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The Editor will be glad to receive MS. articles and also illustrations of current architecture in this country and abroad with a view to publication. Though every care will be taken, the Editor cannot hold himself responsible for material sent him.

THURSDAY, OCTOBER 6, 1938. NUMBER 2281 : VOLUME 88

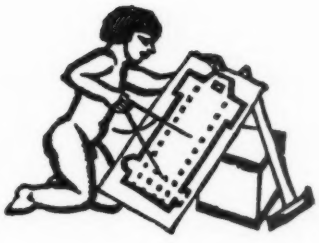
PRINCIPAL CONTENTS

TO BE OPENED NEXT WEEK

THE new Warner Bros. Cinema which has been built on the site of the old Daly's Theatre, Leicester Square, W.C. It is to be opened on October 12. The architect is Mr. E. A. Stone.

SAFETY CURTAIN AT THE OLD VIC

The new safety curtain at the Old Vic, painted by Robert Medley, is now installed in the theatre. This was the winning design in a competition for which 400 artists entered. The judges were Sir Kenneth Clark, Director of the National Gallery; Mr. Winston Churchill, and Mr. C. B. Cochran (see *Astragal's note on page 553*). *The figure on the extreme left of the painting is a portrait of the late Lilian Bayliss.*



IT CAN'T HAPPEN HERE

THE week which ended last Friday will not be easily forgotten. For four and a-half days we fought in imagination a general European war and came out at the other end a shade careworn.

It is impossible for a country to come so close to such a catastrophe without after effects. The relief when it is avoided is so great and nerves so strained that for a little while most people prefer to think of something else and to concentrate on coaxing their ideas and affairs back to normal

It is only after that that they may spend a little while summarizing and understanding the lessons which emerged from the period of danger. The next few weeks seem the time to learn these lessons : the memory of the event will always remain—its moral, unless we are mistaken, will tend to slip out quietly by the backyard door.

One can say with truth that no people wants a great war; that under the present system of international relations it is apparently necessary to go on arming : but these deductions are not very helpful.

A generalization much more to the point—in fact, *the* one essential generalization—is that the Fascist countries have adopted as a weapon not general war, but the threat of general war. For every government knows that after the first short period of actual war, the strain must fall back on the unanimity and the industrial, civil and economic organizations of the countries concerned ; and in these things the democracies are superior.

It would seem therefore that if the dangers of the first three months of war can be provided against, and are clearly efficiently provided against, the event itself is very unlikely to take place, since our Fascist friends will find the dread of war no longer a gilt-edged insecurity.

Architects ought to think about their experiences from September 24-28 from this point of view. Uncertainty is the bogyman of such drawn-out days and nights. But the two practical problems of safeguarding the family and finding oneself a job under a scheme of national defence are the questions that really count.

No architect can have escaped the feeling that both these should have been foreseen and provided for, and that both are bound up with each other.

Every family man, whether he is an architect or a dustman, should know long before the " state of tension " ever arrives, exactly what is to be done with his dependants in war time. Equally he must know where he, as a professional dustman or architect, can be most productively employed. Many must have found, as we did, that under the tremendous strain thrown on the defence authorities for three days no one could spare a second to think of a job for an architect as an architect.

In the next week or so details may become available of the astounding feats of organization and improvization actually carried out in two or three days. At the moment the individual architect is most conscious of having tried a dozen authorities, all of whom failed to find any use for his services.

Whatever cannot be remedied in preparing for a future emergency, this failure can.

It may be impossible to foresee events in a European war for more than three months from its start. But for these three months at least the civilian front will be the main front. And for these three months architects can be prepared.

The letter from the Secretary of the R.I.B.A. published in this issue is the obvious first step in such a preparation. But next steps should not be left until another emergency.

It is a small thing for architects to list their qualifications and individual wishes in the matter of emergency service on a sheet of paper. And it ought not to be very difficult for the R.I.B.A. to approach service departments, local authorities and even the larger concerns engaged in essential war industries for an estimate of the number of architects likely to be needed in the first three months after an outbreak of war, and the nature of the work on which they would be employed.

If those authorities co-operate with the R.I.B.A.—and it is difficult to imagine they would not—it should be possible to allocate all trained architects, within twenty-four hours of the emergency, to jobs where they would be badly needed.

The greatest danger is that now, when the R.I.B.A. is examining the best methods of carrying out some such scheme, it may find that the energy its members showed last week has disappeared—that all they want to do is to forget the whole incident.

This is what must be avoided. If all architects have useful work to take up, one of the worst of the strains of an emergency will have been avoided, and it will be so much the less likely that the event will take place.

It is probable that such a scheme for the whole country will be put forward before long. Architects can go one better and make their plan at once.

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NOTES & TOPICS

TODAY'S DIPLOMACY.

WRITING on Tuesday of last week, I said that the coming week-end must inevitably be the blackest that Europe had squeezed into the last twenty years. In doing so I forgot the speed of present-day events.

*

On the following Thursday the JOURNAL was published—and was even available in London on the Wednesday evening. Yet by then, within twenty-four hours, the worst had come—and was past. It is a trying time for journalists.

WE HAVE BEEN WARNED

The strongest sensation of all architects this week must have been relief. It took a day or two to realize that everything that mattered most had not come to a full stop and that family migrations need not be carried through.

*

For the next few weeks getting back to normal will take up most of our time Neither private practices nor the programmes of public departments can escape after-effects; and in these immediate worries some of the shocks of last week may be forgotten.

*

But one shock should *not* be forgotten. Practically all architects who tried to find useful emergency work discovered that there was apparently none available, despite the obvious fact that during the first three months of war an enormous amount of work would have to be executed for which architects would be needed in large numbers.

*

However much we all hope that no similar emergency will ever again arise, it would be absurd not to be prepared for it. It will be simple in the next few months for architects' qualifications to be sorted and filed at the R.I.B.A., and for *probable* vacancies in emergency departments to be similarly ascertained.

One imagines that all architects will agree that such preliminary work, which would enable them all to take up useful work if an emergency occurs, should be started at once.

ORGANISATION A LA ANGLAISE

Stories of things that happened on September 26-28 are legion already. The ironical ones are at the moment more popular—like that of the architect who lived in Central London and had not seen a gas mask by September 29. But, motoring out early that day to the middle of Sussex to arrange for a refugee wife and child, he found his host in a country house a mile from anywhere, equipped cap à pie—gas masks, refuge rooms, buckets of sand and all.

*

But here is another story—also true. A subordinate official in East Anglia was asked at 8 a.m. on September 27 to arrange billets for 10,000 persons by 8 p.m. the same day.

*

Pulling his hat over his eyes he darted into the Market Place, stopped twenty local motorists, told them to treble themselves in an hour, and by 8 p.m. had arranged at least temporary billets for 9,600. Such men compensate for some of the irritations of democracy.

THE OLD VIC

The Old Vic gives the world a lead in still another sphere, that of painted decoration. It may be remembered that early this year a competition was announced for the best design for a new safety curtain for the Old Vic. Gratification that a public institution should take such public steps to get the best available was increased by the generous amount of the prize—£200; none too much for the importance of the subject, but generous enough to ensure that the best talent should compete.

*

The best talent did compete—there were 400 entries—and what is more the jury awarded the prize to a design that I can hardly imagine bettered. The composition of the jury took my breath away; whoever appointed it was inspired by genius. There were three members: Sir Kenneth Clark, Mr. Winston Churchill, Mr. C. B. Cochran. What architectural competition has ever been blessed with such a blend of knowledge and intuitive judgment?

*

My only misgiving when I heard these names was that the judgment of popular taste for which some of them are famous might lead them to accept one of those brilliantly superficial essays in pastiche to which English decorative painters lend themselves. But they firmly chose a design, that of Robert Medley, that is a serious and profound painting at the same time as being lively and decorative.

*

Now the curtain itself is finished and in position, and Mr. Medley's design fulfils all its promise. It is executed in distemper. It is reproduced in this issue, but it should be seen, before it is judged, in its full colour.

*

To me its great virtue is that it is a serious piece of modern art in that it exploits without compromise the modern artist's abstracted vision; but it succeeds at the same time in being representational and therefore popular. Who can say now that modern art and popular art are not reconcilable?

H.R.H. the Duke of Kent on the stand of THE ARCHITECTS' JOURNAL *at the Building Exhibition. From Sir Giles Gilbert Scott's expression and the emphasis of his hand on* THE ARCHITECTURAL REVIEW *one can suppose the Duke is being warned against the pitfalls of monthly architectural criticism.*

The only thing I regret is that an exhibition has not been arranged to give the public an opportunity of seeing the other 399 designs.

BRITAIN'S BURNING SHAME

Less shapely successor to Mr. Therm and Mr. Oil-drag is Mr. Sammy Soot. He is a prominent character in a new booklet published by the National Smoke Abatement Society under the title of "Britain's Burning Shame."

*

This is a graphic survey of the ravages caused by atmospheric pollution, or what Professor Hilton calls in his foreword "aerial sewage." It is simply written, profusely illustrated, and is rightly designed to appeal to the average citizen, who is himself responsible for most of the pollution. In contrast to the grim graphs of deaths from soot-laden lungs are photographs of Kensal House and illustrated interviews with its happy occupants.

*

We are told that competent authorities estimate the cost of smoke to England is £40,000,000 a year, that 2,500,000 tons of soot fall every year on Britain, and, finally, that a month's fall of soot in London would mount half-way up the Nelson Column.

*

My own feeling about this sort of statistics is that if they were all collected and placed in the funnel of the "Queen Mary" it would be a very good thing. There is no doubt, however, that they are impressive, and they present a dramatic picture of the smoke menace, which grows yearly more insistent and more costly.

ST. GEORGE'S

It is announced that the sending-in day for St. George's has been put off for at least three months—until January 15, 1939. The demands on their resources for which all hospitals were asked to prepare last week makes some postponement understandable. But it is not likely to improve the tempers of the harassed competitors.

*

For another irritation has been much less justifiable—the request that each competitor should submit schedules of cost for a considerable range of most specialized equipment. This has meant that fifty, or a hundred firms, their quantity surveyors, and specialist manufacturers, have done an enormous amount of work to provide fifty itemised accounts of doubtful accuracy.

*

Estimates of cost in an architectural competition have probably never been taken to such an extreme. Perhaps four architects and four quantity surveyors really *know* what they are talking about in the latest hospital equipment. The rest must be merely plunging in the dark.

*

The obviously sensible procedure in the St. George's Competition would have been to get a firm of quantity surveyors experienced in hospital work to prepare *one* such schedule of cost; and to instruct all competitors to allow the resulting £50,000 or £100,000 for such equipment over and above the normal cube rate.

*

This will have to be done in any case in order to check estimates. It would have been much simpler to do it first.

ASTRAGAL

NEWS

POINTS FROM THIS ISSUE

ARC WELDING FOUNDATION

The Jury of Award of the James F. Lincoln Arc Welding Foundation, Cleveland, Ohio, U.S.A., after judging thousands of papers submitted in the $200,000 award programme, found that savings to industry by arc welding claimed by authors of papers aggregates $1,600,000,000. The jury's statement is as follows :—

"The Central Committee of the Jury of Award of the James F. Lincoln Arc Welding Foundation finds that the savings to industry by arc welding claimed by authors of papers aggregates $1,600,000,000. This figure is arrived at after discounting some very enthusiastic claims.

"Altogether, 382 awards were made by the Foundation. The amounts ranged from $101·75 for honourable mention to $13,941·33, the Grand Award.

"Two Englishmen, Anant H. Pandya and R. J. Fowler, engineers, Diagrid Structures, Ltd., Horseferry House, London, received the second Grand Award of the Programme. $11,397·06 was paid them jointly as award for their paper 'All Welded Grid Applied to Plane and Spatial Structures,' in which they show that saving of $60,000,000 is available through use of a new design of framing for floors and roofs of buildings. The paper was submitted in the buildings division of the structural classification of the programme.

"Ten other awards were made for papers submitted to the Foundation by English authors, featuring studies of applications of arc welding. These were : $1,322·82 to Edward Frank Spanner, inventor and designer, Messrs. Spanner Thimble Tube Boilers, Ltd., London, for his paper 'Welding Thimble Tube and Watertube Boilers' ; $305·26 to Cyril Helsby, consulting engineer, Brighton Marine and Palace Pier Co., London, for his paper 'Arc Welded Pier' ; $305·26 to Arthur Kershaw, welding engineer, The Butler Machine Tool Co., Ltd., Halifax, Yorkshire, for his paper 'Welded Design of a Single Housing Planer' ; $203·51 to R. Sherman, assistant to consulting engineer, Messrs. Steel Ceilings, Ltd., Hayes, Middlesex ; the same amount to Henry P. Print, senior partner, Print Brothers, Eynsham, Oxon, for his paper 'Wrought Iron Candlesticks' ; $152·63, each to E. Christie, welding instructor, Army Vocational Training Centre, Aldershot, Hants, for his paper, 'Welded Desk and Seat Frames' ; L. T. Duff, manager, Angell and Williams, Ltd., London, for his paper 'Running a Job Shop Successfully' ; and $152·63 jointly to Messrs. Wm. H. Whittall and Frank N. Buxton, Henry Simon, Ltd., Stockport, for their paper 'Arc Welded Vacuum Pump' ; $101·75 to Thomas G. Grisenthwaite, bridge engineer, The British Construction Steelwork Association, London, for his paper 'All Welded Portal Frame Bridge' ; and the same amount jointly to Hugh B. Fergusson and Edward F. Burford, G. A. Harvey & Co., Blackheath, London, for their paper 'All Welded Economic Type Boilers.'"

THE ARCHITECTS' DIARY

Thursday, October 6

TIMBER DEVELOPMENT ASSOCIATION. *At the Building Centre, New Bond Street, W.1. Exhibition of designs in the Association's recent competition. Until October 15.*

Saturday, October 8

LONDON TRADES COUNCIL. "*A.R.P. in Relation to the Civil Population of London.*" *Addresses by J. B. S. Haldane and T. E. Scott. Memorial Hall, Farringdon Road, E.C.* 2.30 *p.m.*

Tuesday, October 11

PLUMBING TRADES' NATIONAL APPRENTICESHIP COUNCIL. *General Meeting. Institute of Plumbers, 81 Gower Street, W.C.1.* 10.30 *a.m.*

ROYAL SANITARY INSTITUTE. *90 Buckingham Palace Road, S.W.1.* "*The Present Trend of Sewage Purification.*" *By H. T. Calvert.* 5.30 *p.m.*

ARCHITECTURAL ASSOCIATION. *36 Bedford Square, W.C. Special General Meeting.* 6.30 *p.m.*

AIR RAID PROTECTION INSTITUTE. *At 18 John Street, W.C.2.* "*Planning of Shelters and Buildings for A.R.P.*" *By G. R. Falkiner Nuttall.* 8 *p.m.*

CHADWICK PUBLIC LECTURE. *At Niblett Hall, 2 King's Bench Walk North, E.C.4.* "*The Development of Public Health Law during the past 50 years.*" *By Sir William J. Collins.* 5.15 *p.m.*

HOUSING CENTRE, *13 Suffolk Street, S.W.1. Tuesday lunches :* "*Rent Restriction.*" *By Ambrose Appelbe.* 1 *p.m.*

THE MARY WARD SETTLEMENT. *Tavistock Place, W.C.1.* "*The Planning of London—Buildings.*" *By P. G. Bowie.* 8 *p.m.*

LONDON SOCIETY. *Visit to St. Michael's Clubhouse, Chester Square, S.W.1.* 2.45 *p.m.*

EXHIBITION AT CHARING CROSS

Model, plans and photographs of the *Star's* scheme for the development of the South Bank of the Thames are now on exhibition in the booking hall of Charing Cross Underground Station. Mr. Herbert Morrison, Leader of the L.C.C., in a speech at the opening ceremony, said that superstition decreed in the past that the north bank should be favoured and not the other side. "I tried to get the proposed National Theatre put on the south of the Thames. We must try to break the idea that all the best buildings should be on the north bank of the river.

"The L.C.C. had promoted legislation for the acquisition of land on the south bank, and re-development of the south bank. But the *Star* scheme went much further and took in a wider area. I welcome the plan as a fine piece of enterprise and courage. The Borough of Southwark is quite keen about it and has asked the L.C.C. to adopt it. The first thing to say to Southwark was : 'Will you pay for it?' Southwark said : 'We cannot. It is your business.' The baby passed back to County Hall.

"I welcome the enterprise of the *Star* and agree that much can be done by constant persuasion. I cannot pledge the millions of the L.C.C. and I must reserve their position in the matter. But I do say that the scheme is worthy of the examination of the whole of the people of London. It is a great idea for the replanning of the southern area."

The exhibition will remain open until October 21.

HOUSING PROGRESS BY SCOTTISH LOCAL AUTHORITIES

During August, Scottish Local Authorities completed 1,519 houses, compared with 1,172 in July, and 1,037 in August, 1937. In the first eight months of this year these local authorities have completed 11,786 houses, whereas only 8,027 were completed in the same period last year.

At August 31, 27,815 houses were under construction by the authorities, compared with 27,901 a month previously and 26,759 a year ago. The number of houses contracted for but not begun was at August 31, 10,703, an increase of 733 on the number at the end of July and a decrease of 949 on the number at the end of August last year.

Since 1919 local authorities have erected in Scotland 200,963 working-class houses.

B.I.F. PARK FOR SIX THOUSAND CARS

One of the biggest car parks in Europe is now being completed at Castle Bromwich, Birmingham, in readiness for the 1939 British Industries Fair in February.

More than 1,000 tons of slag, consisting of the metallic residue from Black Country furnaces, is being laid down on 6½ acres of ground adjacent to the Fair building, giving, in all, a car park area of 30 acres, capable of accommodating 6,000 cars.

THE PRESIDENT'S NATIONAL LECTURE

On Tuesday last, in the National Programme, Mr. H. S. Goodhart-Rendel, P.R.I.B.A., broadcast the twenty-first national lecture. His subject was "Architecture in a Changing World."

APPOINTMENT

H. Cameron Beaumont, A.R.I.B.A., has been appointed architect to Newport (I.W.) Education Committee, and would be pleased to receive trade catalogues at the Guildhall, Newport, I.W.

CHANGES OF ADDRESS

Messrs. Armstrong and Gardner, F. & A.R.I.B.A., have moved their Coventry office to No. 19 Eaton Road. Telephone No. (as before) : Coventry 4755.

Mr. A. S. E. Ackermann, consulting engineer, has moved his office to Parliament Mansions, No. 19 Victoria Street, S.W.1. Telephone No. (as before) : Abbey 7244.

CORRECTION

In the note on the Dictator door closer (Charles P. Moody), published in our last issue, the prices given were incorrect. The bronze finish is obtainable at 15s., and the chromium-plated at 18s. 9d.

COMPETITION FOR SENIOR SCHOOL, SHREWSBURY

The date for sending in designs for the above competition has been extended to January 30.

ST. GEORGE'S HOSPITAL

We are informed by the House Governor of St. George's Hospital that, owing to the heavy responsibility and demands placed on hospital organizations due to the present crisis, it has been found necessary to postpone the date for receiving competitive designs for the reconstruction of St. George's Hospital competition for a period of not less than three months, namely, till January 15, 1939.

A further notice will be issued on or before December 15, 1938, either confirming, or, if found necessary by unforeseen circumstances, varying this date.

Owing to difficulty of storage, it is requested that no design be sent in prior to December 15.

ARCHITECTS AND THE EMERGENCY

FOREWORD

THE days from Saturday, September 24, until the evening of Wednesday, September 28, were, to say the least, a time of anxiety and activity.

For the present the anxiety is relieved, and there can be no one who does not hope that the relief is permanent. But whether it is permanent or not, the immediate necessity is to make sure that any gaps in national preparedness which were then exposed should be made good.

During the first three days of last week nearly every architect must have asked himself what he should do if war broke out; and each was well aware that in the Services, in the industrial expansion that would be needed and in A.R.P., there would be a very large number of jobs for which architects are specially fitted. But those who tried to discover where to apply for such jobs and what they were like, must have found—as the JOURNAL found—that they were searching for a particular grain in a sandstorm.

The emergency had thrown a tremendous strain on all departments charged with taking military and civil precautions. This was to be expected; the smoothness with which major preparations were carried out was remarkable, and it cannot be considered surprising that departments were unobtainable by telephone and that architects, like other potential volunteers, were unable to hear of any work in which their qualifications would be specially useful.

For the moment this state of affairs is unavoidable. But it would be stupid if it were allowed through negligence to occur again in six weeks or six years.

