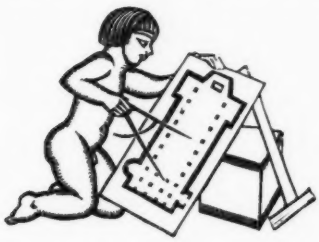
THE ARCHITECTS' JOURNAL



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CHRISTIAN BARMAN, *Editor*

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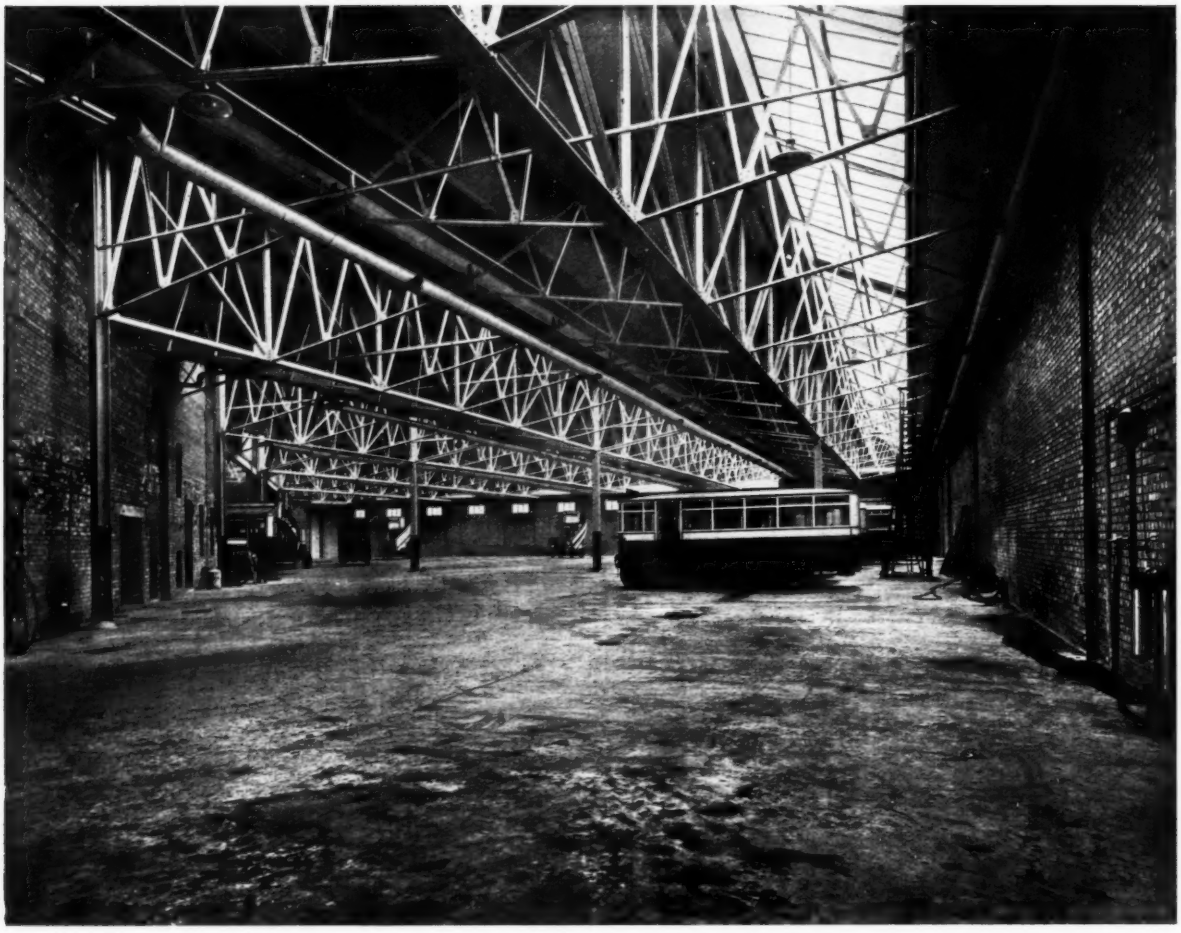
WEDNESDAY, JULY 13, 1927. NUMBER 1695: VOLUME 66

PRINCIPAL CONTENTS



The above illustration shows the interior of one of the Manchester Corporation garages—Parr's Wood Garage. The concrete floors of this garage were made dustless, water, grease and oil-proof, and exceptionally resistant to the wear and tear of heavy vehicular traffic by the use of "Colemanoid," the liquid hardener and waterproofer. The smaller illustration on this page shows the exterior of the garage building, designed by H. J. Price, Esq., A.R.I.B.A., City Architect of Manchester. The outer walls of Ravenhead rustic brick, pointed with "Atlas White" Portland cement mortar (employing a Leighton Buzzard white silica sand as aggregate), are most attractive. For detailed instructions for producing similar floor or wall surfaces write either to Messrs. F. E. Doran, Ltd., 42 Deansgate, Manchester (sales agents for the Lancashire area for "Atlas White" and "Colemanoid"), or to me at Regent House, Regent Street, London, W.1. Ask for "Colemanoid Floor Specifications," or for "Specifications for Non-Staining White Portland Cement Mortar."

Frederic Coleman

[A working detail of this kitchen cupboard appears on the following page]

A KITCHEN CUPBOARD
AND SERVICE HATCH

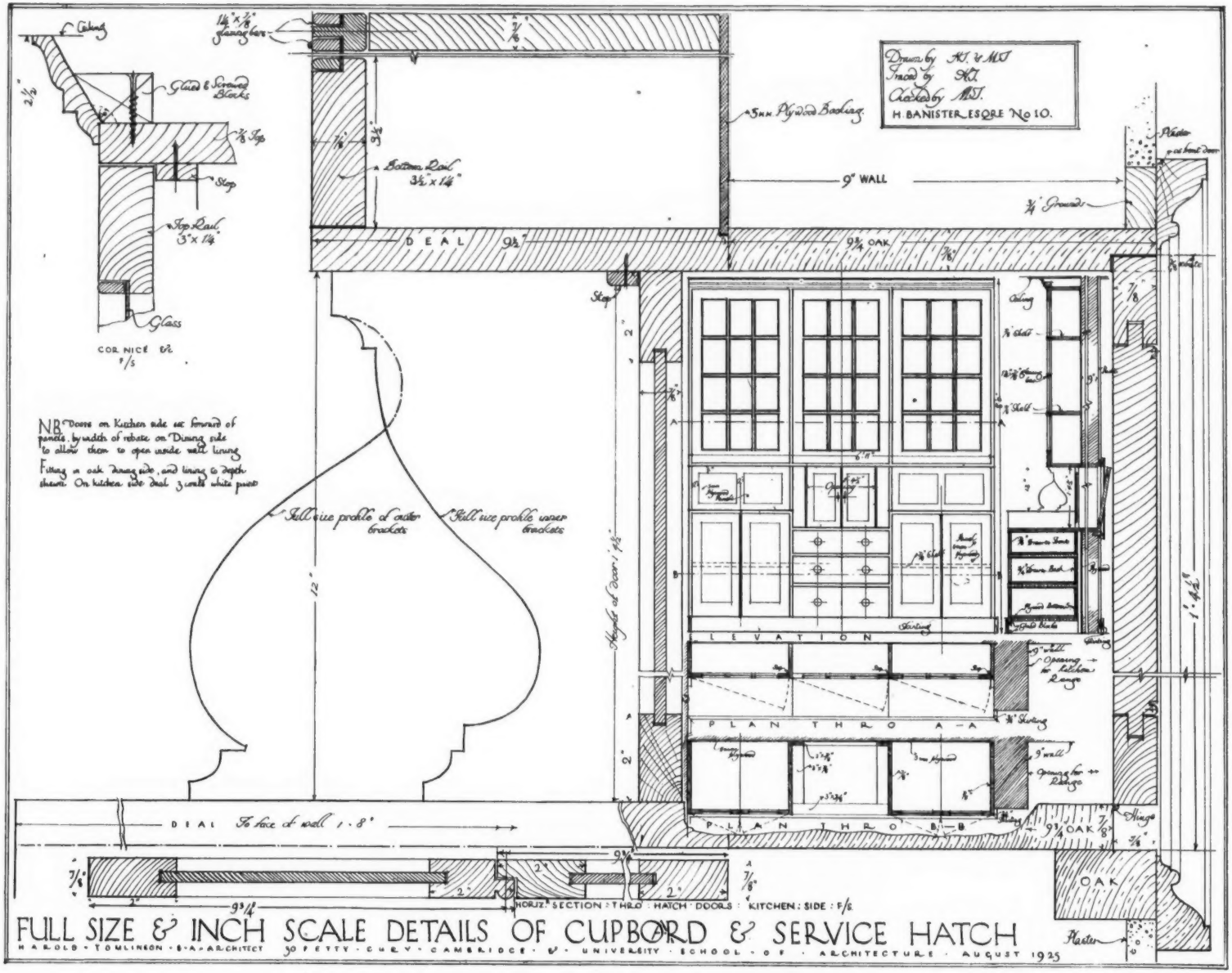
BY HAROLD TOMLINSON

THE WEEK'S DETAIL

[BY HAROLD TOMLINSON]

This kitchen fitting was designed to bring everything to hand at the service hatch, which forms the central panel at the back. Above are china cupboards, while cutlery and table linen are conveniently stored in the central drawers. The central portion has been adapted to table height in order to facilitate service from the dining-room side. The hatch doors on the kitchen side are vertically hung and fold out of the way into the thickness of the wall. The dining-room door, in the form of a drop flap, is of oak, while the kitchen fitting is painted in apple-green enamel.

E



A photograph of this detail is given on the preceding page.

THE ARCHITECTS' JOURNAL

Wednesday, July 13, 1927

MR. DAWBER

> Some village Hampden, that with dauntless breast
> The little tyrants of his fields withstood.

It would appear that it was almost more than fortuitous good fortune which brought Mr. Guy Dawber to the office of President of the R.I.B.A. two years ago, for of all the men eligible for that high post there is surely none whose sensibilities are more outraged by the spectacle of the violation of rural England. We fear that the bulk of the architectural profession, like the bulk of laymen, is apathetic to the situation, or is at least unwilling to make any real effort to check this awful devastation of every unsullied spot in the country.

Mr. Guy Dawber has, throughout his term of office, voiced protest upon protest, both in his public utterances and in his writings, so that he has rightly come to be regarded as the leader of those who are genuinely sorrowful and anxious for the future of England's beauty. The culmination of his efforts has been the formation of the Council for the Preservation of Rural England. Mr. Dawber has long been known to members of his own profession, and to the more discriminating of the public, as one who has carried on with infinite sympathy, skill, and graciousness the great building traditions of English rural architecture, particularly of the stone-building districts of the West, and he epitomizes both in his work, his outlook, aye, and in his very person, the real unindustrialized Englishman. For despite outward appearance, deep down the Englishman still retains his love of the countryside, and urbanization and industrialization are but a veneer. That typically English product, the country gentleman, a product unknown in other countries, still survives today; survives in industrialized England, while its counterpart never existed in agricultural France. There, amongst his roses, surrounded by his implements and animals of sport and with his books, the Englishman is yet, even in this year of grace, at his happiest and his serenest. It is this aspect of English life, thought, and culture that Mr. Dawber represents, and to save which he seems to be willing to devote his eloquence and his energies.

To one of Mr. Dawber's sensibilities there is something infinitely sad, and at the same time truly terrible, in the spoliation of the countryside; and this cruel, thoughtless ravishing that is going on apace stimulates him to make every endeavour to save what is still to be saved. As president of the R.I.B.A. he occupied a post of considerable influence, and we may say without fear of contradiction that no president has ever made better use of that position, or better served his fellow-men: as for more immediate domestic matters, has he not brought registration many steps nearer reality, and has he not launched the Architects', Engineers', and Surveyors' Defence Union? both being achievements which must sooner or later be crowned with success and which must ultimately bring great benefit directly to the professions concerned and indirectly to the general public. These are matters which other men might have handled; but the fight for the countryside is Mr. Dawber's unique contribution, and now that he steps down from his eminence, it is not, we think, to give up the fight. The C.P.R.E. is his creation, and we hope and expect that he will make it an organization of real power, so that it may be the means of saving the country from the awful disaster into which it seems to be plunging.

We have quoted above two famous lines from Gray's *Elegy* because they in themselves seemed apposite to the occasion, and because the poem typifies better perhaps than any other piece of English literature the peculiar rural sweetness of England; that blessed something which no other country possesses, but which is the precious heirloom of every Englishman. All the great travellers and explorers that this country has sent out—those who have circled the globe, who have penetrated into deep forests and climbed high peaks, those who have sailed all the seas—come back only to admit that nowhere have they encountered such serene beauty as that which awaits them within their own sea borders. "For where," writes Sir Francis Younghusband, "For where do the flowers smell so sweet, or the fruits taste so good, or the birds sing so sweetly as in England? What is so sweet as an English cottage, an English garden, or an English village church?" Where indeed; search the world over and the answer will be: "Nowhere." Yet all this loveliness it is which is now threatened with destruction. Surely its preservation is something worth striving for. At any rate Mr. Guy Dawber thinks it is, and we wish there were more who thought like him and, thinking, would strive with him.

The Prime Minister, too, is a country-loving gentleman. "Whatever may be my fate in the years to come," he said in one of his speeches, "all here who know me will believe me when I say that I have no greater desire than to get back to Worcestershire and be left alone." What sort of a Worcestershire will it be that he will go back to? What sort of a countryside will any of us go to when the time comes for us to lay down our urban burdens and realize our last ambition of peace and quiet? Whatever beauties remain to us shall we not perhaps owe some thanks to Mr. Dawber?

NEWS AND TOPICS

THE L.C.C. AND ITS PROPERTY—AND THE ARCHITECTURAL ASPECT—THE MOST BEAUTIFUL THINGS—THE ASCENDANCY OF THE BATH

IT is hardly surprising that the decision of the L.C.C. Improvements Committee to sell the freehold of the Grand Hotel, Charing Cross, was emphatically challenged when it came up for ratification on the 5th inst. The epithets "suicidal" and "approaching a scandal" are quoted as typical of the attitude of those opposed to the sale, and it is difficult not to sympathize with this view of what is most obviously a very shortsighted policy on the part of a public body which has hitherto had a good reputation for visualizing future needs. Undoubtedly the price offered was a tempting one, more than twenty-nine years' purchase, but the existing lease has but thirty years to run and the reversion to full possession is beginning to acquire an appreciable value. Thirty years! who can say what the position around this important centre will then be, and what the public needs may not demand by that time? For the last twenty years the tendency has been towards municipal ownership of property in our large towns, with a view to controlling reorganization when this becomes desirable, and now we find at the very moment when Birmingham is buying large blocks, and considering the remodelling of the central area, the rulers of our metropolis throwing away their chance of ever being able to reconsider the planning of the most important centre under their control. The excuse was made that this particular building was not affected by the proposals for Charing Cross Bridge and its approaches. These left it alone because the scheme is quite costly enough without taking more property than was absolutely needed, but anyone looking at the programme with an eye to the future would see at once that a really comprehensive plan might well demand a re-alignment of streets and frontages extending beyond the limited demands of the bridge itself and such access to it as may be adequate to meet the needs of the moment.

* * *

So far our criticisms of this decision have been based on its unwisdom from the practical standpoint, but there is another which to every architect is of far greater importance. Trafalgar Square is the recognized centre of our great metropolis, and ought to vie with those of other capitals in homogeneous dignity. We know well enough how far it falls short of this ideal, and have we not all had at the back of our minds a vague hope that at some future time Trafalgar Square might re-arise as a unified design with both plan and façades appropriately adjusted to its approaches and its salient features? The present series of rounded angles and awkward corners has no architectural quality, and only the fact that the frontages were mainly in the hands of the Crown and the L.C.C. encouraged a hope that one day a well-studied reconstruction might be practicable. Now that the L.C.C. is parting with the control of one of the most important corners, this dream may be abandoned and London will have a poor chance of ever seeing its focal point in a state worthy of its importance. We know the Grand Hotel possesses but little architectural merit, but possibly it is not so obvious that no building taking its place on exactly the same site could by any possibility be architecturally impressive. Doubtless many of our readers have formulated some idea of a glorified Trafalgar Square, and it has probably occurred to some that a great hemicycle, extending from the Strand to Cockspur Street, might be a dignified treatment. If not, take the map and try on it a radius struck, say, 80 yds., from the south side of the Nelson Column, balancing the Mall entrance with Northumberland Avenue, pushing Whitehall a little towards the West and securing continuity by bridging it with a fine triumphal arch on the lines of the great plaza at Lisbon. There may be some better imagining, but in any case, is it wise to deprive ourselves of such possibilities?

* * *

In spite of the resolutions passed by assembled gatherings of housing reformers, I do not think that there is any likelihood of the Government yielding to the demand for setting up a Royal Commission on Housing. The chief object of the advisers to the Government is to ensure continuity and to avoid any stoppage of the present increasing progress in the number of houses built. From the point of view of any responsible Government anxious to see the nation well housed, it is obviously all to the good that last year 217,000 houses were built, and that the cost of building working-class houses is slowly on the decrease. If a Royal Commission were established, all concerned with building might well anticipate some fresh form of Government assistance or new subsidy. It would therefore be probable that during the time that the Commission sat, there would be a lull in house construction and the nation would be so much the worse off. It is further questioned whether any Commission could discover any aspect of the housing question which has not already been considered and reconsidered in endless detail during the past ten years. The little band of enthusiasts may, therefore, clamour for a Government inquiry, but, so far as I can gather, they are agitating in vain. Mr. Neville Chamberlain intends to pursue a steady policy of encouraging the building of smaller houses and the reduction of costs, and is not likely to be deflected from this course.

* * *

A beautiful woman; a beautiful child; a beautiful flower; a beautiful sunset; a beautiful edifice. These, in the order given, are the five most beautiful things in creation, according to Mr. H. Gordon Selfridge, who on Saturday opened an exhibition of architectural drawings by students of the Liverpool University School of Architecture, at the Walker Art Gallery, Liverpool. Architecture, he said, had the advantage of being utilitarian as well as beautiful. A beautiful edifice was one which could have built into its design and stone work the finest points the mind of the artist could conceive. It was something of permanent value, and could either gladden or sadden thousands of eyes. "I should like to see the architects of this country banded together to decline commissions for any building inconsistent with those ideals. I sometimes think architects are too anxious to get a commission to refuse bad propositions. This little island of ours should make itself a criterion for the rest of the world in any branch of art. I should like to see men come to England to take the post-graduate courses at this school." The bad influence in America was to build buildings high and massive, but without beauty. The members of that school could decline to be associated with the vicious, and only with the beautiful. They could make the lives of all their associates happier, and push civilization further.

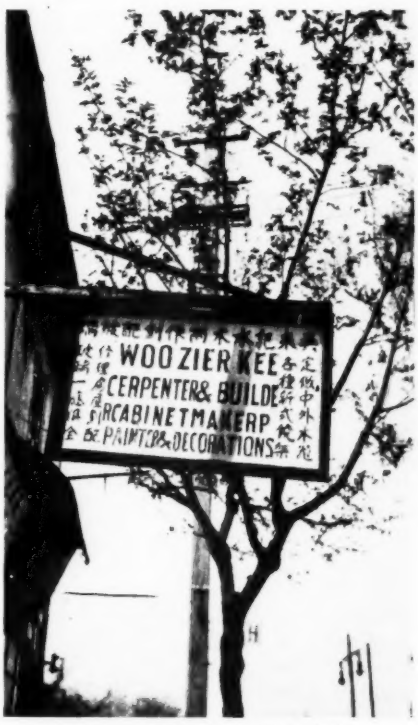
The King has appointed Sir Giles Gilbert Scott, R.A., and Professor Adshead to be members of the Royal Fine Arts Commission. The renewal of the appointment of the Earl of Crawford and Balcarres for a further period as a member of the Council of the British School at Rome is gazetted.

* * *

The Scottish National War Memorial that is to be opened by the Prince of Wales tomorrow (Thursday, July 14) contains a number of sculptures and bronze panels commemorating almost every branch of war activity. In the shadow of the great arch over the central doorway is a sculptured figure intended to represent the survival of the Spirit. All the Scottish regiments have memorials in the Hall of Honour, and in the spandrils of the arches above are the coats of arms representing counties or towns of the territorial districts of the regiments. In the recessed bay at the west end there are memorials to the women, representing war workers engaged in harvesting, nursing, shell-making, and doing ambulance work. Mrs. Meredith Williams has designed two bronze panels in honour of all Scotswomen. A feature of the recessed bays are circular carvings by Miss Phyllis Bone representing animals which served and died, including a camel, a horse, a reindeer, an ox, an elephant, and a dog, with his message tied round his neck. There is even a carving of a cage with canaries, and white mice.

* * *

Entering the gallery from the porch, the centre feature is a very tall arch nearly 40 ft. high, through which the hanging figure of St. Michael can be seen. He is the Captain of the Heavenly Host and the Captain of all Earthly Hosts fighting in a just cause. The figure is suspended above the table on which is placed the wrought-steel casket made by Mr. Thomas Hadden, which is to contain the 100,000 names of the fallen. The architect of the shrine, Sir Robert Lorimer, has had the happy thought of arranging the marble table carrying this casket so that it rests on one of the highest pinnacles of the Castle Rock, which has been left emerging through the floor. Over the windows there are sculptured representations of the seven planets, symbolizing the influence which from earliest times man has supposed that the sun, moon, Mars, Mercury, Jupiter, Venus, and Saturn exercise on his destiny.



A contractor's sign in Shanghai.

* * *

I was with an architect the other day who talked of all his houses in terms of the *bath*. "That," said he proudly, pointing to a handsome £7,000 residence, "is a three-bathroom house." Another which I liked well he remarked upon with less enthusiasm. "Ah! yes, but that is only a two-bathroom house." The bathroom is the house nowadays. It is about their bathrooms, not their picture galleries or their libraries, that the newly-rich are given to brag. When I was in the house of a rich man the other day, the bathroom was the one of which he was most proud. The panels of the door were painted by a famous artist with pictures of little pools and bulrushes and frogs, and it was floored with warm-red tiles that sloped to a white marble grid in the middle of the room. At one side was a small platform covered with cork, a little Ararat where you could dress above the flood, and however generously you used the powerful shower the splashes ran down the central grating and left the room dry. There were centrally heated towel-rails, too, for warming or drying your towels, and interesting little gadgets like a movable shower-ring on a flexible pipe that you could use on back or head when sitting in the bath, which was of a beautiful sort of opalescent glass, standing on nickel feet. Listening to his talk, I became fired with his enthusiasm; it was, I clearly saw, a return again to an age in which water was the supreme deity, and the altar of which was the bath. Standing in a large showroom full of baths in Upper Thames Street (it was the firm of O'Brien, Thomas & Co.) where was exhibited every kind of bath, there came into my mind an item in a gossip-sheet of the time of Queen Elizabeth. "The Queen hath built herself a bath, where she doth bathe herself once a month, whether she require it or no." It was a far cry from Gloriana to the big City showroom. The Emperor Caligula conceived the novel idea of installing a set of baths in his yacht. Here, reclining amid dancers and musicians and fruit trees and vines, he would sail along the enchanting shores of Campania—two thousand years ago. Then, as now, emperors and architects, freemen and slaves, lived their lives in terms of the bath.

* * *

Architectural japes are not often of much account, and if they are, it is well to observe the guiding principle of Captain Cuttle and—"when found make note on." We are told that there was once a young man who embarked in practice as an architect with a commission for a small house. He accurately and conscientiously made the contract drawings, and with equal conscientiousness and exactness compiled a monumental specification. The foundations went in, the walls went up, the rafters were in place, the tiles stacked for hanging, when the architect one day went on to the works to have a look round, where he met the builder, who said to him: "I notice the specification asks for 6 lb. soakers. Do you really want them as heavy as that?" His architect stared at him, hesitated, and then said: "Well, if you'll tell me what a soaker is I'll tell you how heavy it ought to be."

ASTRAGAL

MY FIRST JOB

[BY M. L. A.]

ii: ROBERT ATKINSON

MR. ATKINSON is by nature an incorrigible optimist. He has that peculiar sense of humour which leaves the impression on his hearers that troubles are a rare entertainment. If this is a trait which can be developed, Mr. Atkinson has had ample opportunity for doing so, because it is difficult to imagine anything more discouraging than to be told, before a venture is well begun, that one is bound to failure. Before being sent to serve his articles, Mr. Atkinson was placed for six months at the mercy of a jerry-builder's architect, who was, at the end of that time, to pronounce an opinion as to whether his pupil were likely to succeed as an architect. There must be many ways of spending half a year which are not only more interesting but more instructive, because by the end of a few weeks he knew all that there was to be known about the work, and a prolonged period of boredom set in. The office routine appears to have consisted of selling drawings of small houses at thirty shillings a time; and as the standard of design was not stupendous, the rapid execution of plans became a habit. The architect himself was out a great deal, and the office was left in charge of the "office boy," who, when he was not designing houses, occupied himself in covering the walls with striking caricatures of his employer.

At the end of the six months' probation the architect sent Mr. Atkinson back to his father with the assurance that he would never be any use as an architect, and had better turn to something else at once. At this Mr. Atkinson, senior, laughed heartily, if not helpfully, and immediately sent his son to serve his articles with a real architect. In due course he was presumed to "know architecture," and was left to look after himself. He took a top-floor room in Great Ormond Street, which he shared with two architectural friends, and here they carried on a small practice. It brought in something like thirty shillings a week each, and on this they contrived to live. Most of the work was in the nature of perspectives, although a certain amount of "washing" came in as well. The designs from which the perspectives had to be set up were in many cases so bad that there was nothing to do but to re-design the whole of the elevations—a course to which Mr. Atkinson not infrequently resorted, although the architects for whom the drawings were being done would seldom admit it financially. Nearly all the perspectives were destined for the Royal Academy, but few of them got so far, as the Selection Committee was fully competent to lift the veil of good draughtsmanship and expose the shortcomings of the designs.

After a time Mr. Atkinson moved to Gray's Inn, where he formed a definite scale of charges; the hourly rate varied from five to ten shillings, and was determined by the quality of the designs from which he had to work. Thus, if an architect had done a particularly bad piece of work he had to pay ten shillings an hour for the perspective; so that, briefly, the fees were proportional to the amount of re-designing necessary to make a presentable picture. During his life in Gray's Inn, Mr. Atkinson's first real client was brought to him. He was introduced by a quantity surveyor who had been associated with Mr. Atkinson in his work for certain architects, and presumably felt that the job in question might be welcome to a young man struggling for a practice. The client was one who wanted to build a mill for the manufacture of electrical goods and fittings. The building had to be of the very cheapest, and he had, it appears, been to several other architects, none of whom would associate himself with the work. This aloofness may have been highly creditable in established and successful men, who could afford to pick and choose, but Mr. Atkinson was struggling for a livelihood, and although the prospects were not of the highest order, he decided to accept the offer. He set to work and produced what was in all probability a very fine design; he knew that cheapness was the main requirement of his client, and he was prepared to sacrifice much of what he was sure would enhance the appearance of the work. All decoration of the accepted sort was omitted, and for interest the design relied on variety of materials and on its proportions; but the architect reasoned without full knowledge of his client, to whom the appearance of the building was the last consideration.

It is curious that so many people imagine that beauty and fitness are necessarily expensive luxuries. It seldom strikes any layman that a building may be æsthetically good as well as reasonably cheap, and his first subconscious idea, when he sees a design which pleases him, is that it must be expensive. However this may be, Mr. Atkinson's client would not have anything in his design which, in his view, tended to raise the cost, and so the few attempts at beautification which the architect had permitted himself were definitely and forcefully rejected. At last, after considerable discussion, the design met with the grudging approval of the client, and the working drawings were started. Once again Mr. Atkinson found himself suppressed; reductions in cost were demanded in every conceivable sphere of the work, until he began to have fears, not only about the appearance of the elevations, but about the stability of the structure. But no assurances from the architect could convince his client that he would early regret his drastic economy. "'Spoil the ship for a hap'orth of tar?'—Then let the ship spoil!" And it did. Before many weeks had passed the roof began to leak, and the blame fell on the architect. In one case only the client had become almost generous; this was in his own office, where he had gone to the expense of laying down wood-block flooring—but he had, of course, insisted on cheap timber. In order to preserve the beautiful floor (quaint paradox!) linoleum was laid down, and after quite a short time, with the green wood and lack of ventilation, the leg of a chair went through both floor and linoleum, and again the architect was blamed.

When Mr. Atkinson recounts the history of these events it never crosses one's mind that he was being ill-used, but rather that throughout he was deeply grateful to his client for providing him with a job at all; and one leaves with the feeling that if everyone were so easily and so strangely entertained the world would be a far more habitable place. One may really regard the incidents in connection with this first job as a very potent factor in Mr. Atkinson's training in professional practice; it is also allowable to wonder whether the lessons he learnt by bitter experience do not cross his mind when a new client presents himself; perhaps, when the costs of a building are being remorselessly beaten down, his chair seems to sink beneath him and the feeling gives him renewed power to insist upon essential expenditure! He does not tell us about this, so it must remain a matter for speculation. But what a film the story would make for projection in the lecture rooms of architectural schools as a warning against jerrybuilding!

THE EAST KENT RAILWAY STATIONS

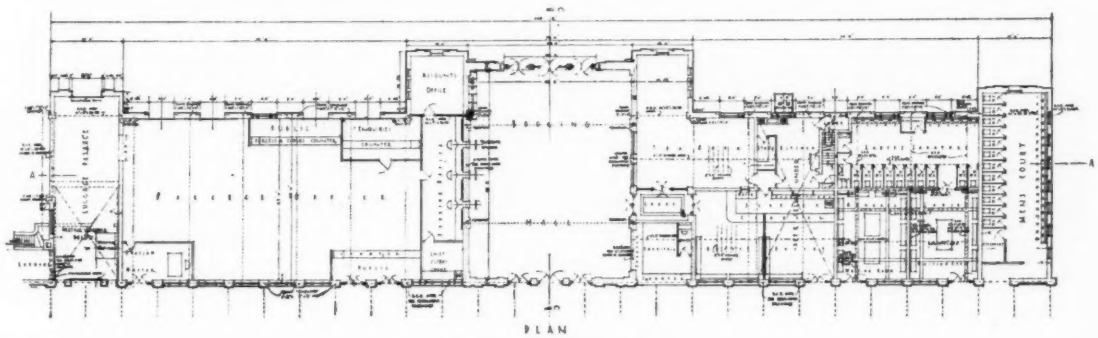
[BY ELEANOR K. D. HUGHES]

THERE are refreshing signs all over the country of a new spirit manifesting itself in architecture; and this new spirit is being expressed in a manner which shows clear qualities of style, of vigour combined with restraint, and, above all, of reasonableness. It is, of course, the English version of a new cast of architectural thought which has come over the world. For the last decade continental architecture has been plunging into experiments. It is perhaps owing to practical considerations, or to our natural temper of mind, that we have kept our designs under restraint, and have felt our kinship rather with America, and with the northern nations, such as Sweden. With America we are bound to have affinity, and we are bound to be impressed by the quantity and quality of architectural output in a country where clients are millionaires, and where fine architecture is even commercially a good proposition. And America is only "across the pond," and there is constant interchange of students.

