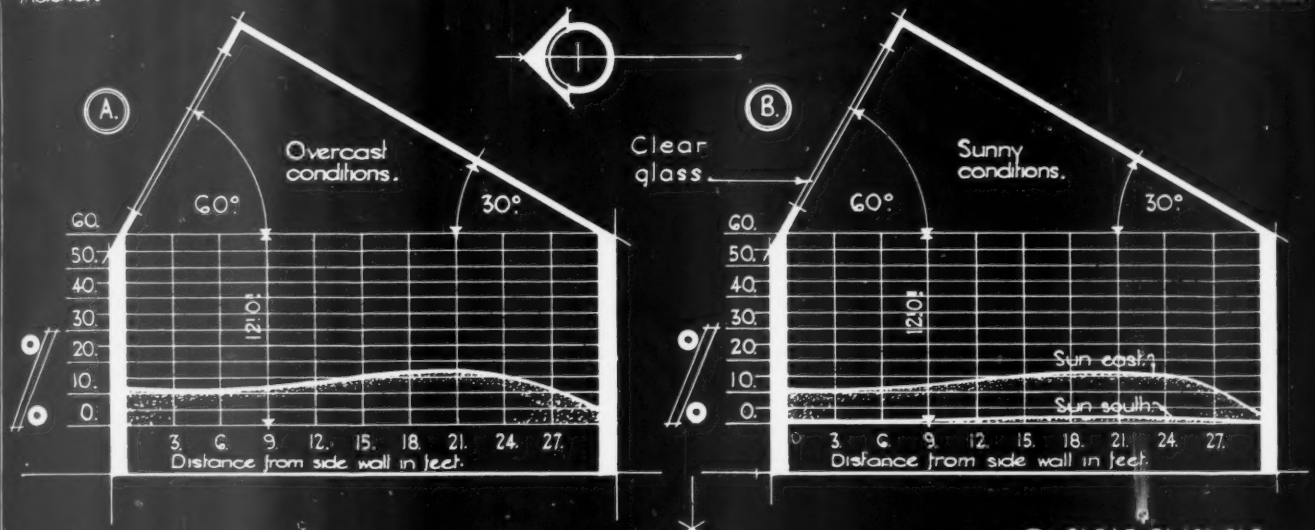
A

THE ARCHITECTS' JOURNAL LIBRARY OF PLANNED INFORMATION

PHYSICAL PROPERTIES OF THERMOLUX LAMINATED DIFFUSING GLASS :

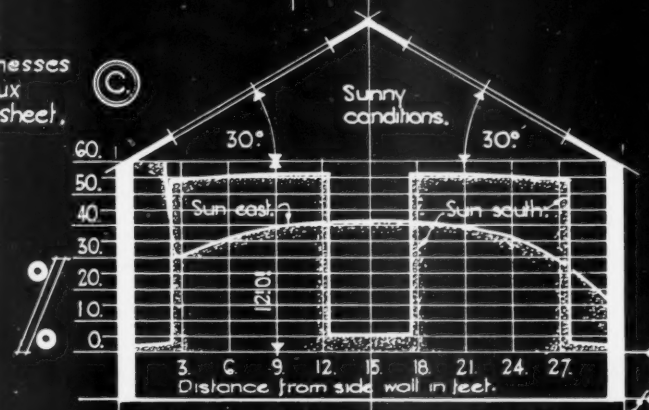
DESCRIPTION : Thermolux is a compound glass of three laminations with both external surfaces perfectly smooth, & consists of a variable sandwich of spun glass between two clear sheets. All edges are hermetically sealed with a damp-resisting adhesive material.

COLOURS : The standard colour of Thermolux is pure white, but pale & dark amber or blue, pink & green, & marble effects are also obtainable.



For standard thicknesses and types of Thermolux glass see back of this sheet.

NOTE :
In all diagrams the floor width is 30 feet & each run of roof glazing 11'6" wide, by any length.



Working bench level assumed to be 3'0" above main floor level for all diagrams.