It can be avoided by a reasonable amount of preparation if architects and all public departments would co-operate with the R.I.B.A. in a comparatively simple scheme.

On the following page is printed a letter from the Secretary of the R.I.B.A. suggesting that all architects who wish to offer their services in the event of a national emergency should apply to the R.I.B.A. in the first instance.

This suggestion has the tremendous advantage that the individual architect need not waste his time and that of departments working under huge pressure by applying to five or six different bodies. The details of the R.I.B.A. scheme are not yet available. But, besides applications by architects, two further stages are essential to its completion.

All public departments and local authorities must be persuaded to apply to the R.I.B.A. when an emergency has created, or looks like creating, vacancies for architects. And, what is far more important, they must be persuaded to supply during the next month or so some indication of the number of architects likely to be needed and the jobs for which they will be needed.

This last will be the most difficult. To take two examples : the War Department and the L.C.C. will both, presumably, need large numbers of architects should war break out—

the latter at once, the former in progressively larger numbers as time goes on. Both authorities are extremely busy just now and may be disinclined to spare staff to indulge in hypothetical calculations for the benefit of one profession. But unless they do so, either specially or as part of a national scheme, the confusion and wastefulness of 1914 may be repeated—with far more tragic consequences.

Architects should do all they can to prevent this.

[Below is the circular letter sent to all Secretaries of R.I.B.A. Allied Societies in Great Britain and Northern Ireland]

THE NATIONAL EMERGENCY

Members of the R.I.B.A. and its Allied Societies who are in doubt as to the best disposal of their services are invited to seek advice from the R.I.B.A., marking their letters "National Emergency."

IAN MACALISTER,
Secretary, R.I.B.A.

Sept. 27, 1938.

ARCHITECTURAL SERVICES

BELOW the JOURNAL *lists some of the organizations in which it is assumed that architects in considerable numbers will be needed should war break out. The* JOURNAL *is compelled to use the word "assumed" because it has been unable during the past week to obtain any definite information from any of the departments concerned.*

●

The work for which architectural training would be specially suitable falls into three main divisions :

1. AIR RAID PRECAUTIONS

These are under the direction of the Home Office and the various local authorities. Architects will presumably be needed for the design, construction and sanitation of evacuation camps; for the layout and construction of trench shelters and all other forms of shelters; for inspecting and shoring up all buildings damaged by aerial attack; for any constructional work needed in connection with first aid centres; and for all repairs to essential buildings.

It may be expected that in a week or so from the outbreak of hostilities, if not before, every large town will have organized a special department which will co-ordinate material, workmen, engineers and architects into an efficient service for all such work.

When it is fully organized it may be expected that older architects will be given first preference in such a department.

★

2. ESSENTIAL INDUSTRIES

A very large amount of new building work and housing schemes or camps will probably be set in hand in connection with essential industries. Munition and filling factories, aircraft and motor vehicle factories will obviously have first preference, although depots for food and other stores may be put in hand in less vulnerable areas.

Some of this work will be carried out by the Office of Works, some by the War Department and the rest by local authorities and private firms.

If a list of architects available for such work were to be ready at the R.I.B.A. a tremendous amount of confusion would undoubtedly be avoided when the emergency actually arises.

★

3. THE SERVICES

THE NAVY.—The building work of the navy is carried out by the Civil Engineer's Department

which employs architects and surveyors in addition to engineers of all kinds. In special cases additional architectural services are obtained from the Office of Works.

It is not expected at the Admiralty that any great expansion in this department would take place in the event of a national emergency—at least as regards architects.

★

THE ARMY.—The section of the Army which may be expected to have vacancies for architects in large numbers is the Royal Engineers. Departments at the War Office controlled by R.E. officers have charge of all building work, both temporary and permanent.

In the event of hostilities it may be presumed that very large numbers of architects will be needed by the War Department in connection with new camps and associated works.

A certain proportion of these new entrants will be employed in civilian capacities in the existing Architect's Department or in other ways. The remainder will presumably be enlisted, since, in the event of major hostilities, a large expansion of R.E. units will be unavoidable.

Architects who are granted temporary commissions or otherwise enlisted will be divided according to age and other capacities between service at home and overseas.

Another section of the War Department in which architects will be presumably of value is that devoted to camouflage.

An immense expansion in this section is certain in the event of hostilities and any persons having special knowledge will be very valuable.

★

THE AIR MINISTRY. — The Directorate of Works at the Air Ministry is responsible for all buildings required for the Royal Air Force, including hangars, stores, barracks and other housing and temporary accommodation.

The Ministry has a large architectural staff at present and it is probable this would be enlarged in an emergency. At the same time much of the emergency constructional work put in hand will probably be of a temporary character and therefore standardized.

Work available for architects will probably be surveying, smaller questions of layout, sanitation and fairly routine draughtsmen's work.

A large expansion in the camouflage section of the Royal Air Force would also take place in time of war, and architects having, or capable of rapidly acquiring, knowledge of this subject would presumably be much in demand.

AIR RAID PRECAUTIONS

1 : PRIVATE

The main theatre of action for the first two months of a European war would be the larger urban areas. The risks to which the population of these areas would be exposed can be lessened either by evacuations or by precautions capable of being taken rapidly. Below the JOURNAL *reprints some extracts from the Government handbook on family precautions,* The Protection of Your Home Against Air Raids. *H.M.S.O. Price 1d. It will be noticed that emphasis is placed on protection against gas, a danger which general opinion believes to be comparatively small.*

[*By permission of the Comptroller, H.M. Stationery Office.*]

EVERY home should have a refuge specially prepared in which the whole household could take cover. Every householder should learn now how to protect, in war-time, his own people and home from the effects of explosive bombs, incendiary bombs, and poison gas. This applies chiefly to those who live in large centres of population. In more remote districts the dangers would no doubt be less, though the need for protection and precautions would still exist.

Decide what place would make the best refuge-room for your household at home, and begin to plan now how you would get it ready.

In time of war all buildings will have to be completely darkened at night. Be ready to do this for your home.

Begin to collect materials for gas-protecting your refuge-room ; materials for darkening your whole house or business premises ; the things you would need in your refuge-room.

Almost any room will serve as a refuge-room if it is soundly constructed, and if it is easy to reach and to get out of. Its windows should be as few and small as possible, preferably facing a building or blank wall, or a narrow street.

A cellar or basement is the best place for a refuge-room if it can be made reasonably gas-proof and if there is no likelihood of its becoming flooded by a neighbouring river that may burst its banks, or by a burst water-main. Alternatively, any room on any floor below the top floor may be used. Top floors and attics should be avoided as they usually do not give sufficient protection overhead from small incendiary bombs. In any flats, or tenement house, or house occupied by more than one family, representatives should be chosen and formed into a Protection Committee to decide upon the most suitable rooms and to prepare them as refuge-rooms if it should ever be necessary for the safety of all.

Although an actual raid may be over in a few minutes it might be necessary to stay in your refuge-room for some time, even perhaps for several hours. You should therefore know how many persons can remain safely in one room without suffering any ill effects. For rooms of normal height (8 to 10 feet) an allowance of 20 square feet of floor area for each person will enable those persons to remain in the room with complete safety for a continuous period of twelve hours without ventilation. A room 10 ft. by 10 ft. will hold 5 persons, a room 15 ft. by 10 ft. will hold 7 persons, a room 20 ft. by 12 ft. will hold 12 persons.

If ever you receive warning that war threatens, do these things at once : (1) Prepare and equip your refuge-room ; (2) make all preparations for darkening the house at night. Windows, skylights, fanlights, glazed doors must be completely obscured ; (3) clear the loft, attic, top floor, of inflammable stuff

that can be moved, to lessen the risk of fire from an incendiary bomb that might penetrate the roof. Assemble appliances to fight fires. Also, if possible, limewash the timbers in the attic or roof space, and protect the floor.

All windows, skylights, fanlights, glazed doors, or other openings in parts of the house where lights are used, must be completely screened after dusk, so that no light is visible from outside. Special care must be taken to cover completely skylights and other windows directly visible from the air. Outside lights, garden and porch lights, must not be used. If they are electric, take the bulbs out altogether.

No serious amount of gas will come into a room unless there are draughts or currents of air to carry it in, so any cracks or openings must be sealed up somehow.

In old houses especially, windows and doors may shut badly. There may be chinks underneath the window cills on the inside. There may be cracks in the ceiling. Fill in all cracks and crevices with putty or a pulp made of sodden newspaper. Paste paper over any cracks in the walls or ceiling. Fill in the cracks between the floor boards and paste sheets of paper over the whole floor. If you have linoleum or an all-over carpet, it should be replaced after the cracks underneath have been filled up. Fill in all cracks round the skirting boards, or where pipes pass through the walls. All trap-doors, skylights and hatches in the room should be sealed, and interior ventilators stopped up with rags or pasted over with thick paper.

All ventilators in the outside walls of the house, including those below the floor level, should be stopped up with rags or paper.

If there is a fire-place, stuff the chimney with paper, rags, or sacks. Plug key-holes. Plug waste-pipes, or overflow pipes, in any basin or sink in your refuge-room. You can still use the room, for ordinary living purposes, provided you can do without a fire.

The windows should be sealed so that draughts, or gas, cannot come in. Wedge them firmly to keep them tightly fixed in their frames. Seal all round the frames with gummed strip or pasted paper, wherever there is a crack. Any broken panes should be boarded in, or the holes pasted over with strong paper. This will not prevent the possibility of glass being broken by the blast of a bomb explosion. So protect the glass if possible.

Be ready to reseal the window openings if the glass gets broken. For this purpose have some stout materials to hang or fasten over them.

Doors to the refuge-room which need not be used should be sealed. Paper should be pasted firmly all round the cracks, especially at the foot of the door, and the key-hole plugged.

Doors which have to be opened and closed should be sealed against gas. This is how to do it. Nail a piece of wood, padded with felt, to the floor so that the door, when closed, presses tightly against it. Take care not to nail this piece of wood on the wrong side of the door so that it cannot be opened. Strips of felt may also be nailed round the inside of the door to exclude draughts. Fix a blanket outside the door if the door opens inwards, or inside the door if the door opens outwards, with strips of wood. The top of the blanket should be fixed to the top of the door frame. One side of the blanket should be fastened down the whole length of the door frame, on the side where the hinges are, by means of a strip of wood nailed to the frame. The other side of the blanket should be secured not more than two feet down, so that a flap is left free for going in and out. Arrange the blanket so that at least 12 inches trails on the floor to stop air from blowing underneath it.

Unless a window is barricaded with sandbags it is not easy to prevent the glass of closed windows being shattered by the blast of an explosion, even at some distance away. But you can prevent splinters of glass being blown into the room by covering the inside of the window panes with at least two thin sheets of one of the transparent or translucent, non-inflammable materials now commonly used for wrapping purposes and sold by stationers. The material must be tough and not readily torn. Although a cellulose varnish is the best adhesive, waterglass or even ordinary gum can be used to stick the material to the glass, but examine it from time to time and regum when necessary.

Thin celluloid makes a better job, but a non-inflammable variety should be used, and it requires a cellulose varnish to stick it to the window pane. Failing anything better, some fabric material such as linen from old pillow cases, or mosquito netting, or even stout paper, may be pasted on the inside of the glass.

If your refuge-room is on the ground floor or in the basement, you can support the ceiling with wooden props as an additional protection.

Sandbags outside are the best protection if your walls are not thick enough to resist splinters. Do not rely on a wall keeping out splinters unless it is more than a foot thick. Sandbags are also the best protection for window openings.

Try to keep gas out of the house by blocking up ventilators and cracks as recommended for the refuge-room and by protecting as many windows as possible against being broken by blast. Then if you shut all windows and doors before a raid, there will be much less risk of gas penetrating into the house while you are in the refuge-room.

An additional precaution in flats or large buildings would be an air-lock at the door of a communal refuge-room, or at a main outer door, or in a corridor which had to be used frequently. An air-lock is simply two gas-proof doors or curtains 4 feet or more apart, with a space between them sealed like a refuge-room. Persons can then pass through without admitting gas, provided they close the first door or curtain when they are inside the air-lock before opening the second.

2: COMMUNAL SHELTERS

IN the JOURNAL for July 7 there was published the A.A.S.T.A. Report on Air Raid Precautions. In this Report the whole problem of structural precautions against air attack was considered in detail. This Report is now reprinted, with a new foreword, additional notes on trench and tunnel shelters and footnotes concerning materials which have been perfected in the last two months.

The Report is obtainable from the Association of Architects, Surveyors and Technical Assistants, 113 High Holborn, W.C.1, or from The Architectural Press, 9 Queen Anne's Gate, S.W.1, price 1s. post free.

The principal sections of the Report are :

1. BOMB TYPES AND THEIR EFFECTS.
2. TRENCH AND BLAST-PROOF SURFACE SHELTERS.
3. BOMB-PROOF SURFACE SHELTERS.
4. BLAST-PROOF SHELTERS IN BUILDINGS.
5. BOMB-PROOF SHELTERS IN BUILDINGS.
6. TUNNEL SHELTERS.

In the event of a national emergency the first shelters to be constructed must obviously be Trench Shelters, Blast-proof Surface Shelters and Blast-proof Shelters in Buildings; for these

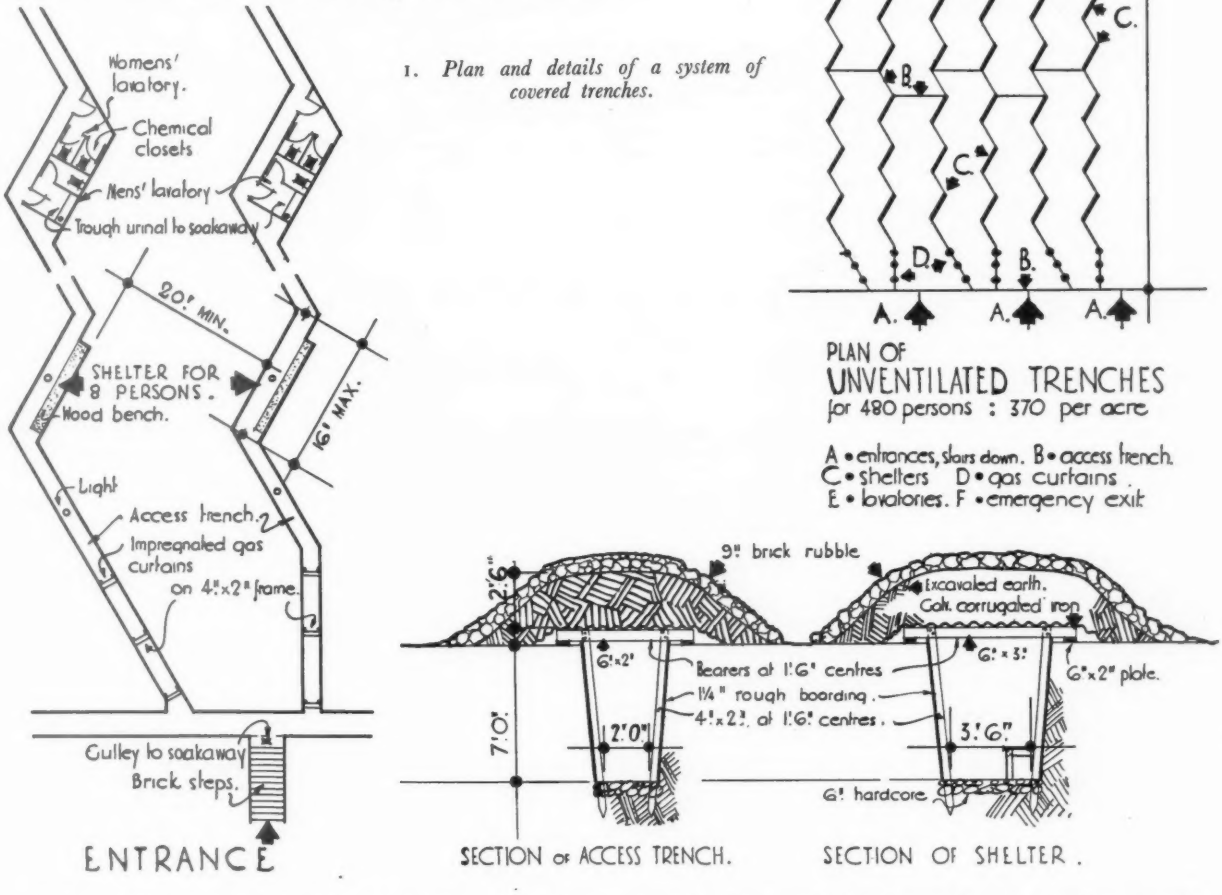
types are the easiest and quickest to construct and require little specially designed material and would give a reasonably high protection—particularly if it is true that comparatively little use of gas may be expected.

It is certain that a large number of these shelter types will be put in hand at once.

For these reasons the JOURNAL summarises below the main recommendations concerning these shelter types.

TRENCH SHELTERS

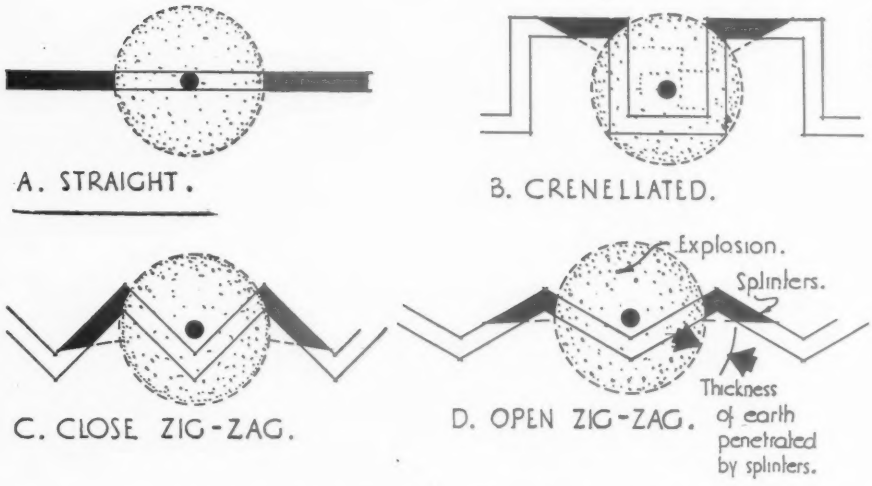
Covered trenches provide good protection against blast and splinters. A typical section is shown in Fig. 1. The excavated earth is used to form a roof, which is supported on some form of permanent shuttering. The Home Office



1. *Plan and details of a system of covered trenches.*

recommends that trenches should be a minimum of 7 ft. deep and 2 ft. wide at the bottom and with recesses 1 ft. 6 ins. deep at intervals, long enough to seat 10 people. The roof is recommended to be of a minimum of 2 ft. 6 ins. of earth supported on sheets of corrugated iron on wood joists at intervals. The protection can be further increased by a layer of hardcore 9 ins. thick on top of the earth. Trenches should be not less than 20 ft. apart. The walls should be lined with creosoted boards or corrugated iron and held in position by 4 ins. by 2 ins. uprights driven 1 ft. 6 ins. into the ground.

A recent Spanish Government publication recommends trenches for places where the existing buildings have no basements. Where the trenches are excavated near buildings they should at least be as far away as the height of the building. In order to localize the effects of explosion, trenches should be excavated zig-zag on plan. It has been found in practice that the zig-zag type provides greater safety than the crenellated type. The effects of blast and splinters from bombs falling on trenches varying in plan is shown diagrammatically in Fig. 2. The trenches should not run more than 5 metres (16 ft.) without changing direction. Where space is limited, the trenches should be excavated 4 ft. wide at the bottom to accommodate two files of people. Where sufficient space is available, it is better to excavate a narrower trench, 2 ft. 7 ins. wide at the bottom, accommodating a single file of people spaced at 1 ft. 8 ins. centres. In order to keep the trench free from water, a soakaway is recommended at the foot of each flight of steps. A layer of rammed hardcore is an advantage in keeping the floor of the trench in good condition.