It is so easy and so stimulating to put in a year or so in New York after school training in England. Only recently Swedish architecture has been discovered by the architectural schools, and has burst on the world with all the glory of a new discovery, although a building such as the Town Hall at Stockholm could never have failed to make a stir—in the profession, at any rate. We were entranced by this northern strength and vigour, intertwined as it is with memories of Italy, not the correct classicism of Italy but the Italy of Venice, touched with the splendour of the East.

In all these things the students of architectural schools have the largest say. They are new themselves, and young and keen, and open-minded. They are bound together by the strongest ties of fellowship and common interest. They can read each other's architecture if they cannot speak each other's language. They travel not only singly and in pairs in the old way, but in well-arranged parties, with a programme in which every hour is filled; and are made welcome by the foreign architects whose guests in a manner they are. So it appears that as we are moving towards a new architectural expression out of the study of past architecture and of new materials, there is to be a quality of universality about it. Let us at all costs avoid standardization of ideas.

There is not only free exchange of architectural ideas (and Britain is, of course, not only a mart for world trade, but a mart for world ideas) between the schools, but a fresh outlook as to design itself. For any time up to five years the young architect learns to design according to first principles and the rock bases of art—so far as they may be comprehended and taught. There is no client



Margate Station. Southern Railway.

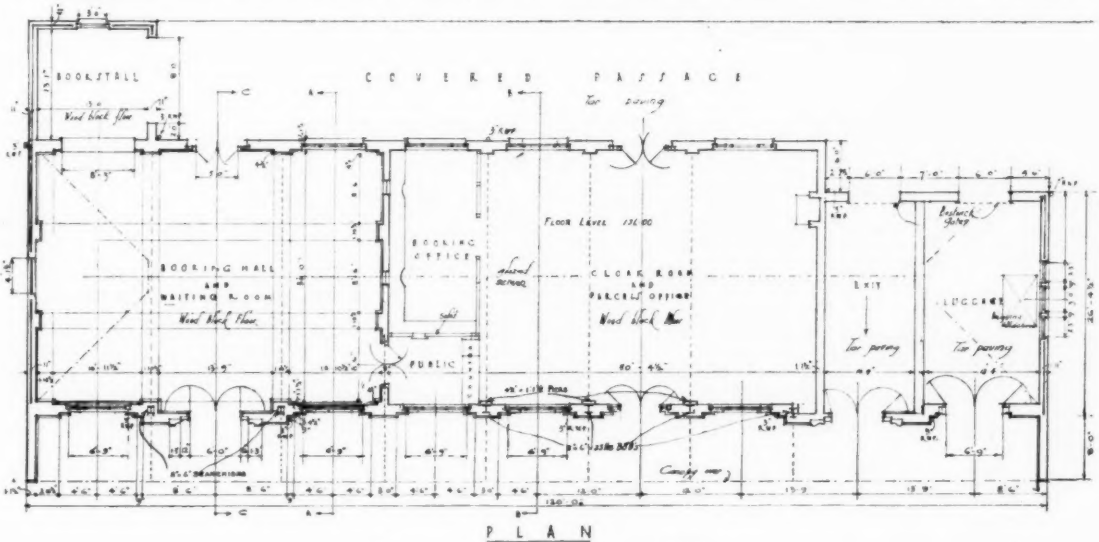
Margate Station, Southern Railway. Above, an entrance. Below, the booking hall.

even in the offing, or if there is an imaginary one, he is of the sort whose only requirement is the "programme," and with him "money is no object." This is not really unpractical, because it arises out of a study of the past and the science of building, as well as out of a feeling towards perfection. In this way the student learns architecture, and it may be successfully contended that it is a good way to learn it. The schools have won their case. It is a good thing to have breathed the "calm serene" of Utopia and to carry its atmosphere into the world. The City churches still stand—mercifully—to bless the London streets, and Inigo Jones's glorious fragment still queens it in Whitehall. Such buildings as these have an atmosphere which is the mark of all true architecture, however great or small.

This new architectural expression is appearing more naturally at first in public and semi-public buildings. There is also a community and civic spirit abroad which is drawing individuals together in a marked manner—more, perhaps, than at any time since the Middle Ages. This, too, is finding an outlet in building.

Such an influential body as the Southern Railway is to be congratulated on its ready acceptance of architectural ideals. The new spirit is evident in its new stations. It is evidence of public spirit that such stations are being placed in Kent. Thousands will pass through them, and note them consciously or unconsciously, during the holiday season. Kent is a county not only of the past but of the future. What will be the future of Kent, the Garden of England? These new stations show a breadth of handling and grasp of practical requirements essential, of course, to their use. But they are also consciously and finely designed, with something of the Grand Manner. The treatment is "reasonable," that is, based on its practical use—and the elevations mark clearly what is that practical use. At the same time there is a unity of design, a grasp of the whole.

The station at Margate, for instance, is a fine thing. The central booking hall and entrance are clearly defined, and there is no confusion as to its use. One knows where to go in, and where to take one's ticket, and how to pass straight through on to the platform. There is often confusion of direction in the older railway stations, which were built for a smaller volume of traffic in more leisurely

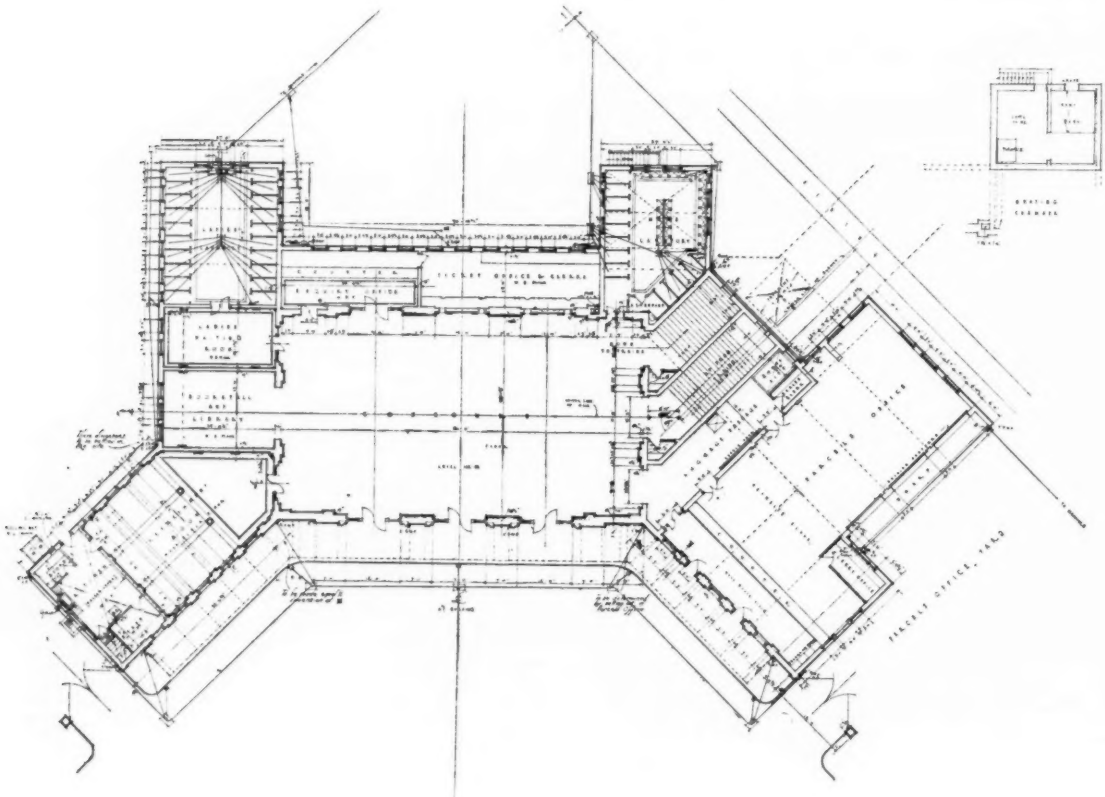


PLAN

Dumpton Park Station. Southern Railway.

days. Here the passenger line of traffic is kept in prominence—while the luggage line of traffic is kept clearly defined and secondary, as it should be in such a place as Margate. There is also ample carriage space and good margin for turning. The wide glass roof over the entrance not only keeps the rain off alighting passengers, but makes a strong horizontal line where the design requires it, and the flanking projections add strength. The round-headed window expresses the rounded ceiling within. The whole façade is a dignified and refined piece of work, very practical but expressive of public service.

The station at Ramsgate, though less monumental, is equally expressive of its purpose. There is a clear distinction between the booking hall and the offices, though probably the conditions of the site required the booking hall to be placed lengthways to the entrance, and so made one main entrance less definable. Here the main block and wings are tied together by the glass roof, another practical consideration. On plan the convenience of the long booking hall becomes evident, and the other departments open out of it. The line of traffic is clear and unimpeded. A feature has been made of the bookstall, which, with the other departments, is well placed. The booking hall itself is light and spacious, not the mere widened passage of the older stations. There is, of course, in such places as these, a demand for space such as would



Ramsgate Station. Southern Railway.

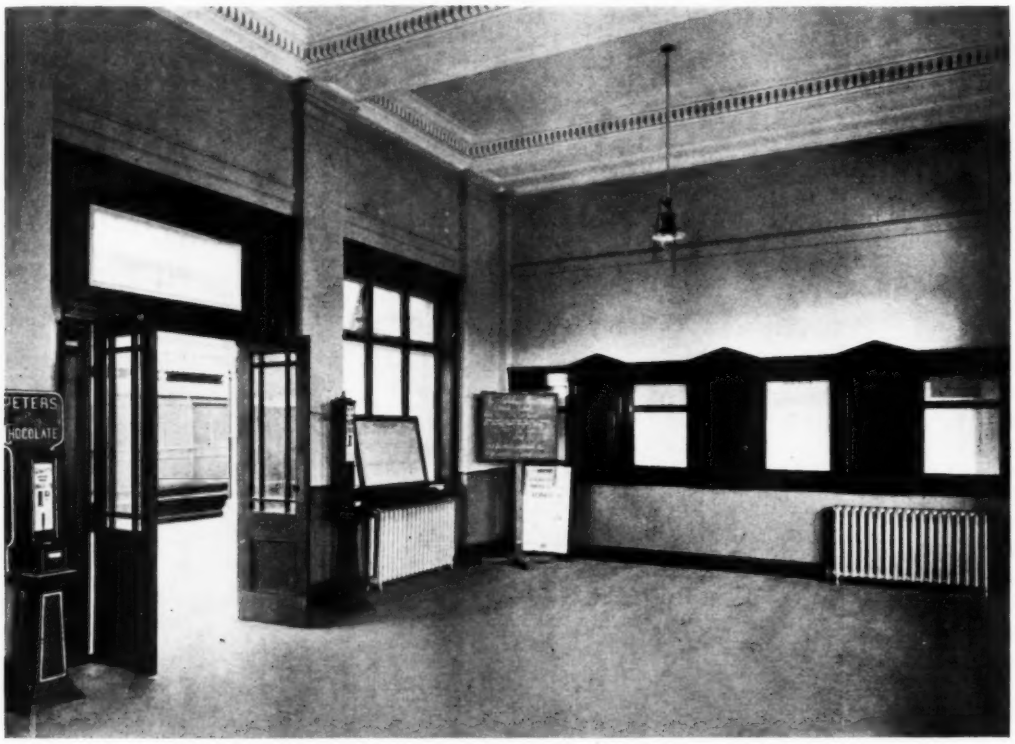
Ramsgate Station, Southern Railway. Above, the booking hall. Below, the entrance to the bookstall and library.

not exist, for instance, in suburban stations, which are nothing but passages, as far as their use goes. Here in these watering-places a large crowd passes through, and constantly waits.

In the station at Broadstairs there is no scope for monumental effect. The entrance can only be seen sideways or at close range. The centre, however, is clearly marked and emphasized, with its flanking towers, its louvre, and its projecting hood. The platform forms the back. The booking hall is again large and light, with through and speedy communication to the platform, and plenty of space for a crowd. Its treatment is dignified, though simpler.

The station at Dumpton Park is, as far as the design goes, a refined and good piece of work. Except for the general lay-out, however, the passenger entrance does not seem to be so clearly marked from the goods entrance, and the duplication of motive tends to a slight confusion of use. Again the strong horizontal glass roof binds the façade together, as the louvre makes a focal point at the centre. It is, however, an interesting design.

The Southern Railway have done public service in producing work of this kind for public use. No doubt more is to come. Our railway stations are gradually being developed from feats of engineering into finely-treated architecture.



Broadstairs Station, Southern Railway. New down side offices. Above, the exterior. Below, the booking hall.

PLYWOOD OF TODAY

[BY JOHN C. ROGERS]

IV: DETAILS OF CONSTRUCTION IN JOINERY AND FURNITURE

LAST week's article concluded with a few remarks on the utilization of plywood in joinery and furniture. We will now resume the practical consideration of various structural uses and the diagrams here reproduced will serve to emphasize the new and extensive possibilities of using the right types and thicknesses of plywood. First, in order that the two varieties may be readily visualized, figure one gives isometric views of *a* multi-ply, and *b* laminated plywood, with further particulars as to thickness. The former is suitable for panels and all forms of fixed construction including carcases of furniture, etc., while the latter is good for all manner of doors, hatches, traps, etc. Taking laminated boards as our material, let us examine the possibilities in door construction. Figure two in the diagrams gives working details of two doors fit for the highest class work, and, so far as the strength and lasting qualities are concerned, composed entirely of one slab of laminated board, i.e. they are entirely without structural framing. Figure two (*a*) utilizes a 1¾ in. thick board and, primarily to protect the edges and secondly to secure a good-looking trimming, a clip frame is glued on all round. I have given this frame a 3 in. width, but of course it can be more or less according to the effect you desire; also it provides a total thickness on edge of 2 in. and gives a one-panel treatment; again, if a two-panel door is desired (on one or both sides) a similar moulded strip can be glued across the panel at lock rail level.

If it is intended to paint the door surfaces, the clip frame may be either on gaboon, like the laminated board, or say in American white wood. On the other hand, the panel might be faced with veneers of some figured hardwood and then the frame would of course be in solid material of the same species.

Figure two (*b*) utilizes a 2 in. thick laminated board with a 2 in. by 2 in. flush border piece tongued and glued on all round. This suggests a good paint job, the door left quite plain, possibly mounted with a fine rim lock, or mortise furniture and finger plates; and some specially effective architrave treatment. There are, I feel, great possibilities in this, and what is more, no fear of shrinking panels or casting frame.

In figure three we have traditional forms but improved construction. I intend this to represent a fine walnut two-panel door with panels veneered in quartered figured walnut, and walnut cross-banding on the field or bevel. The frame is solid as hitherto, but the panels are of laminated board of desired thickness (1¾ in. in this case) with a solid border tongued on to form the bevel; this is necessary to secure a perfect job with the cross-banding, and if doors (and also wall panelling) of this design be carried out in the manner shown, it will ensure a perfect job. Needless to say, whatever solid wood is used in association with plywood, it must be of the best and thoroughly seasoned.

Turning to uses for multi-ply boards. Figure four shows a flush panel treatment in, say, oak or mahogany. It is an excellent scheme for table tops; also tops and sides of desks and all furniture of box formation where flush surfaces with panel effect are desired. The edges of the solid frame may be moulded, such as a small lip or ovolo, when utilized as a clip joint for cupboard doors, etc. But it is not essential to have the solid broad frame.

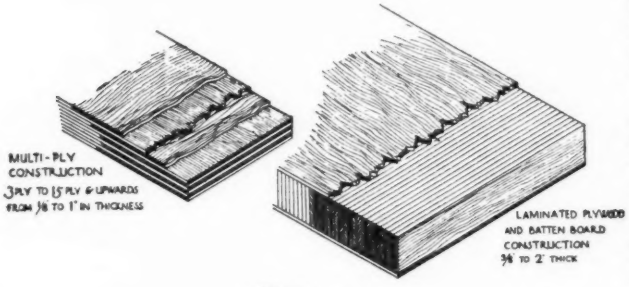
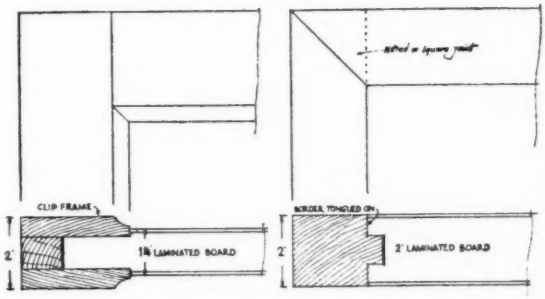


Figure one.



DOOR CONSTRUCTION WITHOUT STRUCTURAL FRAMES

(*a*) *Figure two.* (*b*)

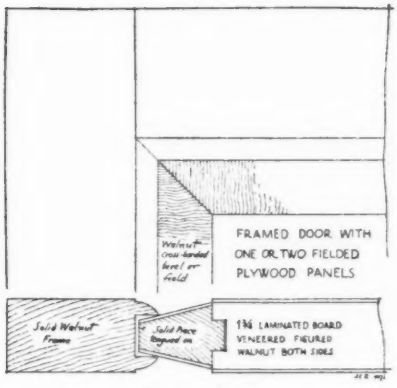


Figure three.

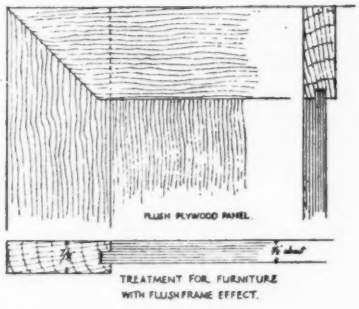


Figure four.

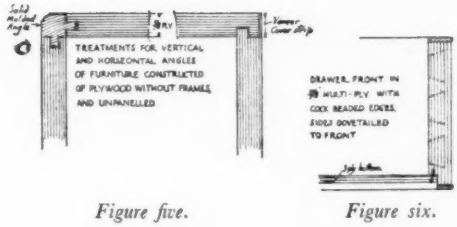


Figure five. *Figure six.*

Figure five gives two treatments of angles for such things as wardrobes, chests, desks, bookcases, etc.; in one case a solid moulded piece tongues the angle together, while in the other, with sharp arris, this is unnecessary and all that is required is a cover strip of similar veneer to hide the laminations of one sheet. In $\frac{5}{8}$ in. multi-ply where a plain piece with flush surfaces is desired, these methods of framing up are quite efficient and speak for themselves as means of saving labour.

Little use so far has been made of plywood for drawer fronts: but figure six shows a satisfactory treatment in $\frac{5}{8}$ in. multi-ply. A cockbead conceals the plies and gives a good finish, and, providing the dovetails are few and large, they are still the best form of joint between the front and sides.

[*Concluded*]

SOLID STEEL COLUMNS

[BY PROFESSOR HENRY ADAMS]

SOLID steel columns are particularly useful in modern building construction as they contain the maximum of strength in a minimum of space; they are much used in supporting bressummers for shop fronts on this account. Tables of safe axial loads with different lengths are given in various section books, but these differ considerably. Taking a 6-in. column 12 ft. high, one list says safe load 116 tons, another says 74 tons, another says 158 tons, another 129 tons, another 93·5 tons; so that not much reliance can be placed on the lists.

A formula much used in America for medium steel is $P=\frac{50{,}000}{1+\frac{(12L)^2}{36{,}000r^2}}$ where P = ultimate strength in lb. sq. in. L = length in feet, r = radius of gyration in inches; ends flat or fixed, safe axial load = $\frac{1}{4}$. The radius of gyration for a solid circular section is one-fourth of the diameter. Taking a 6-in. column 12 ft. high, we have $P=\frac{50{,}000}{1+\frac{(12\times12)^2}{36{,}000(1{\cdot}5)^2}}=\frac{50{,}000}{1+{\cdot}256}=39{,}808{\cdot}9$ lb. sq. in., and taking $\frac{1}{4}$ we have 9702·225 lb. or $\frac{9702{\cdot}225}{2240}=4{\cdot}331$ tons sq. in. The 6 in. diameter gives 28·27 sq. in. area and $4{\cdot}331\times28{\cdot}27=122{\cdot}44$ tons safe load.

The modified Gordon formula (see *Engineers' Handbook*, Waverley Book Co.), is $p=\frac{f}{1+\frac{m}{nq}\left(\frac{l}{d}\right)^2}$ where p = tons per sq. in., $f=26$ for mild steel, m = fixing modulus = 1 for both ends fixed, n = shape modulus = $\frac{3}{4}$ for solid cylindrical, q = strength modulus = 3750 for mild steel, l = length in inches, d = diameter in inches. Then, applying the formula to the same column, we have $p=\frac{26}{1+\frac{1}{\frac{3}{4}\times3750}\left(\frac{144}{6}\right)^2}=\frac{26}{1{\cdot}2}=21{\cdot}7$. Then the area being 28·27 sq. in., the ultimate strength will be $28{\cdot}27\times21{\cdot}7=613{\cdot}5$ tons. Shaler Smith's formula for factor of safety is a very good one for columns; it is $4+{\cdot}05\frac{l}{d}$, which in this case gives $4+{\cdot}05\frac{144}{6}=5{\cdot}2$, and $\frac{613{\cdot}5}{5{\cdot}2}=118$ tons safe load. There is another formula that may be tried, the Rankine-Gordon formula $P=\frac{fA}{1+\frac{1}{ac}\left(\frac{l}{r}\right)^2}$, where P = ultimate load in lb., A = area of cross section in sq. in., f = about two-thirds compressive strength of the material in lb. sq. in. = 40,000 for mild steel, a = constant = 4 for column with fixed ends, c = 9000 for mild steel, l = length in inches, r = least radius of gyration of cross section, factor of safety 4. Then $P=\frac{40{,}000\times28{\cdot}27}{1+\frac{1}{4\times9000}\left(\frac{144}{1{\cdot}5}\right)^2}=\frac{1{,}130{,}800}{1{\cdot}256}=900{,}318$ lb. or 401·9 tons and the safe load $401{\cdot}9\times\frac{1}{4}=100{\cdot}5$ tons.

It is useful to note that the average of all the above results is 118 tons, or the same as given by the modified Gordon formula, but for a rolled joist or a built-up stanchion the Rankine-Gordon formula is safer, as it takes account of the radius of gyration in preference to the least diameter. The London County Council Regulations give a table and a straight line formula for mild steel pillars both ends fixed; safe load tons sq. in. $=6{\cdot}5-\frac{l}{r}({\cdot}025)$, in this case safe load $=6{\cdot}5-\frac{144}{1{\cdot}5}({\cdot}025)=6{\cdot}5-2{\cdot}4=4{\cdot}1$ tons sq. in., and $4{\cdot}1\times28{\cdot}27=115{\cdot}9$, say 116 tons. This is a simple formula giving a reasonable result and shows the limit of loading in the London area.

To make this article more complete a drawing is given (figure one, elevation, and figure two, plan) of a standard cast-steel cap or base plate of minimum dimensions for any mild steel solid pillar. The dimensions, being in terms of the diameter, can be adapted to circumstances.

A cast-iron cap should have the dimensions increased, say, 25 per cent. on account of its less strength.

The steel caps are usually shrunk on to the machined ends of the columns and are sometimes merely flat slabs, the thickness and projection equal to, say, half diameter of column. A pillar or column with flat ends of reasonable area is considered as having both ends fixed, although there may be no actual fixing; but in the majority of cases there is actual fixing by bolts or otherwise to secure it being placed in the right position and to offer resistance to displacement. Should, however, any displacement, or tendency to it, occur, there will be a bending moment brought on the pillar which will increase the stresses. When the ends are not flat or securely fixed, they are considered as rounded or pivoted and a much lower estimate of strength is taken.

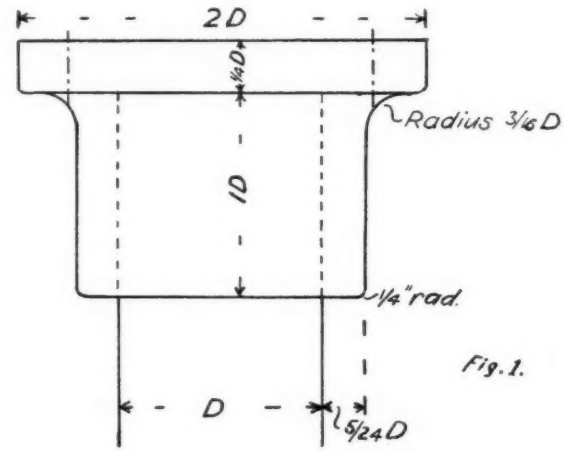


Fig. 1.

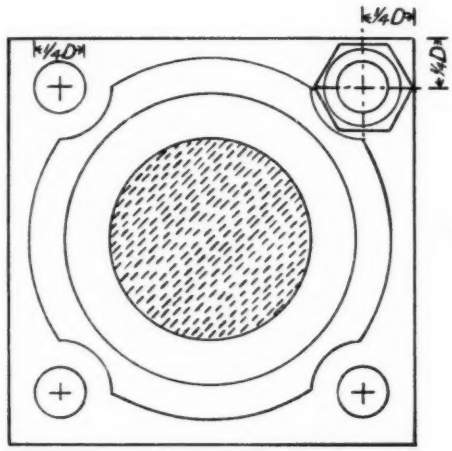
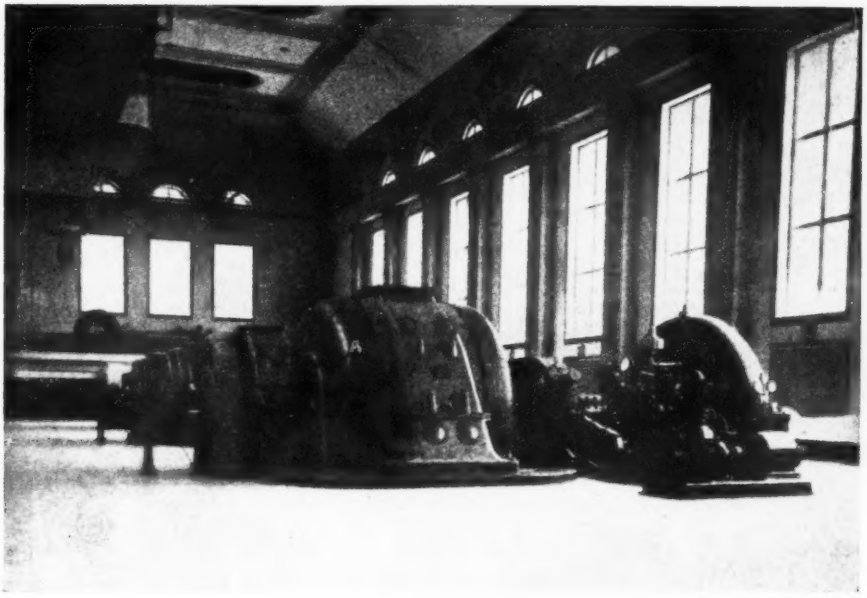


Fig. 2.

ELECTRIC SUPPLEMENT



Contents

Electricity Today

In the use of electricity Great Britain lags behind most other countries in Europe, Canada, and the U.S.A. The lack of water power may be partly responsible for this state of affairs, but such backwardness cannot be altogether attributed to this cause. Whatever it may be, however, a national effort is being made to bring this country into line with most other industrialized communities.

The first thing to do is to put an end to the overlapping, to the uncertainty, to the general chaos, in fact, of generation and transmission of electricity, and this is one of the aims of the Electricity Supply Act. A unification of voltage and frequency, too, is an essential preliminary to proper exploitation, and a state of affairs which allows half a dozen undertakers to supply current within a small area, each at a different voltage, must stop.

There must be, too, some unification of charges. It would be absurd if the postal charge for a letter in London were one penny and in Salford ten pence, yet that is the kind of variation that is met with in the price of current in different parts of the country. And electric current cannot

vary in quality. Thus the consumer is paying ten times as much in one part of the country as in another for identically the same thing.

These anomalies must take time to remove, and this can be done only by the suppression of inefficient and redundant generating stations and by a linking up of surviving and new stations by what is known as the "grid." One of the aims of the new Act is to cut down generating costs and make great blocks of current available in various districts by means of intercommunication between the various sources of generation. The effect of this is to make the whole electrical system more flexible and to avoid the enormous waste due to idle plant during the off-peak periods. Out of the 584 public generating stations in the country, forty-two carry 56 per cent. of the load. It is calculated that the needs of the country can be met with sixty stations.

The ultimate aim of the Act is to increase the consumption of electricity from 200 units per head per annum to 500; and this, it is estimated, will take some fifteen years.

Another matter that needs careful examination is the method of charging for current. An advisory committee was appointed by the Electricity Commissioners under the 1919 Act to report on the methods of charging for domestic current. And a perusal of this report will show how chaotic is the present state of affairs. The difficulty arises in the first place through the necessity of discriminating between the consumption of electrical energy for different purposes and at different times, and of encouraging the use of current by reducing the charge according to consumption. This is economically sound. Undertakers desire to decrease peak periods by encouraging consumption at these times. But the different methods by which it is sought to achieve this object are manifold, complicated, and often hopelessly perplexing for the consumer.

No doubt in course of time the domestic consumption of electrical energy will equal or exceed the industrial consumption. And the uses to which electricity can be put are almost infinite. In the all-electric house it is possible by means of time-switches to be called in the morning and to awake and find the kettle boiling by the bedside ready for a cup of tea, to find the bath ready and the breakfast cooked without human energy. In washing-up, laundrying, house cleaning, food preservation, cooking, heating, lighting, burglar protection, health preservation, electricity can be used in the home. But before the use of electricity on such a scale becomes general, many of the supply companies will have to adopt very different methods. They will have to become alert and endeavour to anticipate demand—to create it, in fact. At the present time they are, for the most part, a long way behind the gas companies, who will often not only lay service mains free, but also carcass the house at a low figure, whereas the electricity companies make high charges and adopt a take-it-or-leave-it attitude.

There is no doubt that in electricity we have an almost ideal source of power and one that is capable of aiding man in every department of life: in industry, in transport, in agriculture, and in his home.