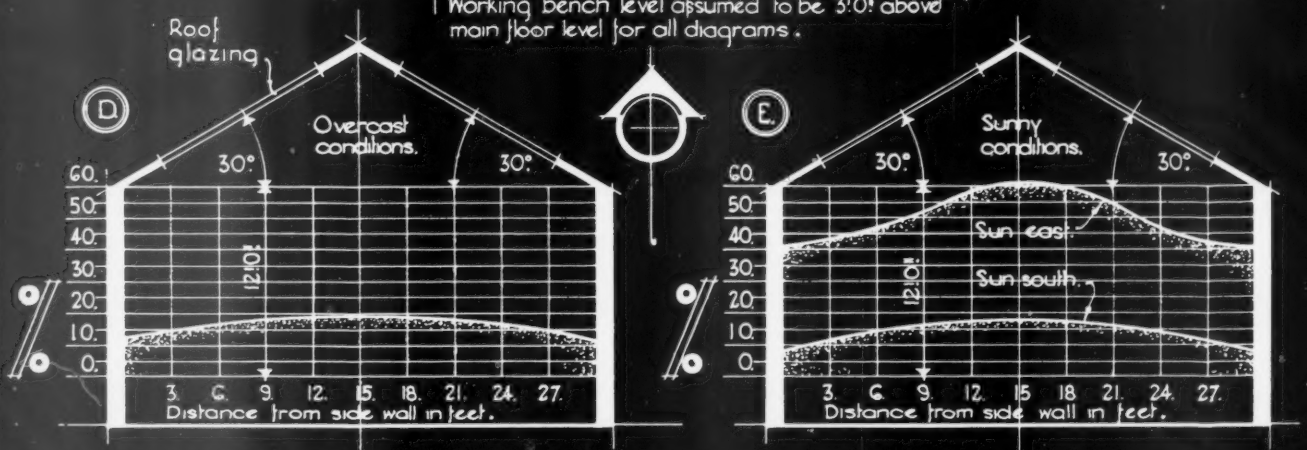
A. CLEAR GLASS FACING NORTH :

B. CLEAR GLASS FACING NORTH :

C. CLEAR GLASS FACING EAST & WEST :

D. THERMOLUX GLASS FACING EAST & WEST:

E. THERMOLUX GLASS FACING EAST & WEST:



3/32" SCALE DIAGRAMS SHOWING RELATIVE LIGHT INTENSITIES OBTAINED AT WORKING BENCH LEVEL :

NOTE : The diagrams above show the percentage of available light from the whole sky transmitted to the working plane. For average total light available in the latitude of London, see table on the reverse side of this Information Sheet. With Thermolux, solar radiant heat is reduced to about 1/3 at working level. (See B.R.S. Report of Investigation N° 236 - 36/1498/2.)

The data regarding the distribution of light shown above is extracted from B.R.S. Report of Investigation N° 208 - 36/1498/2.

Information from The Thermolux Glass Co. Ltd.

For the relationship between Illumination & Industrial efficiency, see Information Sheet N° 2. of this series.

INFORMATION SHEET : SMOOTH-SURFACED LAMINATED DIFFUSING GLASS N° 1.

SIR JOHN BURNET TAIT AND LORNE ARCHITECTS ONE MONTAGUE PLACE BEDFORD SQUARE LONDON WC1. Oliver A. Bayes.

THE ARCHITECTS' JOURNAL
LIBRARY OF PLANNED INFORMATION

INFORMATION SHEET

• 372 •

THERMOLUX DIFFUSING GLASS

General :

On the face of this Sheet are set out diagrams showing the comparative distribution of light within top-lighted buildings of different orientations, glazed with clear glass or Thermolux Diffusing Glass. The diagrams shown are based upon the results of the Building Research Station Department of Scientific and Industrial Research, Report No. 208-36/1498/2 of July, 1935.

Light Intensity :

The following table sets out the monthly variation in illumination of a horizontal surface, expressed in foot candles, derived from the whole sky. The tests were made over a period of ten years at the National Physical Laboratory, Teddington. The figures below have been taken from Illumination Research Technical Paper No. 17. Under direct sunlight the intensities given may be approximately doubled.