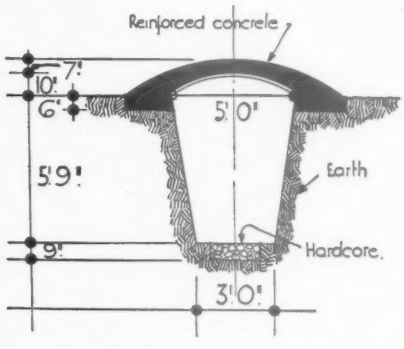


2. Effects of bombs on different trench plans (Information from the Defensa Passiva de Catalunya.)

In Spain, where protection has had to be contrived while a war is in progress, great emphasis is placed on the advantages of rough-and-ready shelters which can be provided quickly and improved at a later date. With this idea in mind, many open trenches have been excavated, providing partial protection from splinters, but which can be rendered safer by the addition of an earth or reinforced concrete roof when the exigencies of war permit. Fig. 3 illustrates a trench section recommended by the Defensa Passiva de Catalunya. When putting a concrete slab over a trench it is important to give it ample bearing on each side, as it was found in the first covered trenches of this type in Spain that the wet came in under the edges of the slab.

In order to arrive at an estimate of the cost of providing earth-covered trenches, the scheme illustrated in Fig. 1 was produced. The trench sections conform generally to the recommendations of the Home Office, but the planning has to some extent been influenced by experience gained in Spain. The trenches in Spain are not as a rule adapted to give protection against gas, and therefore the entrances are open to the external air. This permits more people to occupy the trench than would be the case if it were sealed with gas locks. In the scheme prepared it was found that to comply with the Home Office requirements relating to wall surface per person, it was necessary to arrange the occupants in groups at intervals. There is accommodation for 480 people seated in recesses off the main trench. Gas locks are provided at the entrances, and chemical closets at the rate of 1 to 25. Lighting is by electrical storage batteries, there being one light point to each length of trench.

Costs.—The total cost of the trench shelters as shown in Fig. 1, including the carting away of surplus earth, £4,603; cost per head, £9 12s. 0d.



3. Trench section recommended in Spain

BLAST-PROOF SURFACE SHELTERS

By a blast-proof shelter is meant one providing protection not only against blast but "against air concussion, air suction, bomb splinters and debris of building materials (where the shelter is in or adjoining a building) as well as against chemicals employed for offensive purposes. No security is afforded against direct hits."

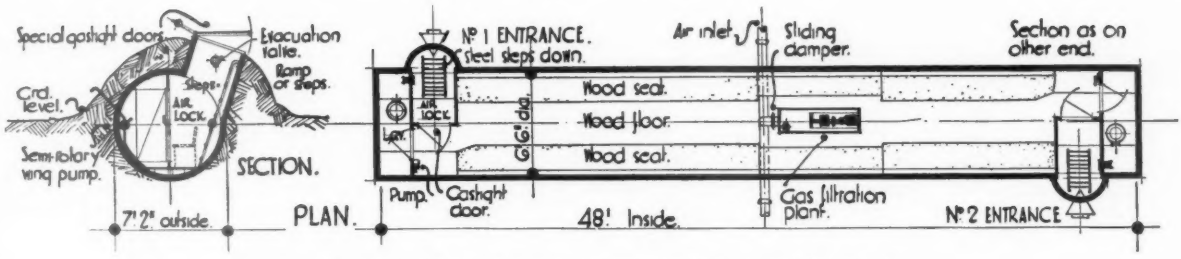
The Home Office recommends that blast-proof shelters should be proof against direct hits from incendiary bombs up to 25 lbs. in weight and against blast and splinters from a 500 lb. high explosive bomb bursting not nearer than 50 ft.

Generally speaking, blast- and splinter-proof shelters depend, like trenches, on a covering of earth to ensure protection, although other materials such as concrete, coal, slag, etc., might be used. They usually consist of a thin shell of reinforced concrete or steel sheets which, while itself giving a certain degree of protection, functions primarily as a permanent shuttering for a covering of earth or other material. Being enclosed in steel or concrete they can fairly easily be made gas-proof, making possible the installation of a ventilating plant and a consequent considerable reduction in the dimensions of the shelter.

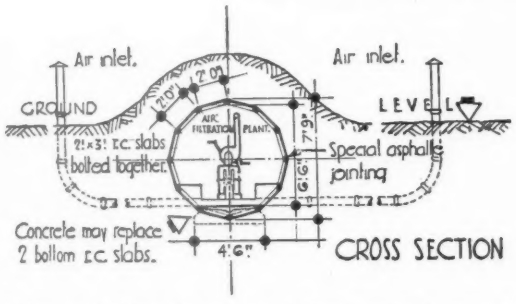
The most economical method of construction would be to bury the shelter partly below ground level so that the excavated earth is sufficient to provide the necessary top cover. The Home Office requires 2 ft. 6 ins. of earth or 12 ins. of normally reinforced concrete to stop splinters—reinforced concrete being therefore 2½ times as resistant to splinters as earth. If the shelter lining is of reinforced concrete 5 ins. thick, it would be necessary, on this basis, to provide an additional cover of 1 ft. 6 ins. of earth in order that the total should be equivalent to 12 ins. of reinforced concrete or 2 ft. 6 ins. of earth.

Reinforced concrete shelters of this type may be either monolithic or of precast units or spun pipes. The two latter have the advantages that they lend themselves readily to mass production and reduce the time of erection to a minimum.

A shelter for 50 persons constructed of 6 ft. 6 ins. diameter spun concrete pipes is illustrated in Fig. 4. Standard units are used except for the ends and entrances which are purpose made. It may be said in passing that the transport costs of large pipe sections is likely to be quite a big item if the site is very far from the works. This shelter is partly underground, the excavated earth being used to provide the necessary protective layer. Equipment includes an air filtration plant situated midway from the ends and delivering purified air which passes out at the ends via the gas locks through non-return valves. Two chemical closets and electric lighting are provided. A similar shelter illustrated



4. Blast-proof shelter for 50 people (Carrier Engineering Co., Ltd.)



5. Blast-proof shelter for 50 people (Stent Precast Concrete Ltd.).

in section in Fig. 5 is constructed of precast reinforced concrete segments which are bolted together on the site.

Shelters of rectangular sections may be built up with precast reinforced concrete beams held at the angles with grooved corner posts of the same material.

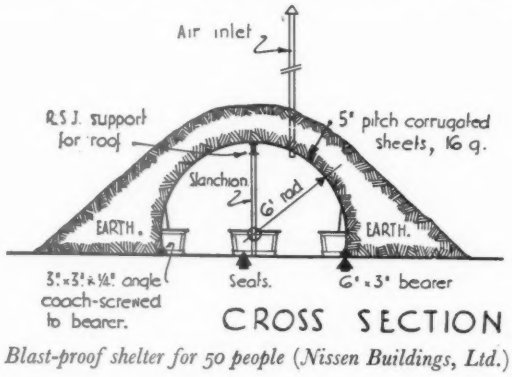
According to information received from the manufacturers, the shelters so far described, accommodating 50 persons, can be built for from £7–£9 per head. It should be understood that transport costs and local conditions inevitably influence the price.

A shelter utilizing light curved corrugated iron sheets of the "Nissen hut" type is shown in section in Fig. 6. With a 2 ft. 6 ins. cover of earth and with accommodation and equipment similar to those previously described, we are given to understand by the manufacturers that the cost would be up to £5 12s. per head.

It should be said that the types of shuttering or lining referred to here for the construction of blast-proof shelters can be equally well used for bomb-proof shelters, in which the earth cover would be replaced by several feet of reinforced concrete.

BLAST-PROOF SHELTERS IN BUILDINGS

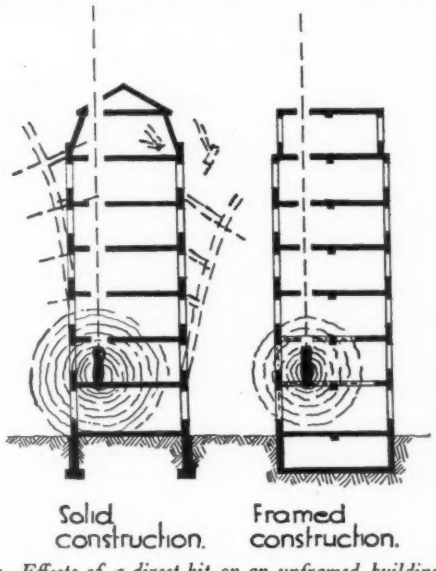
The advantages to be gained from constructing shelters in buildings, rather than as isolated structures, are first that



6. Blast-proof shelter for 50 people (Nissen Buildings, Ltd.).

the shelters are easily accessible to the occupants, and second that the structure of the building itself can to some extent be used for protection. The facility with which a refuge can be contrived in a building depends very largely on the type of building—whether steel-framed or with weight-bearing walls, number of storeys, construction of floors, thickness of walls and so forth.

Broadly speaking, buildings may be classed as framed and unframed. The blast of a bomb falling nearby is likely to demolish a building of traditional construction, that is with weight-bearing walls. A framed building will suffer much less. The likelihood is that some of the walls and panels

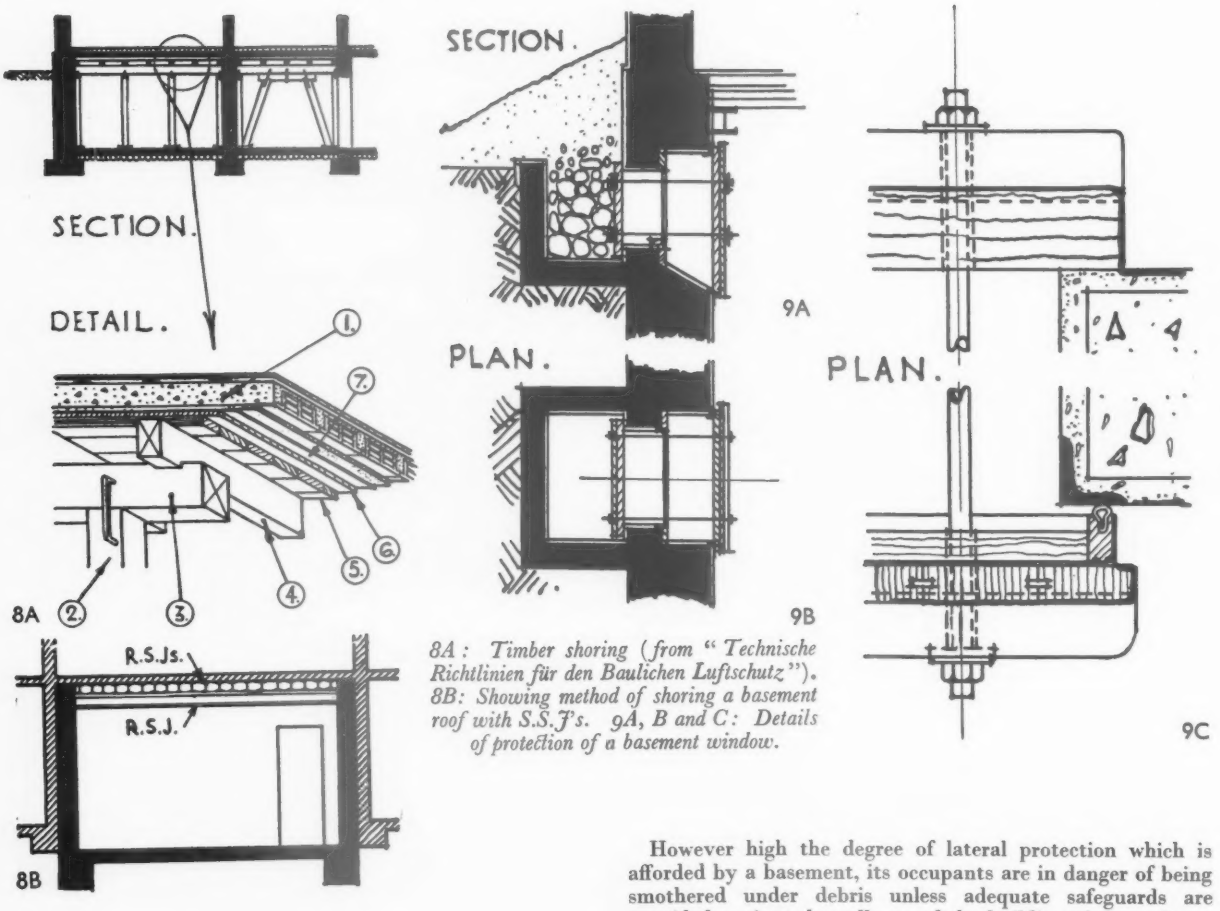


7. Effects of a direct hit on an unframed building and a framed one.

would be destroyed, but that the framework and floors would remain intact. (Fig. 7.)

Splinters ejected from the bomb crater will damage the walls of several of the lower storeys of nearby buildings, the ground floor walls being particularly vulnerable. The best protected part of the building, therefore, from the point of view of both blast and splinters is the basement, which has the advantage of a solid wall and is encircled by a natural protection of earth. In a high building, of course, the upper floors might be made reasonably safe from splinters, but the danger of blast and the collapse of the building would always be present. Where it becomes necessary to locate the shelter on an upper floor, it should have at least two storeys above it to provide overhead protection.

The location of the shelter or shelters will depend considerably on the layout and size of the building. In large buildings it is desirable to have a number of small shelters evenly distributed over the plan rather than one large central shelter. Three important considerations must always be borne in mind: accessibility, means of escape, and protection against the collapse of the building. Boiler-rooms



8A: Timber shoring (from "Technische Richtlinien für den Baulichen Luftschutz"). 8B: Showing method of shoring a basement roof with S.S.J's. 9A, B and C: Details of protection of a basement window.

should never be adapted as refuges. Rooms under warehouses, particularly those where combustible goods are stored, are also to be avoided. Experience gained from explosions has shown that it takes at least three hours to remove debris from exits. In some cases the risk of flooding, due, for example, to the proximity of water mains or sewers, renders the adaptation of the basement very difficult. To ensure protection it would be necessary to tank the refuge room with asphalt and provide means of access above the flood level. In a building with a sub-basement this danger might be met by locating the shelter in the basement rather than the sub-basement, which would function as a sump for the flood water.

The planning of the shelter conforms generally to the principles previously indicated. In an existing building it is often possible to provide the required accommodation with very little structural alteration. The main entrance to the shelter should be inside the building and easily accessible to the occupants. Other things being equal the entrance would be best situated at the foot of a main staircase. As, in the event of the building collapsing, this entrance would be blocked with debris, it is essential to have one, or preferably two, emergency exits which should have direct access to the street. The emergency exit might conveniently take the form of a manhole cover in the pavement. A better form of emergency exit, but difficult to arrange in urban buildings, would be a tunnel with an exit well away from the building. The provision of an emergency exit will largely influence the location of the shelter.

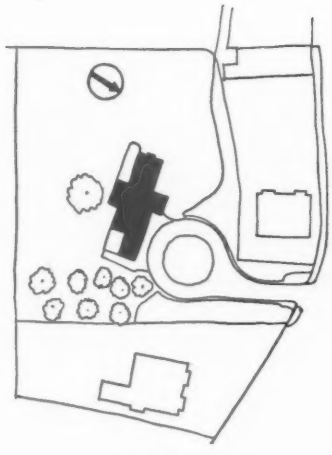
Pipes are always an undesirable feature in a refuge, and difficulty in avoiding them is generally encountered when adapting existing basements.

However high the degree of lateral protection which is afforded by a basement, its occupants are in danger of being smothered under debris unless adequate safeguards are provided against the collapse of the building above. In an existing building some method of strengthening the basement ceiling is essential, if it is to support the debris of the collapsed building. A new floor of reinforced concrete can be built, or the span of the existing floor reduced by shoring. Shoring can be either of wood (Fig. 8A) or steel, and it is possible to use brick piers. Steel has the advantage of occupying less space (Fig. 8B). Considerable care is required in shoring floors, particularly those of reinforced concrete, since incorrectly placed shoring may actually be a source of weakness. It may be necessary to provide concrete foundations to the shores. In a new building, of course, it is possible to design the ground floor to withstand the potential debris load.

Basement walls where surrounded with earth can be regarded as blast and splinter proof, but where the basement is surrounded by an area, or is actually a semi-basement, additional precautions would have to be taken. Fig. 9 shows a method of protecting a window-opening in an area. Windows which are not essential for light or ventilation might well be bricked up. The German regulations previously referred to make the following recommendations with respect to the thickness of walls of blast-proof shelters in buildings: Where the shelter extends not more than 3 ft. 3 ins. above ground level the thickness of the wall shall be 16 ins. in brickwork, 15 ins. in concrete or 12 ins. in reinforced concrete. In cases where the wall extends more than 3 ft. 3 ins. above ground the thicknesses have to be increased to 20 ins., 19½ ins., and 15½ ins., respectively.

In an independent blast-proof refuge it is undoubtedly an economy to instal an air-filtration plant to reduce the size of the refuge room. In the case of an adapted basement, on the other hand, there may be sufficient space available to make a hermetically sealed refuge economically preferable to one with artificial ventilation.

HOUSE AT SHILTON, NEAR COVENTRY



SITE PLAN

DESIGNED BY JOHN W. GRINDAL

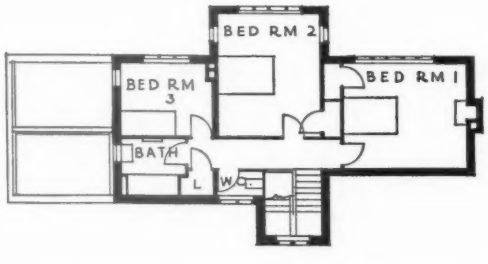
GENERAL—*The client required dining room and lounge as distinctly separate rooms, a large kitchen and a small wash-house.*

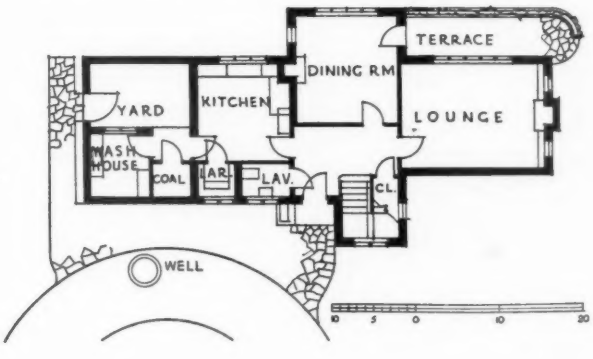
SITE—*The site, on the south side of a noisy main road, consists of an orchard, with a gentle slope and a pleasant outlook to the south. Main rooms are therefore arranged on the south side. Windows on the north side are as few as possible to avoid noise from the main road.*

PLAN—*The reason for the adoption of plan form is to afford maximum sunlight and view to as many rooms as possible.*

CONSTRUCTION—*External walls (except where tile hanging) are 11-in. cavity. Tile hanging is on laths nailed to plugs in 9-in. brickwork. Roof is finished with roofing felt and tiles. The internal walls are brickwork with stud partitions; floors are wood joists to first floor, with ground floor of deal boards bedded in tar on concrete, and nailed to battens bedded in concrete. Paving to terrace and north and east sides of house is in Cotswold stone.*

Above, the main (north front), and a view from the south.





GROUND AND FIRST FLOOR PLANS

HOUSE AT SHILTON, NEAR COVENTRY

DESIGNED BY JOHN W. GRINDAL

EXTERNAL FINISHES—*The client especially desired elevations to be in keeping with the orchard site, and at the same time to be traditional in character. It was felt, therefore, that tile-hanging and white walls satisfied this condition; tiles are dark red, hand-made, sand-faced. The white walls are common bricks distempered. The plinth and flower-boxes to the terrace and the main entrance porch are sand-faced bricks.*

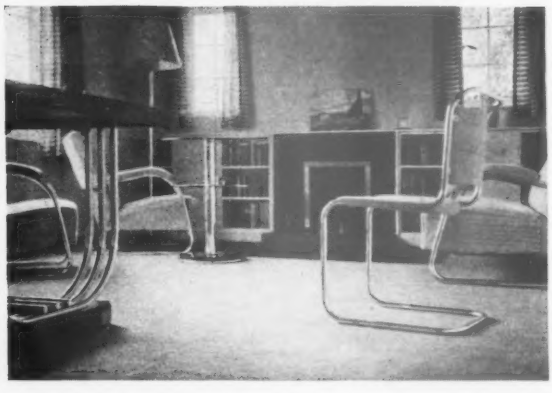
INTERNAL FINISHES—*Walls, generally, are ivory distempered and ivory paintwork. Walls to kitchen, bathroom, cloak and w.c.'s are ivory paintwork; floors (except kitchen, bathroom, etc.) are deal boarded to take fitted carpets. Kitchen, bathroom, larder, cloaks and w.c.'s have rubber flooring. Stair balustrade is brickwork with deal capping cellulosed black.*

SERVICES—*Hot water is provided by a grate in kitchen. Heating is by coal fires. Water supply is from a well drawn by an electric pump, with automatic starting device. A water-softener is installed.*

COST—*1s. 1d. per cube foot exclusive of circular drive.*

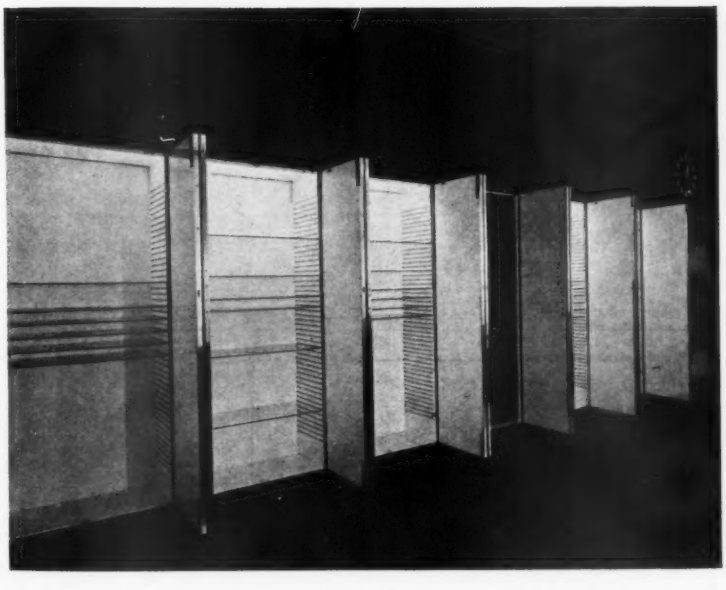
Above, the south front; left, the main entrance; below, the lounge and the staircase.