Wiring the Modern House

[BY G. BLAIR IMRIE]

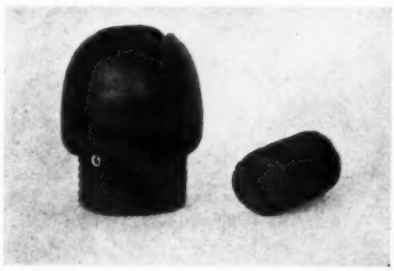
The architect is sometimes reproached with being too conservative in the use of electricity. He is, of course, conservative in most things, and it is right that he should be, for architects cannot make experiments in the spending of other people's money, and in no branch of the architect's work is his progress more uncertain than in the installation of electric light, heating or power. The trouble already begins with the supply companies themselves, who (in my experience, at any rate) are not easily moved to do anything in advance of the demand for current, or to take any steps towards creating such a demand. And the help and encouragement they could give if they wished to those people who are spending money in the development of building estates is very great indeed. Yet not only do they frequently refuse to lay a cable down a new road until a number of houses have actually been built; even where they are induced to lay such cables they charge exorbitant prices for this service. I do not, of course, suggest that electricity companies should go so far as to follow the example of the gas companies and, in addition to laying service mains free, wire the whole house for a nominal figure. But there is no doubt that the demand for current would be enormously stimulated if the initial charges could be reduced. They should be simplified as well. It might also be possible at the same time to do away with the irritating custom of insisting that, though the consumer has paid the cost of the service, the cable remains the property of the supply company. Another difficulty which the architect has to face at the beginning is the reluctance of most supply companies to connect up promptly. A short time ago we completed a house which was not connected until the builder had written to the company to say that he was threatened with damages for non-completion of the work. The extraordinary divergence of the rates charged for current is another great obstacle to the use of electricity in the modern house. This obstacle will, one hopes, be removed by the Central Electricity Board now sitting. But not only do the charges vary greatly from district to district; they are also very often calculated upon tariffs which neither the architect nor the client can possibly understand. Some time ago we were engaged on the modernizing of a large old house; it was proposed to use electricity not only for lighting and heating, but also for cooking, vacuum cleaning, wood-sawing, and other power purposes. When the company was asked to quote an alternative to the ordinary charge per unit, this is the statement we received: "1s. 3d. per annum on each £1 of rateable value plus 4s. per annum on each 100 sq. ft. of floor space of living-rooms, kitchen and bedrooms only, plus 1s. 6d. per annum on each 20-watt lamp (or its equivalent) installed, except sculleries, bathrooms, passages, cellars, etc., up to quarter of total connection (calculated on wattage of lamps) less 10 per cent., plus 2d. per unit used for all purposes up to 20 units per quarter per £1 of fixed annual charge, and 1¾d. after that." The result was, of course, that the client nearly gave the whole business up in despair, and seriously contemplated putting in a generating set.

Very great care should be taken in fixing the positions of lights, switches, etc., a job in which the architect receives much less help from contractors and foremen than he might reasonably expect to receive. If the fixing of point positions is left to the foreman he will often make quite gratuitous mistakes. I have seen pendants fixed just sufficiently out of centre in a square room to produce a very

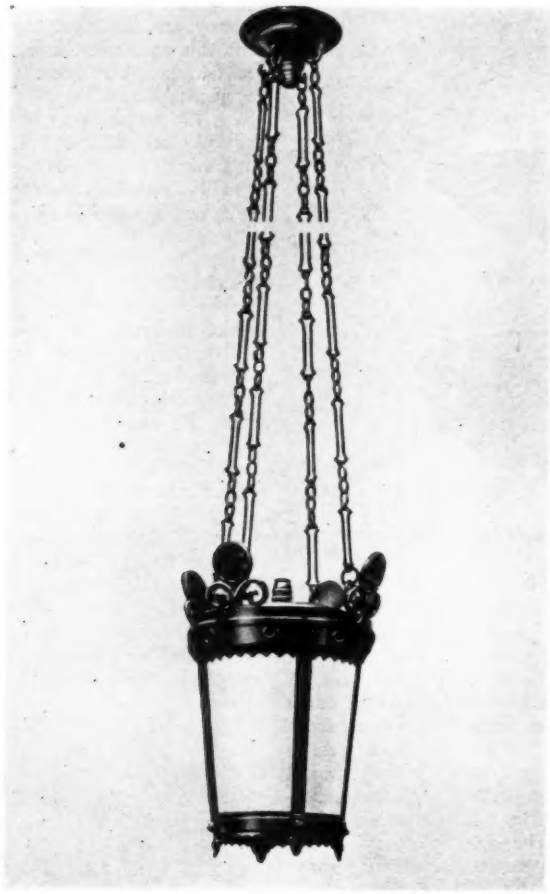
Two semi-indirect lighting fittings.

disagreeable impression, they were fixed in that way merely because the $\frac{1}{8}$ in. scale point plan was not as accurate as it might have been. The following letter, recently received from a client, is also typical; it refers to certain work to be done at her country house during her absence abroad: "I am going to put a double bed against the same wall where a single bed is now, and want a light hung from ceiling, say, 15 in. out from wall. The bed will be 5 ft. in width; some intelligent person (*not an electrician*) should decide where bed and light should be." I give this quotation in order to show how important it is that architects should pay the most careful attention to every detail, however unimportant it may appear and however remote the possibility of error. In dealing with contractors, the architect is also apt to be greatly bothered by what are called wiring rules. There do not appear to be any rules in connection with gas piping, nor do I gather that there is perfect agreement about the rules laid down for the electricity trades, but there is here ample room for simplification and also, I think, for some relaxation. It hardly seems necessary to pile up regulations which must either be broken or, where they are adhered to, increase the costs out of all reason.

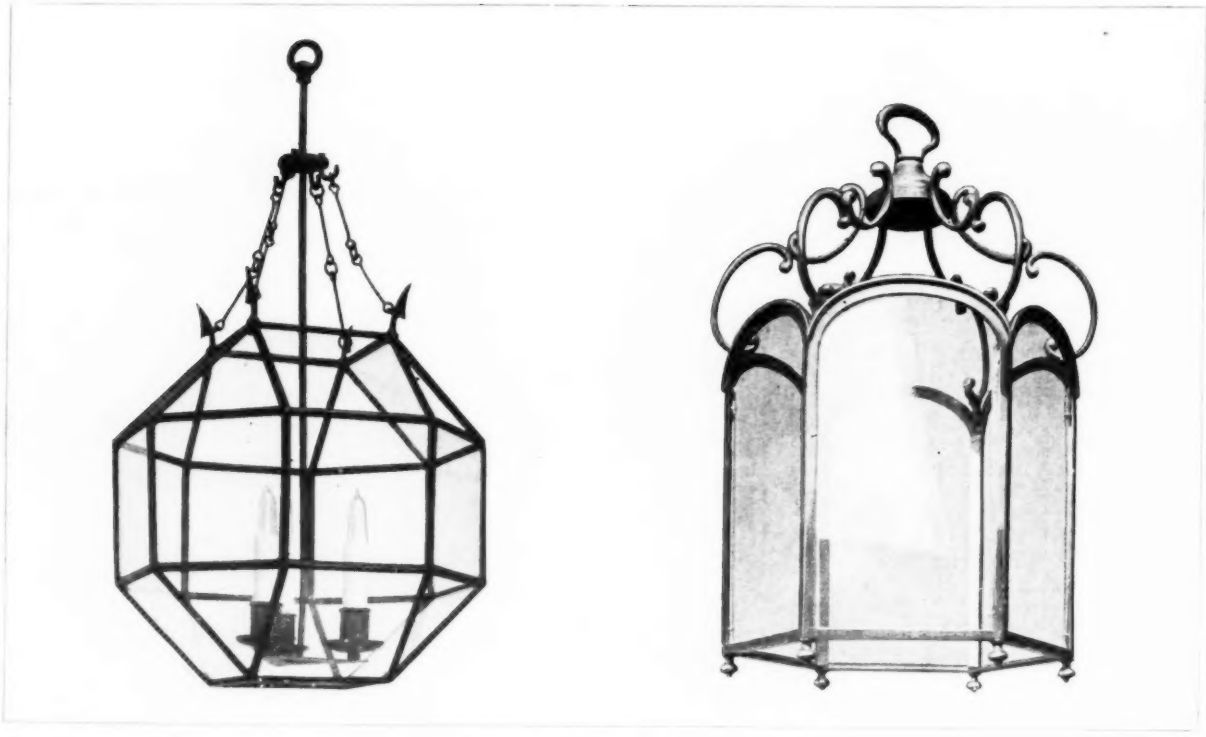
When we come to fittings and appliances we at once have to acknowledge that the ordinary cheap metal switch on a white enamel block is æsthetically a dreadful thing. Of course, the architect prefers the flush switch, but at the moment these switches are certainly more expensive. There seems to be no valid reason, however, why a cheap standardized switch should not be made to approximate both in shape and size to the desirable flush switch. All architects must hope that the manufacturers of these things will one day, by a scheme of co-operation and standardization, arrive at a switch design which will be at once cheap and (at the very least) inoffensive. Power plugs in particular seem continually to be growing larger and larger. I am told, in fact, that the larger they are the better electricians like them. Recently I had to alter the whole of the skirting in a country house because the client wanted to instal something which I believe to be the very latest thing in power plugs. Light fittings are certainly as difficult, if not more so, to obtain to one's satisfaction. It is harder still to find them arranged in showrooms where they are not intermingled with inferior patterns which are apt to distract the client's attention, and sometimes even that of the architect. For this reason I am aware of only one showroom in London where I can with safety take a client to choose fittings for himself. One is often told that good fittings cost money, and that the public is not prepared to pay the price, but this statement surely is not as generally true as it is held to be. Architects in particular know that there are large numbers of people who will gladly pay a little more for good fittings, especially if they can see them displayed in suitable conditions. The inferior kind of fittings may suffer from one of two great defects, either of which is almost equally disabling, and many of them look as though they had been produced either by designers who know nothing about electricity, or by electricians who know nothing about designing. Most architects are tired of the electric lamp which pretends to be a wax candle, or has to be put inside an imitation horn lantern. The electric fitting which looks like an electric fitting, and nothing else, has still to be produced; and so has the electric bulb about which we can say that it is a beautiful thing in itself. The producers of light fittings do not at any rate suffer from the exaggerated modesty of the people who manufacture cookers, boilers, and such-like appliances. I must not, in this article, trespass on the subjects assigned to other contributors in the same issue, but I have certainly observed that many architects have gathered their knowledge of electric cooking from the things they have been told by the gas industry. All the manufacturers of light fittings need is to attract to their industry the best talent of the day, which might possibly be done by offering prizes for first-rate designs. When something of this sort has been accomplished, the architect will have every encouragement to use electricity wherever he has a chance.

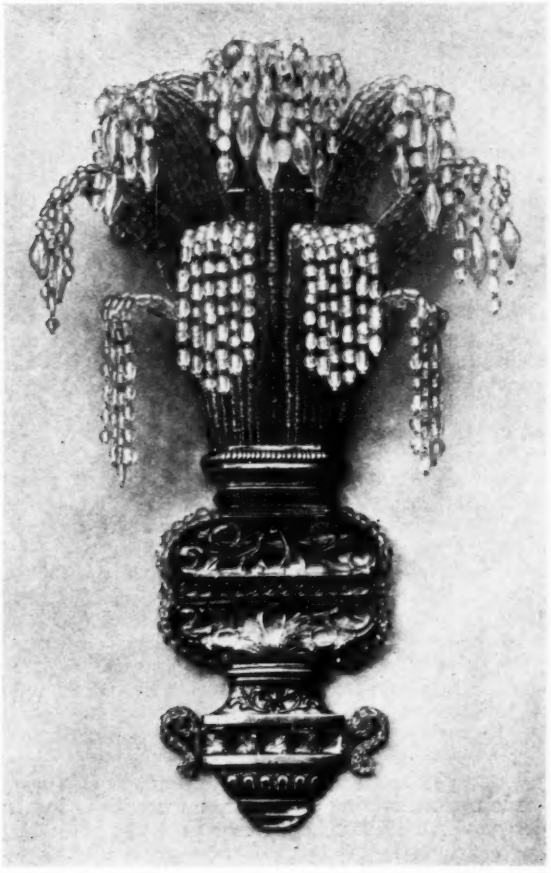


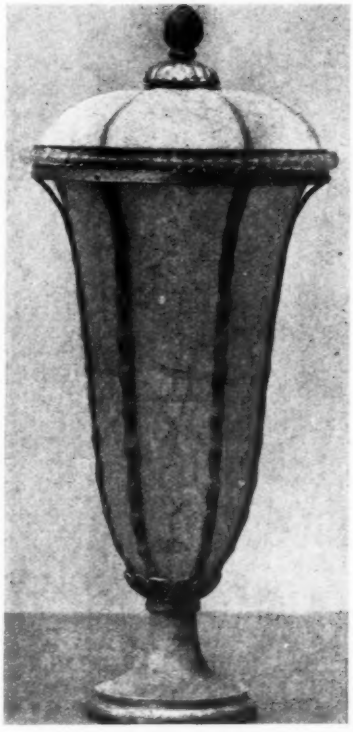
Lampholder, showing method of wiring to avoid possibility of fusing.



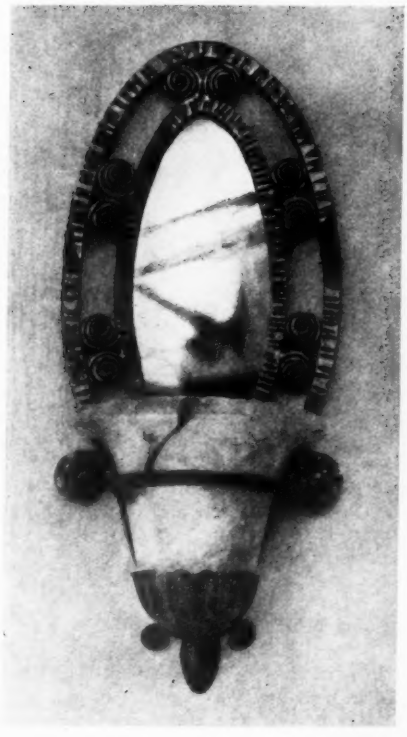
Above, hanging-lamp in the Norwegian Memorial Church, Rotherhithe. Below, left, a lantern in brass to hold imitation candles. Right, a lantern with framework and supporting scroll of cast-brass, and clear sheet glass







Above, a hand-cut crystal wall-bracket. Below, left, a luminous vase of painted iron and crystal covered with silk. Right, wrot-iron and alabaster wall-bracket.



Planning Electric Kitchens

[BY NORMAN SEVERELL]

BETWEEN the early electric cooking appliances and the modern economic and easily controlled electric cooker, there is a difference as great as between the first "carbon filament incandescent" and the gas-filled electric lamp of today. During the past seven years the increased interest in electric cooking, both in its household application and its employment in important hotel and restaurant kitchens has influenced the planning and lay-out of kitchens and domestic offices. Contact with hotel and domestic architects, with teachers of cookery, with chefs and hôteliers shows that the advantages of electric cooking, both in its direct effect on the quality of cuisine and the improved kitchen conditions, amenities, and efficiency of personnel which result, are rapidly gaining recognition and popularity. These facts at once bring the subject into the foreground and vision of the architect and builder.

The knowledge and experience of kitchen planning and location derived from coal-stove lay-out requires revision to derive full benefit from electricity as a source of heat, power, and refrigeration. That the comfort, hygiene, and accompanying improved staff efficiency are considerable in electric kitchens occupying the top floor of a building is at once obvious from a visit to the ably planned kitchen premises at the Peter Robinson store in Oxford Street, London. With no longer a need for flues, the larger appliances, such as electric stoves, roasting and pastry ovens, electric vegetable steamers, deep fryers, and sauce stoves stand out well away from the walls like the tools in a modern machine shop, and enjoy the perfect lighting of a glazed roof which covers the major portion of the kitchen.

Architects planning hotel and restaurant premises who are aware of the advantages of the electrically equipped kitchen will do well to consider a revival of the top floor location. The introduction of the electric kitchen and electrically warmed service lifts—as, for example, those fitted at the Mayfair Hotel—nullify most of the arguments used to favour the dark underground kitchens to which the hotels and restaurants of the country are now committed. Similar principles apply in the lay-out of the domestic kitchen. The provision of metal ventilating hoods over all cooking stoves is, in my opinion, a necessity rather than a refinement. No one wants perpetual olfactory reminders of past and future meals all over house or flat. Connection from hood to flue can be made with a length of light flue piping, and the domestic electric cooker, not requiring the smoke flues of its ancestor the coal-fired kitchener, can enjoy a position regardless of structural consideration. Stoves placed in ill-lighted recesses, generally on the side of the room remote from the window, are a sure cause of indifferent cooking. At any rate, they are an excuse for it.

An electric cooker should not be buried in the tomb lately occupied by the kitchener it has superseded. A situation by the side of a window is ideal. The provision in the kitchen and other domestic offices of at least three other power points, in addition to that required for the cooking stove, is necessary. One will be needed permanently to supply current to operate the automatic electric refrigerator, unless this is located in a separate larder, in which case provision must be made there. The others will be

An all-electric kitchen at South Meadow, Bosham. By Imrie and Angel.

Left, cooker with hob raised and opened oven door.
Right, cooker with plate rack and splash plate.

required to operate the electric clothes washer, a dish-washer, vacuum cleaner, and iron. The use of lamp sockets for obtaining current at lighting rates to operate domestic machinery is a stupid extravagance, but one often thrust upon housewives by architects who neglect to make power-plug provision which is at the same time adequate and thoughtfully disposed. The need for standard home wiring specifications, somewhat similar to the Gold Seal example in America, is becoming imperative. These specifications might be drawn up by a conference of architects and electrical contractors, and must allow for ample provision for development. Electricians are notoriously unimaginative in the choice of wall-socket or outlet positions, and the architect who defines these in his specifications deserves honourable mention.

One of the principal advantages of cooking by electric heat is the complete cleanliness of the method. Electric cooking is done in pure air, which is not required to support combustion. There is no combustion. There are therefore no fumes. An electric oven need not be ventilated except to allow exit of excessive steam. This totally-enclosed principle of the electric oven is one of its most valuable features. It is not what cuisine *is*, but what cuisine *does*, that matters. Game and poultry cooked in a closed electric oven is moist and rich with a precious aroma dear to the educated palate.

Thinking back, this must be the reason for the very ancient method of cooking, by which the food was wrapped in a clay shell—like an apple turnover in its pastry case—and the whole put into smouldering embers. Subsequently, the baked clay was broken away from the little duck, which revealed a superlative succulence as a result of this juice-retaining method of cooking. Charcoal burned in the dished lids of Gouffé's luted brazing pans; that was the exact physical equivalent of the hermetically closed electric oven. Those instruments, barely known to British housewives of today, to whom Gouffé means less—had the same influence on the quality of the cuisine. The heat control in electric cooking stoves is positive and absolute. There can be no hit-and-miss about it or risk of fluctuating temperature. The reduction in the price of electricity under the leadership of Sir Andrew Duncan, chairman of the Central Electricity Board, to the level of price charged by the progressive companies and authorities who now flourish with a large domestic load, should remove any doubt in the mind of architects about the advisability of recommending the fully electrical kitchen either for the home or the hôtelier.

Electricity, to be directly competitive, should cost ½d. per unit; allowing for its superior efficiency, the cost should be ⅞d. to 1d. per unit. In many electrical undertakings the cost of electricity for all purposes in the household is now 1d. to 1½d., so that, even at 1½d., the consumer is paying only slightly more than ½d. per unit for the convenience and safety of electricity. No matter what the capacity of the heating and cooking appliance may be, this statement holds good. The belief that electricity is too expensive for extensive use in the household, which has prevented greater adoption of electrical appliances, is steadily yielding to the lessons of experience.

In the past, electrical engineers, who are seldom practical cooks, were left to design electric cooking appliances

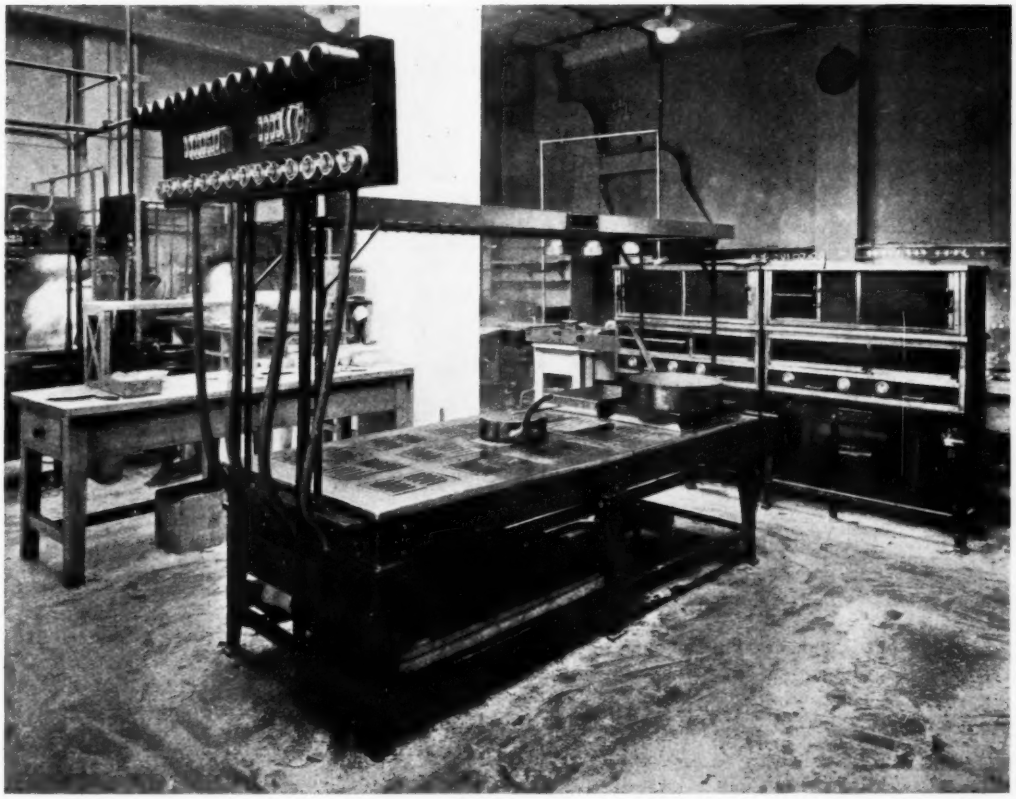
without much help from the practical chef, teacher of cookery, or restaurateur. The consequence was that certain appliances had a serious number of *in*convenient factors. There would be no point in enumerating these here. Rather let me lay down the points to look for in well-designed appliances. First, the heating element which transforms the electrical energy into heat energy. Metallurgical research to produce a non-oxidizing, indestructible resistance wire is still some distance from realization, and the life of elements in electric cookers is not yet unlimited. The conditions under which they are asked to work are difficult, being subjected, especially in the case of boiling-plates, to occasional drowning in milk, soup, sauces, and other liquids which in the ordinary course of cooking are liable to boil up and overflow, even in the hands of the experienced. The corrosion which set in with the earlier resistance wires as a result of this drowning and drying wrecked elements in a short time. To obviate it, the protected element was designed, the boiling-top of the stove presenting a smooth surface like a hot-plate. Whether open or protected elements are better is still a debated point among manufacturers and users.

For technical culinary reasons outside the scope of this article, I favour open type elements provided part of the boiling-top is available for a hot-plate. This is needed for slow warming operations, such as holding a sauce at the right temperature in the absence of a *bain-marie*, with which few domestic kitchens are equipped. All elements should be easily removable for cleaning or replacement. Ovens must be sufficiently lagged, lined with an incorrodible or vitreous enamelled sheet, and have elements controlled and each adjustable to three degrees of heat by visibly indicating switches. Runners and guides for oven shelves must be removable for washing. Oven shelves should be fitted with stops so that they may be firm and secure when fully drawn out for examination or additions to a dish in preparation. This is important, and is seldom attended to by designers. The opinion of many practical users of electric ovens favours the horizontally-hinged oven door, which opens downwards. Thermometers and ventilators, the latter designed so that they can be closed completely, should be fitted as standard. Eye-level ovens are far better to work at than the knee-level variety, but a stove designed in the former way occupies more floor space. The griller on electric cooking stoves is another very valuable feature in electric cookery. Its value lies in the fact that the source of heat is a flat, red-hot surface absolutely parallel to the food to be grilled, and that there are no tongues of flame of varying length to catch and burn the food in spots. The best design of electric grillers have ample range of adjustment of the distance of the food from the element. This enables the grilling of certain dishes, to which I need not refer here, to be conducted in the actual fireproof boats in which they are brought to table. The advantage of this is incalculable, and raises the cuisine at once out of the common rut of grease dabbling.

I have seen recently a model of an electric cooker which is fitted with an automatic temperature control feature. By setting an index at any predetermined temperature, say 350 deg. F., as soon as that temperature is reached, the current is cut off by a mercury interrupter. Other models can be fitted with a time switch feature, which cuts off the current at the end of any period required. The above features are not recommended for hotel use, but only for private houses.

The manufacturers of electric cooking apparatus have provided for contractors' wiremen and electricians ample opportunity for instruction and training in the installation of their appliances. Briefly, it should be mentioned here that every piece of cooking apparatus, except, of course,

Electric pastry ovens at Peter Robinson's.

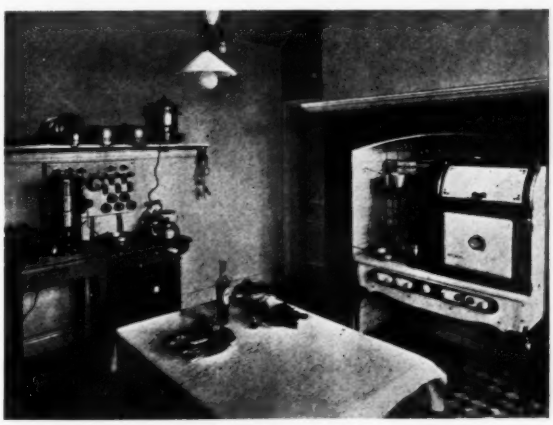


Electric cooking table and grille at Peter Robinson's.

the smaller table grillers and ovens, should each be provided, on the service to it, with a good quality of ironclad double-pole switch and fuse. The fitting of a pilot light, i.e. a red lamp on the wall above the cooker, is a good plan generally, but not necessary if the switches on the cooker are designed in such a way as to make it obvious from a distance that they are in the " on " position. Comments on the qualities of cable and conduit are hardly necessary, the best safeguard against scamped work and poor material being to employ contractors only who are members of the Electrical Contractors' Association, or who are otherwise certified. In hotel or restaurant installations and in private houses also, the appliances should be properly earthed. Chefs whose only thought of danger in coal-stove practice is from burns soon develop a deserving hatred for electric cooking after a few fat shocks at 240 volts through the iron handle of a *sauté* pan. Efficient earthing of all appliances is therefore the rule. All the best makers, whether for domestic or restaurant use, provide either switches whose " on " and " off " positions are obvious at a distance by the position of the handle, or fit red pilot lamps which burn all the time any of the heating elements are in use. Where these obvious precautions against wastage of current are omitted from the design of the apparatus, a red pilot lamp of small candle power should be fitted on the wall near to the stove and wired on the service between switch and stove.

In the maintenance of electric cookers the easy replacement of elements is one of the first considerations. I have referred previously to the necessity in design for elements to be of the " plug-in " or replaceable type. In hotel and restaurant kitchens wasted time and dislocated service are avoided by keeping a small stock of elements to fit each of the apparatus used. These should be in the charge of the house engineer only, and replacement should be allowed by staff electricians only. Cleanliness is not less important in electrically equipped kitchens than elsewhere. The main switch should be opened at night after the day's work is finished, and also opened during cleaning.

With the new organization of the electrical economy of the nation by the Central Electricity Board, a unique opportunity will be afforded for electrical manufacturers to develop an enormous market for heating and cooking utensils, to supply undertakings to develop that market by charging low prices for domestic current, and for the public to realize the actual and potential influence of electricity in their home life and in the life of the nation. Architects who are abreast of the times are watching these developments with very great interest.



An all-electric kitchen at Baslow Hall.

The Electric Fire

[BY H. J. BIRNSTINGL]

A GREAT deal of confusion of thought exists today with regard to domestic heating, because certain principles are not grasped; not grasped even by those who are sometimes called upon to give advice. And this is perhaps not surprising, seeing that but a generation ago there was only one method of heating the rooms of houses, and that was by means of the coal fire. Then there came the gas fire, the electric fire, and manifold systems of central heating.

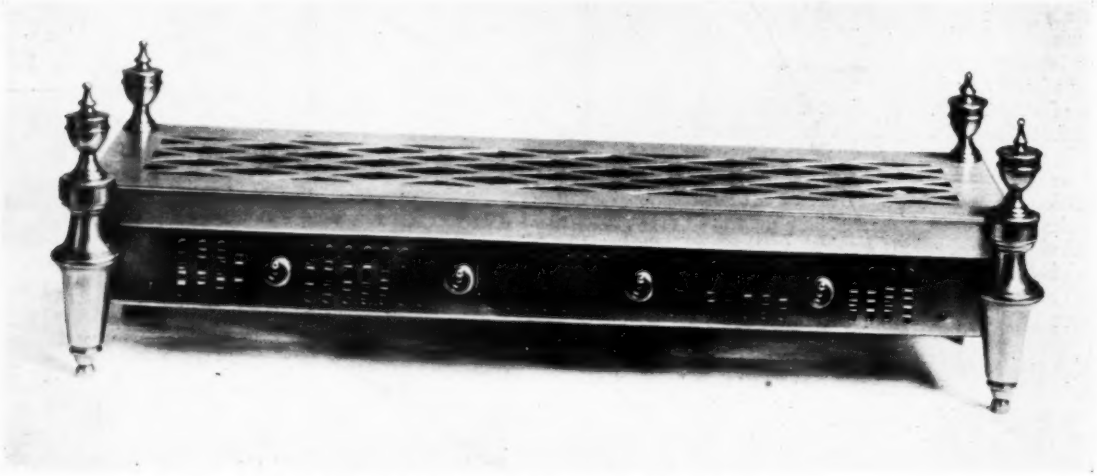
Now before we decide on the method by which we intend to heat a house or a room, we must ascertain what ideal we are striving to attain, or what ideal our client is striving to attain, and this again will depend upon the purpose for which the room is to be used. Do we want a system of heating that will maintain the whole house at an equable temperature, or do we desire a form of heating that can be rapidly generated and as rapidly extinguished? If we desire the first, we shall probably centrally heat the house; if we desire the second, we shall install gas or electricity.

But the matter is not even so simple as that, for not only are there two different ideals, but there are two different kinds of heat which are employed in the attempt to reach these ideals. And this is important, and more significant than is perhaps generally recognized. Put briefly, one method of heating is by means of convection. It is a method of heating the air—such is central heating; the other method is by means of radiation and is a method of heating the objects upon which the direct rays from the source of heat impinge—such is a coal, gas, or electric fire. Radiant heat is the method by which this planet receives its warmth from the sun, although the methods by which the atmosphere itself acquires its heat at different times and places is too vast a subject to be touched upon here. But in room conditions we have in microcosm a more or less accurate reproduction of the macrocosm. Thus with a low atmospheric temperature, with a temperature well below freezing, in fact, it is possible, under certain conditions, to obtain body comfort by placing oneself in the direct rays of the sun. So, too, with a low room temperature, it is possible to obtain body comfort by placing oneself within direct rays of a source of heat radiation; but if the air temperature is low, below 51 deg. or 52 deg. F., the body is overheated on one side and remains chilly on the other. For this reason, unassisted radiant heating is suitable only in temperate climates, such as England, and that is one of the reasons for the persistency of the English method of heating by open fire. It is a method unsuited to climates which experience prolonged spells of temperature well below freezing point.