Average for Ten years

Month	9 a.m.	12 Noon	3 p.m.
January	405	850	390
February	770	1,375	805
March	1,305	1,920	1,270
April	1,845	2,540	1,975
May	2,625	3,500	2,885
June	3,120	3,780	2,880
July	2,825	3,790	2,620
August	2,415	3,315	2,270
September	2,000	2,785	1,770
October	1,305	1,750	920
November	730	1,050	405
December	390	760	295

The North Octant :

When comparing north lighting with east and west glazed roofs, it should be noted that the north octant actually gives an average illumination of considerably less than one quarter of the total light available from the whole sky. In the diagrams shown, however, due to the fact that a 60 deg. pitch draws upon 30 deg. more sky than the true octant, the comparison has been based upon the assumption that the north light roof receives exactly one quarter total light available from the whole sky.

Thermolux Glass :

"Thermolux" is a compound glass with smooth, brilliant surfaces for glazing roofs and windows to diffuse light and insulate against heat and cold.

It consists of a sandwich of spun glass between two sheets of clear glass. The spun glass is in the form of a felt consisting of glass threads so arranged that when in position they shall be horizontal. The edges are hermetically sealed with a material chosen for the permanence of its adhesive properties and for its powers of resistance to exposure and damp.

Maximum Sizes :

For windows : about 9 ft. long and 6 ft. wide ; for roofs and lay (ceiling) lights : about 10 ft. long and 2½ ft. wide. (N.B.—In lay lights the safe maximum length is dependent upon the rigidity of the supporting frame.)

Interlayers :

These are variable according to requirements. The standard interlayers for glazing are :—$\frac{1}{25}$ in. (1 mm.) for all upright glazing, except where privacy is important. $\frac{1}{16}$ in. (1.5 mm.) for all roof glazing exposed to the sun ; for upright glazing (1) where the sun is often hot or the light intense, and (2) where privacy is essential. $\frac{1}{16}$ in. full (2 mm.) for windows in hot climates. $\frac{1}{10}$ in. (2.5 mm.) for roofs in hot climates. $\frac{1}{8}$ in. (3 mm.) for particularly heavy insulation against radiant heat.

Schedule of Thicknesses :

Applicable to glasses with interlayers $\frac{1}{25}$ in. or $\frac{1}{16}$ in. thick.

Size : (United Inches = Length plus breadth)	Use : Upright glazing			Use : Inclined or horizontal glazing		
	Description	Approx. overall thickness in inches	Average net weight in oz. per sq. ft.	Description	Approx. overall thickness in inches	Average net weight in oz. per sq. ft.
Up to 30 ins. united	Type 45	$\frac{7}{32}$ in.	38	Type 45	$\frac{7}{32}$ in.	38
„ 60 ins. „ and 24 ins. wide	„ 45	$\frac{7}{32}$ in.	38	„ 6	$\frac{5}{16}$ in.	50
„ 70 ins. „ „ 30 ins. „	„ 45	$\frac{7}{32}$ in.	38	„ 8	$\frac{3}{8}$ in.	67
„ 100 ins. „ „ 36 ins. „	„ 6	$\frac{15}{32}$ in.	50	„ 8	$\frac{3}{8}$ in.	67
Over 100 ins. „	„ 8	$\frac{3}{8}$ in.	66	„ 8	$\frac{3}{8}$ in.	67

Prices :

White "Thermolux" glass in cut sizes.

Up to	5 ft. super	...	2/6 per sq. ft.
„	10 ft. „	...	2/9 „
„	15 ft. „	...	3/- „
„	20 ft. „	...	3/3d. „
„	25 ft. „	...	3/6d. „
„	35 ft. „	...	3/9d. „
„	45 ft. „	...	4/- „
„	50 ft. „	...	4/3d. „

These prices are for interlayers of $\frac{1}{25}$ in. (1 mm.) to $\frac{1}{16}$ in. full (2 mm.) thickness ; for interlayers of $\frac{1}{10}$ in. (2.5 mm.) and $\frac{1}{8}$ in. (3 mm.) thickness, add 3d. per sq. ft.

Information from : The Thermolux Glass Company, Ltd.

Address : 1 Albemarle Street, Piccadilly, London, W.1

Telephone : Regent 1321-2