The general contractors were W. T. Denyer and Sons; for list of sub-contractors, *see page 584.*



WORKING DETAILS : 689

BOARD ROOM • RESEARCH LABORATORIES, BLACKLEY, MANCHESTER • SERGE CHERMAYEFF



The board room suite consists of board room and ante room, and was designed to serve two other purposes. First for lectures : the end wall is specially treated for projection ; and secondly for exhibitions : cupboards running the length of one wall are equipped with adjustable glass shelves and independent top lighting. A continuous hanging rail in copper permits the hanging of charts, etc., with special provision for the display of photographs and transparencies against the light-diffusing glazing of the false windows.

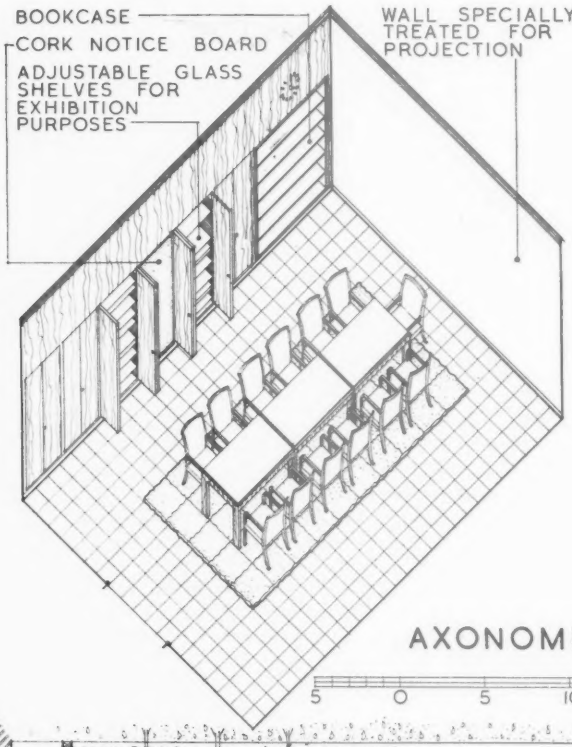
To ensure sound insulation from works outside and escape from frequent fogs, the rooms are air-conditioned by their own independent plant. Air is drawn in through air filters, warmed by a continuous pipe run, and comes into the rooms under the windows and is extracted through the false ceiling and air space between the external and inner windows, ventilating the false window lighting at the same time.

Acoustical correction has been obtained by untreated fibre board on the ceiling. The panelling is of Australian walnut ply faced on a core of the same fibre board. The chairs, upholstered in natural hide, are of birch. The tables are in units with reversible tops for display purposes. The flooring is cork and the metal trim throughout is in copper.

Details are shown overleaf.

WORKING DETAILS : 690

BOARD ROOM • RESEARCH LABORATORIES, BLACKLEY, MANCHESTER • SERGE CHERMAYEFF



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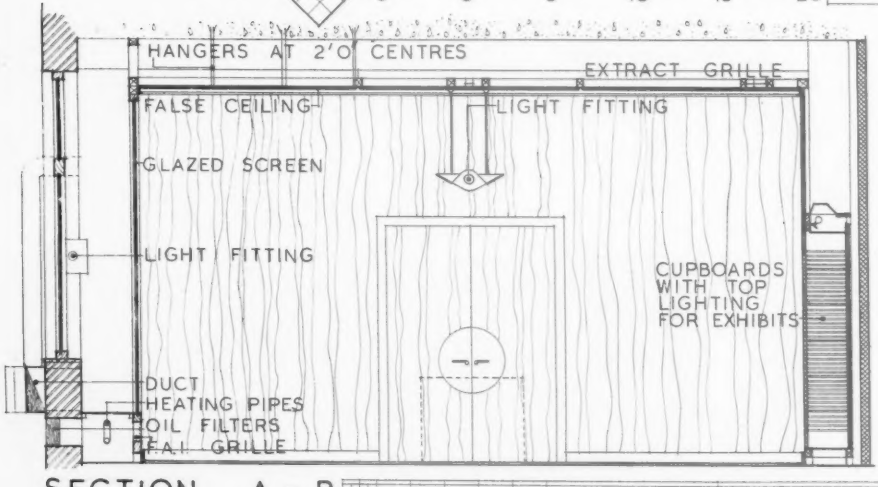
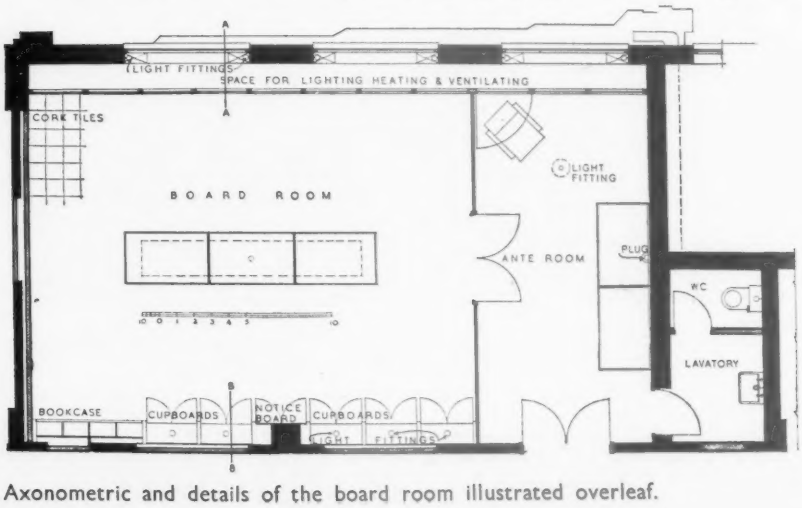
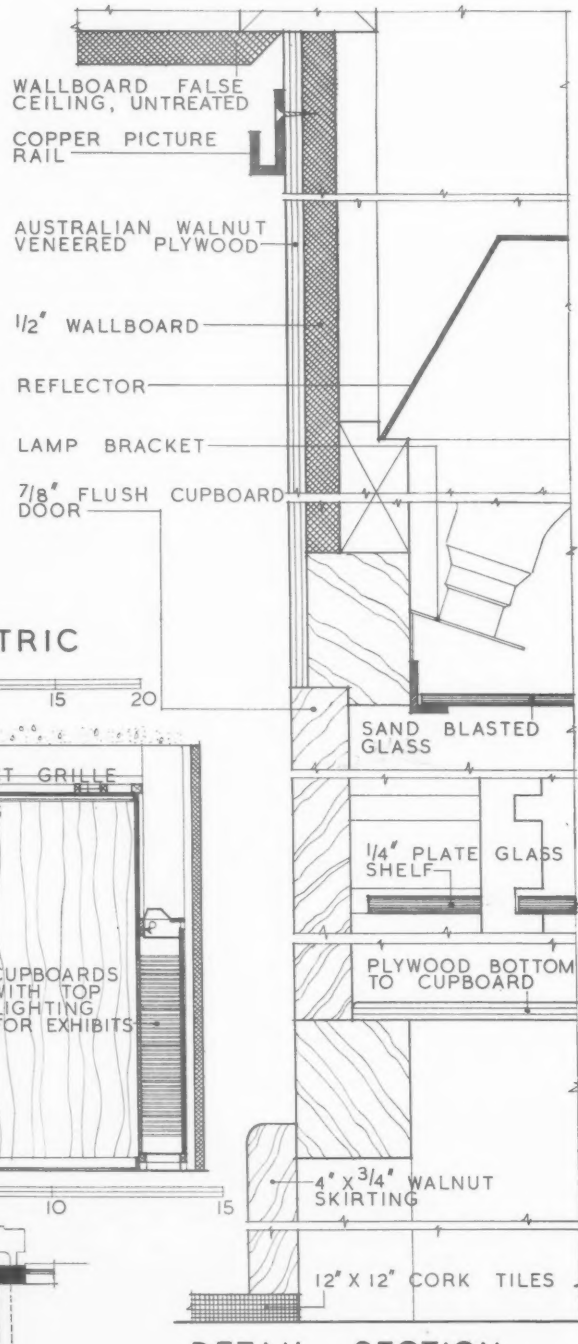


SECTION A - B 0 1 2 3 4 5 10 15



PLAN OF BOARD-ROOM SUITE



DETAIL SECTION THRO' CUPBOARDS

1 0 1 2 3 4 5

Axonometric and details of the board room illustrated overleaf.

The Architects' Journal Library of Planned Information

INFORMATION SHEET

SUPPLEMENT

SHEETS IN THIS ISSUE

667 A.R.P.

668 Aerodromes

In order that readers may preserve their Information Sheets, specially designed loose-leaf binders are available similar to those here illustrated. The covers are of stiff board bound in "Rexine" with patent binding clip. Price 2s. 6d. each post free.

Sheets issued since Index :

601 : Sanitary Equipment
602 : Enamel Paints
603 : Hot Water Boilers—III
604 : Gas Cookers
605 : Insulation and Protection of Buildings
606 : Heating Equipment
607 : The Equipment of Buildings
608 : Water Heating
609 : Fireplaces
610 : Weatherings—I
611 : Fire Protection and Insulation
612 : Glass Masonry
613 : Roofing
614 : Central Heating
615 : Heating : Open Fires
616 : External Renderings
617 : Kitchen Equipment
618 : Roof and Pavement Lights
619 : Glass Walls, Windows, Screens, and Partitions
620 : Weatherings—II
621 : Sanitary Equipment
622 : The Insulation of Boiler Bases
623 : Brickwork
624 : Metal Trim
625 : Kitchen Equipment
626 : Weatherings—III
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628 : Fireclay Sinks
629 : Plumbing
630 : Central Heating
631 : Kitchen Equipment
632 : Doors and Door Gear
633 : Sanitary Equipment
634 : Weatherings—IV
635 : Kitchen Equipment
636 : Doors and Door Gear
637 : Electrical Equipment, Lighting
638 : Elementary Schools—VII
639 : Electrical Equipment, Lighting
640 : Roofing
641 : Sliding Gear
642 : Glazing
643 : Glazing
644 : Elementary Schools—VIII
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646 : Plumbing
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648 : U.S.A. Plumbing—V
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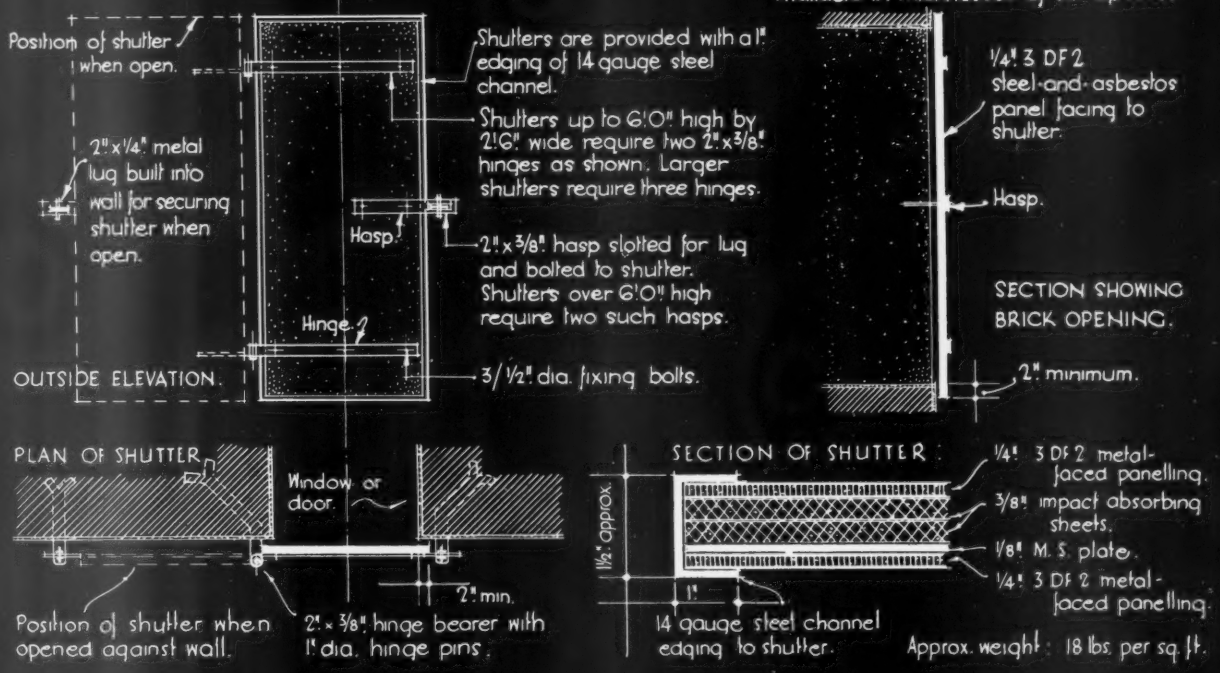
650 : Ventilation of Factories and Workshops—I
651 : School Cloakrooms (Boys)
652 : U.S.A. Plumbing—VII
653 : Plumbing
654 : U.S.A. Plumbing—VIII
655 : School Cloakrooms (Girls)
656 : Ventilation of Factories and Workshops—II
657 : Floor Construction
658 : Partitions
659 : Equipment
660 : Asbestos-Cement Decorated Sheets
661 : Aluminium
662 : Sound Resistance
663 : Building Equipment
664 : Sheet Lead Work
665 : Building Equipment
666 : Sound Insulation

830. THE ARCHITECTS' JOURNAL LIBRARY OF PLANNED INFORMATION

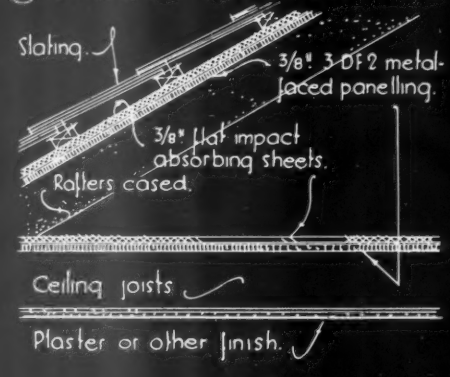
TYPICAL DETAILS OF DURASTEEL COMPOSITE SPLINTER PROOF SHUTTERS:

Available in thicknesses of ½" up to 4"



PRECAUTIONS AGAINST LIGHT INCENDIARY BOMB ACTION IN NEW & EXISTING ROOFS:

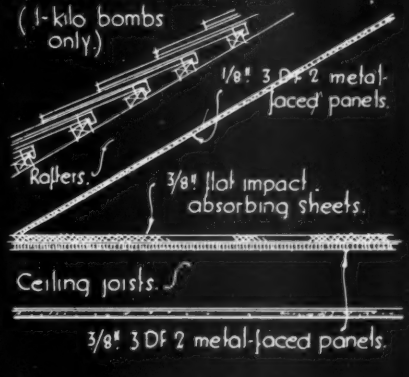
(A) TIMBER CONSTRUCTION.



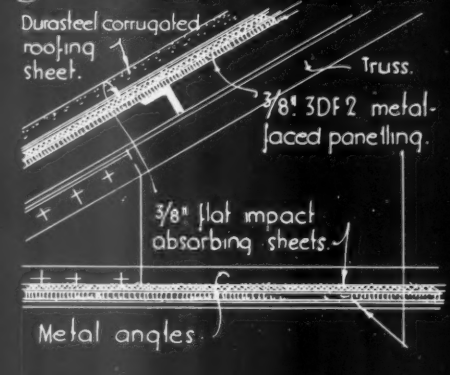
1: NEW BUILDINGS.
2-kilo bombs. (4½ lbs.)
Construction as shown. Timber battens or close boarding may be used.

2: 1-kilo bombs. (2¼ lbs.)
Pitched roof construction as above, but the wooden ceiling joists need not be protected.

3: EXISTING BUILDINGS.
(1-kilo bombs only.)



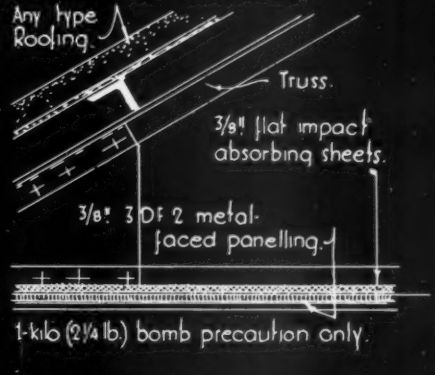
(B) STEEL TRUSS CONSTRUCTION:



4. NEW BUILDINGS:
2-kilo bombs. (4½ lbs.)
Construction as shown. Roofing must be Durasteel 1" deep corrugated sheets.

5. 1-kilo bombs (2¼ lbs.)
Pitched roof construction as above, but no precautions need be taken at ceiling level – i.e., trusses may be left unceiled.

6: EXISTING BUILDINGS.



Information from Durasteel Roofs Ltd.

INFORMATION SHEET: A.R.P.: SHUTTERS AND ROOF LININGS.
SIR JOHN BURNET TAIT AND LORNE ARCHITECTS ONE MONTAGUE PLACE BEDFORD SQUARE LONDON WC1. Oscar P. Boyne

THE ARCHITECTS' JOURNAL
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INFORMATION SHEET

• 667 •

A.R.P.

Subject : Fire-resisting Roof Linings and Protective Shutters

General :
The details given on this Sheet show some applications of two patent materials for Air Raid Precautions work.
The materials are :
(*a*) Durasteel Patent 3DF2 Fire Protection panelling which consists of two light gauge steel facings keyed to a compressed asbestos composition core.
This material possesses a very high fire resistance, withstanding direct flame temperatures up to 1000° C. without disintegration. The steel facings on each side give it considerable strength.
(*b*) Durasteel Impact Absorbing Sheet, a sheet of highly compressed fibrous composition, which has a high fire resistance and is capable of absorbing shock.

Fire Resisting Roof and Ceiling Linings :
The protective linings shown in the details in this sheet are designed :—
(*a*) To break the velocity of falling incendiary bombs.
(*b*) To provide a fire-resisting surface on which the bomb, if it explodes, will burn itself out relatively harmlessly.
No exact standards exist by which relative protective values (resistance to penetration) can be given, but Durasteel has been extensively tested and as a general guide it can be stated that each type of "2 kilo" construction shown will stop a 2 kilogram bomb at a terminal velocity of 450 feet per second, and each type of "1 kilo" construction shown will stop a 1 kilogram bomb at a terminal velocity of 400 feet per second. The resistance to impact afforded to each type of construction is more than sufficient to arrest bombs (weight and velocity as above) on top of the lower 3DF2 Sheet, where if they burst they may burn out relatively harmlessly.