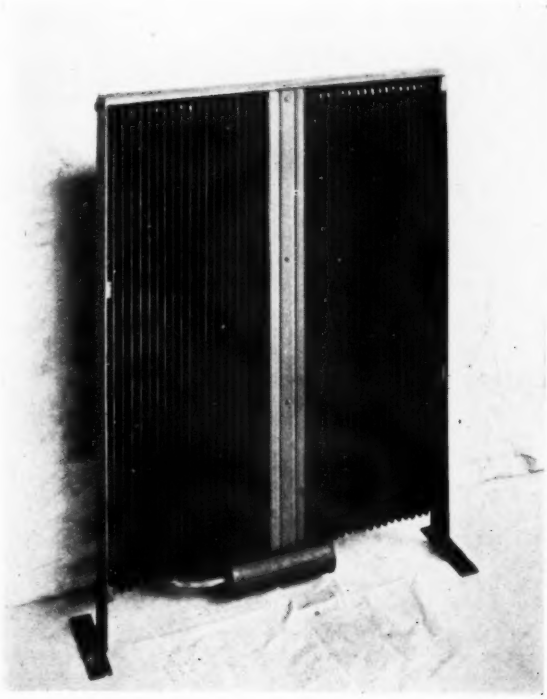
We see, then, that radiant heat is, for the most part, independent of air conditions and air temperature. Not so central heating. Thus, on a day when the outside temperature is 40 deg. F., a frequent English day temperature, for body comfort the air in a centrally heated room must be about 65 deg. F., and if, through doors and windows being open for a short time, the warmed air is blown out of the room by a violent draught, the room will not be comfortable again until the air temperature is restored to 65 deg. F. In a radiantly warmed room, however, such disturbances have little effect, since for proper body comfort it is necessary for the body to be in the line of direct heat ray and a slight fall in the air temperature is not of much consequence.

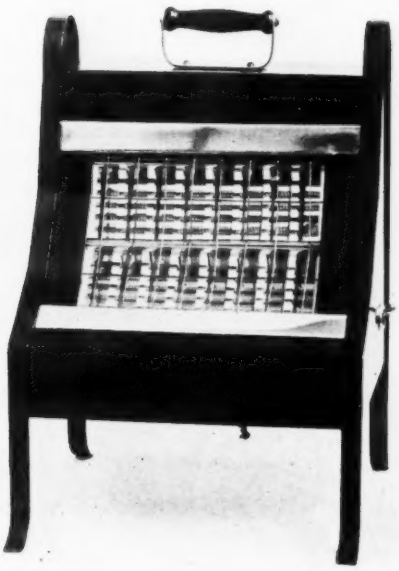
With the English love of fresh air, therefore, and open windows, a radiant source of heat is clearly more suitable than a convection source; and for a radiant source the electric fire is clean and the most efficient.

Says Dr. Margaret Fishenden, "Thus, while the radiation efficiency of open coal fires usually lies between about 17½ per cent. and 25 per cent. direct convection, heating probably accounts for less than 5 per cent., which indicates an aggregate efficiency of 22½ per cent. to 30 per cent. . . . The radiation efficiency of the best modern gas fires has been shown to be generally about 45–50 per cent., and about 10 per cent. of convection is usually claimed in addition. The radiation efficiency of electric heaters varies according to the type, but reaches as much as 70 per cent. for some of the high-temperature open-wire heaters now on the market. Whatever the radiation efficiency, however, the total efficiency is 100 per cent., the balance appearing as direct convection." Thus in



These heating trivets are made to stand in front of imitation coal fires that are not themselves fitted with heating-bars.



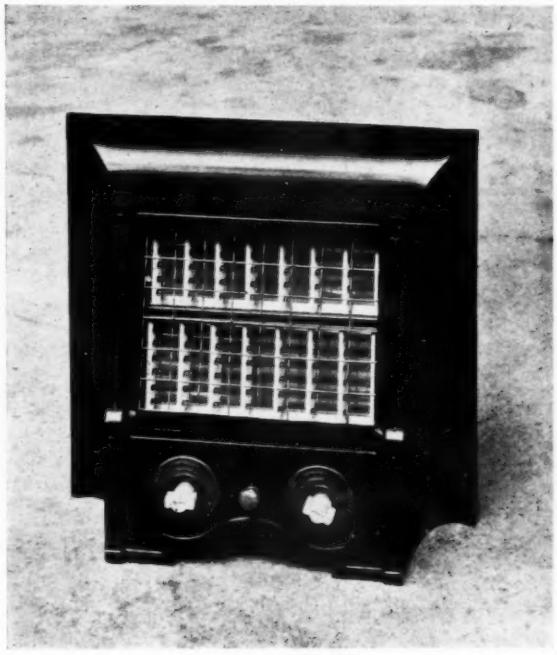


Left, an air-warmer (floor type), and right and below, three types of portable fires.

the electric fire you have a 100 per cent. efficient apparatus and in electricity you have a fuel which cannot be tampered with. All other fuels, can be adulterated or tampered with, but an electric unit is inviolable.

With regard to the efficiency of the various electric fires, then, there is little to choose, so that selection becomes chiefly a matter of taste. In most fires the heating is produced by the resistance offered to the passage of the current by wires of tabasco, which are raised to incandescence. These wires are sometimes stretched across the front of vertical strips of mica, sometimes they are wound over tubes of quartz glass or on bars or plates of fireclay.

Where it has been decided to install electric fires in a building previous to, or during the course of its erection, these should be worked into the scheme and not be



subsequently introduced as adjuncts. So far, very little inventive ingenuity has been shown in the design of apparatus for electric heating, designers finding it apparently quite impossible to break away from the form of the coal fire, so much so that the more closely they can adhere to a coal grate and a coal fire, the more pleased they are with their achievement. Yet it is possible to conceive of a scheme of decoration in which glowing wires introduced at various points might well form as integral a part as the electric illumination. And is there not, indeed, an equally good reason for distributing the source of heat about a room as for distributing the source of light?

Electric heating by means of incandescent wires should give infinite scope to a skilful architect or decorator. Yet the most that has been done is the creation of a multitude of "period" fittings.

The small portable fire with its copper bowl reflector is extremely useful for providing quite local heat or for warming up small rooms such as a bathroom, and its appearance is in some respects more pleasant than the larger and more pompous fires. To warm a large room with an electric fire, however, it is necessary to consume a good deal of current. A room about 15 ft. square requires two kilowatts per hour, more than is used probably for the entire illumination of the house. In the matter of cost, however, the comparison does not hold, of course, as the current for the fire is obtainable at a very much lower rate than that for the lighting.

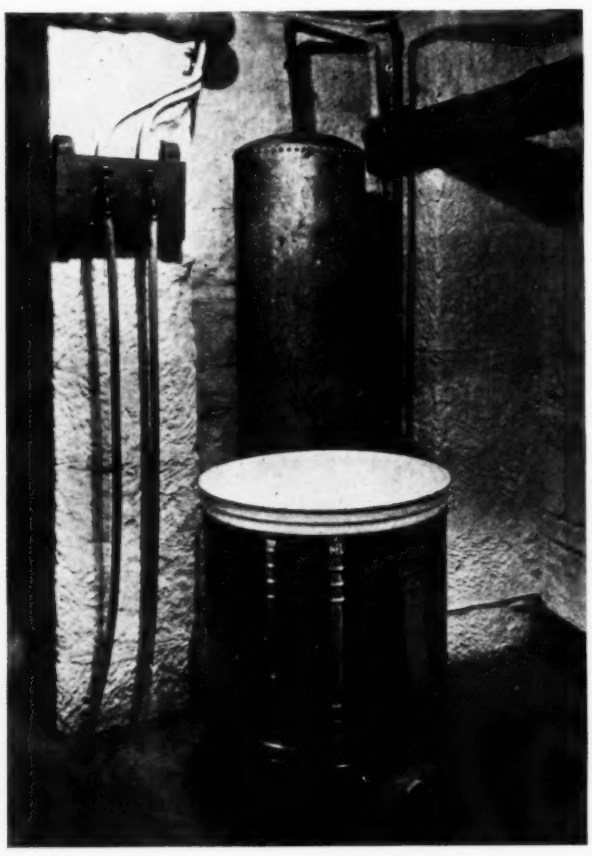
Electricity may one day supply the only form of radiant heat for house warming, but that day is not yet, and before it arrives there must be very great reductions in fuel costs, and before it arrives, too, it is to be hoped that the potential decorative qualities of electric radiant heating will be more fully exploited.

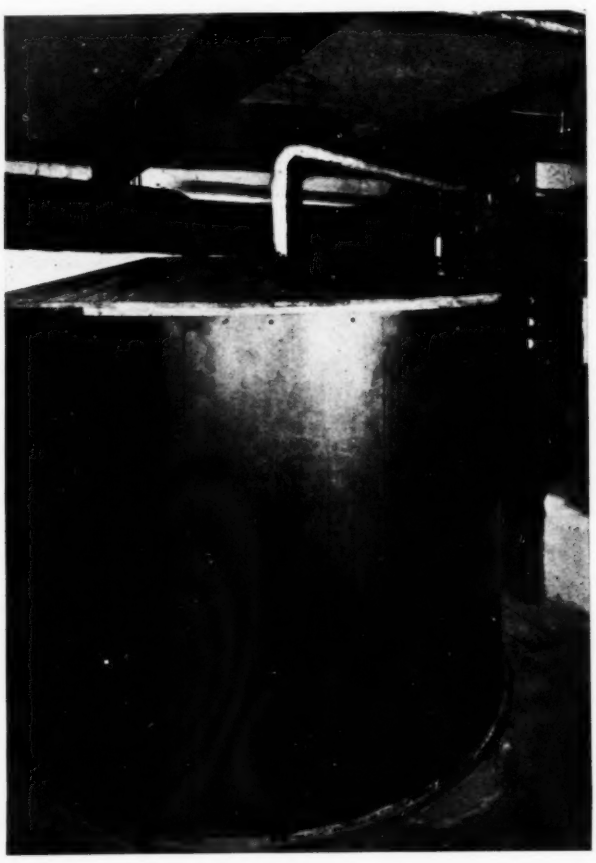
Storing Electric Heat

[BY C. H. S. TUPHOLME]

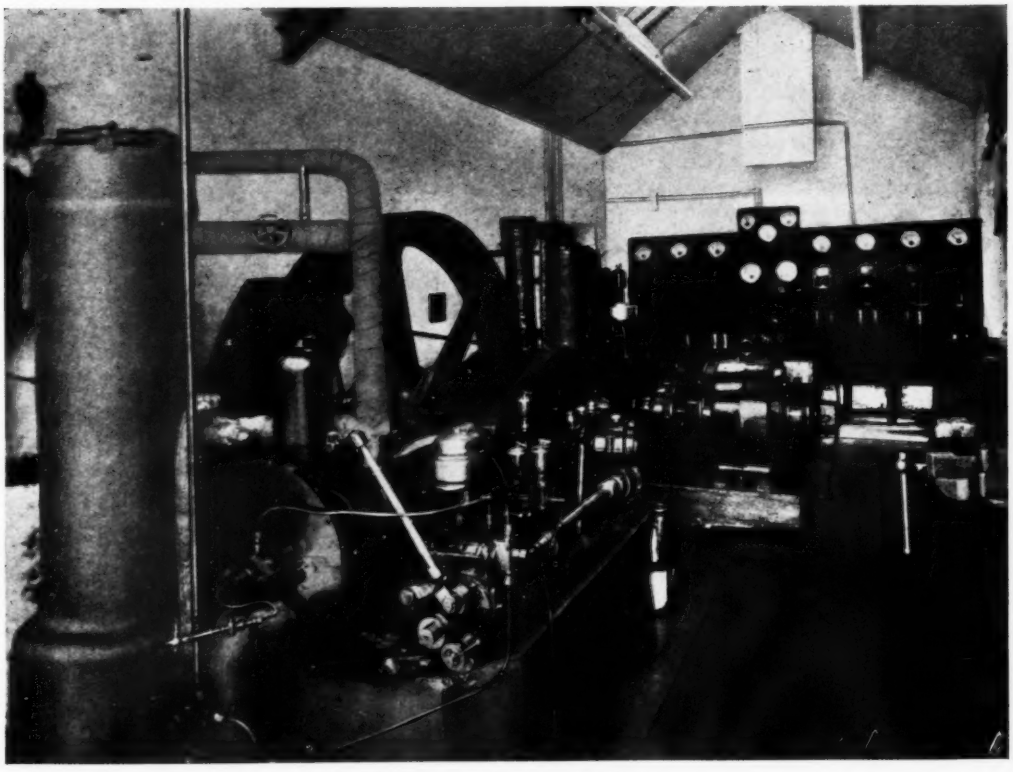
In order that electricity may be cheaply supplied it is essential that it be used over the longest possible period during each twenty-four hours as it is seldom economical to continue generating hot water in an electrical boiler, thus the problem of storage arises. The storage of electricity itself cannot be carried out efficiently and engineers have in consequence turned their attention to the question of storing the hot water instead. The problem of storing electrically heated water was very succinctly stated by Dr. Ferranti in a discussion on a paper entitled "An All-Electric House," read by Professor S. Parker Smith.

Dr. Ferranti said: "Our great handicap in electrical work is that we have no efficient means of storing electricity. Batteries store it perfectly well by chemical action, but the capital cost is heavy and the maintenance cost is also heavy, and it would not pay, I think, for every house to





An electric washer, left, and, right, a heat-storage tank at Baslow Hall.

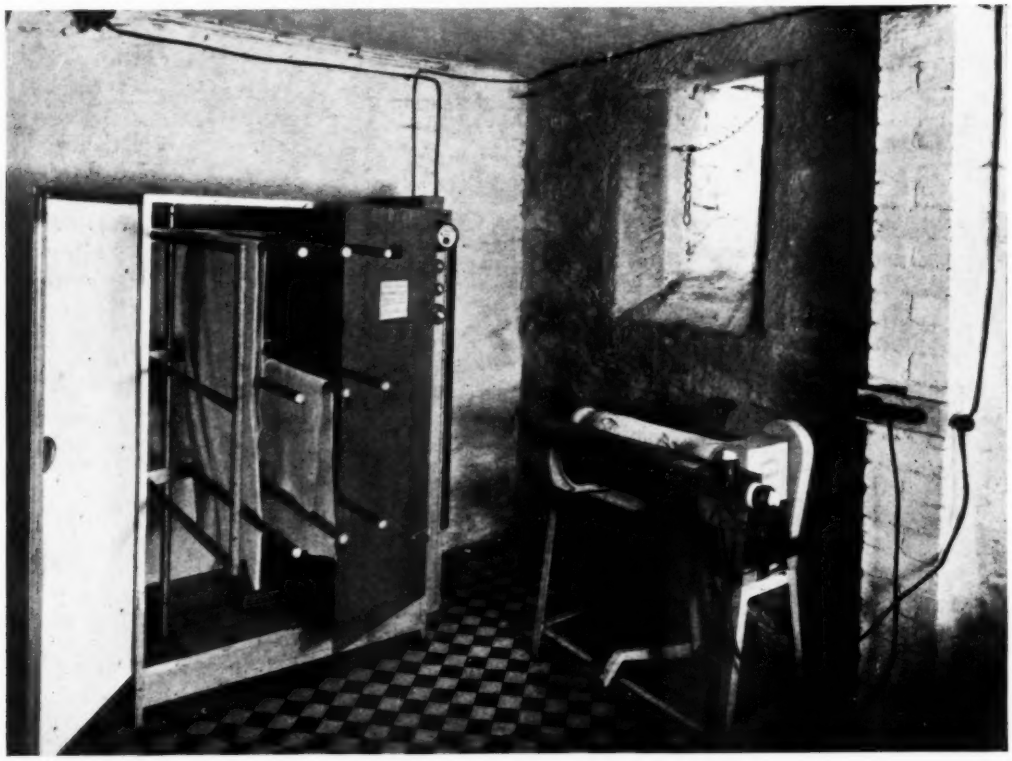


The engine-room at Baslow Hall

have a battery to take electricity for the whole twenty-four hours and to use it at the times that it is required. Fortunately, however, a large amount of the heat we require in a house is low-grade heat, and that we can store in the form of hot water. Hot water is a very cheap form of energy storage, and the provision of a large water tank enables electricity to be taken at a time when it has practically no value—when the capital invested is practically lying dead—and turned to good account by storing energy in the form of hot water which is used at any time during the rest of the twenty-four hours. I think that further developments along these lines will do much in the way of solving our electrical difficulties. I should like to add a few words with regard to my own experience of an electric house. I live thirteen miles from the nearest source of supply, Sheffield, and some years ago I put an electric installation into the house. This installation has been modified from time to time, and is at present not complete, although now, and in fact for the past six months, we have had no fires in or near the house for any purpose. We burn no coal or coke, and use no gas. We burn crude oil in a 25 h.p. engine. Our maximum load up to the present has been 18 kw. This is at a time when the battery is assisting the engine. The whole or a very large portion of the heat of the jacket water and of the exhaust is used to supply the hot-water storage in the house. In a case of this kind probably about 25 per cent. of the fuel energy is obtained in the form of electricity, and the jacket water and the exhaust would probably add another 50 per cent. I have a storage battery containing, I think, about 2 tons of lead, and the hot-water storage is a tank in the basement, 6 ft. in diameter, and 6 ft. 6 in. long, with about 6 in. of insulation. This tank holds about 6 tons of hot water. We therefore store our energy in about 2 tons of lead—the electrical part—and 6 tons of water—the low-grade heat storage. The capital cost of hot-water storage is, of course, much less than that of direct electrical storage. We find that with this particular plant we get all the hot water that we require for baths and washing and house-heating.

"The system of heating the house is in accordance with what I have already said on that subject, i.e. it is true heating by radiation. All the principal rooms have invisible panels in the ceiling, consisting of pipes bedded in the plaster below the surface. The general heating is therefore taken care of by radiation at low temperature from the ceilings of all the principal rooms, and not by heating the air by convectors, which are wrongly called radiators. The reason for placing the panels in the ceiling is that they shall not heat up the air; the idea is to have in the top of every room a layer of stagnant hot air which keeps the surface of the ceiling reasonably warm, i.e. which does not take away by convection from the heat in the ceiling. The heating is produced by radiation at low temperature from the warm surfaces. The temperature at the surface of the ceiling, where one wants the heating, is 110 deg.—120 deg. F. The high-grade radiant heat is produced by electric radiators. Every room has one or more electric radiators of various kinds in it. The heat efficiency of the whole installation is extremely high; I think that something over 75 per cent. of the heat in the oil is usefully employed in one form or another in the house from the high temperature form of light to the low temperature form of low-grade heat radiation. I feel that by one process or another we must find means to enable the population of the country to do all its work electrically. The advantages of a clear atmosphere are enormous. At present we have done everything we can to shut the sun out of our lives."

There are four bathrooms, ten lavatory basins and five sinks in the house, so that the demand for hot water is considerable. This is obtained from a tank contained within the large storage tank previously described. Electric

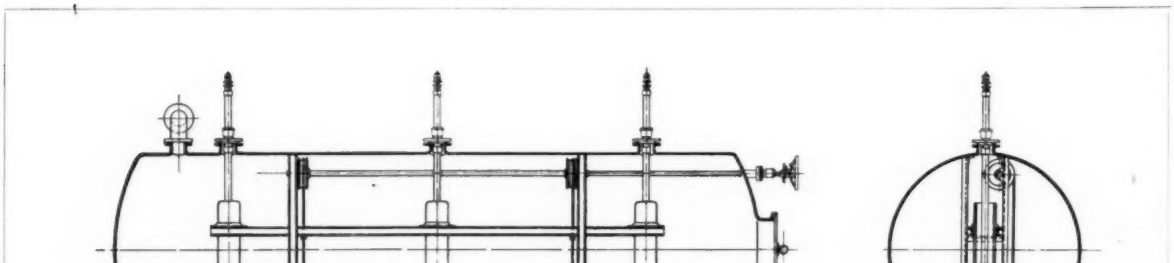


The electric dryer and ironer at Baslow Hall.

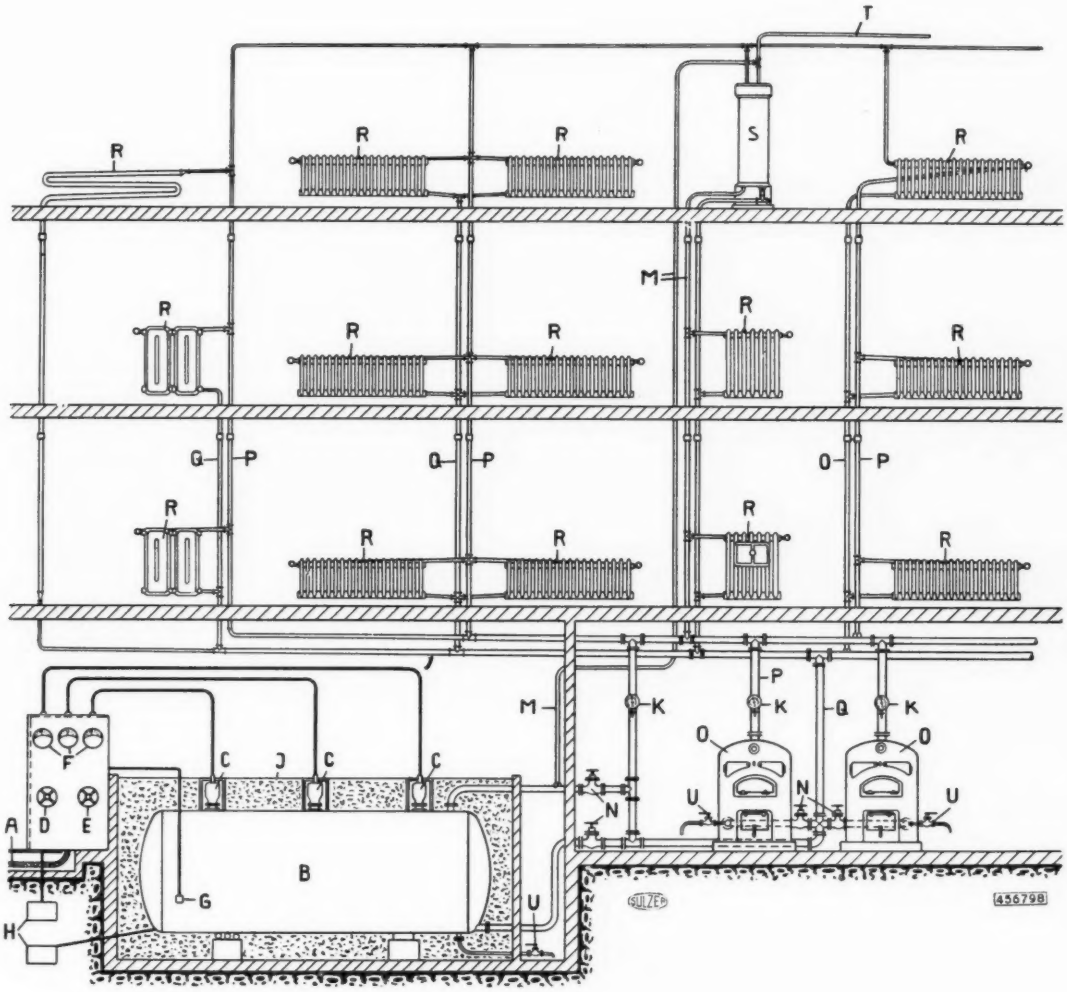
lighting is amply provided for. In the cellar there is an electric washer, an electric ironer, motor-driven, and a large drying and airing cupboard. There is also an electrically-driven cream separator in the dairy, and an electric fan to keep the air moving in the cellar and the dairy.

The heating conditions in autumn and spring are often very similar, and it is often advantageous to heat by electricity, and an electric boiler can be installed alongside coal-fired boilers for central-heating schemes. The conditions are very different when electricity has to be used for heating all through the winter. The most important question, then, is the efficient storage of the heat energy. For some years this heat has been stored in water accumulators, such as that shown below, which serves as a boiler as well as a heat accumulator. In these water accumulators the water is warmed, according to the pressure, to 212 deg., or 265 deg. F., for central-heating purposes, or as high as 375 deg. F., for steam raising.

The way in which the heat is withdrawn from the boiler when required varies widely. When water is to be heated, the stored hot water is drawn off from the accumulator in the required amount, and then added to the water already



A water-accumulator which serves as a boiler.



An electric boiler, with heat storage, in a central-heating installation.

A	Electric Mains	F	Ammeters	O	Coal-fired Boiler
B	Electric Boiler for storage of heat energy	G	Temperature Contact	P	Hot Water Delivery Pipe
C	Heating Elements	H	Earthing	Q	Hot Water Return Pipe
D	Hand-wheel to Oil-switch	J	Heat Insulation	R	Radiators
E	Hand-wheel for Current regulation	K	Thermometer	S	Expansion Tank
		M	Safety Pipe	T	Safety Overflow
		N	Valves	U	Drain Cocks

in circulation. A diagram of such an installation is given at the top of this page. The electric boiler B is arranged as an insulated heat accumulator and is placed near the coal-fired boilers O. Hot water from the accumulators is added to the water in the main system through the pipe P, the quantity being regulated by the valve N according to requirements.

It is also possible to construct the accumulator as a high-pressure steam boiler and to draw off steam from it for heating purposes in buildings. For example, the boiler can be heated up at a cheap rate during the night to a pressure of about 170 lb. per sq. in., and then steam drawn off from it during the day, though, naturally, at a continually decreasing pressure. Consequently the boiler must be so designed that when it is at full pressure in the morning, it can work till the evening without the pressure falling lower than desired. To arrive at an approximate estimate of the size required, it may be assumed that about 6 to 7½ lb. of steam can be stored per cubic foot of hot water at the usual pressures. One kw. hour gives about 2·7 lb. of steam. If, then, in a fairly small plant, there is about 80 kw. available for ten hours during the night, the accumulator must be capable of storing 800 kw. hours, or, in other words, it must have a capacity of about 350 cu. ft. The simplicity of the electric heating and hot-water storage installation makes for the minimum of supervision and, of course, the cleanliness is a great recommendation. It has been estimated by a leading authority that the following quantities of electricity are required to give the same heating effect as 2·2 lb. of good coal—in small boilers, 3 kw. hours; in larger central-heating installations, 4 kw. hours.

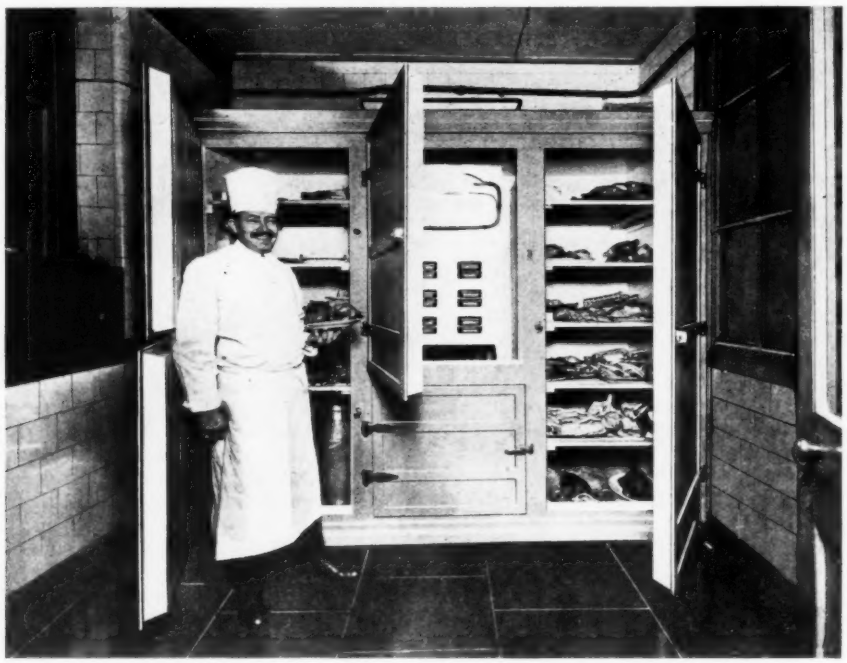
Electric Refrigeration

[BY L. F. EDWARDS]

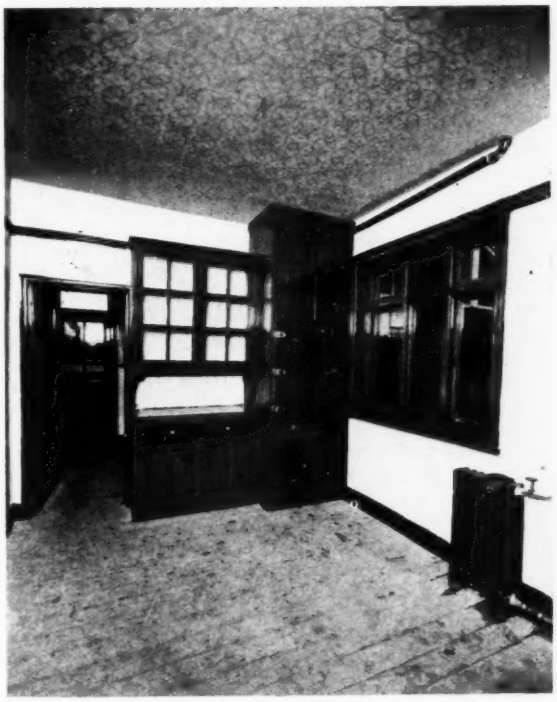
No architect today would design a house for people of even moderate means without making provision for a garage; many housing schemes have even further attempted to catch the public fancy by advertising built-in wireless installations; but few have, up to the present, made any provision for refrigeration. This is all the more curious in so far as, since the coming into force of the Food Preservatives Act this year, refrigeration can no longer be classed merely as a luxury, but must be regarded as a necessity. However, it is, perhaps, a national characteristic for us to make out a specious case for the luxuries that promise us enjoyment and leave the necessities that minister to our health and comfort to look after themselves.

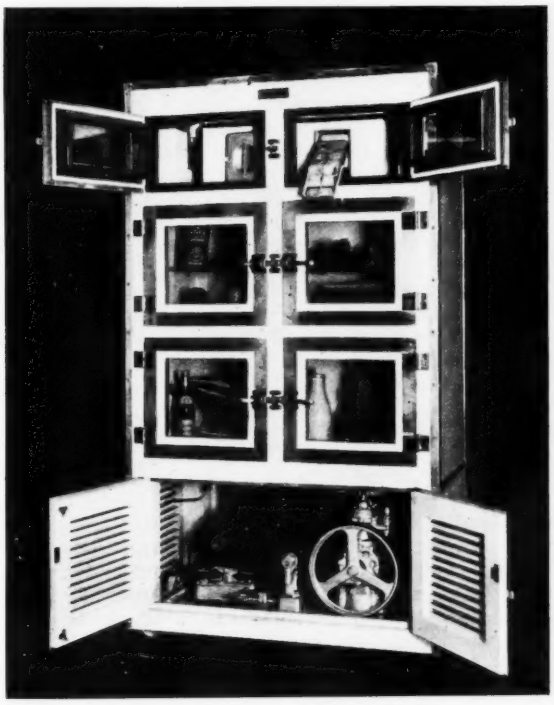
There is no prejudice against refrigeration in this country, only a vast ignorance. Every day people eat meat and fruit that has come thousands of miles by the aid of cold storage, and drink milk that has been kept pure and fresh by refrigeration, but it has only occurred to a very few to continue this cycle of refrigeration in their own homes and individually to save their food from spoilage and waste by electric refrigeration as, nationally, they are already doing by vast cold stores and refrigerated cargo boats. As a result of this lack of foresight it is necessary for the architect to point out to the buyer of the small house or the proprietor of the small shop or café that only by refrigeration can he buy in economical quantities and at the same time protect himself from waste and spoilage, and to remind him that crisp green salads and sparkling iced drinks are preferable to soggy greens and tepid disappointments. We must, therefore, look forward to a time when some form of refrigeration becomes a necessary part of every architect's specification, and the conveniences of the small electric cabinet make it the most suitable for clubs, cafés, and well-to-do homes. That this time is not so very far distant may be assumed by a résumé of the output figure of the companies making these cabinets. Five years ago a few experimental machines, not more than a few hundreds at an outside reckoning, comprised the entire output for this country. Today, one of the larger manufacturers is making arrangements for an output of fifteen thousand machines against a vastly increased competition, and another has thought it worth while to erect a large new factory devoted entirely to mechanical refrigerators and with an estimated output of two hundred a day.

All these electric refrigerators are easy and convenient to install. In the smaller cabinets, suitable for the average small house, the compressor unit is built into the cold cabinet itself, and the condenser being air-cooled, they require only a single electric wall-plug for connection. Roughly speaking, the average household cabinet with a food storage space of from 5 to 9 cu. ft. takes up a floor space of about 30 in. by 30 in., and can conveniently be built into the wall itself, thus forming literally a cold cupboard. This has been done in the case of the Grattan Estates, where electric refrigerators formed part of the specification. The larger cabinets have separate compressor units which, being very small, can be tucked away in any waste space, the electric connections being a very simple matter. These are particularly suitable for clubs,

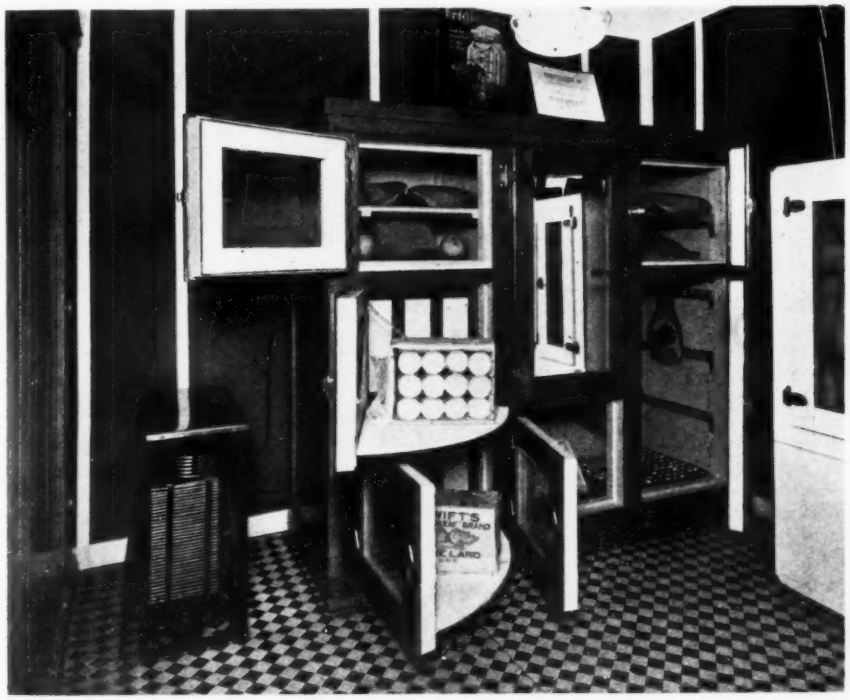


One of the electric refrigerators at the Garden Club, Mayfair.





Three electric refrigerators. That shown in the top left illustration is of the built-in type, and is installed on the Grattan estate, Beckenham, Kent.



restaurants, hotels, small shops, and the larger private houses. Some designs have water-cooled condensers and require water connections also.

These cabinet refrigerators are very handsome pieces of furniture. The ordinary models are, as a rule, finished in white porcelain with rounded corners to make cleaning easy. Some are finished in metal, enamelled steel, or some composition metal; others are finished in ash or oak. I have never seen one of the cabinets built into a piece of period furniture for use as a sideboard or buffet, but there seems no reason why this should not be done, and it would make a very attractive addition to a dining-room. They are often fitted into mahogany or walnut cases.

Most electric refrigerators are automatic in operation, the temperature being controlled either by a pressure switch or by a thermostat which stops or starts the machine as soon as certain temperature limits are exceeded. This temperature variation is usually about ten degrees, which is amply sufficient for keeping food in good condition, but this can be considerably restricted when necessary, and I have seen an automatic machine working successfully on a cold room full of fresh caviare on a " cut-out " of only two degrees.

Besides its principal value in preserving food there are a number of luxury uses for which the small electric refrigerator is especially suitable. Wines, for example, must be kept at certain definite temperatures to obtain the finest bouquet, and lager beer should always be chilled. One enterprising firm makes a special cabinet for the proper conditioning of cigars, while almost every electric machine on the market produces small ice-cubes for cocktails and iced fruit drinks.

It is no part of this article to discuss the comparative quality of the various designs of electric refrigerators on the market. As a matter of fact, the standard is remarkably high, and any of the widely-known makes can be recommended, but there is one point in dealing with these machines that is probably even more important to the average purchaser—that is, the service organization behind them. Properly handled there seems to be no reason why one of these machines should not go on doing its duty indefinitely without attention, and many makers claim, quite reasonably, that their machines are " fool-proof." But no machine, however fool-proof, is proof against the amateur investigator, and at the present day the itch " to see the wheels go round " is almost as human as to err. Proper servicing is a very important factor, and it is as much on this as on improved design that the sales of these automatic refrigerators have increased so enormously, both in this country and abroad, particularly America and Germany.

There is little question in this country, as in the States, of having to install electric refrigerators in the place of domestic ice-safes, and any real question of a competition between the two seems to me to be facing a needless difficulty. There are certain clear advantages for electric refrigeration over refrigeration by ice, notably in the fact that the cold produced by mechanical means is dry and not liable to form mould. On the other hand, it is still comparatively expensive. But the crux of the situation is that the people of this country have never realized the advantages of using cold in any form whatsoever, and it will require practical experience of the workings of the Food Preservatives Act to teach them.

Domestic Electric Hot Water Supply

[BY J. H. PARKER]

The hot water problem has never been properly tackled by the builder or the plumber, and it is a fatal mistake for electrical engineers to accept the existing obsolete arrangements in a house and convert it to electric heating. Generally speaking, hot water is required in two rooms in a house. At the scullery sink it is required in small quantities, very hot and very frequently. In the bathroom it is required at less frequent intervals in larger quantities at lower temperatures. The obvious solution is two heaters, one for each place. If this is not done a quantity of hot water equal to the capacity of the pipe between the storage tank and the tap is left to cool in the pipe and has to be run away every time the tap is used; in these circumstances the cost of hot water supply by electricity is correspondingly increased. Where, however, the storage tank and the various water taps are adjacent to each other, as in a hairdresser's saloon, one water heater can be quite satisfactory or the existing storage tank can be electrically heated if the tank can be satisfactorily lagged.

Water heaters can be broadly divided into three classes: first, the instantaneous geyser type; second, the constant loaded type; and, third, the automatically controlled storage tank type. Each type has its advantages and disadvantages, but by selecting the type most suited to each case every domestic water heating problem can be satisfactorily and cheaply solved.

The geyser type of water heater has only a limited range of usefulness because of the heavy loading required. But it has one great advantage, the temperature of the water coming out of the tap can be adjusted. A 3 to 4 k.w. loading will give a sufficient stream of hot water for washing up under the tap without wasting water, and no one who has washed up greasy dishes in a basin of water and under a running tap has any doubt which is the cleaner and pleasanter method. Washing up under a running tap is only wasteful when the tap is on too full, and a 3 k.w. loading does not permit this. For a wash-basin even a 4 k.w. geyser is on the slow side if it is desired to use a basin of water, and switching a 4 k.w. load on and off is liable to cause unpleasant flickers in the lights.

Geysers of the Inventum or the Santon type where the spiral heating element is immersed in water, should only be used on an alternating current supply. For d.c. supplies an immersion heater type of geyser, like the Nobbs, should be used, and the loading should be slightly higher than for the immersed spiral types to obtain the same quantity of water.

Hard waters give trouble with both types of geyser heaters. Apparently the water at the heating surfaces gets too hot and a hard scale is deposited. If some maker would construct an immersion heater with a big radiating surface as compared with the loading, so that the surface temperature of the element was lower, scaling could be avoided, as was the case with the Colebrook geyser, which is now no longer on the market. In the geyser type of

heater the chalk deposit due to temporary hardness is carried forward by the rush of water and causes no bother. Generally speaking, the geyser type of heater has not much to recommend it. All that it claims to do can be equally well done by other types of hot water storage heaters combined with a mixing tap, and the station engineer naturally prefers the lighter loaded elements of the other types.

The constant loaded type of water heater has been evolved to meet those cases where low charges are offered for a 24-hour load. In the Bastian heater there is a patent restricted feed system which permits the water to enter the tank at the rate at which it heats, and this rate is proportional to the loading employed. This means that the water in the tank varies in quantity according to the rate of use, but it is always hot. This arrangement is quite satisfactory at a sink or wash-basin where water is frequently used and the tank is kept from standing too long filled.

But at a bath it has the objection that if the water and heating element are adjusted to give one bath every twelve hours it costs the same for energy each week, whether one or fourteen baths were taken in that week. This is an extreme case, and the obvious reply is switch off if you don't want hot water for a week.

The third type of heater is the well-lagged storage cylinder controlled by a thermostat. This is the most generally useful type. For the average scullery sink a small capacity cylinder with a loading of 500 watts is quite sufficient for all ordinary purposes. The 1½-gallon Inventum, which has been on the market for some time, loaded to 500 watts, and suitable for a.c. only, has created a demand for a small d.c. heater. Both the Inventum and the Sadia have now developed a d.c. heater of from 1½ to 2 gallons capacity. The thermostat for d.c. supply naturally costs more than one for a.c. supply, but an experimental heater I have had on test has showed itself equally reliable as the a.c. pattern.

It is always desirable to install heaters made of tinned copper at the sink so that the hot water (usually about 195 deg. F.) can be used for filling kettles and saucepans as well as for washing-up purposes. A loading of 500 watts enables this heater to be wired from the ordinary lighting wiring and yet ensures hot water in from 1 to 1½ hours from cold.

For restaurants, hospitals, etc., I have found the 4½- and 6-gallon sizes very useful. Several firms put these sizes on the market—Inventum, Sadia, Cumulus, and Euthermene.

They are all good, but I do not agree with their standard loading, which is too light. The loading of 250 watts on 4½-gallon size is no good for a restaurant, and is too small for a bath. The 1½-gallon size loaded to 500 watts would obviously give double the quantity of water, and costs less.

The only reason for buying a tank between the sink or wash-basin size (1½- or 2-gallon) and the bath size (10- or 11-gallon) is that you want more water; it should therefore be loaded to 750 or 1,000 watts. For baths 10- or 11-gallon size is ample, and a hot bath uses three units and gives more than 20 gallons at the bath temperature of 105 deg. F. A 10-gallon tank holds approximately 1 cwt. of water, and is light enough to hang on an ordinary brick partition wall. By loading to 1,000 watts, both children and an adult can have baths the same night.

With regard to first cost, a bath heater ranges from £8 to £12, a sink or wash-basin heater from £4 to £5, and gives efficient and ample supplies of water.

An interior of a modern bathroom, with electric heaters to bath and hand-basin.

Ventilation by Electricity

[BY R. HUTCHINGS]

The ventilation of such buildings as factories, schools and workshops is of more than individual interest. It is a subject of national importance owing to its effect upon the health, comfort, and efficiency of the workers, and it demands much more scientific investigation than it has been accorded in the past. The experiments already conducted in industry show that successful ventilation—that is, ventilation depending primarily on both the temperature and the movement of air, which is kept free from dust and microbic infection—has not only led to increased comfort, efficiency, and production in occupations involving hot and heavy work, but there is reason to believe that it may be an important factor in reducing phthisis and other communicable diseases in occupations where workers are closely assembled. In these aspects ventilation has engaged the close attention of the Privy Council with the consequent interest of the Medical Research Council. The principles of ventilation in vogue and the initiative taken in scientific quarters to improve them have been explored in practically every phase by Dr. H. M. Vernon and other members of the Industrial Fatigue Research Board. In their report the investigators condemn the prevalent view that all effects of bad ventilation result from the chemical impurity of the air, and assert that these ill-effects are due primarily to the want of adequate cooling of the body and evaporation from it. Heating, of course, cannot be divorced from ventilation, and the combination of electric fans and electric radiators should provide a solution of the heating and ventilating problems of the factory and workshop.

Two types of electric fan, each having a high volumetric efficiency, are particularly suitable for securing air movement. One is the oscillating type and the other the gyro. In the oscillating type the motor and blades oscillate horizontally through the arc of a circle, so that the direction in which the air is projected by the blades is continually varying. In the gyro type the oscillation is in horizontal and vertical directions, so that the path traced by the projected air takes the form of an ellipse. In this manner constant circulation of air is ensured.

The most popular type of fan, and one which is particularly suitable for large halls, clubs and similar places, is the ceiling fan. This pattern must not be confused with another type of fan which is frequently used in large rooms constantly filled with people. In the latter case the air must be renewed, mere circulation being ineffective after a time, and for this purpose an exhaust fan is employed, fixed to an outlet of the room or at the end of a ventilator shaft connected with the room. Some of these exhaust fans have blades measuring five feet in diameter, and will displace as much as 23,000 cubic feet of air per minute. In the ceiling fan, the blades, two, three or even four in number, are long and resemble the blade of an aeroplane propeller. The "sweep," that is the diameter of the circle swept by the extreme of the revolving blades, is usually between two and five feet. An unusual and interesting fan of the type, by an ingenious mechanical movement applied through gears to the blades, causes the pitch of the latter to alter so that an intermittent volume of cooling air is delivered every five seconds, in a similar manner to the old-fashioned curtain punkah. The intermittent stream allows the body to perspire between the cooling periods, and so produces a healthy physiological effect. The power consumed by this class of fan rarely exceeds 120 watts, only about double that consumed by the average electric lamp.

With the householder, bracket fans seem to be the most popular, chiefly owing to cheapness and efficiency. These fans may be attached to the walls of a room or, as is more usually done, simply used as a desk fan. The

Interior of St. Mary's Church, Fort St. George, India.

four blades vary in size from 12 to 16 in., and are so shaped as to give a maximum volumetric efficiency. They are balanced both statically and dynamically so that troubles and noise due to mechanical vibration are prevented.

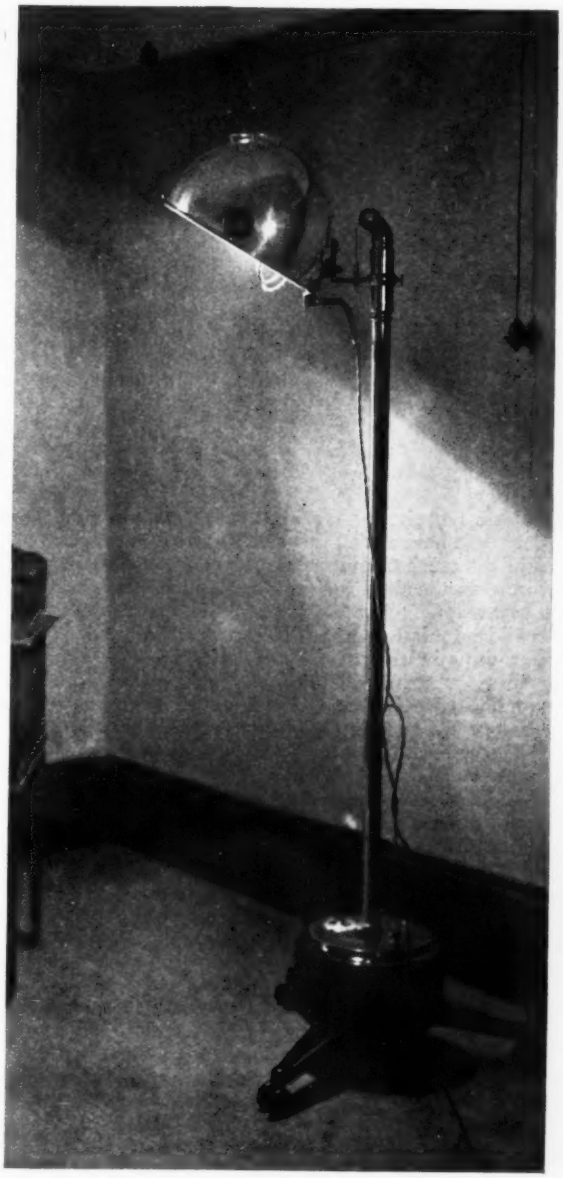
It is difficult to understand why we do not make more general use of the electric fan in this country. Our climate is the very type that calls for the use of an appliance whereby instant relief may be obtained in the case of a sudden change of temperature. Æsthetically, there is no reason why an electric fan should not be made to conform pleasantly with any particular furnishing or decorative scheme. The report referred to above merits the attention of all those who have the administrative control of factories. Happy, healthy, and comfortable conditions are of high psychological value and importance, and have a stimulating effect on the quantity and quality of the workers' output.

Substitute Sunlight

[BY DR. C. W. SALEEBY]

In the beginning, God said, "'Let there be light': and there was light." Without this creative fiat our earth would be a black and sterile cinder. Many scores of years have passed since the botanists showed that the sunlight is the source of the energy and synthetic chemistry displayed by the green leaf; but only in recent years have we learnt that the animal world and mankind need sunlight no less than the meadows and the prairies, the orchards and the gardens. "Of all flowers," indeed, as Michelet said, "the human flower is that which has most need of the sun." Elsewhere I have outlined the history of the subject.[1] In the beginning of medicine, Hippocrates, the Father of Medicine, as we rightly call him, took off his patients' clothes—for which process the Greek name is gymnastics—and made them do exercises in the unpolluted sunlight of the temple of Æsculapius at Cos. Through long ages of darkness the wisdom of Hippocrates was lost. Florence Nightingale praised sunlight in 1856 and condemned the building of Netley Hospital so as to exclude it from the wards; but no one heeded her. In 1890 Dr. T. A. Palm, still alive and in practice, published a paper in which he showed that sunlight prevents and cures rickets, and recommended its universal use accordingly; but no one heeded him. In 1893 Niels Finsen used sunlight as an antiseptic—which it is, the best, safest, cheapest, simplest that ever was or will be—to kill tubercle germs in the skin. In his city of Copenhagen sunlight was often lacking, and he therefore had recourse to electrical means of providing a substitute, in the form of the Finsen Lamp, now used all over the world.

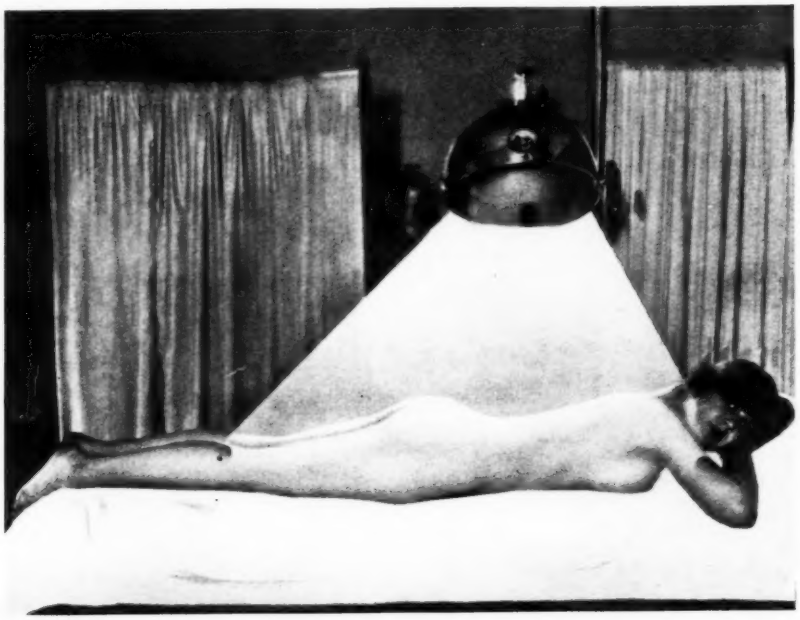
In 1900 Her late Majesty Queen Alexandra, then Princess of Wales, introduced the Finsen method from her native to her adopted land, and presented the first lamp to the London Hospital. I saw it at work in 1902, and have been praising sunlight and its substitutes ever since with little effect until, six years ago, I visited Leysin in the Alpes Vaudoises, and there saw the work of Dr. Rollier against many forms of tuberculosis and other diseases, using the unpolluted sunlight, rich in ultra-violet rays, of that lovely life-giving spot. Having very recently returned from the latest of many visits, in summer and in winter, to Leysin, let me assure the reader that my incessant praises of it during the past six years, and the consequent "boom" in sunlight, are well founded. Any critic who suggests that I exaggerate may be at once dismissed: he has not been to Leysin, and the results which Dr. Rollier has been steadily attaining ever since he opened his first clinic, with five patients in 1903, continue in all their unparalleled completeness and beauty. The professional reader may be referred to the new edition of Rollier's *Heliotherapy*,[2] of which I arranged for the translation into English as my first duty after seeing what Leysin had to teach us in this country. Nothing, by the way, is more remarkable than the permanence of the



An ultra-violet ray lamp.

[1] *Sunlight and Health.* By Dr. C. W. Saleeby. Third edition, 1926. Nisbet & Co. Price 5s. net.

[2] *Heliotherapy.* By A. Rollier and colleagues. Oxford Medical Publications. Price 21s. net.



Showing the method of use of an ultra-violet ray lamp.

cures which sunlight effects, in signal contrast to the customary and only too familiar patching-up, with subsequent relapses, following other methods of treatment of tuberculosis.

The real lesson of Leysin is to be learnt not in its clinics, but in the " school in the sun " which Dr. Rollier established in 1910. I repeat, as ever, that my object in praising Dr. Rollier's clinics is not to fill them—he has some twelve hundred patients and a terribly long waiting list—but to empty them. The school in the sun applies to healthy childhood the principles laid down by Dr. Palm more than a generation ago: and from such children no tuberculosis clinics are recruited. During the last four years the city of Lausanne has applied this teaching by the establishment of sunlight crèches and holidays in the sun for its school children, on the shores of Lac Leman at Pully and Vidy; and new cases of tuberculosis are ceasing to appear amongst the child population of that city.

Our duty in this country is that which I have been asserting for nearly a quarter of a century with ever-accumulating evidence. We must restore the light of life to our urban populations, now living in the land of the shadow of death, and the diseases of darkness, as I call them, will vanish. The Public Health (Smoke Abatement) Act, 1926, which comes into force this July, is less than a half-measure. It cannot be seriously regarded or accepted unless, at the very least, it is amended so as to empower local authorities, if they will, to make regulations requiring that new private dwelling-houses shall be equipped with smokeless apparatus for heating and cooking. It is impossible to maintain that the combined resources of gas, coke, oil, and, above all, electricity are inadequate to make such requirements practicable, for there are many parts of the country where their practicability is already demonstrated. Meanwhile, alas! in the great majority of instances we are building houses which illustrate the remark of Lord Fisher about our battleships: " They will last a hundred years, and be obsolete in five." Ever since 1902 I have been told that it was impossible to recondition existing houses for smokeless heating and cooking, and always my reply has been that at least we should build our new houses aright. The new Act should have made that possible.

Meanwhile, for years to come, those who wish to live through our urban winters, when the train of our civilization enters a tunnel longer and smokier than any under the Alps, will be well advised to supply themselves, as a matter of hygiene, with some substitute for sunlight. We are not to believe that any artificial lamp is equal to sunlight, but it may be far better than nothing and may certainly avail, rightly used, to maintain healthy growth in the young and resistance to disease at all ages. It has been proved, for instance, under the auspices of the Committee on Light which the Medical Research Council appointed at my suggestion early in 1922, that artificial lamps will raise the antiseptic power of the blood just as sunlight has been proved to do.

Many lamps are available. Mine is safe for an old lady or a small child to turn on and use, for it does not splutter nor need adjustment. It is a mercury vapour quartz lamp, of the well-known " Hanovia " type, run at quite negligible cost from the electric supply which I also use to run a vacuum cleaner and a radiator for a spare bedroom. It stands beside my bed and is used at convenient times by all my household. In my view, to include provision for artificial light baths is an essential part of the task which many of us householders are now called upon to perform—to turn an old house of yesterday into a home for tomorrow. The uses of such lamps are many. They vastly raise the nutritive power of many familiar foods, if exposed to their light in shallow saucers for a few minutes. My space is gone and the subject is too large to deal with in an article which must chiefly praise real sunlight, but I must here repeat the suggestion which I made when opening the discussion on Heliotherapy at the Child Welfare Congress in London last July—that the lamps at hospitals should be in continuous use: first, to treat patients; secondly, to maintain the health of the night nurses, whose health always deteriorates owing, as I maintain, to lack of sunlight; thirdly, to radiate the food supplied to the patients and the staff. I doubt not that within a decade this will be the practice in every first-class hospital.

LITERATURE

GARDEN COLOUR SCHEMES

To many people plans and sections are utterly meaningless, and elevations merely dead symbols, like arithmetical fractions. Others can erect in their mind a complete edifice, and can feel the enjoyment of its form and texture, from seeing a set of drawings. In a manner allied to the faculty for visualizing a building when reading one-dimensional drawings, the gardener and the garden lover will read into the lists of flower names comprised in this book, life, form, colour, and character. To some the book will be a schedule and nothing more, until, after consulting it, the less imaginative gardener has experimented with the colour masses which his heart craves. The brief preface explains the reason for the publication of the set of charts for consultation by those who would have their garden colour scheme deliberately designed like "a bit of a stained-glass window." To lovers of informal and casual gardens the effect of the artist's palette "after the day's work, a waste of colour," may have qualities which the more deliberate painting with flower colours lacks. There are few, however, whether possessing a garden of many acres, or a few square feet of turf and borders, who might not profitably experiment with some form of colour design, with the aid of the charts which Mr. John Fothergill, "artist, Greek archæologist, and an expert on whippets," has worked out. Unfortunately, the charts must be read by turning the book round to make one long double page, an awkward method and bad for the book. The index refers to the colour groups and the lettered sections. The plants are arranged in order of height in each section.

The book might have been more interesting with a greater expansion of the subject than is given in the preface and note. The little scrap of personal matter might have been included, instead of being relegated to the "jacket," and a few indications of soil, aspect, etc., might have been given, in which schemes might be most suitably attempted. But the purpose of the book is evidently rather to suggest, and leave the gardener to experiment, than to lay down rules or teach the *modus operandi*. Those who will find the most value in the book are those who will complete it for themselves. They will scarcely limit their additions to "putting a tick (in pencil) in the narrow columns against the plants existing in the garden or in seed boxes," but will make their own lists in the blank pages at the end. The book is one which might fall into the category of gift books, and find a place on the table in the loggia or the garden room. Imaginative gardeners will also find it a suitable companion for fireside gardening, when the influx of seedsmen's catalogues begins. It is principally concerned with garden canvases which are completely washed off and repainted summer by summer.

V. M. C.

The Gardener's Colour Book. By John Fothergill. Knopf. Price 5s.

MUNICIPAL HOUSING IN VIENNA

The great scarcity of houses after the war spurred the Common Council of Vienna, in 1923, to decide upon the erection of blocks of flats to contain 24,000 apartments, thus embarking upon a building scheme comparable with that of the Ringstrassen period. In those days it was the State who enriched the land with palaces, museums, and other buildings. Today the community of Vienna is the builder, and the cost is provided by the "tax-for-building-lodgings." Sites were secured in business centres or near railway stations; no fewer than 118 private architects and their staffs are occupied in designing the flats; and the Municipal Office of Building is providing the materials, erecting the buildings, and installing the gas, water, and electric light. How much this mobilization of architects has added to the value of the planning and architectural character of the buildings may be seen from *The Rebuilding of Vienna. Part I. The Erection of Flats* a portfolio of plans and plates showing the elevations and details of the completed work. In plan, all the traditional evils of the old so-called tenement have been eliminated, although, perhaps, the rooms could have been larger. Some of the details are unusual: there are semicircular and two-sided windows, resembling the poop of a ship; there are lamp standards designed like maypoles—but there are loggias, gardens, and floral urns that seem to breathe the atmosphere of a Florentine palace. Briefly, the architects seem to have made excellent use of every opportunity at their disposal to provide for the comfort, health, and well-being of the inhabitants, and in one instance at least the main front has been kept lower than the remainder of the building to allow free access of air and sunlight.

British architects have also achieved considerable success in the design of blocks of flats and many examples, such as "Hortensia House," designed by Percy Tubbs, Son and Duncan, for the Chelsea Borough Council; and Heathcroft, Hampstead, by J. B. F. Cowper, can be compared favourably in plan and elevational treatment with any of the Viennese productions. It is, perhaps, in the external attributes of the individual flat that Vienna seems to excel: in the laying-out of the forecourts and gardens and the playgounds for the children; in the planting of trees, the provision of seats and fountains designed by well-known sculptors; and in undertaking such ventures as a central laundry, lending library, dental clinic, kindergarten, decorated by famous artists, nurseries, and courts for sports in summer and skating in winter. All these attributes, however, are not unknown to the British architect. Their inclusion in any scheme depends upon the question of cost and whether the tenants will make full use of them; and there is every reason to believe that in this country they will not. Here more attention could well be given to laying-out of the forecourts and gardens, with, in many cases, the co-operation of a landscape gardener.

E. R.

Neubauten der Stadt Wein. I Band: die Wohnhausbauten. Edited by Josef Bittner. Published by Verlag Gerlach and Weidling.

THE GERMAN HOUSE

Admitted now to the comity of nations, Germany may, naturally enough, claim the right to let her voice be heard in matters other than sheer politics. It is obvious that she should, for instance, wish to put before the rest of the world opportunities of becoming acquainted with the progress of her art, over which the war and the period following it have meant the dropping of a veil, obscuring from us her aspirations and achievements of the last twelve years. In architecture, especially, ought we to be interested in such knowledge, and in the measure of its share in the great world-change. Most naturally and palpably affected by this, one would expect—as is indeed the case—to find in the domestic architecture of the country and the home of the ordinary German today an expression of his needs and desires, and an indication of the impression made on these by the happenings since 1914.