Detail No. 1.
This type of construction, designed to give protection against a 2 kilogram bomb at a terminal velocity of 450 feet per second, consists of an impact absorbing sheet and a 3DF2 sheet laid over the rafters but under the battens.
The battens are fixed with heavy nails capable of driving through the batten and the two layers of Durasteel material and into the rafters.
Tiles or slates are fixed to the battens in the usual way.
Rafters should be spaced at not more than 14 ins. centre to centre.
The rafters should be lined on the sides and underside with 3DF2 $\frac{1}{8}$-in. thick, to protect them from a bomb burning itself out on the ceiling lining below.
These protective sheets fixed to the rafters are not intended to stop a 2 kilogram bomb completely, but to reduce its velocity considerably.
An impact absorbing sheet and a sheet of 3DF2 are provided over the ceiling joists, which should not be spaced at more than 14 ins. centre to centre, and the surface thus provided is intended finally to check the fall of the bomb so that if it bursts it will burn itself out on the fire-resisting sheet.
The alternative form of construction (No. 2) noted, in which the linings on the ceiling joists are omitted gives less protection and is expected to prevent penetration of only a 1 kilogram bomb at a terminal velocity of not more than 400 feet per second.

Detail No. 3 :
This detail shows the general method of protection as outlined above, applied to an existing construction.
The 3DF2 sheet $\frac{1}{8}$-in. thick is skew nailed or screwed to the under side of the rafters and is intended only to retard the fall of the bomb. Impact Absorbing Sheets and $\frac{3}{8}$-in. 3DF2 Sheets are provided on top of the ceiling joists to give a further impact surface and a fire resisting surface on which the bomb will be stopped and can burn itself out.

Details Nos. 4, 5 and 6 :
These details show the application of the same methods to new and existing steel roof construction. In each case if one set of linings is provided it is intended to resist 1 kilogram bombs and if two sets of linings are provided it is intended to resist the penetration of 2 kilogram bombs.
In the case of the existing construction shown in detail No. 6, the protection given is effective against the 1 kilogram bomb, even if the existing roofing material offers very low resistance to penetration. The stronger the existing roofing material is, the greater is the factor of safety.

Durasteel Shutters :
Durasteel composite shutters are built up of sheets of 3DF2 Impact Absorbing sheet and mild steel plate enclosed in a 14-gauge steel channel edging.

Resistance to Penetration :
The 1$\frac{1}{2}$-in. thick shutter shown on this Sheet has been tested and provides resistance to penetration equal to a solidly built 4$\frac{1}{2}$-in. brick wall.
The 4-in. thick shutter provides resistance to penetration equal to a solidly built 9-in. brick wall.
A removable barrier of greater thickness is available which equals a 13$\frac{1}{2}$-in. brick wall in its resistance to penetration—such a wall is officially accepted as being capable of stopping all flying splinters resulting from the explosion of a 500-lb. bomb at a distance of 50 feet or more.

Fixing :
Shutters should preferably be fixed on the outside of the wall, the hinges and fixings being anchored solidly into the wall with long fish-tailed lugs. If the shutters are fixed on the inside of the wall the anchorages must be made extra heavy and secure.
The usual hinge for outside fixing is a long strap hinge bolted on, but special hinges may be required to suit the conditions of the job.

Sizes :
Shutters up to 8 ft. by 2 ft. 6 ins. are made from single sheets, larger sizes are divided into panels with steel framing and if of exceptional size are braced and stiffened with horizontal steel braces. All shutters are purpose made and vary according to size and site conditions.

Gas Proofing :
All shutters can be made gas proof with suitable jamb linings and rubber cushion strips. In these cases triple action hinges are usually required instead of those normally used.

Tests :
Full details and photographic records of all tests carried out on Durasteel products and various types of construction incorporating Durasteel may be inspected on application to the Company.

Prices :
(A) *Impact Absorbing Sheet* :
6d. per square foot
or 7/6 per sheet 6 ft. by 2 ft. 6 ins.
10/- per sheet 8 ft. by 2 ft. 6 ins.
(B) 3DF2 *Fire Protection Panelling* :

Thickness	Standard Size 6 ft. by 2 ft. 6 ins.	8 ft. by 2 ft. 6 ins.
$\frac{1}{8}$ in. ...	15/-	20/-
$\frac{1}{4}$ in. ...	17/6	23/6
$\frac{3}{8}$ in. ...	21/6	28/6

Sheets of special dimensions can be cut from stock sheets at a slight extra cost.
(C) *Asbestos Protected Steel Corrugated Roofing Sheets:*

Size	Colour	Standard Durasteel
Up to 8 ft. long	Natural grey.	1/4 per lineal foot 2 ft. 3 ins. wide.
Over 8 ft. long	„	1/5 per lineal foot 2 ft. 3 ins. wide.
Stock sheet 6 ft. by 2 ft. 3 ins.	„	8/- per sheet.

Curved sheets, or sheets cut to special size, and coloured sheets are obtainable at slight extra cost.
The price of roofing accessories such as ridging, corner and gable trim, louvres, etc., ranges between 10d. and 1/4 per foot run.

Manufacturers: Durasteel Roofs, Ltd.
Address : Oldfield Lane, Greenford, Middlesex
Telephone : Waxlow 1051

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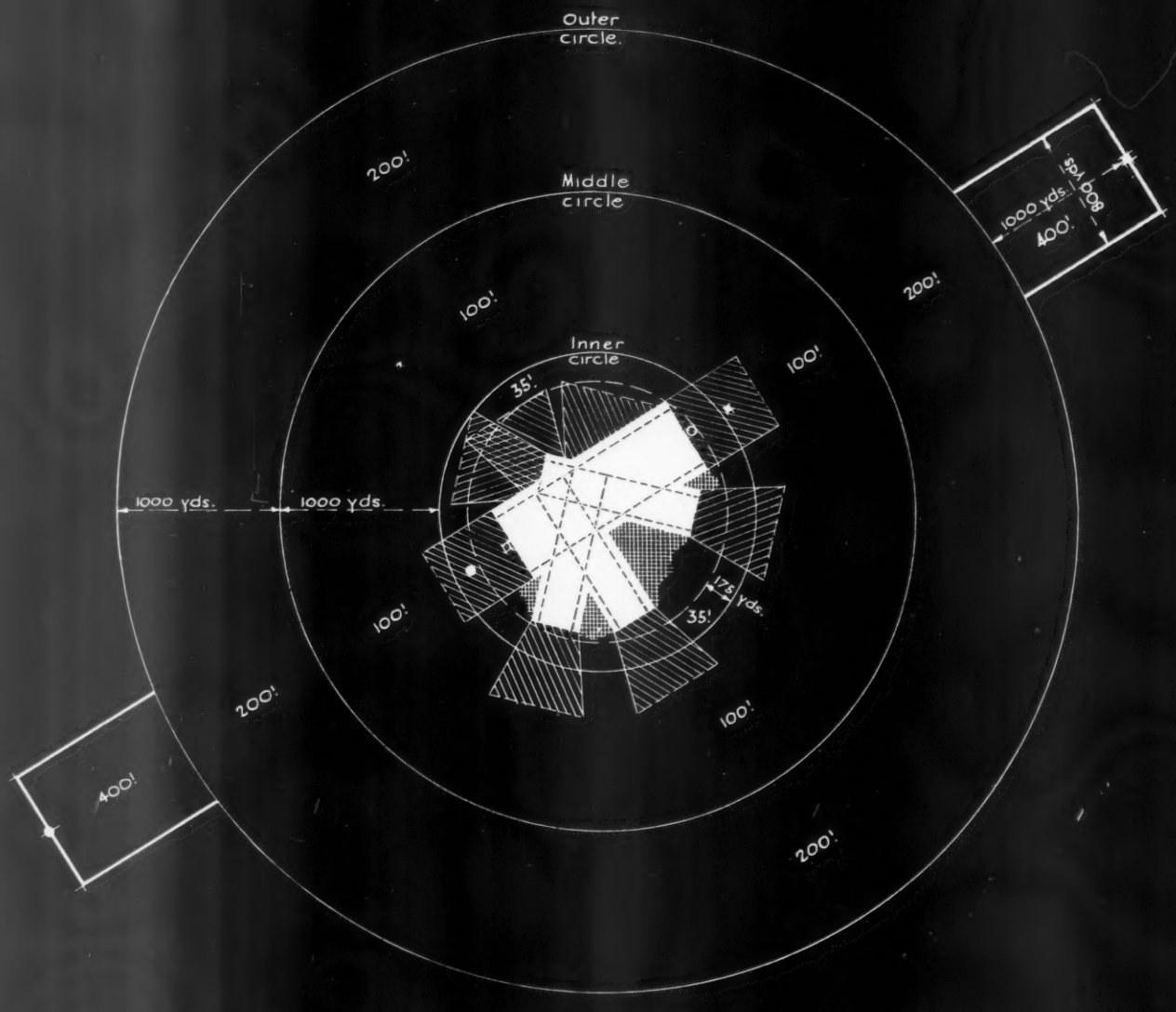
RECOMMENDED ZONING REQUIREMENTS FOR STANDARD ALL-WEATHER COMMERCIAL AERODROMES:



Neutral and Landing Areas.

Limits of Landing area: 3 runways of 1000 x 200 yds & 1 of 1300 x 400 yds.

Possible sites for buildings.

No obstruction above a slope of 1 in 15 measured from the end of Runway.

Low visibility approach areas.

○ □ Sites for Main Transmitter Beacons

● ■ Sites 50' x 50' for Inner & Outer Radio Marker Beacons.

Broken Circle: Smallest circle which will encompass the Neutral & Landing areas.
Inner Area: 35' indicates no obstruction above 35 feet.
Middle Area: 100' " " " " 100 ".
Outer Area: 200' " " " " 200 ".
Low Visibility: 400' " " " " 400 ".
The Datum from which heights shall be measured is the Mean Level of the Landing Area.
Where two height restriction zones overlap the permissible height shall be the lower of the two.

Extracted by permission from: Air Ministry Pamphlet 76 (May 1938).

INFORMATION SHEET: ZONING OF LAND AERODROMES.
SIR JOHN BURNET TAIT AND LORNE ARCHITECTS ONE MONTAGUE PLACE BEDFORD SQUARE LONDON WC1. Oscar A. Beyne

THE ARCHITECTS' JOURNAL
LIBRARY OF PLANNED INFORMATION

INFORMATION SHEET

• 668 •

AERODROMES

Subject : Planning and Zoning of Aerodromes.

The diagram given on this Sheet and the notes quoted below have been extracted from "The Principles Governing the Planning and Zoning of Land Aerodromes," A.M. Pamphlet 76, 1st Edition, May, 1938, published by the Air Ministry (Department of Civil Aviation), and are reproduced here by permission of the Controller of H.M. Stationery Office.

The Sheet deals with the requirements for commercial aerodromes for regular day and night services, the recommendations being based upon the "standard aerodrome" referred to in the Maybury Committee's report.

General Considerations :

1. The Committee . . . under the Chairmanship of Sir Henry Maybury . . . came to the conclusion that . . . the standard ordinarily adopted for commercial use should be that illustrated in Appendix III to their Report . . .

2. It is perhaps necessary to mention in this connection that the earlier aerodromes developed in this country were more or less limited to the adaptation of an existing field of grass . . .

3. These disadvantages gradually led to the conception of a "planned" aerodrome having zoned approaches leading to four principal runways . . .

4. Under such a plan the orientation of the runways can be considered in relation to the character of the terrain and to the natural obstructions beyond the aerodrome . . .

5. Buildings . . . necessary for aerodrome purposes, can be sited in positions within the angles formed by neighbouring runways . . .

6. . . . it has been considered advisable in this Pamphlet to deal more particularly with the measures recommended to be taken to secure the preservation of the air approaches to an aerodrome so planned.

7. However well planned and graded may be the landing area . . . it is becoming increasingly important to take account of the surroundings and to ensure that the effective dimensions of the aerodrome, as planned, are not reduced in the future by the erection of obstructions . . . While this consideration applies in marked degree to the ground beyond the runways as planned, it will also be necessary to control, to some general extent, the height of buildings on other portions of the land surrounding the aerodrome . . .

8. Although the acquisition of further land beyond the aerodrome proper may, in certain cases, be unavoidable . . . this method of preservation may sometimes prove costly, and equally satisfactory results can often be obtained by the utilization of the powers afforded in the Town and Country Planning Act, 1932 . . . A Note regarding the use of such powers is contributed by the Ministry of Health in Part V of this Pamphlet.

9. The layout and zoning arrangements, reproduced in Appendix III to the Maybury Committee's Report, envisaged an aerodrome with a symmetrical arrangement of the runways . . . For the purpose of this Pamphlet, it has been considered preferable, therefore, to use as an illustration a model "standard aerodrome" planned with runways having an asymmetrical arrangement.

10. It is recognized that local circumstances may, in certain cases, preclude the creation of a standard aerodrome. . . .

11. Where owing to such local circumstances . . . an aerodrome not conforming to standard requirements is acceptable, the same need for the protection of the approaches in some reasonable degree will inevitably arise. . . . In order, however, that corresponding principles may be applied, some recommendations for dealing with secondary aerodromes have been included in this Pamphlet.

Definitions :

12. (*a*) *Aerodrome.*—Any definite and limited area of ground, including any buildings, installations or equipment intended to be used either wholly or in part in connection with the arrival, the departure or the servicing of aircraft.

(*b*) *Standard Aerodrome.*—An aerodrome suitable for the operation of regular day and night services.

(*c*) *Secondary Aerodrome.*—An aerodrome suitable for purposes other than those for which a standard aerodrome is intended.

(*d*) *Landing Area.*—That part of an aerodrome specifically reserved for the landing and taking off of aircraft and licensed for that purpose by the Secretary of State for Air.

(*e*) *Runway.*—A strip of ground forming part of the landing area and designed for use only in the direction in which the strip is orientated.

A low visibility runway differs from a normal runway only in shape and size.

(*f*) *Neutral Area.*—A strip of ground, 50 yards in width, adjoining the sides of a runway.

(*g*) *Aerodrome Building Area.*—That part of an aerodrome adjoining the neutral area which is reserved for the erection of Aerodrome Buildings and any other Buildings intended for use in connection with the aerodrome.

(*h*) *Zoning.*—The defining around an aerodrome of areas within which limitations are imposed on the height of all objects so as to permit unobstructed passage in flight to aircraft arriving and departing.

(*i*) *Flightway.*—The air space extending for a distance of 500 yards beyond the end of a runway. The lateral boundaries of a flightway, other than of a low visibility flightway, are formed by vertical planes, the extensions of which pass through the diagonally opposite corners of the rectangle containing the runway and two laterally adjoining strips each 50 yards in width.

The lateral boundaries of a low visibility flightway are formed by vertical planes, the extensions of which contain the sides of the rectangle formed by the low visibility runway which the flightway serves and two laterally adjoining strips each 50 yards in width.

(*j*) *Inner Area.*—An area enclosed between the perimeter of the landing area and the circumference of a circle the radius of which is 175 yards greater than that of the smallest circle that will encompass the landing and neutral areas.

(*k*) *Middle Area.*—An area enclosed between the outer limit of the inner area and an exterior concentric circle the radius of which is 1,000 yards greater than that of the inner area.

(*l*) *Outer Area.*—An area enclosed between the outer limit of the middle area and an exterior concentric circle the radius of which is 1,000 yards greater than that of the middle area.

(*m*) *Low Visibility Approach Area.*—An area extending for 1,000 yards beyond the limits of the outer area and having a width of 800 yards.

The area is symmetrically disposed about the axis of the low visibility runway which it serves.

(*n*) *Obstruction Angle.*—The angle formed between the horizontal and a line joining the highest point of an object situated in a flightway to the nearest point of the appropriate runway.

Planning of Standard Aerodromes :

13. A standard aerodrome should include a landing area together with neutral areas and its surroundings should be protected and zoned in accordance with the particulars set out below :—

(*a*) *The Landing Area.*—The Landing Area should consist of not less than four runways, each of which is disposed at an angle not greater than 45 degrees to the next, and of which not less than one should provide for landings in low visibility.

The minimum dimensions of a runway, other than a low visibility runway, should be 1,000 yards long by 200 yards wide.

The minimum dimensions of a low visibility runway should be 1,300 yards long by 400 yards wide.

Note.—The disposition of the runways at any aerodrome is dictated by local conditions.

(*b*) *Neutral Areas.*—Neutral areas should be preserved along each side of every runway except in so far as any portion, or portions, of such areas would be coincident with any part of an intersecting runway.

(*c*) *Aerodrome Building Area.*—The portions of land within the angles formed by neighbouring runways will afford the most suitable sites for the erection of necessary aerodrome buildings. The area selected for this purpose, however, should not encroach upon the neutral areas.

(*d*) *Protection of the Aerodrome and Zoning of Air Approaches.*—The datum for height measurements of obstructions—not being obstructions in the flightways—should be the mean level of the landing area :—

(i) Within the neutral areas, no obstructions of any kind should be erected except with the prior approval of the Air Ministry.

(ii) Within the aerodrome building areas, such buildings may be erected as are specifically approved by the Air Ministry.

(iii) Within the flightways, no obstruction angle should exceed 3 degrees 45 minutes, which is approximately equivalent to a slope of 1 in 15.

(iv) Within the inner area, the maximum permissible height should be 35 ft. or such other height as the Air Ministry may consider to be safe having regard to local conditions.

(v) Within the middle area, the maximum permissible height should be 100 ft.

(vi) Within the outer area, the maximum permissible height should be 200 ft.

(vii) Within the low visibility approach areas, the maximum permissible height should be 400 ft.

No obstructions exceeding the maximum permissible height, as set out above, should be permitted within the areas mentioned, provided that if two areas overlap the maximum permissible height in those areas should be determined by the lower of the two limits.

14. *Diagram.*— . . . the disposition of the runways in the diagram is only one of an infinite number that may be adopted to suit local conditions.

15. *Exceptional Modifications.*—The foregoing specification embodies the principles which should govern general practice, but modification of details will sometimes be necessary to suit local conditions. In extreme cases . . . Air Ministry approval may be given to . . . deviations from them . . .

Secondary Aerodromes :

16. For preservation of the air approaches o secondary aerodromes, the following specification is recommended . . .

17. For the purposes of this specification the definitions given in Part II of this Pamphlet are deemed to apply, except that a flightway should be defined as follows :—

"The air space extending for a distance of 1,000 yds. beyond the end of a runway. The lateral boundaries of a flightway are formed by vertical planes, the extensions of which pass through the diagonally opposite corners of the rectangle containing the runway and two laterally adjoining strips each 50 yds. in width."

18. Where the aerodrome is not laid out in runways :—

(*a*) No obstructions should be erected within 1,000 yds. of the perimeter of the landing area above a slope of 1 in 15 measured from the nearest point of the said perimeter ;

(*b*) No obstructions should be erected more than 200 ft. in height above the mean level of the landing area, within 2,000 yds. of the said perimeter.

19. Where the aerodrome is laid out in four or more runways intersecting at angles not exceeding 45 degrees :—

(*a*) No obstruction should be erected within the neutral areas, or within the aerodrome building area except with the prior approval of the Air Ministry ;

(*b*) No obstructions should be erected within a flightway (as defined in paragraph 17 above) above a slope of 1 in 15 measured from the end of the runway ;

(*c*) No obstructions should be erected more than 100 ft. in height above the mean level of the landing area, within 500 yds. of the perimeter of the landing area ;

(*d*) No obstructions should be erected more than 200 ft. in height above the mean level of the landing area, within 2,000 yds. of the said perimeter.

20. Where two areas with different height restrictions overlap, the lower of the two height restrictions should obtain.

BRANCH LIBRARY, LEICESTER

DESIGNED BY

SYMINGTON, PRINCE AND PIKE

GENERAL—*This scheme is the outcome of a competition.*

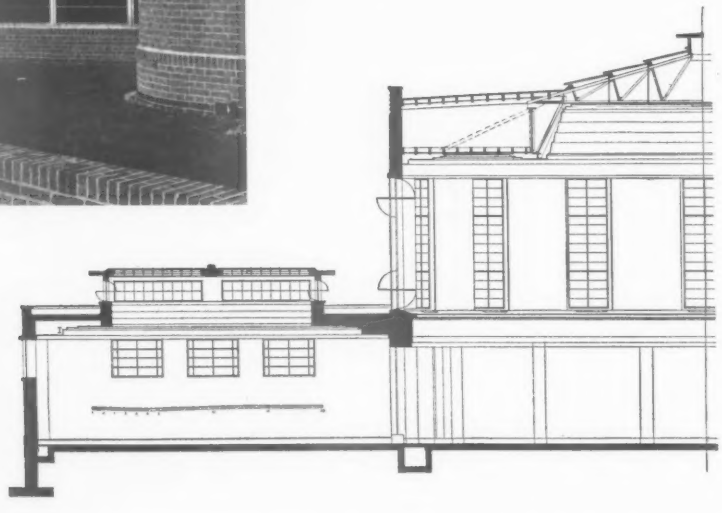
SITE—*The site was level and situated at the corner of St. Barnabas Road and French Road, Leicester. After trial holes were taken, running sand was found to exist. This necessitated specially designed foundations in reinforced concrete. Steel sheet piling was used for the basement work (the walls of which were reinforced concrete), whilst wall foundations were designed on the beam principle in reinforced concrete. The whole of the basement was lined with asphalt.*

Above, a general view of the main front; below, the main entrance.