Some exception may, perhaps, be taken to the statement in the foreword of the book whose title is at the head of this notice, that the twelve or fifteen years preceding that date had placed Germany in a supreme position amongst nations as regards its domestic architecture, and that this was maintained through all the grave events that followed. But it is perhaps inevitable that we should, in such a judgment, have to allow for the bias of nationality, and for the tendency to treat one's own as the particularly "favoured nation."

It is somewhat surprising to learn from Herr Muthesius's book the great extent to which Germany has, since the War, devoted its artistic energy and architectural expression to the treatment of the interior of the house. It has passed through several stages and developments, and has left behind it the earlier form which our author terms (perhaps from the desire of the German of today to avoid the use of French expressions)—not *l'art nouveau* but *Jugendstil*. This somewhat gruesome method, with its creepy curves, its imitation of hand work, and its affectation of the primitive flourished, and then eventually died a somewhat

sudden death. It was succeeded by a phase for which we in England have no contemporary movement or equivalent, one which the Germans call *Chinoiserie*. This attempt at the expression—especially in colour and pattern—of Oriental design was, however, of an evanescent nature, and the practitioners of this fashion—for it was little else—were succeeded by those who held that "Constructionism" should be their "only wear." The guiding theory here was very much on the lines of the engineer and not on that of the architect, and its basis was that, in designing furniture, the principles that dominated the work should be those of construction—and those alone. Constructed right, it would *be* right, design and all.

This method not unnaturally merged into one of a kind of negation of design, best suggested to us by Herr Muthesius' term *Puritanische Stil*. It aimed at a suppression of ornament as being non-essential and superfluous, and its influence is still to be seen in the principles under which many German architects of today are working. To quote the author, post-war art should, like politics, be restful, and the practical prevail over the imaginative.

It cannot be denied, of course, that in common with all other nations, there is today coexisting in Germany, side by side with this more restrained design, a manifestation—more especially in the surface decoration of interiors—of *Expressionismus*, a school in which caprice and eccentricity are glorified, and whose principles, as obtaining amongst the arts generally, were thus defined the other day in a lecture by Sir Reginald Blomfield: "The method of *Expressionismus* was to cast about for what the artist assumed to be the salient characteristics of his subject, and then to express it by diagrams and symbols, without the slightest references to any physical appearances."

Amongst the adherents of this worship of the unusual in decorative art, it is, for instance, esteemed an invention of startling merit to have each of the four sides of a room painted a different colour, or to place in unrelated juxtaposition the most vivid and startling colours. They claim success if their work produces shock rather than any quieter sentiment.

No more than the phase (now all but passed away) when antique furniture and "period" treatment were the ideals of the German home will this wild new school leave more than not very pleasant memory. There has now arisen, says the author of *Die Schone Wohnung*, and with every sign that it will have a continued and assured existence, a demand on the part of the owner of the German home that the rooms in which he lives shall recognize that beauty of simplicity and calm that befit a post-war world.

The name of Herr Muthesius will recall to many his long visit to this country some twenty years ago, when, on the instructions of the ex-Kaiser, he gathered material for his important work *Die Englische Baukunst der Gegenwart*. Of this interesting retrospect of English architectural achievement during the last quarter of the nineteenth century the first part, followed by four others, appeared in 1900, and they form a valuable and excellently illustrated record of the work of the leading English architects during the period of that quarter century of Renaissance in design, which may roughly be said to have owed its origin, and much of its full development, to Norman Shaw. Apart from his admirable sketch of the course of English architectural history, leading up to, and during, the years of which he treated, Herr Muthesius, in his description and criticism of the different examples he put before his German readers, showed a breadth of view and an appreciation that he again manifests in the present volume.

Dealing, once again, with work of modern architects, but this time with that of his countrymen, the ground it covers is the interior treatment of the modern German house. It has the particular interest that the examples given in the 200 and more illustrations are all post-war, and it consequently offers us an opportunity of gauging the artistic mentality of the German, as affected by that world-crisis.

With so large a mass of illustrations Herr Muthesius does not enter upon individual criticisms, but in a foreword and preface puts forward considerations that have bearing upon them collectively. He enters a protest against the craze, affecting Germany no less than England, for furnishing a house with little else than antique—or what it is the fashion to call "period"—furniture, as resulting, he says, in the production of the effect of either a museum collection, or the odds and ends of a lumber room. And he adds the commendable point of view that in these days of poverty and unemployment it behoves every one to increase, by purchases of modern work, the amount of production and employment.

The German house architect, though to a less extent than the English, has, in late years, made a feature of the hall as a general sitting-room, but with no great approval on the part of Herr Muthesius, who looks upon it as possessing little utility if a *Wohnzimmer* is provided for the use of the family generally, and a *Herrenzimmer* as a smoking-room and library for the special use of the men.

The illustration of the hall in a house at Pichelsberge, by Herr Muthesius himself, shows a room somewhat more spacious in size than the generality of those illustrated, and bearing, perhaps, notwithstanding the glazing-in of the staircase gallery, some indication of his knowledge of the English work of which he made, when in this country, so thorough a study. Herr Otto Prutsher's treatment of the hall of a house in Vienna, and an example by Herr Josef Hoffman, both indicate (the latter to a high degree) the distinction between the Viennese school of design and that of the less fussy work of Berlin and Prussia generally, the latter indicated by the illustration of a house at Barmen, by a Düsseldorf architect.

Herr Muthesius advocates in the arrangement of the dining-room what must surely be the somewhat German provision of two dining tables—a small one for the use of the family itself, and a larger table to be used in the case of company and guests. He pleads for a brighter colour-treatment than that universal in the old-fashioned *Speisezimmer* or dining-room with its dark walls and heavy furniture. Herr Bruno Paul's design is pleasant and quiet. Quite otherwise is that of Josef Hoffman, the Viennese architect.

Of the heavy curtains and furniture and catafalque-like bed of the old German bedroom this book shows little trace, and perhaps there is no better expression of the more modern feeling for simplicity and brightness than is given in the series of plates that show the bedroom of the German house of today. This is observable in the illustration of a *Schlafraum*, designed by Herr A. Niemeyer of Munich.

Finally, the claim to consideration of no house, and especially of no German house, can be considered as exhausted unless reference is made to that most important of its rooms—the kitchen. Herr Muthesius gives a series of illustrations of these rooms, of which that designed by Herr Robert Oerley gives an impression of spaciousness and well-thought-out possibilities of orderliness, both in the room itself and in the doing of the work for which it is intended.

C. HARRISON TOWNSEND.

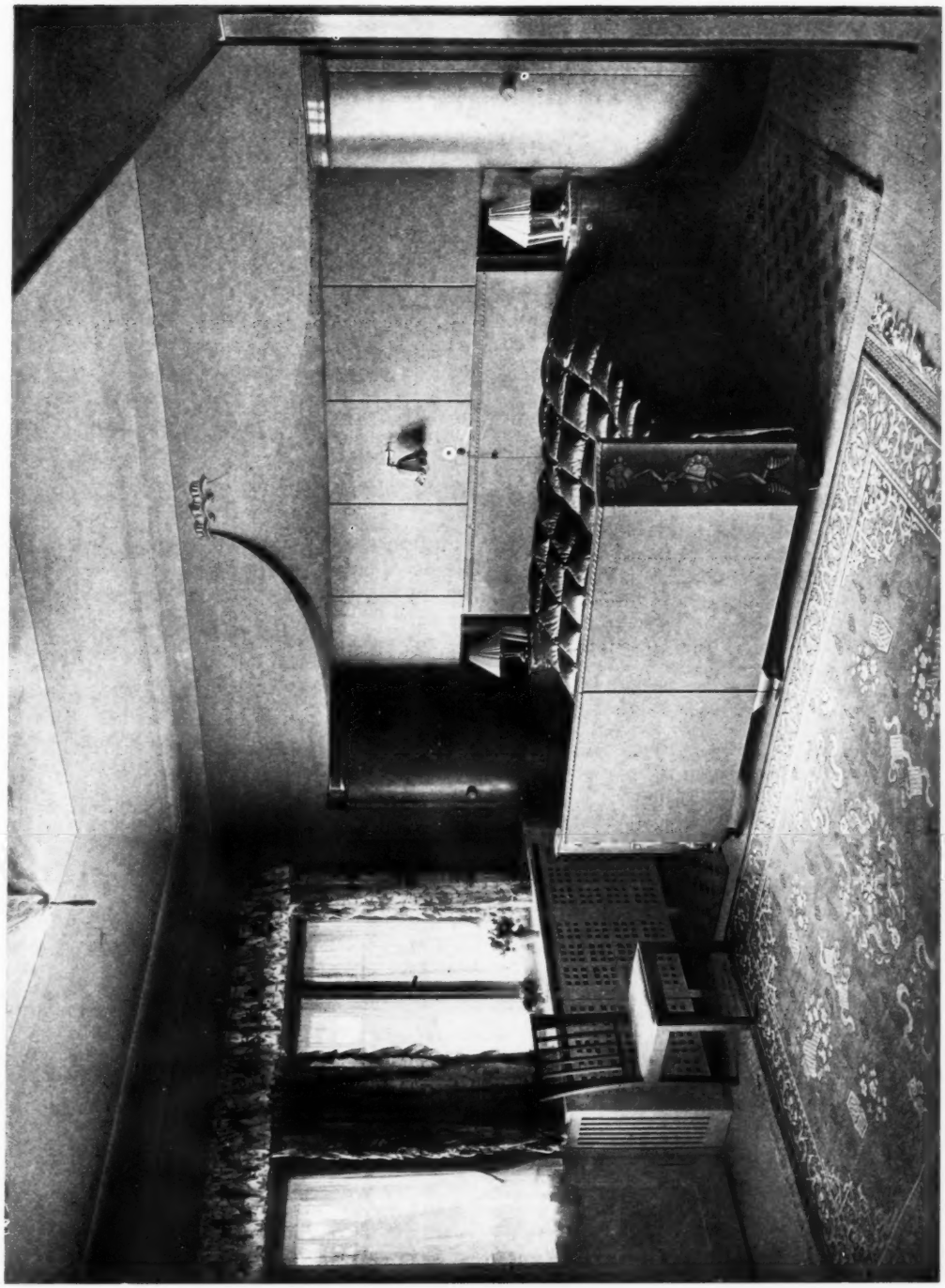
Die Schone Wohnung. By Hermann Muthesius. F. Bruckmann, A. G., Munich.

ANNOUNCEMENTS

Col. the Hon. Sidney Cornwallis Peel, D.S.O., has been appointed a director of Westminster Bank, Ltd.

Mr. R. E. Enthoven and Miss I. M. Enthoven have removed from 3 Cleveland Gardens to 3 Berkeley Gardens, Campden Hill, W.8. Telephone, Park 1482.

Messrs. Henry Riley, F.S.I., and C. H. Riley, P.A.S.I., of 11 Victoria Street, S.W.1, and W. F. Fidgen, F.S.I., of 27 Chancery Lane, W.C.2, chartered quantity surveyors, have entered into partnership, and in the future will practise under the name of Riley and Fidgen, at 82 Victoria Street, S.W.1. Telephone, Victoria 2177.



A Bedroom. By A. Niemeyer. [*From* Die Schöne Wohnung.]

THE REGISTRATION BILL

DECORATIVE DESIGNERS DEBARRED

At the resumption of evidence before the Select Committee on the Architects' Registration Bill, Sir Charles Allom submitted a précis of evidence which stated that he carried on business as senior partner in the firm of White Allom & Co. at 15 George Street, Hanover Square, and was the senior partner of the firm carrying on business under the same name at 817 Madison Avenue, New York; his business was that of a decorative designer and architect, but by reason of his being a member of a contracting firm as well as an architect he was debarred from becoming an Associate or Fellow of the Royal Institute of British Architects, in spite of having practised architecture continuously for a great number of years.

There were other decorative designers in the same position as Sir Charles Allom, who, like him, were seriously affected by the Bill even if amended as at present proposed. His training had been spread over a wide field, much wider, in fact, than that of the vast majority of members of the Royal Institute of British Architects, yet, notwithstanding such training, the business for which it had qualified him prevented him from obtaining membership of the Institute or of becoming a registered architect as the Bill now stands.

Sir Charles had been engaged for many years in designing buildings, both personally and in collaboration with architects of eminence in England, America, and elsewhere. He was capable of designing any building work. Having specialized in the decorative side of architecture, Sir Charles had established a reputation for design and workmanship second to none, which had found employment for hundreds of highly skilled craftsmen; but by reason of executing his own work he had not received the general support of the architectural profession. In France there was no bar to decorative experts who are recognized as highly specialized architects.

The public would attach importance to the term "Registered Architect," and Sir Charles and those associated with him desired to come within the provisions of the Bill and to become registered architects. His submission was that there were a number of decorative experts at least equal to the very best architects in the kingdom, and it was unfair to them to refuse an amendment to Clause 5 (c) of the Bill, making it clear that persons who had practised as architects in conjunction with the carrying on of another profession or business should have the right to be registered under the Bill. He would further point out that it was possible for an architect to become registered, thus being entitled to describe himself as a registered architect, and, subsequently, follow the line adopted by Sir Charles. Under the Bill as it now stood the anomaly would then arise that of two architects, both contracting to carry out work they had designed, one would be entitled to describe himself as a registered architect because he had become registered before contracting, whereas the other could not register or be entitled to describe himself as a registered architect. The question was one of "bona-fides," and the interpretation of the term by the registering body. The amendment suggested would remove the possibility of such an anomaly, and as a natural corollary to that amendment the Institute of British Decorators should be included in the second schedule to the Bill.

Sir Charles Allom added that his knowledge of architecture began at the age of fourteen or fifteen. His grandfather was one of the designers of the building they were now in (the Houses of Parliament). His grandfather had acted with Barrie in its construction.

The Chairman: Your main objection is that you are not included in section "B"?

The witness: The word bona-fide is the question. The addition I wish to make is to qualify the expression. The Royal Institute naturally objects to my carrying out work on my own, and it would be very unfair if I were in any way barred by them from practising. The witness added that there had been some difficulty in defining the word "architect," and gave the following statement:

Architecture is the science and art of building. The æsthetic side is an extremely rare gift of Nature, and cannot be ensured by study or examination. The scientific side, however, can and must be taught by the most skilful exponents. Its scope is to erect stable, comfortable, convenient, and healthy buildings, and to design them with such beauty that they may be of lasting pleasure to generations who see and use them. Only great natural ability can make a great architectural achievement. You can no more make a good architect than you can make a good painter or a good inventor. But a beautiful building must be beautiful inside as well as outside, and that is the special function which I represent. I must also point out that modern science is rapidly altering methods of building, and is adversely influencing the æsthetic side of the art. More and more is it bound to require the services of structural engineers who, however, are not, in my opinion, qualified to complete their designs without the assistance of a qualified architect.

Captain Wallace: Does that definition of architect take us any further than the Bill?—No, it takes me a little further. I was only thinking of myself.

Sir A. Hopkinson: Having the hall-mark that a man had been through a certain course of training, would not that be a great protection to the public?—Very great indeed.

Genius helped by tradition is best?—Of course.

Mr. Gardner: In what way will the Bill hurt your position if the people who go to you will go to you in any case?

Sir Charles: If most men put up the heading on their paper that they are "Registered Architects" I may be asked whether I am a registered architect. It would possibly hurt me.

Mr. W. Ernest Lord, of the firm of W. Turner, Lord & Co., 20 Mount Street, W.1, appeared in support of the amendment proposed to clause 5 (1)(c), viz.: the addition at the end of that clause of the words "either exclusively or in connection with, or as part of his ordinary business." In his précis of evidence the witness asserted that the promoters of the Bill were seeking power to undermine the position which was held by witness's firm and others. He therefore contended that in doing so they were acting *ultra vires* to the accepted practice and custom of the country, and were seeking to prejudice men who by their conduct and work ought not to be placed in any inferior position to members of the Institute. If clause 5 was amended as suggested the objections raised would be considerably modified.

CONSULTING ENGINEERS AND ARCHITECTURAL WORK

Mr. Alfred Herbert Dykes, hon. secretary of the Association of Consulting Engineers, submitted a précis of evidence, from which the following points are abstracted, to the Select Committee of the House of Commons:

It is inevitable that a civil engineer whose practice involves the carrying out of such structural work as that usually implied by the term "Civil Engineering" is, and must be, frequently called upon to carry out minor works which are undoubtedly of an architectural nature or are on the border line.

It is found, for instance, that members of the Association engaged on water and sewage schemes frequently have to design buildings in connection with these works, such as valve towers, machinery-houses, pumping stations, caretakers' cottages, and similar works. Other members, whose practices deal with docks and harbours, frequently have to carry out buildings of a quasi-architectural nature, including dock warehouses and sheds, storehouses, workshops, engine-rooms, etc., all forming part of, or ancillary to, main schemes or groups of works of a predominantly civil engineering character.

One member, as consulting engineer to the Royal Naval Lifeboat Institution, is not only responsible for the design and construction of the boathouses and slipways all round the coast, but designs and constructs numerous cottages occupied either by

motor-mechanics or members of the lifeboat crew—also boatsheds, workshops, stores, offices, residential flats, etc., all of which have been constructed during the ordinary course of his practice as consulting engineer to the Lifeboat Institution.

Other members, again, who specialize in steel constructional work and reinforced concrete, are perfectly competent to supply details of a structural engineering nature in connection with any building.

Again, it frequently happens that consulting engineers engaged upon the design of electricity power stations are asked to undertake the complete work, including the building surrounding the machinery of the power station.

The term " building surrounding the machinery of the power station " is used advisedly, because most modern electricity power-houses consist practically of a steel framework supporting the overhead coal bunkers, boilers, etc., merely filled in with brickwork between the steel framework.

It is evident that any consulting engineer who has hitherto been accustomed to carry out buildings and architectural work (usually of a simple description) as part of or in connection with other schemes of a civil engineering nature, will, if clause 12 of the proposed Architects (Registration) Bill is passed in its present form, be in a position analogous to that of an unqualified or unregistered medical practitioner. If he should by chance have any dispute with his client with regard to the amount of his charges or to the payment of them, the client could—if he availed himself of the provisions of the Act—plead clause 12 and avoid payment of so much of the charges claimed as would be applicable to that classified as building or achitectural work.

The majority of practising civil consulting engineers (using the term in its narrower sense) would object to add to their statement of qualifications the words " Registered Architect," even if eligible for admission to the register. A somewhat similar situation occurs among architects, some of whom have been adequately trained and are quite competent and experienced in the design of steel structural work. With such experience and training they are perfectly competent themselves to design the details of a structural engineering nature in connection with an architectural building. Some architects, in fact, do this work ; others employ engineering specialists to do the work for them, and some get the work done by manufacturing or contracting firms.

In the former case no one could reasonably suggest that a competent architect is exceeding his rightful duties or that it is necessary for him to obtain and use professionally a specific engineering qualification before he can apply his knowledge and talents to problems of structural engineering.

The crucial test in the interest of the public should be : " Is the man competent to carry out the work which he undertakes ? "

If it is desired to restrict work of an architectural nature to architects registered under the Bill, then it would logically follow that engineering work should be restricted to engineers registered under a similar Bill, and our members would no longer have to complain of the practice of many architects in inviting contractors to prepare schemes and estimates for dealing with engineering work in connection with buildings, such as steel construction, lifts, electrical works, and hot-water supplies, and similar matter of an engineering nature, and in including a selected scheme in the plan and specifications without having the necessary engineering knowledge properly to carry out the work — or, alternatively, to employ an engineering consultant for this portion of the work whose fees are paid by the client, while the architect still claims fees upon the whole of the work, including that portion carried out by the engineering consultant.

My Association has no objection whatever to the registration of architects as such, but it does object to any attempt to prevent qualified consulting engineers carrying out civil engineering work because it may be deemed to be of an architectural character.

Although the work of architects and consulting engineers overlaps in many directions, their functions are essentially different, the one being more particularly engaged in applying the principles of art to beautifying human dwellings and structures, whilst the function of the engineer is more particularly to apply the principles of science in order to add to the power and productivity of man and to his material comfort and well-being.

There is thus an unlimited field of work for both, and what is required is greater co-operation between these professions and more readiness on both sides to call in professional help in all cases where the original expert, whether architect or engineer, is not fully competent himself to deal with all portions of the work making up the undertaking under consideration.

The witness, in reply to members of the committee, said that the particular clause to which his Association objected was clause 12.

The Chairman then showed witness the amended Bill, and asked him whether the amendments made to the clause covered the points of objection.

The witness replied that the objections were met to a considerable extent. He said that the objections to the Bill in its original form was that a large number of their members in the course of practice as consulting engineers had to do structural work on buildings in connection with docks, electrical power stations, and so on, and although it was the general custom if any special architectural features were required to associate an architect with the work, there were occasions when the engineers carried out the work themselves.

Sir A. Hopkinson: You wish to charge in the ordinary way for work done which is in the nature of architectural work ? Subject to that you see no objection to the Bill as amended ?—I would like to glance through it first.

The Chairman: Any other alterations would be in your favour. They are consequential.

The witness: We have had many complaints from our members in connection with the boundary line between architectural and engineering work. We have had to investigate complaints that architects were doing engineering work. We object to their doing engineering work for which they have no qualifications.

Mr. Hirst: Will the Bill prejudice relations between yourselves and the Royal Institute or improve them ?—I do not think it makes much difference. The Bill nowhere defines what is architectural work or what are the duties of an architect. Architects often include in their bills of expenditure of work on a building a great proportion of what may be engineering work. We object to that. Large sums are often included for electric lighting, power-motors, ventilation, and heating, although some of the leading architects associate an engineer with them in that work.

Is it your view that the Bill would be improved by a specific definition of what is an architect ?—I think it would help considerably.

I understood that your real objection was confined to clause 12, and that when you saw the amended Bill you were quite happy about it.—That altered it a good deal.

Is it your wish that a definition of architect should be included ? —It is our wish, but we recognize it is exceedingly difficult to do so. What one really wants to get is something that means that if a man is a registered architect he is only registered to carry out work for which he is fully qualified and not to carry out work for which he is not fully qualified.

Col. Moore: I suggest to you that the whole object of this Bill is to ensure that only qualified architects as such are admitted to the register.—We have no objection to their being admitted to the register as qualified architects. The objection was that frequently they include many architects who are carrying out engineering work for which they are not fully qualified.

Col. Moore: We are only discussing the admission of *bona fide* architects.—So I presume.

Therefore your attitude is considerably altered by the fact that this point has been cleared up ?—Yes.

Can you give a definition of architect ?—The witness referred the committee to the definition in his précis of evidence.

Col. Moore: If it is so difficult to define an architect is it not better that such a definition should be left out ?—I suppose it is.

Sir A. Hopkinson : Would it not be an advantage to any profession to have the people in it more carefully trained ?—I think so.

You find that the entrance to your own profession is bettered through having a carefully organized institution?—Yes.

PROFESSOR BERESFORD PITE'S VIEWS

Professor Arthur Beresford Pite, F.R.I.B.A., in his précis of evidence, said that the qualifying examinations for registration under the Bill were not specified, but it could be assumed that they would follow the precedents established by the existing examinations for admission to the R.I.B.A. These examinations, and the educational course that had come into existence dealing with the syllabus, were replacing the old apprenticeship system which had fallen into disfavour in recent years. The examinations were designed to establish a level of professional status in education and assumed a public school education of about fifth form standard as a preliminary qualification. Thus the elementary education standard had to be supplemented by advanced education, a foreign language being required, etc. This was a bar to easy entrance to architectural education proper. His experience for many years, on the one hand, in the cases of talented art students at the Royal College of Art, and, on the other, among students of the L.C.C. School of Building, indicated that if architecture was regarded as a gentleman's profession, demanding general education rather than as a practical occupation dealing with the building crafts, the lower rungs of the ladder were missing. Educationally the art of architecture was the art of building. Building was concerned primarily with handicrafts. The architectural ordering and design of buildings needed this basis of practical training. There were advantages in the older method of articled pupilage or apprenticeship from this point of view. Many juniors in offices without articles or premiums had attained eminence as architects through their natural gifts. It was contended with force by important architects that practical handwork in the crafts of building was a necessary education for an architect. That being so, the workman or artificer possessed a large part of an ideal architectural education. A much-needed reform would be the opening of courses of architectural education for builders, i.e. to building students. The high fees charged in the schools recognized by the R.I.B.A. were a difficulty in the way of reform. All the vital styles of architecture originated in the building crafts and their traditions. Architecture as a learned profession only dated from the Renaissance of classical studies, and from that time onward the building crafts lost their artistic vitality. The recognition by legislation of a registered qualification for architects should be conditioned by the requirement that the examination should deal only with the essentials of architectural education. These might be described as: (1) Sound construction; (2) practical acquaintance with the arts and crafts of building. In his judgment it would be unsafe to admit questions of taste or design into a legalized examination. The judgment or bias of the one or two examiners who in practice would have to decide such matters, and the necessarily rapid examination test, could not provide a fair criterion of a candidate's architectural power.

The witness added that he wanted to urge the importance of a greater practical acquaintance with the arts and crafts. The well-trained builder had the fundamental qualification for an architect. It would be a hardship if one could only be registered as an architect after passing the test of personal opinions in matters of taste. He was a little afraid of Parliament interfering with artistic taste.

The Chairman: It would be rather a mistake in your view to recommend any interference with taste in architecture, and that we must decide it on the question of architecture alone, apart from taste?—Yes.

Sir A. Hopkinson: Some of us read your letter in the *Times* with interest. You have read the amended Bill and seen the alterations to clauses 11 and 12?—I was here when Major Barnes made these suggestions on behalf of the promoters.

Mr. Tasker: Do I understand you to say that the present method of examinations is not ideal?—Yes.

But I think you will agree that that was always the case. You are more concerned with the practical side, and you suggest that it has been more divorced from the artistic side in recent years?—I would say divorced from the educational side rather than from the artistic side.

I gather that in your experience the tendency is to shut out the poor man, although he might be a genius?—That is because the education is in the hands of a professional body which has professional ideals.

You desire to give encouragement to genius irrespective of surroundings or birth?—Yes.

The Chairman: I think we must confine ourselves to matters that can be introduced within the Bill itself. It is not much use going round the whole question of education and other matters which we cannot introduce in the Bill.

Col. Moore: I think you will agree that practical education in architecture must follow the theoretical and not precede it. Or do you suggest it should go concurrently?—Concurrently, I would suggest.

In reply to another question the witness said that there was no difficulty in students working in an office in the daytime and attending classes at night.

Col. Moore: To your knowledge are there any boys who were in poor circumstances now members of the Royal Institute?—Yes, one was elected at the last election.

Mr. Gardner: I gather your idea is that architectural pupils should go to evening classes for theory. Do you approve of such extended hours for students?

The witness asked at what age?

Mr. Gardner: Say about sixteen or seventeen. Do you say they ought to spend the day in an office and the evening at a school?—Yes, I do.

Replying to a further question, the witness said he saw no way of overcoming the difficulty of examinations in art of design. He did not think it the concern of legislation at all. When he was professor of architecture at the Royal College of Art, South Kensington, he was in a position to say to the students: "I like this; I will not have that." But he did not want Parliament to be in a position to say that to him.

Mr. Gardner: Surely there is some common factor or data or Plimsoll line that could be accepted?—I wish you would suggest it.

Mr. Lindley: Do you think it desirable to detail the subjects of the qualifying examinations?—I do not, but the nature of these examinations bears upon the fact that Parliament is asked to make the examinations the test of registration.

Replying to another question by Mr. Lindley, the witness said he should be sorry to distinguish between the theoretical and the practical. A combination of both was necessary. Unless a man had the educational status to begin with he could not get into the Royal Institute.

The witness added that he did not think the Bill would be advantageous either to the community or to the profession. It would not be advantageous to the community because it applied only to a group, that was to say, the architects, and the community was not able to test their special qualities as architects. It was likely to be inimical to architects if it made architecture a theoretical rather than a practical handicraft.

Asked for his views of the way of overcoming the difficulty of the fees charged for the training of architects, witness said the way was to take the power out of the hands of the Institute and give it to the Board of Education. If it was desired that architectural education should be as free as possible, it should be placed on the same basis as a technical rate-aided school. In his view the class of training would not suffer.

The Chairman: Major Barnes did not quite agree with your views.

Professor Beresford Pite: And I did not quite agree with Major Barnes's views.

Col. Moore: If the Royal Institute were to recognize these Council schools that would meet the point?—The witness said that then the difficulty would be met.

The committee then adjourned.

Company Meeting.

SHIP CANAL PORTLAND CEMENT MANUFACTURERS

SCIENTIFIC DISTRIBUTION "RIGHT ACROSS ENGLAND" THE COMPANY'S INVESTMENTS

THE Sixteenth Annual General Meeting of Ship Canal Portland Cement Manufacturers, Limited, was held on Friday, July 8, at Winchester House, Old Broad Street, London, E.C.

Mr. Oliver J. S. Piper (chairman of the company) presided.

The chairman, in moving the adoption of the report and accounts, recalled that in July last the company made an issue of £600,000 6½ per cent. Debentures, first, to consolidate short-term debts into long-period obligations, and secondly, to provide additional equipment in order to make the fullest use of the unusually advantageous geographical situation which their company possessed. They could claim to be the only works in the United Kingdom owning most complete wharf facilities and equipment enabling them to load ocean-going boats up to 15,000 tons capacity alongside their own wharf at any state of the tide; they had unique facilities for taking in coal supplies, and were in an exceptional position for the export of cement to all parts of the world.

RAPIDLY INCREASING DEMAND

Trading experience of the past two years had indicated that it would be profitable to increase the output of the company to meet the rapidly increasing demand in the adjacent and important markets which provided the natural outlet for the output of the company's plant. To take care of growing local consumption in such active industrial centres as Birkenhead, Liverpool, Manchester, and Chester—to mention only a few—the board had installed a new kiln with additional equipment to the works and quarries, providing an extra 1,250 tons of cement per week, which in the opinion of the sales department would be readily absorbed. To facilitate distribution they were adding extensively to the transport equipment. Users of their cement were, he was sure, appreciative of how helpful it was to have works so conveniently situated to them; customers, large and small, could be assured that at all times the desire was to give the most efficient and dependable service. The company's "England" brand of cement had been supplied to such important consumers as the Mersey Docks and Harbour Board, Liverpool Corporation, Henry Boot and Sons, Sheffield, Sir Robert McAlpine and Sons, London, Courtaulds, Limited, and Melville, Dundas and Whitsin, of Glasgow, but it was not solely the large contracts which interested the management; it was a particular part of instructions to the company's salesmen to attend to the demands of the small user; the same care was taken of the requirements of the local builder as of an important corporation.

He might mention that Mr. J. T. Phelan had joined the board as production manager; the company was under a material obligation for that to the Associated Anglo-Atlantic Corporation. Already, as a result of Mr. Phelan's work, in co-operation with Mr. Hodgson, the works manager, and the staff, they were getting the output from four kilns which they used to get from five, and the board had every reason to anticipate that the estimates of increased capacity would be handsomely exceeded with a further reduction in costs and a consequential increase in profits.

EXTENDED SPHERE OF OPERATIONS

The issue of the balance of the authorized Preference capital at par, and of the Ordinary capital at a satisfactory premium during the current year had enabled the board to extend considerably the sphere of the company's operations. A substantial interest had been acquired in the Holborough Cement Company at a figure well below the present market price and at a cost which would ensure a profitable income-earning investment. The purchase had been made because the board were satisfied that the works were in an area that geographically fitted in with their scheme of development, were properly capitalized, and a cheap producer. The use of this additional capital would prove highly satisfactory. The company's salesmen could now justly claim to be able to guarantee to customers cement supplies "Right Across England." The new item in the balance-sheet—"investments"—consisted mainly of the holding in the Holborough Cement Company, and all he had to say in relation to that was that the figure which could be inserted today as the market value would be considerably in excess of the balance-sheet figure.

PROFIT AND DIVIDEND

The profit and loss account showed a profit of £60,397, which, with the balance brought forward, gave a total of £84,061. The fixed dividend of 7½ per cent. had been paid on the Preference shares, and the directors recommended a dividend of 7½ per cent. on the Ordinary share capital, leaving £11,203 to carry forward. The profit was substantially below the figure at one time anticipated, but the coal strike had affected their trading not only during the actual period, but afterwards. It would have been possible, possessing practically the monopoly of certain centres of supply, to have raised prices substantially, but the board had felt, in loyalty to the company's customers, that they should not do so unless absolutely forced; they had never done so, and he was sure that action had received a merited recognition from their many customers. The directors felt quite justified in repeating last year's dividend on the increased capital, as for the current year prospects were quite encouraging.

ECONOMIES IN TRANSPORT

With reference to the acquisition of the old-established business of Greaves, Bull, and Lakin, Limited, the purchase had been effected in conformity with their programme of owning a line of economical production units "Right Across England." With a community of interests and co-operative selling arrangements, the company were now able to guarantee to contractors and others, supplies of cement north, south, east, or west. The vital importance of that could not be too strongly brought out when it was remembered that cement was a bulky material, and transport charges played a very important part. Industry was being charged far too much for transport. For that reason, apart from others, the group of works now controlled by this company provided a basis for a considerable saving in relation to transport. The acquisition of the business of Messrs. Greaves, Bull, and Lakin had only been made after the most careful investigations, and their company now controlled, either by way of direct share control or agreements, other important works, so that by striking a line from Ellesmere Port through to Leamington in the Midlands, where Greaves, Bull, and Lakin's works were down to the south of England, to the Holborough works, the company possessed a chain of works ideally situated for distribution and for serving the ever-growing needs of their customers now and in the future, through the length and breadth of Great Britain. To give the best of service, and to obtain the fullest advantage of the company's very favourable position, a distributing company had been registered to trade under the name of the Portland Cement Selling and Distributing Company, Limited, and it would be responsible for the marketing of the output of the three companies. The board were confident that a considerable saving in selling costs would be effected. The sign of their selling organization would be a red triangle based on the word "Dependability."

NEW SHARE ISSUE

It was necessary that, to have a real vital selling organization, the company should have a considerable amount of capital. For this purpose and so as to have ample funds for future developments it was proposed to increase the Ordinary capital from £280,000 in shares of 4s. each to £1,000,000, and to issue forthwith 1,100,000 shares at 5s.—a premium of 1s. per share. Ordinary shareholders would be given the right to a preferential allotment of eleven new shares for every fourteen shares now held; it had been arranged with the British Cement Products and Finance Company, Limited, in conjunction with the Associated

Anglo-Atlantic Corporation, that the issue would be guaranteed. To sum up, their undertaking was in an exceedingly strong position, with interests in other cement undertakings possessing great potentialities, and they could now claim to occupy the specially favourable strategic position of being able to transport cement economically north, south, east, or west—in other words, "Right Across England."

The report and accounts were unanimously adopted.

IN PARLIAMENT

[BY OUR SPECIAL REPRESENTATIVE]

Mr. C. Williams asked the Minister of Health whether his attention had been called to the report adopted by the London County Council on the subject of the Rent Restriction Acts, in which it was recommended that the Acts should be continued for a further period of one year; and whether he was yet in a position to announce the proposals of the Government in this matter?

Mr. Chamberlain said that he was aware of the report, and had carefully considered the recommendations which it contained. Representations on the subject had been made to him from various quarters, and he had received a number of suggestions for the amendment of the Rent Restriction Acts. Some of the suggestions merited careful consideration. In view, however, of the difficulty of finding time during the present session for an amending Bill, it was proposed to provide for the continuance for one year of the Rent Restriction Acts in their present form by including them in the Expiring Laws Continuance Bill, as was recommended in the report of the London County Council.

Mr. Buxton asked the Minister of Health whether his attention had been drawn to the problem of housing conditions in Westminster; and what steps the local authority were taking in order to alleviate the distress caused by these conditions?

Sir Kingsley Wood said that the Minister's attention had from time to time been drawn to the housing conditions in Westminster. The City Council had completed forty tenements and had under construction a further 118 flats. It was understood that they had also accepted an offer from the London County Council for the allocation to Westminster families of fifty houses on the County Council's estate at Hammersmith. The high cost of land in Westminster materially increased the difficulty of providing housing accommodation in the City at a reasonable rent, and there was no doubt that relief for the overcrowded population of Central London must come, in the main, from the large building schemes of the London County Council.

Lieutenant-Commander Kenworthy asked the Secretary of State for War if he was aware that a row of eighteen square red and yellow steel huts or houses had been erected by the War Office on Larkhill, within a mile and a half of Stonehenge; that the circle of Stonehenge was orientated in that direction, so that the sunrise at the summer solstice was in line with the land on which these huts now were; when he intends to have those huts removed; whether permanent brick and slate barracks were to be erected on Larkhill within full view of this national monument; and whether he would see if some other site was available equally suitable for military purposes but farther away from Stonehenge?

Sir L. Worthington-Evans said that as regards the first part of the question, if the hon. and gallant member was referring to the thirty-six married quarters erected in steel construction at Larkhill Camp last year, he was advised that they were clear of the line of sight of the midsummer sun's rise as viewed from Stonehenge, and special steps had already been taken to ensure that that line continued to be kept clear so far as future buildings were concerned. As regards the last part of the question, a scheme was under consideration for the replacement by permanent barracks of the temporary hutments at Larkhill, which were falling into disrepair and involved excessive charges for maintenance. Roads, drains, water supply, and electric light facilities already existed at Larkhill, and it would therefore be impossible to justify the heavy expenditure involved in removal to another site, even were a suitable alternative available.

Mr. R. Morrison asked the Chancellor of the Exchequer whether he was aware that many persons who were purchasing their houses through the Small Dwellings Act, building societies, and on the instalment system, were being served with notices to pay income tax under schedule A (property tax), although their incomes were below the income tax limit; and, in order to remove their doubts, would he make a statement on the matter?

Mr. McNeill, who replied, said that if a house-owner's income was of such an amount that he was not liable to income tax, he could claim exemption from any tax under schedule A charged in respect of his property. Where the property was subject to annual charges, such as ground rent or mortgage interest, the exempt owner would merely be called upon to pay to the Revenue the tax which he deducted from his ground landlord or mortgagor, upon whom, and not upon the owner, the charge of such tax therefore falls. If Mr. Morrison had in mind any case in which it was alleged that an exempt owner was being called upon to pay—and ultimately to bear—income tax under schedule A in respect of his property, and would furnish him with the necessary particulars, he would gladly have the matter investigated, and would, in due course, communicate to him the result.

CORRESPONDENCE

ART AND INDUSTRY

To the Editor of THE ARCHITECTS' JOURNAL

SIR,—The two leading articles you published last month on art and industry, the first of which roused Mr. Craven Pritchard to a lucid and penetrating protest, expressed very clearly the views that generally follow a superficial survey of modern industrial civilization. Without being an apologist for the kind of idiocy that proclaims "The world is a market; go, fill it!" I am forced, from my experience of the life that surrounds me, and from my observing, thinking, and reading, to realize that the population of the world is now considerably larger than it was when industrial production and machine-craft began. There is a vast need for articles in wood, and metal, and pottery; and the machine, which is a tool despite the dogmatic assertion of your leader writer (ask any cabinet-maker or joiner), satisfies that need so far as quantity is concerned. It would always satisfy the need in the matter of quality, only the manufacturer has almost invariably persisted in regarding the machine as a producer of cheap copies of something that once was made by hand. When he regards the machine frankly as a super-tool, a real extension of the craftsman's skill, then his wares are shorn of shoddiness; they cease to be the tawdry, imitation things that nauseate us, and make some weary critics yearn for the Middle Ages of picturesque Belloc and romantic Chesterton. Lethaby has said: "Art is not a special sauce applied to ordinary cooking; it is the cooking itself if it is good." Machines intelligently directed, machine-craft in alliance with hand-craft, have made many things well. While admitting that machinery has been responsible for some of the worst productions the world has ever seen, I suggest that it has also been responsible for many well-made things—the printing of THE ARCHITECTS' JOURNAL, for instance, and the half-tone blocks in its pages. Those pages of type are the product of the linotype or monotype machine (and who can challenge the title of super-tool for such machines?); those illustrations are children of the camera etched on copper by a mechanical process. . . .

It is rather disheartening to those of us who are trying, however feebly and weakly, to foster the idea of an ultimate union between hand-craft and machine-craft, so that creative industry may use intelligently the great tool-chest provided by human invention—it is disheartening when we find an influential journal condemning machinery because so far it has nearly always been controlled by people whose slogan is: "Muck for the multitude; art for the rich!" It is easy to jeer at the machine. It is hard work to try and bring

about even a little discerning co-operation between manufacturers —who are the machine-craftsmen—hand-craftsmen and artists, and to make some effort to educate the buying public.

JOHN GLOAG
Vice-Chairman, Design and Industries Association.

PROTESTANTISM AND ART

To the Editor of THE ARCHITECTS' JOURNAL

SIR,—In your issue for June 22 there appeared under the above heading a quotation from Karel Capek's *Letters from England*, in which he attributed the dreariness of our London suburbs to "Protestantism." Had Karel Capek's knowledge of the history of English art equalled his dislike of our religion, he would have known that craftsmanship and architecture, which had been decaying in this country for a century before the Reformation, received thereby a fresh stimulus. I feel sure that it was not by accident that you preceded the quotation by a letter drawing attention to "the relics of an older domestic architecture, such as some of the lovely Tudor examples." No one would think of quoting the dreary suburbs of a French industrial town, say Le Havre for example, as proof that "Catholicism has drained that country dry in an artistic respect"; yet both charges must be equally true or false. Architecture in this country, from the Reformation to the industrial revolution, fears nothing by comparison with contemporary work on the Continent, and the fallacy of Karel Capek's remark becomes obvious when we compare the modern architecture of America, England, Holland, Denmark, Norway, and Sweden with that of France, Belgium, Spain or Italy. What, then, of the speculating builder and the industrialist on whom the blame really lies? Anyone who has seen their handiwork in the various parts of the British Isles will agree that there is no difference between a Catholic jerry-builder and his Protestant confrère.

May I also be allowed to draw attention to a rather remarkable statement by your writer in the same issue? In a very welcome article drawing attention to the necessity of keeping a close guard on our ecclesiastical treasures, the following sentence occurred: "Not the least part of the duty of the English Church is the care of a great number of valuable ancient monuments which have passed into its keeping from pre-Reformation times or have been contributed by pious folk." I think this instance of a body of people inheriting their own property would have been unique, but for the fact that the view that the Church of England came into existence at the Reformation and inherited the property of another church is, of course, a fallacy. The English Church bases its unbroken descent from the earliest years of the Christian era and could scarcely inherit what has always belonged to it.

H. T. JACKSON

TRADE NOTES

The travelling exhibit of the National Radiator Company, Ltd., which is fitted with a working installation of the Ideal Cookanheat and Ideal Classic Radiators, is to give the following demonstrations: July 13, Castle Yard, Market Place, Stockport; July 14, 15, and 16, in front of Palatine Cinema and Café, Palatine Road, Withington, Manchester (at tram terminus); July 18 and 19, Station Yard, Chorlton-cum-Hardy, Manchester; July 20 and 21, Market Place (in front of Robinson's Depositories), Bury New Road, Higher Broughton, Manchester.

In connection with the Greenwich Health Week, held from July 5 to 9, the Borough Council, through the officials of the Public Health Department, arranged a comprehensive exhibition at the Municipal Buildings. Among the exhibits were a complete set of models showing the practical application of "Pudlo" brand cement waterproofing powder as a cure for dampness. We are informed that the sanitary inspectors of the borough have found it possible to save many old buildings that have been scheduled for demolition owing to dampness, by applying renderings of sand and cement waterproofed by the addition of "Pudlo" brand powder.

BANK DIVIDENDS

The directors of Westminster Bank, Ltd., have declared an interim dividend of 10 per cent. for the half-year ended June 30 on the £20 shares, and the maximum dividend of 6¼ per cent. on the £1 shares for the same period. The dividends, 10s. per share and 1s. 3d. per share, respectively (both less Income Tax), will be payable on August 2.

The directors of the Midland Bank, Ltd., announce an interim dividend for the half-year ended June 30 last at the rate of 18 per cent. per annum less Income Tax, payable on July 15. The dividend for the corresponding period of 1926 was at the same rate.

A CORRECTION

On page 912 of our issue for June 22, under the heading "Competition News," we published a list of those selected to take part in the final competitions for the Tite Prize and the Soane Medallion. In the list headed "The Soane Medallion" the title of Mr. E. F. Davies's School was incorrectly given as "The Bartlett School of Architecture, University of Liverpool." It should be "The School of Architecture, University of Liverpool."

THE EAST KENT RAILWAY STATIONS

The general contractors for Margate Station, illustrated on page 45, were Messrs. Rice and Son. The general contractors for the stations at Dumpton Park, Ramsgate, and Broadstairs, illustrated on pages 47, 48 and 50, were Messrs. Sir Robert McAlpine and Sons. Messrs. Rice and Son also erected, in connection with the Margate Station, a new goods shed, stables, and several cottages.

NEW INVENTIONS

[The following particulars of new inventions are specially compiled for THE ARCHITECTS' JOURNAL, by permission of the Controller of H.M. Stationery Office, by our own patent expert. All inquiries concerning inventions, patents and specifications should be addressed to the Editor, 9 Queen Anne's Gate, Westminster, S.W.1. For copies of the full specifications here enumerated readers should apply to the Patent Office, 25 Southampton Buildings, W.C.1. The price is 1s. each.]

LATEST PATENT APPLICATIONS

15779. Ambrose, J. G., and Concrete, Ltd. Formation of blocks, &c. June 14.
15884. Bailey, C. F. Fireplaces, &c. June 15.
15656. Fea, J. W. Manufacture of building, &c., bricks. June 13.
15946. Hughes, H. Wilson. Reinforced, &c., building materials. June 15.
16192. Layer, E. Hollow wall. June 17.

SPECIFICATIONS PUBLISHED

248779. Zouri Drawn Metals Co. Metallic window sashes.
272343. Goddard, E. A. Folding doors, partitions, and the like.
272358. Cesa, C. M. Combined house-heating and vacuum-cleaning system.

ABSTRACT PUBLISHED

270290. Compagnie Nationale des Radiateurs, 149 Boulevard Haussmann, Paris. Radiators.

THE WEEK'S BUILDING NEWS

Plans passed by the DOUGLAS (I.O.M.) Corporation: Stores, Fort Street, for Messrs. Todhunter and Elliot, Ltd.; sports pavilion, Falcon Cliff, for Mr. Alexander; two houses, Duke's Road, for Mr. J. K. Brearley.

*

The STOKE-ON-TRENT Corporation has purchased two acres at High Street, Pittshill, for a housing scheme.

*

Plans passed by the STOKE-ON-TRENT Corporation: Oil and spirit depot and five garages, Scotia Road, Tunstall, for the Anglo-American Oil Co.; Primitive Methodist Church, Leeks Road, Abbey Hulton, for the trustees; lay-out, Penkhull estate, Penkhull, for Stoke-on-Trent Tenants, Ltd.; garage, Scotia Road, Burslem, for Messrs. Browns' Motor Co.; petrol and oil storage and offices, Argyle Street, Fenton, for Shell-Mex Co., Ltd.; sanitary pipe and firebrick work, Acres Wood Lane, for Messrs. Wilkinson.

*

Plans passed by the ILFORD Corporation: Distributing depot, dairy shop, and stables, 261-275 High Road, for the United Dairies, Ltd.; alterations and additions, 152 High Road, for Messrs. A. H. Davies and Partners; new roads and sewers, Virginia Gardens, Waverley Gardens, and Westminster Gardens; factory and offices, Uphill Road, for Mr. F. D. Pipe.

*

Messrs. Searle and Searle, Paternoster House, E.C.4, are to erect a building on the site of 7-13 Vandon Street, WESTMINSTER.

*

Messrs. Boodle, Hatfield & Co., are to erect buildings to abut upon the west side of Park Street, the north side of North Row, and the south side of Oxford Street, MARYLEBONE.

*

Plans passed by the CHORLEY Corporation: Building, Lyons Lane, for Independent Methodist Church; store and workshop, 31 Cuncliffe Street, for Mr. H. Martindale; pavilion, St. Lawrence's Park, for St. Lawrence's Tennis Club; pavilion, off Southport Road, for Chorley Cricket and Tennis Club.

*

The CHORLEY Corporation has arranged for a plebiscite to be taken on the question of the desirability of proceeding at the present time with the erection of public baths, which will cost £21,000.

*

The FULHAM B.C. have passed plans for a building, in Peterborough Road and Bells Alley, for Messrs. H. N. Barnes, Ltd.

*

Messrs. Kieffer, Fleming and Keesey, architects, are erecting a new Congregational Church in Orange Street, WESTMINSTER.

Messrs. W. H. Woodroffe and Son, 5 Bedford Row, W.C.1, are to erect a hall in Hankey Place, SOUTHWARK.

*

Plans passed by the SHIPLEY U.D.C.: Warehouse, Dockfield Road, for Messrs. F. Mann, Ltd.; club-houses, High Bank, for the Northcliff Golf Club.

*

Plans passed by the COULSDON U.D.C.: Six houses, Vincent Road, for Mr. J. G. Cooper; four houses, Fairdene Road, for Messrs. West and Duly; bank, junction Brighton Road and Chipstead Valley Road, for National Provincial Bank, Ltd.; nine houses, Brancaster Lane, Purley, for Messrs. Lawes, Cherry & Co.

*

Plans passed by the MARYLEBONE B.C.: Building, Seymour Place, Harrowby Street and Brown Street, for Messrs. Hoare and Wheeler; buildings, Oxford Street, Hereford Gardens, for Messrs. Boodle, Hatfield & Co.

*

The ST. MARYLEBONE Housing Association, Ltd., has purchased the block of properties known as the Salisbury Place site, which it proposes to develop for housing purposes.

*

Mr. H. Kempton Dyson is to carry out alterations to 3-5 Burlington Gardens, abutting upon Cork Street and Old Burlington Street, WESTMINSTER.

*

Messrs. G. and A. Parris are developing land at Haling Park, CROYDON, and are to erect twenty houses in Stafford Road.

*

The ADDISCOMBE Garden Estates, Ltd., is developing land in Shirley Road and Addiscombe Road, and is to erect shops on part of the estate.

*

The Surrey C.C. and the Ministry of Transport have agreed upon an amended scheme for reconstructing the main road from Minbridge to Sunningdale, in the CHERTSEY rural district, at a cost of £50,000. The work is to be undertaken by the C.C. by direct labour.

*

The BANSTEAD Common Conservators has agreed to give land for the proposal of the Surrey C.C. to widen the main road in the vicinity of the Downs, a scheme which will cost £17,250.

*

Mr. A. C. Burlingham is developing a building estate in Merrow Village, near GUILDFORD.

*

The London County Council has prepared a scheme for the construction of a traffic relief road in the vicinity of WALHAM GREEN, out of North End Road, at an estimated cost of £47,000.

An amended scheme has been prepared by the Surrey C.C. for the construction of the EWELL by-pass road, the cost being estimated at £33,000.

*

The SEAHAM HARBOUR U.D.C. has prepared plans for the proposed new bridge in Strangford Road.

*

The Church Army Housing, Ltd., is to erect houses on land at Barrow Close, SOUTHGATE, at a cost of £18,000.

*

The Middlesex Education Committee has obtained a site on the Cranleigh Gardens estate, Kenton, HARROW, for the erection of an elementary school.

*

The Education Committee has approved the plans submitted by the Rev. J. C. Joyce for the erection of a Roman Catholic school, FINCHLEY.

*

The FINCHLEY U.D.C. has appointed a sub-committee to deal with the development of the glebe lands recently acquired, and meanwhile part has been scheduled for a recreation ground.

*

Mr. A. H. C. Arnell is to construct three roads and erect forty-four houses on the Kimbolton estate, Regent's Park Road, FINCHLEY.

*

The Misses Wright and Kingsford are to erect a nurses' dormitory and day shelter at the Wright-Kingsford Home, Granville Road, FINCHLEY.

*

The CHELMSFORD Education Committee has inspected sketch plans submitted by the borough engineer for the erection of a new school in Lady Lane, and authorized the borough engineer to visit the Board of Education with the plans. The cost is estimated at £22,300.

*

The SWANSEA Education Committee is to acquire compulsorily, if necessary, a site at Tirdeunaw for the erection of an elementary school.

*

Plans passed by the CHELMSFORD Corporation: Alterations, 68 High Street, for Messrs. Gosling and Son; two houses, Wood Street, for Messrs. W. C. Jennings and C. Benton; two houses, Rainsford Lane, for Mr. J. C. Pryke; office and stores, Hill Road, for Mr. F. Ward; two shops and dwellings, King's Road, for Messrs. J. G. Hawkes and Sons; alterations, 4 and 5 High Street, for Messrs. F. Spalding and Sons; alterations to the "Rosebery" Temperance Hotel, Springfield Road, for Mr. W. G. Wenley.

The CHELMSFORD Corporation is to borrow £36,000, required in connection with the reservoir for the new water scheme.

*

The SWANSEA Education Committee is to acquire land for the future enlargement of the Oystermouth Council School.

*

The Metropolitan Water Board has prepared a scheme for remodelling the DEPTFORD works, Kent district, including provision of machinery, £109,000; erection of buildings, £76,000; wells, headings, and working-out mains, £36,000.

*

The Croydon Corporation is obtaining 5 acres in Hermitage Road, UPPER NORWOOD, for a housing scheme.

*

Messrs. Blake, Son and Williams, on behalf of clients, are offering to purchase land at the corner of Thornton Road and Shamrock Road, THORNTON HEATH, for the erection of licensed premises.

*

Mr. H. Macintosh, of East Croydon, is to erect a church hall next to the Wesleyan Church in London Road, CROYDON.

*

Messrs. Barclay, Perkins & Co. are to erect an hotel in Purley Way, SOUTH CROYDON.

*

Messrs. North, Robins and Wilsdon, 39 Maddox Street, W.1, are to erect shops with billiard hall over at the corner of High Street and Friends Road, CROYDON.

*

Plans passed by the CROYDON Corporation: Eight houses, Addiscombe Road, for Messrs. Paish, Tyler and Crump; thirty-four houses, Shirley Avenue, for Messrs. Paish, Tyler and Crump; eight houses, Springfield Road, for Mr. R. Pierson; alterations and additions, 13-14 Selsdon Road, for Messrs. F. Sage & Co., Ltd.; joinery mill, etc., 227 London Road, for Messrs. C. H. Gibson, Ltd.; four houses, Constance Road, for Mr. J. G. Bevan; fourteen shops and seven flats, Shirley Road, for Messrs. Paish, Tyler and Crump; four houses, Upfield Road, for Mr. F. Windsor; ten houses, Mersham Road, for Messrs. A. and J. Wall Bros.; seven houses, Fairlands Avenue, for Mr. A. Duckit; twelve garages and two workshops, Whitehorse Road, for Mr. C. H. Ridge.

*

Plans passed by the BEXHILL Corporation: Shop premises with flats over, Marina, for Messrs. J. Sainsbury, Ltd.; eight bungalows, Pebsham, for Mr. E. C. Allerton; new lavatory block, Collington Rise school, for Messrs. Wall, Callow and Callow; two houses, Hollier's Hill, for Mr. J. Rogers and St. Peter's Parochial Church Council; two cottages, off De La Warr Road, for Mr. E. Errey; shop premises, Hollier's Hill, for Mr. G. H. Gray.

The Middlesex Education Committee has obtained sanction for a loan of £12,000 for the enlargement of Townfield School, HAYES.

*

The Middlesex Education Committee has obtained sanction for a loan of £17,000 for the erection of an elementary school at East Lane, WEMBLEY.

*

The WANDSWORTH B.C. has obtained sanction for the purchase of a site at Clapham for the erection of public baths.

*

Plans passed by the STOKE-ON-TRENT Corporation: Six houses, Cauldon Road, Hanley, for Mr. T. Horwill; seven houses, Lincoln Road, Trent Vale, for Messrs. Ball and Robinson.

*

The GRAVESEND Corporation has obtained sanction to borrow £31,250 for the drainage of the Sand Area, and tenders are now to be invited.

*

The Christian Science Society is to erect a church in Hilary Street, DOUGLAS, I.O.M.

*

The MARKET HARBOROUGH U.D.C. is urging the County Council to reconstruct the Northampton Road river bridge.

*

Messrs. Stewart, Sons, Bremner and Nicol are developing Barloch estate, MILNGAVIE.

*

St. Andrew's Ambulance Association is to erect premises on the site of 100-108 North Street, GLASGOW.

*

The GLASGOW Corporation Housing Committee is seeking power to borrow £1,800,000 for housing schemes.

*

The Lodge trustees are to erect a billiard hall at the Freemasons' Hall, Waterloo Road, BURSLEM.

*

Messrs. Hollins and Jones, architects, are developing an estate off Weston Road, MEIR, Staffs.

*

The Ministry of Health has sanctioned the borrowing of £25,284, for the erection of the two junior mixed departments and the administrative block of the proposed new Tang Hall school, YORK.

*

The managers of the Roman Catholic School in Argyle Street, HEBBURN, have prepared a scheme for enlarging the school to accommodate an additional 320 children.

*

Plans have been passed by the UXBRIDGE U.D.C. for extension of mill premises for the Bell Punch and Printing Co., Ltd.

Plans passed by the TYNEMOUTH Corporation: Two houses, Chirton Green, North Shields, for Messrs. F. R. N. Haswell and Son; alterations, 44 Saville Street, North Shields, for the Maypole Dairy Co.; two houses, Brightman Road, for Mr. W. Stockdale; four houses, Chirton Green, for Messrs. Chisholm & Co.; eight houses, Cartington Road, for Mr. W. Stockdale; ten flats, Chirton Green, for Messrs. F. R. N. Haswell and Son.

*

Plans passed by the BRIGHTON Corporation: Alterations, Y.M.C.A., Old Steine, for the National Council of Y.M.C.A.; five houses, Hollingbury Crescent, for Mr. W. J. Burstow; house, shop, garage, and two flats, Down Terrace, for Mr. W. Trott; extension, 171 North Street, for Lloyds Bank, Ltd.; seven houses, Freshfield Road, for Messrs. T. J. Braydon and Son; factory, South Road, Preston, for Messrs. A. Darling and Sons; alterations, 28 St. James's Street, for Messrs. F. W. Woolworth & Co., Ltd.; rebuilding, 11 King's Road, for the Motor Union Insurance Co.; alterations, "The Caxton Arms," North Gardens, for the Kemp Town Brewery; alterations, 93 St. James's Street, for the Home and Colonial Stores, Ltd.; workshop, 18 Blackman Street, for Messrs. E. G. Brown, Ltd.; three houses, Hollingbury Road, for Mr. G. Ayling; twenty houses, Kimberley Road, for Mr. G. Ayling; rebuilding, 38 and 39 West Street, for Messrs. Baker & Co., Ltd.; alterations, 114 London Road, for the Midland Bank, Ltd.; alterations, 61 Beaconsfield Road, for Mr. H. Pannett; twelve houses, Dawson Terrace, for Mr. C. G. Payne; five houses, Windlesham Gardens, for Mr. R. Mitchell.

*

The GUILDFORD Corporation is to interview representatives of the Standing Joint Committee for Surrey with reference to the provision of assize courts, and inquiry is to be made as to what financial help the Standing Joint Committee will be prepared to give, and whether Stoke Park would be a suitable site for the erection of the assize courts.

*

The BRIGHTON Education Committee recommends that steps should be taken at once to prepare plans for the new boys' secondary school at Varndean with a view to its completion in 1929. The type of school which is suggested for the new secondary school would be a building accommodating 600 boys, and costing approximately £68,900.

*

The TYNEMOUTH Corporation housing architect has prepared a lay-out for the erection of thirty-eight houses in flats, eighty-eight three-roomed houses, sixty four-roomed houses on the Cullercoats estate, estimating the cost of the flats at £473, and the houses at £527 each.