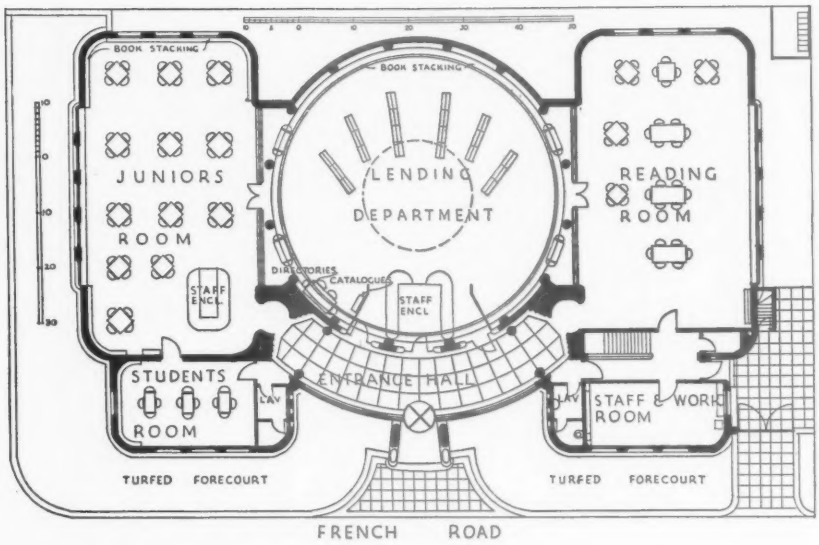
BRANCH LIBRARY, LEICESTER: DESIGNED

PLAN—*The plan is simple but straightforward, arranged on one floor, with a small basement embodying a store room and heating chamber, situated on the south-east side. The entrance is in French Road. Access to the building is arranged through oak revolving doors, which may be used as such, or, alternatively, thrown open, thus leaving a clear opening in case of necessity or during summer months. The entrance hall allows full access to the lending department, reading room, junior library, students' room, staff room and caretaker's quarters. Adjacent to the staff room and entrance, is a staircase serving the store room below. Consideration has been given to ease of circulation and the supervision by the staff from the central enclosure. Steel glazed screens separate the lending department from the reading and junior library for this purpose. All departments are lit by top lighting.*

Above is a view of the French Road front.

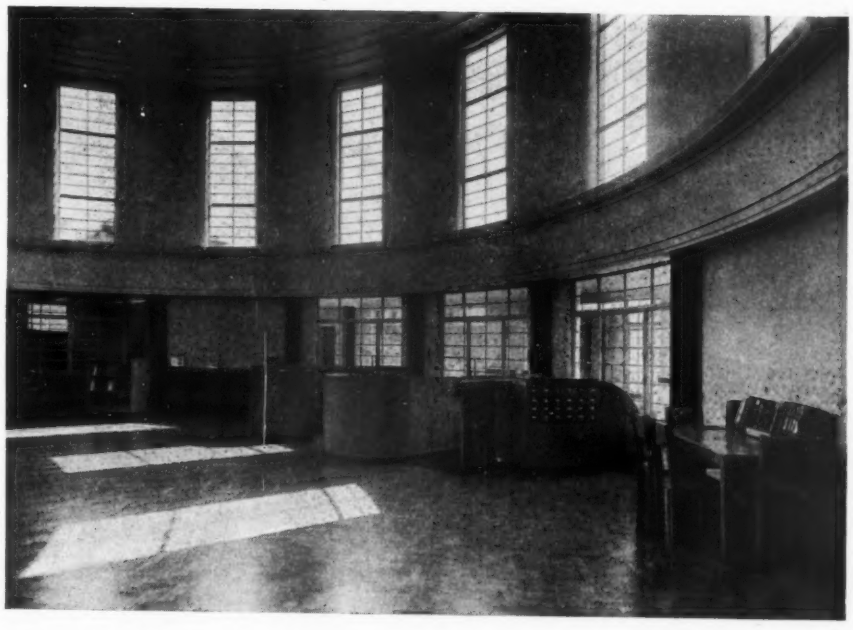


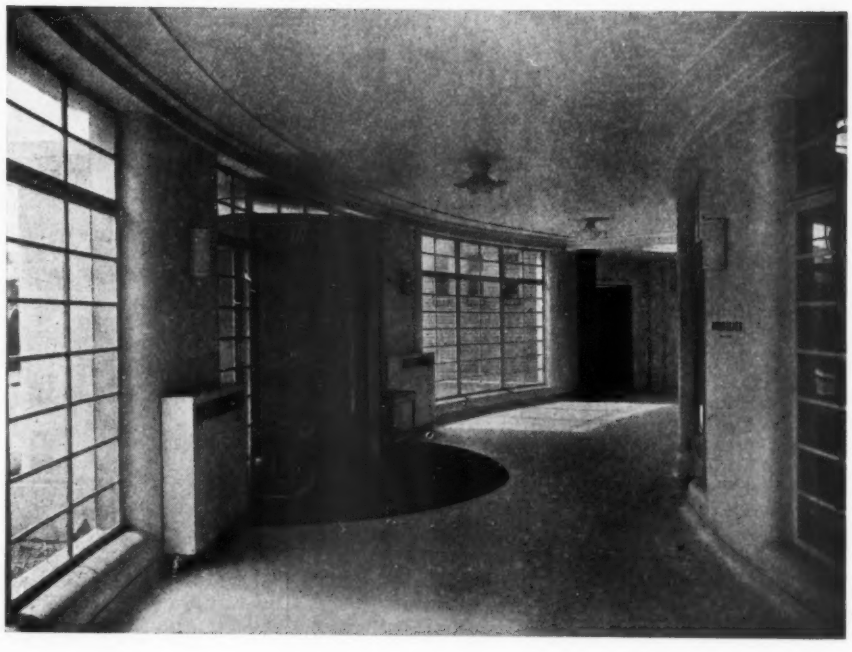
HALF SECTION



GROUND FLOOR PLAN

BY SYMINGTON, PRINCE AND PIKE

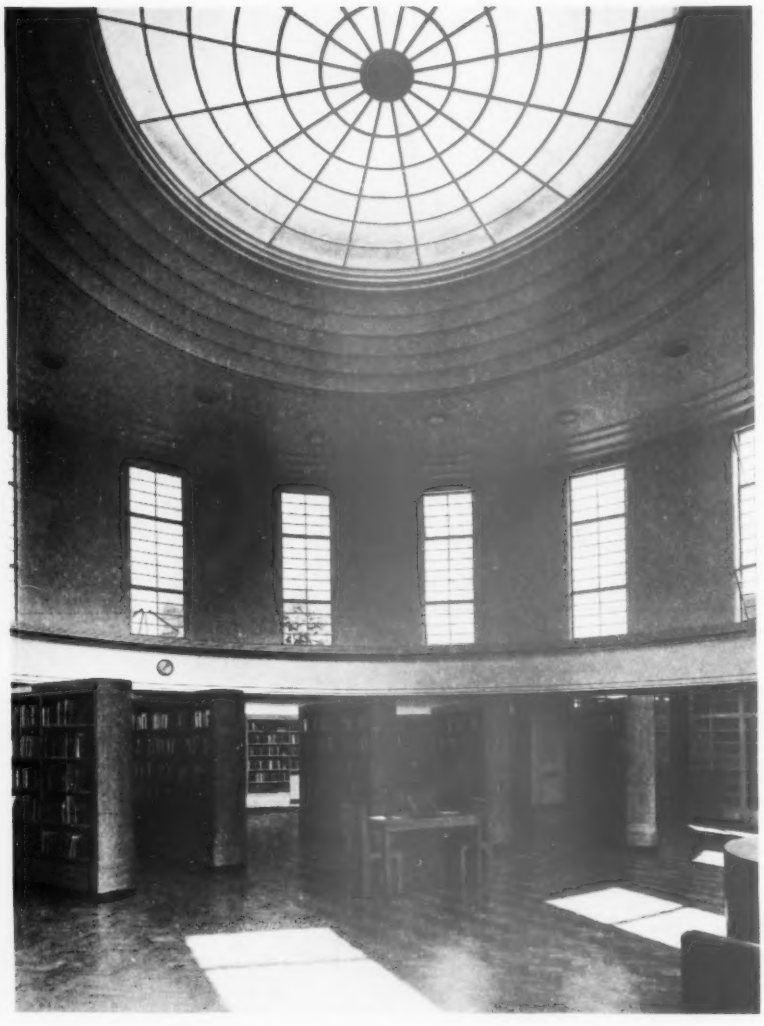




CONSTRUCTION AND EXTERNAL FINISHES—*The building is steel framea almost throughout and has brick outer walls and artificial stone dressings. The ground floors are concrete with floor finishes of oak block, with the exception of the entrance hall, staff entrance and lavatories, which are finished in terrazzo. All roofs, with the exception of the lending department, are executed in precast concrete beams, screeded to falls and asphalted. An under ceiling has been suspended beneath, consisting of wood battens, on which is fixed expanded metal lathing, with a plaster finish. The lending department roof consists of a steel frame, with timber and asphalt surround, and a circular roof light in patent glazing and a ventilator as a centre finish. Beneath the metal lathing is suspended a plaster ceiling; the centre laylight is in steel and wired glass. All windows are steel, fixed directly into the brickwork and have vents operated by long arm gear.*

Top, the lending department; above, the entrance hall.

BRANCH LIBRARY, LEICESTER



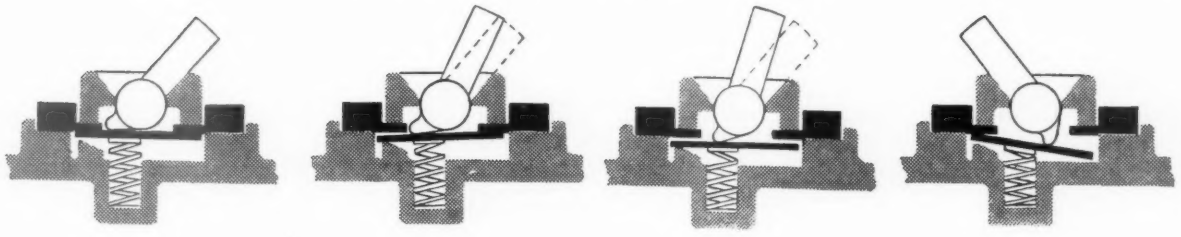
DESIGNED BY SYMINGTON, PRINCE AND PIKE

INTERNAL FINISHES—*Plaster throughout, decorated with an eggshell glazed paint. The staff lavatories have terrazzo dadoes. All doors, with the exception of the main entrance and those giving access to the departments, are flush and are Austrian oak. The remainder are steel. The furniture and fittings, designed by the architects, are in natural finished Austrian oak.*

SERVICES—*The heating is by low pressure hot water and the heating units are of the ventilating type. The boiler is mechanically fed and thermostatically controlled. The system is assisted in circulation by an electrical pump. Electric heaters, thermostatically controlled, supply hot water over lavatory basins and sinks. Towel rails, off the heating system, are arranged in the staff lavatories. Inset electric lighting fittings are installed in the lending department; other departments have ceiling fittings.*

Left, and below (left), two views of the lending library; and below, the reading room.

The general contractors were Geo. Gurney and Sons; for list of sub-contractors, see page 584.



TRADE NOTES

[*By PHILIP SCHOLBERG*]

Switches for Alternating Current

FOR a good many years switch manufacturers have been concentrating on quick make and break, a very right and proper outlook as long as most supplies were direct current. With the now almost universal use of alternating current, the position is rather different, for it has now been established that for this form of current a short slow break is best, in that it gives less arcing. As a secondary point the slow break makes it possible to produce a silent switch, and this is all to the good, as the quick break types were becoming noisier and noisier, a 15-amp. power plug producing a smack which could be heard all over a small house.

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So far, most manufacturers have been content to modify the normal tumbler type of switch, but now Messrs. G. H. Scholes & Co. have evolved what seems to be a new type. The four small sketches at the head of these notes show the various movements which take place when the switch is turned off. It will be seen that contact is made through a small flat strip pressed home against the contacts by a spring, the first movement of the switch dolly giving the short slow break, further movement giving a double and finally a long break. It will be appreciated that there are only two moving parts and the pressure spring, so that any replacements should be remarkably easy, though the silver to silver contacts are robustly made and should give no trouble. Current carrying capacity seems ample, for after 2½ hours at 18 amps. the 15-amp. socket showed a maximum temperature rise of 4·4 degrees C., which was reached after approximately one hour, the temperature thereafter remaining contant. At 30 amps. the maximum rise was 8 degrees.

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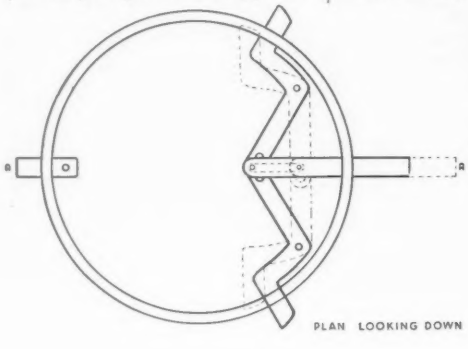
These sockets are made in 5 and 15 ampere sizes, and in surface, flush and sunk types, the price varying from 2s. 8d. to 6s. 10d. each. The manufacturers continue their support for the flat pin type of plug, which these sockets are arranged to take. From a practical point of view there is much to be said for the flat pin type, the main advantage from the user's point of view being that the 2, 5 and 15 amp. plugs will all go straight into the 15 amp socket, and of course the 2 will go into the 5. From the manufacturers' point of view it is rather easier to maintain contact pressure on the flat blades than it is on the more usual circular pin. In America flat pin plugs seem to be almost universal, but in this country they cannot be said to be very widely used, though certain municipal housing estates and several privately-owned flat blocks use them everywhere. But assuming that the architect instals them in a house, the fact remains that nearly all portable appliances like irons and wireless sets are sold with the ordinary round pin plug, so that the user may suffer a certain mild annoyance. It is rumoured, however, that a British standard specification for flat pin plugs is being seriously considered, and that one or two large manufacturers of electrical gear are considering the production of flat pin plugs in a fairly large way. How much trust should be placed in these rumours I do not know, but it would probably be better in the long run if they were true, for it is at least arguable that the flat is better than the round pin, and if there is to be any widespread change-over it is obviously better to make it sooner than later. Maybe Messrs. Scholes will reap the reward of their pioneer work, though history suggests that someone else is much more likely to muscle in and scoop it. But either way it would be a good thing to get the problem settled soon, or is this

Plan and photograph showing a variation of the Ultralux fittings known as type G. See note overleaf.



just a part of the current peace at any price slogan?—(*George H. Scholes & Co., Ltd., Wylex Works, Wythenshawe, Manchester.*)

Ultralux Developments

Troughton and Young have just introduced a variation of the Ultralux fittings known as type G. The photograph on page 583 gives a pretty good idea of what it looks like, the main point being that no metalwork is visible once the bowl is in position. The resultant fitting is therefore quite shallow, 5¼ inches for the 200-watt model, and the absence of metalwork does away with the awkward question of whether to have chromium, bronze or a cellulosed finish—details which hardly any clients and only a few architects can decide without a great deal of heart-searching.

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A new method of fixing the glassware has also been worked out (see diagram). The glass has an inturned horizontal rim, and the back plate has one fixed and two hinged lugs, these latter being tweaked outwards by a flat strip after one edge of the glass has been hooked over the fixed lug. A simple and unobtrusive device which should be perfectly reliable in use, and which should put an end to the usual domestic habit of cross-threading everything from thermos tops upwards.

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Five sizes have been standardized, varying from 40 to 200 watts and from 8½ in. to 1 ft. 2 in. in diameter. Prices run from 14s. 6d. to 35s. with white flashed opal glassware, ivory flashed opal costing anything from 1s. to 5s. more according to size.—(*Troughton and Young, Ltd., The Lighting Centre, 143 Knightsbridge, London, S.W.1.*)

Synchronous Clocks

Clocks driven from time-controlled A.C. mains have been with us long enough to be taken for granted, and their use will obviously increase as more and more supply companies change over. Smiths, after a year or two of experiment in the comparatively early days, now have a really large range of models, so that one must be captious indeed not to find the type one wants, be it period or modern. Flush types for building-in are also now available in a good many different patterns, and these seem to be the most sensible type.

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It is also interesting to see that Smith's propaganda is concerned mainly with installation, their present war-cry being "Don't forget the clock points," an intelligent outlook which not only puts across the idea of the clocks, but which may also help to put an end to the yards of flex which even now sometimes disfigure the sides of the mantelpiece, and which can easily be a trap for people rushing round with vacuum cleaners. They are now pushing a neat little connector which I think has already been noticed in these columns. Prices are reasonable and the sample I have before me seems to be a well-made little job, and it is sufficiently different from the ordinary plug to stop the curious from pulling it out and thus stopping the clock.—(*Smith's English Clocks, Ltd., Cricklewood Works, London, N.W.*)

Spun Concrete Pipes

The sole rights of a new process for the manufacture of concrete pipes have recently been acquired by John Ellis and Sons, and this process is now in operation at their new works at Stoney Stanton. The process, invented by Mr. W. R. Hume, of the Hume Pipe Company in Australia, is known as the Hume concussional process, and is a combination of centrifugal spinning and concussion, the concussion being applied during the early stages of the operation by means of an eccentric shaft. This concussion makes possible the use of a low water-cement ratio in the neighbourhood of ·35 to ·4, thus avoiding segregation of the aggregate in the pipe wall. The result, it is claimed, is to give increased density and strength to the concrete, and to avoid the layer of fine aggregate so often found in the interior surface of pipes spun by the wet process. The concussion presumably has somewhat the same effect as vibration, hence the improved properties of the finished product.—(*John Ellis and Son, Ltd., Stoney Stanton, Leicestershire.*)

Manufacturers' Items

In order to cope with the demands being made for their materials, Messrs. Reynolds Tube Company, Ltd., announce further large-scale extensions to their plant for the production of light alloy tubes and sections. These include a 5,600-ton extrusion press, claimed to be the largest in the world, together with a further 2,750-ton press. The large press will produce sections weighing ¾ ton and up to 60 ft. in length, in heat-treatable high-strength alloys. Work is well advanced, and the new units are expected to be in operation by the end of this year.

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It will be remembered that in March last there was a serious fire at the Esavian Works, Stevenage, when the greater portion of the timber and some of the outbuildings of this factory were destroyed.

Amongst the buildings was the sports pavilion, and on September 3 the opportunity of a cricket match between the London house and Stevenage was made the occasion of opening the new pavilion which has been built to the design of Mr. J. W. Leonard.

The pavilion was opened by Mrs. R. J. W. Appleton, wife of a director of the firm.

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We are informed by Messrs. A. W. Faber that their Castell pencil—which is intended for the making of blueprints direct—has been reduced from 6d. each to 4d.

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The Trussed Concrete Steel Co., Ltd., have been appointed reinforced concrete engineers for the following new buildings: New showrooms and offices in Oxford Street for the Gramophone Co., Ltd. (architect: Mr. Joseph Emberton, F.R.I.B.A.), and are also carrying out the reinforced concrete frame and Truscon floors. Section House at East Ham for the Metropolitan Police. Architect: Mr. Brian O'Rorke, F.R.I.B.A. Newbridge Secondary School. A reinforced concrete frame building with solid slab floors. County Architect: Colin L. Jones, L.R.I.B.A. Contractors: Messrs. Rees Edwards, Tredegar. Gosden House. Architects: Messrs. Wm. G. Newton and Partners, F.R.I.B.A. Contractors: Messrs. Crosby & Co., Ltd., Farnham. Section House for the Metropolitan Police. Architects: Messrs. Farquharson and McMorran, F. and A.R.I.B.A. A reinforced concrete frame building. School clinic at Great Barr. Architect: Mr. S. N. Cooke, F.R.I.B.A. Contractors: Messrs. Percy W. Cox, Ltd., Handsworth.

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It is interesting to note, in spite of the general condemnation of asphalt as a flooring material where mustard gas is liable to be present in any quantity, that an asphalt mix has been evolved. We understand that the Limmer and Trinidad Lake Asphalt Co., Ltd., in conjunction with the Chemical Defence Research Department, are responsible for the production of what is known as Sample No. 1, which has received the approval of the Home Office, for anti-gas constructional work, and further, that in all cases where this special asphalt mix (Sample No. 1) is submitted as the flooring and walling in air-raid shelters it will be approved.

We are informed by the Limmer and Trinidad Lake Asphalt Co., Ltd., that this special mix has been registered under the name of Anti-gasphalt, and that they will be pleased to supply particulars and prices to any A.R.P. authorities interested.

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The Grosvenor range made by Radiation Ltd. (Large Apparatus Department, Palatine Works, Warrington) has been supplied on an exceptionally large scale through the Scarborough Gas Company to the Royal Hotel, Scarborough. The installation comprises: an eight-oven Grosvenor central range, seven of the ovens being fitted with Brazier hotplate burners, the eighth having a special arrangement of hotplate for deep fat frying.

THE BUILDINGS ILLUSTRATED

HOUSE AT SHILTON, NEAR COVENTRY (pages 569-570). Architect: John W. Grindal. The general contractors were W. T. Denyer and Sons, and the sub-contractors and suppliers included: London Brick Co., bricks; Longford and Midland Concrete Co., artificial stone; G. Tucker, Ltd., tiles; J. Chambers, glass; Slate Slab Products, Ltd., grates; G. R. Marsons, Ltd., electric wiring; Berry's Electric, Ltd., electric light fixtures; Rugby Plumbing and Heating Co., Ltd., plumbing; Matterson; Huxley and Watson, sanitary fittings; General Stampers (Welwyn), Ltd., door furniture; Crittall Manufacturing Co., Ltd., casements; Henry Wiggin & Co., Ltd., metal sink; Heal and Son, Ltd., textiles; Pel, Ltd., steel furniture; Easiwork, Ltd., kitchen equipment, G. H. Heritage and Son, well sinks; Silical Water Softeners (Domestic), Ltd., water-softening plant; Daymonds, Ltd., hardwood letters; R. A. Lister & Co., Ltd., electric pumps.

ST. BARNABAS BRANCH LIBRARY, LEICESTER (pages 579-582). Architects: Symington, Prince and Pike. The general contractors were George Gurney and Son, and among the sub-contractors were the following: Richards (Leicester), Ltd., structural steel; B.R.C. Fabric Co., Ltd., steel reinforcement; Empire Stone Co., stonework and carving; British Steel Piling Co. steel piling; Leicester Asphalte Co., asphalting; William Freer, plumbing and glazing; Maddock and Wright, Ltd., heating installation; J. Orton and Son, electric lighting; Meason and Leeson, plastering; G. F. Harrison and Son, painting; Hewetson & Co., wood block floors; Crittall Manufacturing Co., Ltd., steel windows; George Pick and Son, ironmongery and gates; Elliott and Son (Reading), revolving doors; Constone, Ltd., terrazzo work; Fred. Thomas, Ltd., electric fittings; Mellowes & Co., patent glazing; Leicester Cabinet Co., internal fittings and furniture.

PRICES

On the following pages appear *(a)* Prices for Measured Work, Part II; *(b)* Prices for Approximate Estimates.

★ *ANSWERS TO QUESTIONS*

While the JOURNAL, *naturally, cannot presume to undertake the responsibilities of a quantity surveyor, it has arranged with the authors of this Supplement to answer readers' questions regarding any matter that arises over their use of the Prices Supplement in regard to their work, without any fee. Questions should be addressed to the Editor of the* JOURNAL, *and will be answered personally by Messrs. Davis and Belfield. As is the normal custom, publication in the* JOURNAL *will omit the name and address of the enquirer so that it is unnecessary to write under a pseudonym.*

The complete series of prices consists of four sections, one section being published each week in the following order :—

1. Current Market Prices of Materials, Part I.
2. Current Market Prices of Materials, Part II.
3. Current Prices for Measured Work, Part I.
4. A.—Current Prices for Measured Work, Part II.
   B.—Prices for Approximate Estimates.

● *Prices are for work executed complete and are for an average job in the London Area, all prices include for overhead charges and profit for the general contractor.*

PART 4

CURRENT PRICES FOR MEASURED WORK—II

BY DAVIS AND BELFIELD, P.A.S.I.

JOINER

Deal Flooring

		1″	1¼″
Plain edge flooring in batten widths ..	per square	38/–	46/5
Ditto tongued and grooved ditto ..	per square	41/9	50/6
T. & G. B.C. Pine rift flooring in narrow widths	per square	50/–	—

Wood Block Flooring, laid herringbone, 100 *yards and up*

D.G. and T.G. kiln dried, 2 block border, laid in hot mastic composition on cement screed, including 2 feet run of straight cutting per yard super, and wax polishing at time of laying.

		1″ nominal	1¼″ nominal
Burma teak	per yard super	13/11	18/4½
Canadian Maple	per yard super	11/6	13/8
25–30 per cent. quart Austrian Oak	per yard super	12/10	16/–
Plain American Oak (no selection made for sap) ..	per yard super	11/8	—
Gurjun	per yard super	12/7	14/9
Pitch Pine (50% rift sawn)	per yard super	11/10	13/8
Ditto (100% ditto)	per yard super	13/1½	15/6
British Columbian Pine ..	per yard super	10/–	11/6
Kara Sea Deal, 100 per cent. rift sawn	per yard super	9/9	10/6
Jarrah	per yard super	13/2	15/9
Additional straight cutting..	5½d. per foot run		

JOINER—(*continued*)

Secret Nailed Tongued and Grooved Strip Flooring, fully Desiccated, including Polishing

		1″ nominal £ s. d.	1¼″ nominal £ s. d.
Austrian Wainscot Oak ..	per square	8 18 6	10 12 7
Plain Japanese Oak ..	per square	7 10 8	9 2 2
Plain American Oak ..	per square	7 7 0	9 3 9
Pitch Pine..	per square	7 0 6	8 15 7
British Columbian Pine ..	per square	4 14 6	5 7 7
Canadian Maple	per square	6 19 1	8 10 7
Burma Teak	per square	8 18 6	10 17 4
English Oak	per square	10 4 9	12 15 11
Gurjun	per square	6 19 1	8 10 7
Jarrah	per square	6 13 10	8 6 5

Wall Linings

⅝″ Deal tongued and grooved V-jointed Matching in narrow widths	per square	32/9
¼″ (6 mm.) Birch (A) Plywood and fixing to walls	per square	46/6
3/16″ Asbestos cement sheets butt jointed	per foot super	–/3¾
½″ Fibre board and fixing to walls ..	per yard super	2/11
Deal battens as ground plugged to brickwork	per foot super	–/1½
1½″ × ⅝″ wrot and chamfered fillets ..	.. per foot run	–/1½
2″ × ½″ wrot and moulded ditto	per foot run	–/1½

CURRENT PRICES

BY DAVIS AND BELFIELD, P.A.S.I.

JOINER, IRONMONGER AND STEEL AND IRONWORKER

JOINER—(*continued*)

Skirtings

	Deal	Austrian Oak
1″ chamfered or moulded 4″ high, fixed to and including grounds and backings planted on per foot run	–/3½	–/7¾
Add for plugging to brickwork .. per foot run	–/0½	–/0¾

Fitted ends on hardwood price as 4″ of skirtings, mitres as 6″.
Fitted ends, etc., on deal skirting included in price per foot run.

Casements and Fanlights

	1½″	2″
Deal moulded sashes divided into squares with glazing bars .. .. ..per foot super	1/4½	1/5½
Add for hanging casements (butts measured separately) .. .. each	1/9	2/–

Cased Frames and Sashes

Deal cased sashed frame, including 2″ double hung sashes, with 6″×3″ Oak cill and brass axle pulleys, sash line and weights, average 15 feet super .. per foot super	3/9

Doors in Deal

	¾″	1″	1¼″
Matchboarded, ledged and braced door per foot super	1/–	1/2	1/4
	1½″	1¾″	2″
Framed, ledged and braced door, filled in with matchboarding .. per foot super	1/5	1/9	1/10
Ditto garage doors .. .. per foot super			1/7
			4-panel
1½″ square framed, both sides .. .. per foot super			1/7
2″ ditto .. .. per foot super			1/9
1¼″ ditto bead butt panels one side, but square the other per foot super			1/9
2″ ditto, ditto .. .. per foot super			1/11
1½″ moulded both sides .. .. .. per foot super			1/10
2″ ditto .. .. per foot super			2/–
For fixing only p.c. doors allow .. .. per foot super			–/2½

Hardwood doors two-and-a-half times as much as deal.

Deal glazing beads, mitred and bradded per foot run	–/1½
Ditto and fixed with brass cups and screws per foot run	–/3

Window and Door Linings

	1″	1¼″	1½″
Deal linings, 6″ wide, tongued at angles and planted on including backings per foot run	–/6½	–/7	–/8
Add for plugging to wall .. per foot run	–/0½	–/0½	–/0½
Add for rebating .. .. .. per foot run	–/0½	–/0½	–/0½
Add for ½″ × 2″ Deal stop planted on per foot run	–/1½	–/1½	–/1½
Deal window board 9″ wide, with rounded nosing, tongued at back and on and including bearers plugged to brickwork .. per foot run	–/10	–/11	1/1
¾″ Deal scotia mould .. .. per foot run		–/1½	
Oak linings 6″ wide tongued at angles and planted on including backings per foot run	1/2½	1/4½	1/7½
Add for plugging to brickwork .. per foot run	–/1	–/1	–/1
Add for rebating .. .. .. per foot run	–/1	–/1	–/1
Add for ½″ × 2″ Oak stop planted on per foot run	–/3½	–/3½	–/3½
Oak window board 9″ wide, with rounded nosing tongued at back and on and including bearers plugged to brickwork .. per foot run	1/10	2/1	
¾″ Oak scotia mould .. .. per foot run		–/3½	

Window and Door Frames

	Deal	Austrian Oak
4″ × 3″ door frames .. .. per foot run	–/10	2/0½
4″ × 3″ window frames .. .. per foot run	1/–	2/4½
4″ × 3″ transomes and mullions .. per foot run	1/3½	2/11½
6″ × 3″ door cill, sunk weathered twice throated and grooved for water bar (measured separately) per foot run	—	3/9
6″ × 3″ window ditto .. .. per foot run	—	3/1
Add or deduct for variation in sectional area per square inch .. .. .. per foot run	–/0½	–/1½
Add for each labour, for chamfer, bead or rebate, etc. .. .. per foot run	–/0½	–/1
Add for each moulding .. .. per foot run	–/0¾	–/1½

Architraves

	Deal	Oak
1″ × 3″ chamfered or moulded architraves, including mitres on softwood, planted on per foot run	–/3	–/7½

Mitred angles on oak price as 6″ of architrave.

Add for plugging to brickwork .. per foot run	–/0½	–/0¾
Add for narrow splayed grounds .. per foot run	–/1½	–/1½

JOINER—(*continued*)

Shelving

	Deal	Oak
Slat shelving of 1″ × 2″ spaced ¾″ apart per foot super	–/9	—
1″ shelving .. .. .. per foot super	–/10	2/2
1¼″ ditto .. .. per foot super	–/11½	2/6
1″ cross-tongued shelving .. per foot super	1/–	2/6
1¼″ ditto .. .. per foot super	1/1½	2/10
1″ × 2″ chamfered bearers planted on per foot run	–/2¼	–/5½
Add if bearers plugged to brickwork per foot run	–/0½	–/0¾

Teak Draining Boards and Twice Oiling

1½″ Moulmein cross-tongued fluted draining board fixed to slight falls .. .. per foot super	3/9
½″ × 2″ rounded rim bedded in white lead and screwed to edge of draining board .. .. .. per foot run	–/5
½″ × 4″ rounded skirting fillet ditto .. per foot run	–/9

Staircases

	Deal	Oak
1½″ treads and 1″ risers .. .. per foot super	2/–	5/–
2″ strings, fixed .. .. .. per foot run	1/10	4/7
Housing treads and risers to strings .. each	–/9	1/6
3″ × 2½″ French polished moulded handrail per foot run	—	2/6
1½″ × 1½″ square balusters 2′ 6″ long .. each	–/10	2/–
4″ × 4″ Newels with chamfered edges and fixing per foot run	1/4	3/4

IRONMONGER

Fixing only

4″ Butt hinges to softwood .. .. .. per pair	1/–
4″ ditto to hardwood .. .. per pair	1/4
16″ T. hinges to softwood .. .. .. per pair	1/6
48″ Collinges patent gate hinges to softwood .. per pair	7/6

	Softwood	Hardwood
6″ Cabin hooks .. .. .. each	–/7½	–/10
Hat and coat hooks .. .. .. each	–/3	–/4
Cupboard knobs .. .. .. each	–/3	–/4
Night latches .. .. each	1/6	2/–
Thumb latches .. .. .. each	1/6	2/–
Letter plate and knocker, including perforation in door.. .. .. .. each	2/6	3/4
Barrel or tower bolts.. .. .. each	–/10	1/1
Flush bolts .. .. each	1/6	2/–
Rim locks and furniture .. .. each	2/–	2/8
Mortice ditto .. .. each	3/–	4/–
Rebated ditto.. .. .. .. each	3/6	4/8
Grip handles .. .. each	–/6	–/8
Cupboard locks .. .. .. each	1/–	1/4
Spring catches .. .. .. each	–/10½	1/1½
Casement fastener .. .. .. each	1/–	1/4
Ditto stays .. .. .. each	–/10	1/1
Sash fastener .. .. each	–/8	–/11

STEEL AND IRONWORKER

(For Rainwater Goods—*see* "Plumber.")

Steelwork

	£ s. d.
Basis for plain rolled steel joists .. .. per ton	16 6 6

Fabricated Steelwork

	£ s. d.
Joists cut and fitted .. .. per ton	20 10 6
Stanchions, ordinary sections with riveted caps and bases .. .. per ton	23 10 6
Stanchions, compound .. .. .. per ton	25 11 6
Plate girders .. .. per ton	28 9 6
Framed roof trusses, 25′ 0″ span .. .. per ton	30 4 6
Ditto ditto 60′ 0″ span .. .. per ton	28 5 0

The above prices are ex mills ordered well in advance of delivery.
Prices ex London stocks are considerably higher, and definite quotations should be obtained.

Wrot Iron Work

Simple balusters and handrail fixed (excluding mortices, etc.) .. .. per cwt.	56/–
Bolts and nuts fitted .. .. per cwt.	45/–

Galvanized Corrugated Sheeting

	20 B.G.	22 B.G.
Sheeting in 3″ corrugations and fixing on wood framing with screws and galvanized embossed curved washers including laps .. per square	56/–	49/–
Ditto fixed to steel framing .. per square	63/4	56/8

CURRENT PRICES

BY DAVIS AND BELFIELD, P.A.S.I.

PLASTERER, EXTERNAL AND INTERNAL PLUMBER

PLASTERER

Lime and Sirapite Plastering

	Per yard super	In narrow widths per foot super
Expanded metal lathing	1/8	–/3
1″ × 3/16″ sawn laths	–/9	–/1½
Render and set in lime and hair	1/8	–/3¼
Render, float and set in lime and hair	2/–	–/3¾
Plaster, float and set ditto on lathing (measured separately)	2/1½	–/4
Render and set with Sirapite	1/9½	–/3½
Plaster, float and set ditto on lathing (measured separately)	2/3	–/4
Skimming coat Sirapite	1/5½	
⅜″ thick plaster board fixed including covering joints with scrim cloth	2/–	

Keenes

	Per yard super	In narrow widths per foot super
Cement plain face on and including a backing of Portland cement and sand	2/6	–/5

Mouldings and Labours

		Lime and Sirapite	Keenes
Plain cornices and mouldings 6″ girth	per foot run	–/9½	–/11
Labour arris, quirk or throat	per foot run	–/1½	–/1½
Ditto rounded angle	per foot run	–/2	–/2
Ditto staff bead	per foot run	—	–/7½

Mitres price as 12″ of moulding, stopped ends as 6″, and rounded angles as 18″.

Portland Cement and Sand (1 : 3)

		½″	¾″
Screeds to floors for wood or tiles	per yard super	1/2½	1/4
Screeds for tiling, etc., on walls	per yard super	1/4	1/6
Renderings to walls—one coat float finish	per yard super	1/6	1/8
Plainface	per yard super	1/10	2/–

Coloured Cement Plainface

Cullamix No. 2 or 3 cream, on and including water repellent cement and sand backing	per yard super	3/10
Snowcrete mixture on and including ditto	per yard super	3/10
Snowcrete and white silica sand on and including ditto	per yard super	3/6

For raking out joints of brickwork, keyed bricks or hacking face of concrete, to form key for plastering, see "Bricklayer."

Wall Tiles, Commercial Quality

6″ × 6″ × ⅜″ ivory or white	per yard super	16/–
Extra for rounded edge tiles	per yard run	1/5
6″ × 6″ × ⅜″ coloured enamel bright glazed	per yard super	21/3
Extra for rounded edge tiles	per yard run	–/7¾
6″ × 6″ × ⅜″ eggshell gloss enamelled	per yard super	22/1
Extra for rounded edge tiles	per yard run	–/6¾

EXTERNAL PLUMBER

Lead

		Flats	Gutters, Flashings, etc.	Stepped Flashings	Soakers cut to size
Milled sheet lead and labour	per cwt.	'39/6	40/7	41/8½	34/4
Bedding edges in white lead	per foot run				–/2
Lead wedgings to flashings	per foot run				–/1½
Ditto to stepped flashings	per foot run				–/2
Dressing 6-lb. lead over glass and glazing bars	per foot run				–/3½
Copper nailing	per foot run				–/1½
Close ditto	per foot run				–/2
Bossed ends to rolls	each				–/7½
Extra labour dressing through shoots and into rainwater heads	each				3/–
Ditto to cesspools, including extra solder	each				5/3

Cast Iron Rainwater Goods

Rainwater Pipes fixed to brickwork.

		3″	4″
Round pipes	per foot run	1/5½	1/9
Extra for bends	each	2/2	2/10
Ditto 6″ offset	each	2/4	2/10
Ditto single branches	each	2/7	3/1
Ditto shoes	each	1/7	2/2
		3½″ × 3½″	4″ × 3″
Square and rectangular pipes	per foot run	3/2	2/10
Extra for elbows	each	4/11	3/6
Ditto single branches	each	5/9	5/4
Ditto shoes	each	4/8	4/3

EXTERNAL PLUMBER—(*continued*)

Gutters fixed to fascia.

		4″	5″	6″
Half-round gutters	per foot run	1/–	1/2½	1/8½
Extra for angles	each	1/9	2/–	2/3
Ditto nozzles	each	1/7	1/10	2/5
Ditto stop ends	each	1/–	1/3	1/4½
Ogee gutters	per foot run	1/1½	1/4	1/9½
Extra for angles	each	1/9½	2/3	2/4
Ditto nozzles	each	1/8	2/3	2/8
Ditto stop ends	each	1/1½	1/4½	1/7½

INTERNAL PLUMBER

Lead Pipes

Service.

		½″	¾″	1″	1¼″
Pipes laid in trenches	per foot run	–/10¾	1/2½	1/8¾	2/4½
Add if fixed on walls	per foot run	–/2	–/3	–/4	–/5
Ditto if in short lengths	per foot run	–/1	–/1	–/1½	–/2
		1½″	2″	2½″	3″
Pipes laid in trenches	per foot run	3/–	4/–	—	—
Add if fixed on walls	per foot run	–/6	–/8	—	—
Ditto if in short lengths	per foot run	–/3	–/4	—	—

Distributing.

		½″	¾″	1″	1¼″
Cold water pipes fixed to walls	per foot run	–/10¾	1/2¾	1/8¼	2/3
Add if in short lengths	per foot run	–/1	–/1	–/1½	–/2
Cold water pipes fixed to walls	per foot run	1½″ 2/9½	2″ 3/7¼	2½″ —	3″ —
Add if in short lengths	per foot run	–/3	–/4	—	—

Flushing and Warning.

		½″	¾″	1″	1¼″
Waste and overflow pipes fixed in short lengths	per foot run	–/8¾	–/11	1/2	1/5
Waste and overflow pipes fixed in short lengths	per foot run	1½″ 1/10	2″ 2/5½	2½″ —	3″ —

Soil and Ventilating

		3½″	4″	4½″
Pipes fixed, including lead tacks	per foot run	5/3	5/10	6/8½

	1½″	2″	2½″	3″	3½″	4″	4½″
Bends each	1/6	2/–	2/9	3/9	4/3	4/6	5/6

	½″	¾″	1″	1¼″	1½″	2″
Soldered joints to fittings each	2/1½	2/4	2/7	2/9	3/–	3/5
Soldered branch joints (price as largest branch) each	2/3½	2/6	2/9	3/–	3/3	
Soldered branch joints (price as largest branch) each	3/8	4/–	4/6	5/–	6/6	

Wrap small pipes with hair felt	per foot run	–/6

Drawn Lead Traps

	1¼″	1¼″ 3″ deep seal	1½″	1½″ 3″ deep seal	2″	2″ 3″ deep seal
P. Traps 6 lb. with cleaning eye and two soldered joints each	7/1	7/7½	8/3	8/9½	9/8	10/2½
S. ditto each	7/6	8/0½	8/8	9/2½	10/4	10/10½

Brasswork (*Best Quality*)

	½″	¾″	1″
Brass screwdown stop cocks including two soldered joints each	7/6	9/9	13/1
Ditto, including two red lead joints for iron each	5/8	7/10	11/–
Ditto, including one soldered and one red lead joint each	6/1	8/1	11/2
High pressure Portsmouth pattern ball valve with flynut and union and one soldered joint each	8/5	11/7	17/2
Ditto, including red lead joint for iron each	6/5	9/2	16/8

	2″	4″
Brass thimble and soldered and cement joints each	5/–	9/5
Ditto, with solder and caulked lead joints each	6/–	11/2

Fixing Only (*Connections to Pipes measured separately*)

24″ × 18″ × 6″ sinks including taps, etc., and pair of brackets cut and pinned to brickwork each	6/–
24″ × 18″ lavatory basins ditto each	6/6
W.C. suite comprising pan and trap, seat, W.W.P. and brackets each	10/6
Baths, including taps, etc., and setting in position each	10/6

CURRENT PRICES

BY DAVIS AND BELFIELD, P.A.S.I.

INTERNAL PLUMBER, GLAZIER AND PAINTER

INTERNAL PLUMBER—(*continued*)

Screwed and Socketed Galvanized Steam Quality Steel Tubes and Fittings

Pipes up to and including 1½″ include short running lengths, sockets, connectors, elbows, bends, fire bends; Tees and Diminishing Pieces enumerated.

Distributing.

	½″	¾″	1″	1¼″	1½″	2″
Pipes fixed to walls per foot run	–/10	1/–	1/4	1/10	2/4	3/–
Ditto in short lengths, fittings, etc., measured separately per foot run	–/10	1/–	1/4	1/10	2/4	3/–
Extra for						
Firebends .. .. each	–/4	–/6	–/9	1/3	1/6	2/–
Bends .. .. each	1/2	1/5	1/9	2/6	3/1	4/9
Round elbows .. each	1/5	1/8	2/–	2/4	2/10	4/4
Square ditto .. each	1/5	1/8	1/11	2/3	2/8	4/1
Tees .. .. each	1/6	1/10	2/1	2/9	3/1	4/8
Crosses .. .. each	2/9	3/2	3/10	5/–	6/–	9/1
Diminishing pieces each	–/10	–/11	1/2	1/6	1/11	2/8
Caps .. .. each	–/7	–/8	–/10	1/–	1/5	1/9
Plugs .. .. each	–/6	–/6	–/8	–/11	1/4	1/8

Cast Iron Waste, Soil and Vent Pipes

	2″	3″	4″	5″	6″
L.C.C. pipes in 6′ 0″ lengths fixed to brickwork .. .. per foot run	1/10	2/–	2/5	4/5	5/4
Extra for bends .. .. each	5/3	6/1	7/10	11/–	14/9
Ditto single branches .. each	6/5	8/2	11/–	17/6	23/6
Ditto swannecks 6″ projection each	6/1	8/9	11/1	16/1	22/–
Extra for access door or any fitting .. .. .. each	6/9	6/9	7/3	8/6	8/6

Zincworker

	13 G.	14 G.	15 G.	16 G.
Rolled sheet zinc on flats per foot super	–/7½	–/8	–/9	–/9½
Ditto in gutters, cover flashings, etc. per foot super	–/8½	–/8½	–/9½	–/10½
Ditto in stepped flashings per foot super	–/10½	–/11	1/–	1/0½
Labour and risk dressing over glass per foot run	–/4½	–/4½	–/4½	–/4½
Capped ends to rolls .. .. each	–/2½	–/2½	–/2¼	–/2¼
Extra labour to cesspools .. each	2/7½	2/7½	3/2	3/2

Copperworker

Distributing.

	½″	¾″	1″	1¼″	1½″	2″
Solid drawn copper tube fixed to walls per foot run	–/9	1/–	1/5½	1/10	2/3	3/3
Add if in short lengths per foot run	–/0¾	–/0¾	–/1	–/1½	–/2	–/2¼

Fittings for copper tubes

		½″	¾″	1″	1¼″	1½″	2″
Compression type							
Straight couplings .. each		1/10	2/2	3/–	3/9	5/1	7/3
Obtuse elbows	,,	2/8	3/2	4/5	5/6	8/10	12/7
Tees	,,	3/1	3/6½	5/4	7/4½	11/3	15/7
Crosses	,,	4/1½	4/8	5/8½	8/–	13/2	18/–
Reducing coupling ..	,,	—	2/2	3/–	3/9	5/1	7/3
Bends	,,	2/5	2/10½	3/1	5/–	8/3	11/11
Brass stopcocks	,,	5/6	7/10	11/–	19/3	26/6	43/6
Capillary type							
Straight coupling .. each		1/6	1/11	2/7	3/3	4/1	5/4½
45° Elbow	,,	2/4	2/11½	3/10½	4/11	6/10	9/7
Tees	,,	2/7	3/–	4/3	5/10	7/10	11/–
Crosses	,,	3/1	3/6	5/1½	6/10	9/8	13/5
Reducing coupling ..	,,	—	1/7	2/–	2/6	3/3	4/8
Bends	,,	2/8	3/2	4/3	5/7	8/1	10/11
Pillar tap connections	,,	1/11	2/6				

	24 G.	23 G.
Rolled sheet copper on flats .. per foot super	1/5	1/7
Ditto in gutters, cover flashings, etc. per foot super	1/7	1/9
Ditto in stepped flashings .. per foot super	2/1½	2/4½
Labour and risk dressing over glass per foot run	–/4½	–/4½
Capped ends to rolls .. .. each	–/3¼	–/3¼
Extra labour to cesspools .. .. .. each	3/8	3/8

GLAZIER

Sheet Glass (Ordinary Glazing Quality)

18 oz. clear sheet and glazing to wood, sprigged and with back and front putties, to all normal sizes not exceeding 60″ in length or 40″ wide .. .. per foot super	–/6½
24 oz. ditto .. .. per foot super	–/7¾
32 oz. ditto .. .. per foot super	–/11½

GLAZIER—(*continued*)

Obscured ground sheet glass, net extra to above prices per foot super	–/1¾
⅛″ figured rolled white glass and glazing to wood with beads (measured separately) .. per foot super	–/10½
Ditto, normal tints, ditto .. .. per foot super	1/2¾
Hammered double rolled cathedral white ditto per foot super	–/10
Ditto, normal tints, ditto .. .. per foot super	1/1¾
Add for glazing into metal frames (ordinary rebates) per foot super	–/1⅛
Ditto, metal sashes with ferroput .. per foot super	–/2¼
Ditto, solid metal casements and screw beads per foot super	–/2¼
Wash leather strip or similar material and bedding edge of glass .. .. per foot run	–/3¼

Glazing only thick drawn sheet glass, polished plate or wire polished plate for all normal sizes. (For prices of glass see materials section and add profit, say 10 per cent.) per foot super 6¼d.

PAINTER

Painting, Whitening and Distempering (on new Plastered Walls)

Twice distempering white .. .. per yard super	–/5
Ditto, in common colours .. .. per yard super	–/7
Add for stippling .. .. .. per yard super	–/2
Preparing and painting three coats of paint per yard super	1/9

Preparing and Painting Two Coats of Oil Colour on Ironwork after fixing

General surfaces .. .. .. per yard super	1/1½
Perforated landings and staircases both sides (one side measured) .. .. per yard super	2/6
Pipes, bars, balusters, etc., not exceeding 3″ girth per yard run	–/1¾
Metal Window Frames .. .. .. per yard run	–/2¾
Eaves gutters .. .. per yard run	–/7½
2″ Rainwater pipes .. .. .. per yard run	–/3
4″ ditto .. .. per yard run	–/6
Squares one side .. .. per dozen	1/9
Large ditto .. .. per dozen	2/3
Extra large ditto .. .. per dozen	3/–
Edges of casements .. .. each	–/3

Painting on New Woodwork

	Knot, prime, stop and paint three coats oil colour	Add or deduct for each coat more or less
General surfaces .. per yard super	2/–	–/6
Fascias and soffites per yard super	2/6	–/7½
Fillets, skirtings, etc., not exceeding 3″ girth .. .. .. per yard run	–/3	–/0¾
Ditto, not exceeding 6″ .. ,, ,, ,,	–/5½	–/1¼
Ditto, not exceeding 9″ .. ,, ,, ,,	–/7	–/1¾
Ditto, not exceeding 12″ .. ,, ,, ,,	–/9	–/2
Squares one side .. .. per dozen	3/6	–/9
Large ditto .. .. .. ,, ,,	4/6	1/–
Extra large ditto .. .. ,, ,,	6/–	1/4
Edges of casements .. .. each	–/6	–/1½

Sundries

Twice creosoting woodwork .. .. per yard super	–/6
Twice limewhiting brickwork .. .. per yard super	–/4

	Sizing	Staining	Once Varnish
General surfaces .. per yard super	–/2	–/1½	–/6
Wax polishing .. .. per foot super		–/1½	
Body in and French polish on hardwood surfaces per foot super			1/–

Writing

Plain letters or figures, two coats, 2″ to 12″ letters per dozen inches in height	1/10½
Ditto, shaded .. .. .. ,, ,, ,, ,, ,,	2/6
Plain gold, 2″ to 12″ letters .. ,, ,, ,, ,, ,,	2/6
Ditto, 12″ to 24″ .. .. ,, ,, ,, ,, ,,	3/9

Gilding

	Single Gold	Double Gold
Preparing and gilding in best oil gold per foot super	5/3	8/4
Ditto in matt or burnished gold per foot super	7/4	11/6

Paperhanging

Pasting and hanging only.

	On walls	On ceilings
Preparing new plastered walls for papering per piece (60 feet super)	1/4	1/5½
Plain lining paper .. ,, ,, ,, ,,	1/4	1/8
Common printed papers ,, ,, ,, ,,	2/–	2/6

APPROXIMATE ESTIMATES

★ON this and the three following pages the JOURNAL's section of Approximate Estimates is published for the eighth time.

There is nothing revolutionary about the idea—its usefulness lies in its efficiency as a time-saver in calculating the approximate price of work to which the cubing system cannot be applied.

In brief, an Approximate Estimate in considering a roof, converts the several units of pricing involved into a common unit of price per square yard, and then adjusts the price to cover sundry labours. By this means several stages of calculation are saved by the estimator in a hurry.

• ***The following composite prices are for work executed complete and should be used for the preparation of Approximate Estimates only.***

FOUNDATIONS

		Thickness of walls 9″	11″ Hollow	13½″
• Excavation in clay soil for foundations 2′ 6″ deep to walls, including stock brickwork in second stocks cement mortar 1 : 3 up to 6″ above ground and horizontal double slate damp-proof course with external facings p.c. 100/– and pointing	*per yard run*	25/1	28/3	35/4
• Ditto, in ordinary soil ditto	*per yard run*	23/10	27/1	33/9

EXTERNAL WALLS

• External walls in Fletton brickwork in cement mortar 1 : 3 including three coat lime plaster and twice distempering one side and facings p.c. 100/– in Flemish bond, joints raked out and pointed with a neat struck weathered joint, the other	*per yard super*	19/4	19/1	24/9
• Ditto, including Keenes cement plain-face and three coats oil colour one side and ditto	*per yard super*	21/–	20/9	26/5
• Ditto, including internal fair face, flush jointed one side and ditto	*per yard super*	17/7½	17/4½	23/0½
• For variation of 10/– per m. in p.c. of facings in Flemish bond (stretcher in cavity work)	*per yard super*	–/9	–/6¾	–/9

APPROXIMATE ESTIMATES—(*continued*)

INTERNAL WALLS AND PARTITIONS

		2″	3″	4½″	9″
● Breeze partitions set in cement mortar or Fletton brick walls and including three coat lime plaster and twice distempering both sides	*...per yard super*	9/11	11/1	11/1	16/7
● Ditto, built fair and flush jointed both sides	*...per yard super*	—	—	7/8½	13/2
● Ditto, including Keenes cement plain-face and three coats oil colour both sides	*...per yard super*	13/3	14/5	14/6	19/11

GROUND FLOORS

● Solid ground floor construction including 9″ excavation, 4″ bed of hardcore, 6″ concrete 6 : 1 surface bed, finished with 1½″ granolithic paving trowelled smooth	*per yard super*	9/10
● Ditto, finished with ¾″ cement and sand 1 : 3 screed and wood block flooring or paving p.c. 10/– yard	*per yard super*	18/2
● Ditto, finished with 2″ × 2″ sawn floor fillets and floor clips and 1″ deal tongued and grooved flooring, batten widths	*per yard super*	12/11½
● Ditto, finished with floor fillets as before and 1″ (nominal) oak tongued and grooved narrow widths strip flooring polished at time of laying	*per yard super*	25/2½
● Sleeper wall ground floor construction, including 15″ excavation, 4″ bed of hardcore, 6″ concrete 6 : 1 surface bed, sleeper walls 12″ high, built honeycomb, 4½″ slate damp-proof course 4½″ × 3″ fir plate, and 4″ × 2″ sleeper joists and 1″ deal tongued and grooved flooring in batten widths	*per yard super*	15/3
● Ditto, with 1″ nominal oak tongued and grooved narrow widths strip flooring polished at time of laying	*per yard super*	27/6

UPPER FLOORS

		With 7″ Joists	With 9″ Joists	With 11″ Joists
● Wood construction including 2″ fir joists on 4″ × 3″ fir plates and herring-bone strutting with three coat lime plaster and twice distempering white to soffite and 1″ deal tongued and grooved flooring in batten widths	*per yard super*	12/–	13/2	14/3
● Ditto, with 1″ nominal oak tongued and grooved narrow widths strip flooring polished at time of laying	*per yard super*	24/3	25/5	26/6
● 5″ thick concrete 4 : 2 : 1 reinforced with fabric suitable at 13′ 0″ spans for carrying ¾ cwt. per ft. super, with two coat lime plaster and twice distempering white to soffite and 1″ Kara Sea deal 100 per cent. rift sawn block flooring wax polished at time of laying ...	*per yard super*			25/7
● Ditto, with 1″ nominal 25/30 per cent. quartered Austrian oak block flooring polished at time of laying	*per yard super*			28/8

APPROXIMATE ESTIMATES—(*continued*)

FLAT ROOFS

		Using 7″ Joists	Using 9″ Joists	Using 11″ Joists
● Wood construction including 2″ fir joists on 4″ × 3″ fir plates and herring-bone strutting with three coat lime plaster and twice distempering white to soffite and best natural rock asphalt roof finish ...	*per yard super*	18/5	19/5	20/6
● 5″ Thick concrete 4 : 2 : 1 reinforced with fabric (suitable at 13′ 0″ span for carrying 40 lbs. per ft. super) with two coat lime plaster and twice distempering white ditto	*per yard super*			22/7

PITCHED ROOFS

● Bangor Countess 20″ × 10″ slating, laid to 3″ lap fixed with zinc nails, including 2″ × 1″ battens, ¾″ roof boarding and 4″ × 2″ rafters (measured on slope)	*per yard super*	13/1
● Westmorland Random green slates No. 1 best 24″ to 12″ long proportionate widths ditto	*per yard super*	17/2
● Machine-made tiles 10½″ × 6½″ laid to a 4″ gauge, fourth course nailed with galvanized nails ditto	*per yard super*	11/6
● Hand-made sand faced tiles ditto ditto	*per yard super*	12/3
● Slate ridges, including cuttings and 1½″ × 9″ deal ridge	*per yard run*	9/10½
● Half-round ridge tile ditto	*per yard run*	7/7
● Slate hips, including cuttings, lead soakers, and 1½″ × 11″ deal hips	*per yard run*	12/5½
● Hip tiles, including cuttings and 1½″ × 11″ deal hips	*per yard run*	14/–
● Lead valley gutter to slated roof, including cuttings and 1½″ × 11″ deal hips	*per yard run*	18/5
● Purpose-made valley tiles, including cuttings and 1½″ × 11″ deal hips	*per yard run*	13/7

DOORS

		Partitions or Walls				
		2″	3″	4½″	9″	13½″
● 2″ flush door p.c. 29/– 2′ 6″ × 6′ 6″, including deal frames or linings, ironmongery p.c. 15/– and simple architraves both sides, all painted	each	100/–	101/5	96/3	100/10½	106/10½

WINDOWS

Prices are for normal size, including suitable ironmongery, glazing with clear sheet glass and painting.

● Standard metal casements with fixed lights	*per foot super*	2/5
● Ditto, with average proportion of opening lights	*per foot super*	3/10
● Standard metal casements in wood frames with fixed lights	*per foot super*	4/–
● Ditto, with average proportion of opening lights	*per foot super*	4/11
● Standard industrial type sashes with fixed lights	*per foot super*	2/2
● Ditto, with average proportion of opening lights	*per foot super*	3/6
● Solid deal frames and 2″ casements	*per foot super*	5/0½
● Deal cased frames and double hung sashes	*per foot super*	4/10½

NOTE.—Standard wood surrounds to metal windows can be obtained at a cheaper price than that given for wood frames above.

APPROXIMATE ESTIMATES—*(continued)*

STAIRCASES

• Deal 9′ 0″ high, including half space landing, newels, balusters and handrail	*each*	£23	10 0
• Austrian oak ditto	*each*	£44	5 0
• Precast concrete ditto	*each*	£32	15 0

DRAINS

		Ordinary Soil	*Clay Soil*
• Manhole, 2′ 3″ × 1′ 6″ × 2′ 0″ deep, including excavation, 6″ (6 : 1) concrete bottom, one brick sides 3rd stocks in cement mortar with brown glazed half-round straight main channel and one brown glazed branch channel, including benching, sides rendered in cement and sand (1 : 3) and a 24″ × 18″ black single seal cast iron manhole cover and frame, weight 0 cwts. 3 qrs. 0 lbs.	*each*	£3 12 6	£3 15 6
• Manhole 2′ 3″ × 3′ 9″ × 4′ 0″ deep ditto including six branches	*each*	£7 2 0	£7 6 6

		Clay Soil		*Ordinary Soil*	
		4″	*6″*	*4″*	*6″*
• British standard quality stoneware drain pipes laid on and including 6″ thick concrete bed flaunched up both sides of pipe and excavating average 2′ 6″ deep	*per foot run*	2/5	3/0½	2/3	2/10½
• Ditto, but excavating 4′ 0″ deep	*per foot run*	4/1½	4/9	3/7½	4/3
• Cast iron drain pipes in 9′ lengths and laying in trench including 6″ concrete bed and excavating average 2′ 6″ deep	*per foot run*	4/8	6/6½	4/6	6/4½
• Ditto, average 4′ 0″ deep	*per foot run*	6/4½	8/3	5/10½	7/9

PATHS AND DRIVES

• 2″ finished gravel paths, including 6″ excavation and 4″ bed of hard-core and edging boards	*per yard super*	5/3
• 7½″ finished gravel drive, including 6″ excavation, 6″ bed of hardcore and edging boards	*per yard super*	6/9
• 2½″ Tarmacadam drive including ditto	*per yard super*	7/10

FENCES

• Cleft chestnut pale fence 4′ 0″ high	*per foot run*	–/10
• Deal weather boards, including posts, arris rails and gravel boards creosoted, 5′ 0″ high	*per foot run*	2/9½
• Ditto, in English oak throughout	*per foot run*	3/10½

The four sections on PRICES published in the issues of September 15, 22, 29 and this week, together complete the PRICES SUPPLEMENT. Next week the FIRST SECTION—PRICES OF MATERIALS, PART 1—will be repeated with items revised according to market quotations.