RATES OF WAGES

			I	II
			s. d.	s. d.
A	ABERDARE	S. Wales & M.	1 8	1 3½
A₁	Abergavenny	S. Wales & M.	1 7½	1 2½
B	Abingdon ..	S. Counties	1 6	1 1½
A	Accrington	N.W. Counties	1 8	1 3½
A₃	Addlestone	S. Counties	1 6½	1 2
A	Adlington ..	N.W. Counties	1 8	1 3½
A	Airdrie ..	Scotland	*1 8	1 3½
C₁	Aldeburgh	E. Counties	1 4	1 0½
A	Altrincham	N.W. Counties	1 8	1 3½
B₃	Appleby ..	N.W. Counties	1 4½	1 0½
A	Ashton-under-Lyne	N.W. Counties	1 8	1 3½
A₃	Atherstone	Mid. Counties	1 6½	1 2
B₂	Aylesbury ..	S. Counties	1 4½	1 0½
B₃	BANBURY	S. Counties	1 4½	1 0½
B₃	Bangor ..	N.W. Counties	1 5	1 1
A	BarnardCastle	N.E. Coast	1 8	1 3½
A	Barnsley ..	Yorkshire	1 8	1 3½
B₁	Barnstaple	S.W. Counties	1 5½	1 1½
A	Barrow ..	N.W. Counties	1 8	1 3½
A	Barry ..	S. Wales & M.	1 8	1 3½
B₃	Basingstoke	S.W. Counties	1 4½	1 0½
B	Bath ..	S.W. Counties	1 6	1 1½
A	Batley ..	Yorkshire	1 8	1 3½
B	Bedford ..	E. Counties	1 6	1 1½
A₃	Berwick-on-Tweed	N.E. Coast	1 7	1 2½
A₂	Bewdley ..	Mid. Counties	1 7	1 2½
B₃	Bicester ..	Mid. Counties	1 4½	1 0½
A	Birkenhead	N.W. Counties	*1 10	1 4½
A	Birmingham	Mid. Counties	1 8	1 3½
A	Bishop Auckland	N.E. Coast	1 8	1 3½
A	Blackburn	N.W. Counties	1 8	1 3½
A	Blackpool	N.W. Counties	1 8	1 3½
A	Blyth ..	N.E. Coast	1 8	1 3½
B₃	Bognor ..	S. Counties	1 4½	1 0½
A	Bolton ..	N.W. Counties	1 8	1 3½
A₃	Boston ..	Mid. Counties	1 6½	1 2
B₁	Bournemouth	S. Counties	1 6	1 1½
B₂	Bovey Tracey	S.W. Counties	1 5	1 1
A	Bradford ..	Yorkshire	1 8	1 3½
A₃	Brentwood	E. Counties	1 7	1 2½
A	Bridgend ..	S. Wales & M.	1 8	1 3½
B₃	Bridgwater	S.W. Counties	1 5	1 1
A₁	Bridlington	Yorkshire	1 7½	1 2½
A	Brighouse	Yorkshire	1 8	1 3½
B₁	Brighton ..	S. Counties	1 6	1 1½
A	Bristol ..	S.W. Counties	1 8	1 3½
B₃	Brixham ..	S.W. Counties	1 4½	1 0½
A₃	Bromsgrove	Mid. Counties	1 7	1 2½
C	Bromyard ..	Mid. Counties	1 4	1 0½
A	Burnley ..	N.W. Counties	1 8	1 3½
A	Burslem ..	Mid. Counties	1 8	1 3½
A₃	Burton-on-Trent	Mid. Counties	1 7	1 2½
A	Bury ..	N.W. Counties	1 8	1 3½
A₁	Buxton ..	N.W. Counties	1 7½	1 2½
B	CAMBRIDGE	E. Counties	1 6	1 1½
B₃	Canterbury	S. Counties	1 4½	1 0½
A	Cardiff ..	S. Wales & M.	1 8	1 3½
A	Carlisle ..	N.W. Counties	1 8	1 3½
B	Carmarthen	S. Wales & M.	1 6	1 1½
B₃	Carnarvon	N.W. Counties	1 5	1 1
A₁	Carnforth ..	N.W. Counties	1 7½	1 2½
A	Castleford	Yorkshire	1 8	1 3½
B₁	Chatham ..	S. Counties	1 5½	1 1½
B₁	Chelmsford	E. Counties	1 5½	1 1½
A₃	Cheltenham	S.W. Counties	1 6½	1 2
A	Chester ..	N.W. Counties	1 8	1 3½
A	Chesterfield	Mid. Counties	*1 8	1 3½
B₃	Chichester	S. Counties	1 4½	1 0½
A	Chorley ..	N.W. Counties	1 8	1 3½
B₃	Cirencester	S. Counties	1 5	1 1
A	Clitheroe ..	N.W. Counties	1 8	1 3½
A	Clydebank	Scotland	1 8	1 3½
A	Coalville ..	Mid. Counties	1 8	1 3½
B₁	Colchester ..	E. Counties	1 5½	1 1½
A	Colne ..	N.W. Counties	1 8	1 3½
B₁	Colwyn Bay	N.W. Counties	1 5½	1 1½
A	Consett ..	N.E. Coast	1 8	1 3½
B₁	Conway ..	N.W. Counties	1 5½	1 1½
A	Coventry ..	Mid. Counties	1 8	1 3½
A₃	Crewe ..	N.W. Counties	1 6½	1 2
A₃	Cumberland	.....	1 6½	1 2
A	DARLINGTON	N.E. Coast	1 8	1 3½
A	Darwen ..	N.W. Counties	1 8	1 3½
B₃	Deal ..	S. Counties	1 4½	1 0½
B₁	Denbigh ..	N.W. Counties	1 5½	1 1½
A	Derby ..	Mid. Counties	1 8	1 3½
A	Dewsbury ..	Yorkshire	1 8	1 3½
B	Didcot ..	S. Counties	1 6	1 1½
A	Doncaster	Yorkshire	1 8	1 3½
C₁	Dorchester	S.W. Counties	1 4	1 0½
A₃	Driffield ..	Yorks	1 6½	1 2
A₃	Droitwich ..	Mid. Counties	1 6½	1 2
A₁	Dudley ..	Mid. Counties	1 7½	1 2½
A	Dundee ..	Scotland	1 8	1 3½
A	Durham ..	N.E. Coast	1 8	1 3½
B₁	EASTBOURNE	S. Counties	1 6	1 1½
A	Ebbw Vale	S. Wales & M.	1 8	1 3½
A	Edinburgh	Scotland	1 8	1 3½
A	E. Glamorganshire & Monmouthshire	S. Wales & M.	1 8	1 3½
B	Exeter ..	S.W. Counties	*1 7	1 2½
B₂	Exmouth ..	S.W. Counties	1 5	1 1
B	FELIXSTOWE	E. Counties	1 6	1 1½
A₃	Filey ..	Yorks	1 6½	1 2
A	Fleetwood ..	N.W. Counties	1 8	1 3½
B₂	Folkestone ..	S. Counties	1 5	1 1
A	Frodsham ..	N.W. Counties	1 8	1 3½
B₃	Frome ..	S.W. Counties	1 4½	1 0½
A	GATESHEAD	N.E. Coast	1 8	1 3½
B₁	Gillingham	S. Counties	1 5½	1 1½
A₃	Gloucester	S.W. Counties	1 6½	1 2
A₂	Goole ..	Yorkshire	1 7	1 2½
B	Gosport ..	S. Counties	1 6	1 1½
A₃	Grantham	Mid. Counties	1 6½	1 2
A₁	Gravesend	S. Counties	1 7½	1 2½
A	Greenock ..	Scotland	*1 8	1 3½
A	Grimsby ..	Yorkshire	1 8	1 3½
B₁	Guildford ..	S. Counties	1 5½	1 1½
A	HALIFAX ..	Yorkshire	1 8	1 3½
A	Hanley ..	Mid. Counties	1 8	1 3½
A	Harrogate	Yorkshire	1 8	1 3½
A	Hartlepools	N.E. Coast	1 8	1 3½
B₂	Harwich ..	E. Counties	1 5	1 1
B₃	Hastings ..	S. Counties	1 4½	1 0½
B₁	Hatfield ..	S. Counties	1 5½	1 1½
B	Hereford ..	S. W. Counties	1 6	1 1½
B	Hertford ..	E. Counties	1 5½	1 1½
A₁	Heysham ..	N.W. Counties	1 7½	1 2½
A	Howden ..	N.E. Coast	1 8	1 3½
A	Huddersfield	Yorkshire	1 8	1 3½
A	Hull ..	Yorkshire	1 8	1 3½

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

			I	II
			s. d.	s. d.
A	ILKLEY ..	Yorkshire	1 8	1 3½
A	Immingham	Mid. Counties	1 8	1 3½
B	Ipswich ..	E. Counties	1 6	1 1½
C₁	Isle of Wight	S. Counties	1 4	1 0½
A	JARROW ..	N.E. Coast	1 8	1 3½
A	KEIGHLEY	Yorkshire	1 8	1 3½
B₁	Kendal ..	N.W. Counties	1 5½	1 1½
B₁	Keswick ..	N.W. Counties	1 5½	1 1½
B	Kettering ..	Mid. Counties	1 6	1 1½
A₂	Kidderminster	Mid. Counties	1 7	1 2½
B₂	King's Lynn	E. Counties	1 5	1 1
A	LANCASTER	N.W. Counties	1 8	1 3½
A₂	Leamington	Mid. Counties	1 7	1 2½
A	Leeds ..	Yorkshire	1 8	1 3½
A	Leek ..	Mid. Counties	1 8	1 3½
A	Leicester ..	Mid. Counties	1 8	1 3½
A	Leigh ..	N.W. Counties	1 8	1 3½
B₃	Lewes ..	S. Counties	1 4½	1 0½
A₃	Lichfield ..	Mid. Counties	1 6½	1 2
A	Lincoln ..	Mid. Counties	1 8	1 3½
A	Liverpool ..	N.W. Counties	*1 10	1 4½
B	Llandudno	N.W. Counties	1 5½	1 1½
A	Llanelly ..	S. Wales & M.	1 8	1 3½
	London (12 miles radius)		1 9½	1 4½
	Do. (12-15 miles radius)		1 9	1 4
A	Long Eaton	Mid. Counties	1 8	1 3½
A	Loughborough	Mid. Counties	1 8	1 3½
B	Luton ..	E. Counties	1 6	1 1½
A	Lytham ..	N.W. Counties	1 8	1 3½
A₁	MACCLESFIELD	N.W. Counties	1 7½	1 2½
B	Maidstone	S. Counties	1 5½	1 1½
A₃	Malvern ..	Mid. Counties	1 6½	1 2
A	Manchester	N.W. Counties	1 8	1 3½
A	Mansfield ..	Mid. Counties	1 8	1 3½
B₃	Margate ..	S. Counties	1 4½	1 0½
A₃	Matlock ..	Mid. Counties	1 6½	1 2
A	Merthyr ..	S. Wales & M.	1 8	1 3½
A	Middlesbrough	N.E. Coast	1 8	1 3½
A₃	Middlewich	N.W. Counties	1 6½	1 2
B₂	Minehead ..	S.W. Counties	1 5	1 1
A	Monmouth S. and E. Glamorganshire	S. Wales & M.	1 8	1 3½
A₁	Morecambe	N.W. Counties	1 7½	1 2½
A₃	NANTWICH	N.W. Counties	1 6½	1 2
A	Neath ..	S. Wales & M.	1 8	1 3½
A	Nelson ..	N.W. Counties	1 8	1 3½
A	Newcastle ..	N.E. Coast	1 8	1 3½
A	Newport ..	S. Wales & M.	1 8	1 3½
A	Normanton	Yorkshire	1 8	1 3½
A₂	Northampton	Mid. Counties	1 7	1 2½
A	North Staffs.	Mid. Counties	1 8	1 3½
A	North Shields	N.E. Coast	1 8	1 3½
A₃	Norwich ..	E. Counties	1 6½	1 2
A	Nottingham	Mid. Counties	1 8	1 3½
A	Nuneaton ..	Mid. Counties	1 8	1 3½
B	OAKHAM ..	Mid. Counties	1 5½	1 1½
A	Oldham ..	N.W. Counties	1 8	1 3½
A₃	Oswestry ..	Mid. Counties	1 6½	1 2
B	Oxford ..	S. Counties	1 6	1 1½
A	PAISLEY ..	Scotland	*1 8	1 3½
C	Pembroke	S. Wales & M.	1 4½	1 0½
A	Perth ..	Scotland	*1 8	1 3
A₃	Peterborough	Mid. Counties	1 6½	1 2
A	Plymouth	S.W. Counties	*1 8	1 3½
A	Pontefract	Yorkshire	1 8	1 3½
A	Pontypridd	S. Wales & M.	1 8	1 3½
B	Portsmouth	S. Counties	1 6	1 1½
A	Preston ..	N.W. Counties	1 8	1 3½
A	QUEENSFERRY	N.W. Counties	1 8	1 3½
B	READING ..	S. Counties	1 6	1 1½
B	Reigate ..	S. Counties	1 5½	1 1½
A₃	Retford ..	Mid. Counties	1 6½	1 2
A	Rhondda Valley	S. Wales & M.	1 8	1 3½
A₃	Ripon ..	Yorkshire	1 6½	1 2
A	Rochdale ..	N.W. Counties	1 8	1 3½
B	Rochester ..	S. Counties	1 5½	1 1½
A₁	Ruabon ..	N.W. Counties	1 7½	1 2½
A₂	Rugby ..	Mid. Counties	1 8	1 3½
A₃	Rugeley ..	Mid. Counties	1 6½	1 2
A	Runcorn ..	N.W. Counties	1 8	1 3½
A₃	ST. ALBANS	E. Counties	1 6½	1 2
A	St. Helens	N.W. Counties	1 8	1 3½
B₃	Salisbury	S.W. Counties	1 4½	1 0½
A₁	Scarborough	Yorkshire	1 7½	1 2½
A	Scunthorpe	Mid. Counties	1 8	1 3½
A	Sheffield ..	Yorkshire	1 8	1 3½
A	Shipley ..	Yorkshire	1 8	1 3½
A₃	Shrewsbury	Mid. Counties	1 6½	1 2
A₂	Skipton ..	Yorkshire	1 7	1 2½
B	Slough ..	S. Counties	1 5½	1 1½
A₂	Solihull ..	Mid. Counties	1 7	1 2½
A₃	South'pton	S. Counties	1 6½	1 2
B₁	Southend-on-Sea	E. Counties	1 5½	1 1½
A	Southport ..	N.W. Counties	1 8	1 3½
A	S. Shields ..	N.E. Coast	1 8	1 3½
A₂	Stafford ..	Mid. Counties	1 7	1 2½
A	Stockport ..	N.W. Counties	1 8	1 3½
A	Stockton-on-Tees	N.E. Coast	1 8	1 3½
A	Stoke-on-Trent	Mid. Counties	1 8	1 3½
B	Stroud ..	S.W. Counties	1 5½	1 1½
A	Sunderland	N.E. Coast	1 8	1 3½
A	Swadlincote	Mid. Counties	1 8	1 3½
A	Swansea ..	S. Wales & M.	1 8	1 3½
B	Swindon ..	S.W. Counties	1 6	1 1½
A₁	TAMWORTH	N.W. Counties	1 7½	1 2½
B₁	Taunton ..	S.W. Counties	1 5½	1 1½
A	Teeside Dist.	N.E. Counties	1 8	1 3½
B	Teignmouth	S.W. Coast	1 6	1 1½
A	Todmorden	Yorkshire	1 8	1 3½
A₂	Torquay ..	S.W. Counties	1 7	1 2½
C	Truro ..	S.W. Counties	1 4	1 0½
B₁	Tunbridge Wells	S. Counties	1 5½	1 1½
A	Tunstall ..	Mid. Counties	1 8	1 3½
A	Tyne District	N.E. Coast	1 8	1 3½
A	WAKEFIELD	Yorkshire	1 8	1 3½
A₁	Walsall ..	Mid. Counties	1 7½	1 2½
A	Warrington	N.W. Counties	1 8	1 3½
A₂	Warwick ..	Mid. Counties	1 7	1 2½
B	Wellingborough	Mid. Counties	1 6	1 1½
A	West Bromwich	Mid. Counties	1 8	1 3½
B	Weston-s-Mare	S.W. Counties	1 6	1 1½
A₂	Whitby ..	Yorkshire	1 7	1 2½
A	Widnes ..	N.W. Counties	1 8	1 3½
A	Wigan ..	N.W. Counties	1 8	1 3½
B₃	Winchester	S. Counties	1 5	1 1
B	Windsor ..	S. Counties	1 6	1 1½
A	Wolverhampton	Mid. Counties	1 8	1 3½
A₃	Worcester ..	Mid. Counties	1 6½	1 2
A₃	Worksop ..	Yorkshire	1 6½	1 2
A₁	Wrexham ..	N.W. Counties	1 7½	1 2½
B	Wycombe ..	S. Counties	1 6	1 1½
B₁	YARMOUTH	E. Counties	1 5½	1 1½
B₃	Yeovil ..	S.W. Counties	1 5	1 1
A	York ..	Yorkshire	1 8	1 3

* In these areas the rates of wages for certain trades (usually Painters and Plasterers) vary slightly from those given. The rates for each trade in any given area will be sent on request.

PRICES CURRENT

EXCAVATOR AND CONCRETOR

EXCAVATOR, 1s. 4½d. *per hour*; LABOURER, 1s. 4½d. *per hour*; NAVVY, 1s. 4½d. *per hour*; TIMBERMAN, 1s. 6d. *per hour*; SCAFFOLDER, 1s. 5½d. *per hour*; WATCHMAN, 7s. 6d. *per shift.*

Broken brick or stone, 2 in., per yd. £0 11 6
Thames ballast, per yd. 0 13 0
Pit gravel, per yd. 0 18 0
Pit sand, per yd. 0 14 6
Washed sand 0 15 6
Screened ballast or gravel, add 10 per cent. per yd.
Clinker, breeze, etc., prices according to locality.
Portland cement, per ton £2 19 0
Lias lime, per ton 2 10 0
Sacks charged extra at 1s. 9d. each and credited when returned at 1s. 6d.
Transport hire per day:
Cart and horse £1 3 0 *Trailer* £0 15 0
3-ton motor lorry 3 15 0 *Steam roller* 4 5 0
Steam lorry, 5-ton 4 0 0 *Water cart* 1 5 0

EXCAVATING and throwing out in ordinary earth not exceeding 6 ft. deep, basis price, per yd. cube 0 3 0
Exceeding 6 ft., but under 12 ft., add 30 per cent.
In stiff clay, add 30 per cent.
In underpinning, add 100 per cent.
In rock, including blasting, add 225 per cent.
If basketed out, add 80 per cent. to 150 per cent.
Headings, including timbering, add 400 per cent.
RETURN, fill, and ram, ordinary earth, per yd. £0 1 6
SPREAD and level, including wheeling, per yd. 0 1 6
FILLING into carts and carting away to a shoot or deposit, per yd. cube 0 10 6
TRIMMING earth to slopes, per yd. sup. 0 0 6
HACKING up old grano. or similar paving, per yd. sup. 0 1 3
PLANKING to excavations, per ft. sup. 0 0 5
DO. over 10 ft. deep, add for each 5 ft. in depth, 30 per cent.
IF left in, add to above prices, per ft. cube 0 2 0
HARDCORE, 2 in. ring, filled and rammed, 4 in. thick, per yd. sup. 0 2 1
DO. 6 in. thick, per yd. sup. 0 2 10
PUDDLING, per yd. cube 1 10 0
CEMENT CONCRETE, 4-2-1, per yd. cube 2 3 0
DO. 6-2-1, per yd. cube 1 18 0
DO. in upper floors, add 15 per cent.
DO. in reinforced-concrete work, add 20 per cent.
DO. in underpinning, add 60 per cent.
LIAS-LIME CONCRETE, per yd. cube £1 16 0
BREEZE CONCRETE, per yd. cube 1 7 0
DO. in lintels, etc., per ft. cube 0 1 6
CEMENT concrete 4–2–1 in lintels packed around reinforcement, per ft. cube 0 3 9
FINE concrete benching to bottom of manholes, per ft. cube 0 2 6
FINISHING surface of concrete spade face, per yd. sup. 0 0 9

DRAINER

LABOURER, 1s. 4½d. *per hour*; TIMBERMAN, 1s. 6d. *per hour*; BRICKLAYER, 1s. 9½d. *per hour*; PLUMBER, 1s. 9½d. *per hour*; WATCHMAN, 7s. 6d. *per shift.*

Stoneware pipes, tested quality, 4 in., per ft. £0 1 3
DO. *6 in., per ft.* 0 2 8
DO. *9 in., per ft.* 0 3 6
Cast-iron pipes, coated, 9 ft. lengths, 4 in., per yd. 0 6 9
DO. *6 in., per yd.* 0 9 2
Portland cement and sand, see "Excavator" above.
Lead for caulking, per cwt. £2 5 6
Gaskin, per lb. 0 0 5½

STONEWARE DRAINS, jointed in cement, tested pipes, 4 in., per ft. 0 4 3
DO. 6 in., per ft. 0 5 0
DO. 9 in., per ft. 0 7 9
CAST-IRON DRAINS, jointed in lead, 4 in., per ft. 0 8 0
DO. 6 in., per ft. 0 10 0

Note.—These prices include digging concrete bed and filling for normal depths, and are average prices.
Fittings in Stoneware and Iron according to type. *See* Trade Lists.

BRICKLAYER

BRICKLAYER, 1s. 9½d. *per hour*; LABOURER, 1s. 4½d. *per hour*; SCAFFOLDER, 1s. 5½d. *per hour.*

London stocks, per M. £4 15 0
Flettons, per M. 2 18 0
Staffordshire blue, per M. 9 10 0
Firebricks, 2½ in., per M. 11 3 0
Glazed salt, white, and ivory stretchers, per M. 24 10 0
DO *headers, per M.* 24 0 0
Colours, extra, per M. 5 10 0
Seconds, less, per M. 1 0 0
Cement and sand, see "Excavator" above.
Lime, grey stone, per ton 2 17 0
Mixed lime mortar, per yd. 1 6 0
Damp course, in rolls of 4½ in., per roll 0 2 6
DO. *9 in. per roll* 0 4 9
DO. *14 in. per roll* 0 7 6
DO. *18 in. per roll* 0 9 6

BRICKWORK in stone lime mortar, Flettons or equal, per rod £33 0 0
DO. in cement do., per rod 36 0 0
DO. in stocks, add 25 per cent. per rod.
DO. in blues, add 100 per cent. per rod.
DO. circular on plan, add 12½ per cent. per rod.
DO. in backing to masonry, add 12½ per cent. per rod.
DO. in raising on old walls, etc., add 12½ per cent. per rod.
DO. in underpinning, add 20 per cent. per rod.
HALF-BRICK walls in stocks in cement mortar (1–3), per ft. sup. £0 1 0
BEDDING plates in cement mortar, per ft. run 0 0 3
BEDDING window or door frames, per ft. run 0 0 3
LEAVING chases 2½ in. deep for edges of concrete floors not exceeding 6 in. thick, per ft. run 0 0 2
CUTTING do. in old walls in cement, per ft. run 0 0 4
CUTTING, toothing and bonding new work to old (labour and materials), per ft. sup. 0 0 7
TERRA-COTTA flue pipes 9 in. diameter, jointed in fireclay, including all cuttings, per ft. run 0 3 6
DO. 14 ft. by 9 in. do., per ft. run 0 6 0
FLAUNCHING chimney pots, each 0 2 0
CUTTING and pinning ends of timbers, etc., in cement 0 1 0
FACINGS fair, per ft. sup. extra 0 0 3
DO. picked stocks, per ft. sup. extra 0 0 7
DO. red rubbers gauged and set in putty, per ft. sup. extra 0 4 9
DO. in salt white or ivory glazed, per ft. sup. extra 0 5 6
TUCK pointing, per ft. sup extra 0 0 10
WEATHER pointing, do. do. 0 0 3
TILE creasing with cement fillet each side per ft. run 0 0 6
GRANOLITHIC PAVING, 1 in., per yd. sup. 0 5 0
DO. 1½ in., per yd. sup 0 6 0
DO. 2 in., per yd. sup. 0 7 0
If coloured with red oxide, per yd. sup. 0 1 0
If finished with carborundum, per yd. sup. 0 0 6
If in small quantities in finishing to steps, etc., per ft. sup. 0 1 4
Jointing new grano. paving to old, per ft. run 0 0 4
Extra for dishing grano, or cement paving around gullies, each 0 1 6
BITUMINOUS DAMP COURSE, ex rolls, per ft. sup. 0 0 7
ASPHALT (MASTIC) DAMP COURSE, ½ in., per yd. sup. 0 8 0
DO. vertical, per yd. sup. 0 11 0
SLATE DAMP COURSE, per ft. sup. 0 0 10
ASPHALT ROOFING (MASTIC) in two thicknesses, ½ in., per yd. 0 8 6
DO. SKIRTING, 6 in. 0 0 11
BREEZE PARTITION BLOCKS, set in Cement, 1½ in. per yd. sup. 0 5 3
DO. DO. 3 in. 0 6 6
BREEZE fixing bricks, extra for each 0 0 3

THE wages are the Union rates current in London at the time of publication. The prices are for good quality material, and are intended to cover delivery at works, wharf, station, or yard as customary, but will vary according to quality and quantity. The measured prices are based upon the foregoing, and include usual builders' profits. Though every care has been taken in its compilation it is impossible to guarantee the accuracy of the list, and readers are advised to have the figures confirmed by trade inquiry.

MASON

MASON, 1s. 9½d. *per hour*; DO. *fixer*, 1s. 10½d. *per hour*; LABOURER, 1s. 4½d. *per hour*; SCAFFOLDER, 1s. 5½d. *per hour.*

Portland Stone:
Whitbed, per ft. cube £0 4 6
Basebed, per ft. cube 0 4 7
Bath stone, per ft. cube 0 3 0
Usual trade extras for large blocks.
York paving, av. 2½ in., per yd. super 0 6 6
York templates sawn, per ft. cube 0 6 9
Slate shelves, rubbed, 1 in., per ft. sup. 0 2 6
Cement and sand, see "Excavator," etc., above.

HOISTING and setting stone, per ft. cube £0 2 2
DO. for every 10 ft. above 30 ft. add 15 per cent.
PLAIN face Portland basis, per ft. sup. £0 2 8
DO. circular, per ft. sup. 0 4 0
SUNK FACE, per ft. sup. 0 3 9
DO. circular, per ft. sup. 0 4 10
JOINTS, arch, per ft. sup. 0 2 6
DO. sunk, per ft. sup. 0 2 7
DO. DO. circular, per ft. sup. 0 4 6
CIRCULAR-CIRCULAR work, per ft. sup. 1 2 0
PLAIN MOULDING, straight, per inch of girth, per ft. run 0 1 1
DO. circular, do., per ft. run 0 1 4
HALF SAWING, per ft. sup. £0 1 0
Add to the foregoing prices if in York stone 35 per cent.
DO. Mansfield, 12½ per cent.
Deduct for Bath, 33⅓ per cent.
DO. for Chilmark, 5 per cent.
SETTING 1 in. slate shelving in cement, per ft. sup. 0 0 6
RUBBED round nosing to do., per ft. lin. 0 0 6
YORK STEPS, rubbed T. & R., ft. cub. fixed 1 9 0
YORK SILLS, W. & T., ft. cub. fixed 1 13 0
ARTIFICIAL stone paving, 2 in. thick, per ft. sup. 0 1 6
DO. 2½ in. thick, per ft. sup. 0 1 9

SLATER AND TILER

SLATER, 1s. 9½d. *per hour*; TILER, 1s. 9½d. *per hour*; SCAFFOLDER, 1s. 5½d. *per hour*; LABOURER, 1s. 4½d. *per hour.*
N.B.—Tiling is often executed as piecework.

Slates, 1st quality, per 1,200:
Portmadoc Ladies £14 0 0
Countess 27 0 0
Duchess 32 0 0

Old Delabole	*Med. Grey*	*Med. Green*
24 in. × 12 in.	£42 11 3	£15 1 0
20 in. × 10 in.	31 4 3	33 0 6
16 in. × 10 in.	20 18 0	22 4 9
14 in. × 8 in.	12 1 0	12 16 3

Green Randoms, per ton 8 3 9
Grey-green do., per ton 7 3 9
Green peggies, 12 in. to 8 in. long, per ton 6 3 9
In 4-ton truck loads, delivered Nine Elms station.
Clips, lead, per lb. £0 0 6
Clips, copper, per lb. 0 2 0
Nails, compo, per cwt. 1 6 0
Nails, copper, per lb. 0 1 10
Cement and sand, see "Excavator," etc., above.
Hand-made tiles, per M. £5 18 0
Machine-made tiles, per M. 5 8 0
Westmorland slates, large, per ton 9 0 0
DO. *Peggies, per ton* 7 5 0

SLATING, 3 in. lap, compo nails, Portmadoc or equal:
Ladies, per square £4 0 0
Countess, per square 4 5 0
Duchess, per square 4 10 0
WESTMORLAND, in diminishing courses, per square 6 5 0
CORNISH DO., per square 6 3 0
Add, if vertical, per square approx. 0 13 0
Add, if with copper nails, per square approx. 0 2 6
Double course at eaves, per ft. approx. 0 1 0
SLATING with old Delabole slates to a 3 in. lap with copper nails, at per square.

	Med. Grey	Med. Green
24 in. × 12 in.	£5 0 0	£5 2 0
20 in. × 10 in.	5 5 0	5 10 0
16 in. × 10 in.	4 15 0	5 1 0
14 in. × 8 in.	4 10 0	4 15 0
Green randoms		6 7 0
Grey-green do.		5 9 0
Green peggies, 12 in. to 8 in. long		4 17 0

TILING, 4 in. gauge, every 4th course nailed, in hand-made tiles, average per square 5 6 0
DO., machine-made do., per square 4 17 0
Vertical Tiling, including pointing, add 18s. 0d. per square.
FIXING lead soakers, per dozen £0 0 10
STRIPPING old slates and stacking for re-use, and clearing away surplus and rubbish, per square 0 10 0
LABOUR only in laying slates, but including nails, per square 1 0 0
See "Sundries for Asbestos Tiling."

CARPENTER AND JOINER

CARPENTER, 1s. 9½d. *per hour*; JOINER, 1s. 9½d. *per hour*; LABOURER, 1s. 4½d. *per hour.*

Timber, average prices at Docks. London Standard Scandinavian, etc. (equal to 2nds):
7 × 3, per std. £20 0 0
11 × 4, per std. 30 0 0
Memel or Equal. Slightly less than foregoing.
Flooring, P.E., 1 in., per sq. £1 5 0
DO. *T. and G., 1 in., per sq.* 1 5 0
Planed boards, 1 in. × 11 in., per std. 30 0 0
Wainscot oak, per ft. sup. of 1 in. 0 2 0
Mahogany, per ft. sup. of 1 in. 0 2 0
DO. *Cuba, per ft. sup. of 1 in.* 0 3 0
Teak, per ft. sup. of 1 in. 0 3 0
DO., *ft. cube* 0 15 0

FIR fixed in wall plates, lintels, sleepers, etc., per ft. cube 0 5 6
DO. framed in floors, roofs, etc., per ft. cube 0 6 6
DO., framed in trusses, etc., including ironwork, per ft. cube 0 7 6
PITCH PINE, add 33⅓ per cent.
FIXING only boarding in floors, roofs, etc., per sq. 0 13 6
SARKING FELT laid, 1-ply, per yd. 0 1 6
DO., 3-ply, per yd. 0 1 9
CENTERING for concrete, etc., including horsing and striking, per sq. 2 10 0
TURNING pieces to flat or segmenta soffits, 4½ in. wide, per ft. run 0 0 4½
DO. 9 in. wide and over per ft. sup. 0 1 2

continued overleaf

CARPENTER AND JOINER: *continued.*

SHUTTERING to face of concrete, per square	£1	10	0
DO. in narrow widths to beams, etc., per ft. sup.	0	0	6
USE and waste of timbers, allow 25 per cent. of above prices.			
SLATE BATTENING, per sq.	£0	12	6
DEAL boarding to flats, 1 in. thick and firrings to falls, per square	2	10	0
STOUT feather-edged tilting fillet to eaves, per ft. run	0	0	6
FEATHER-edged springer to trimmer arches, per ft. run	0	0	4
STOUT herringbone strutting (joists measured in), per ft. run	0	0	6
SOUND boarding, ⅞ in. thick and fillets nailed to sides of joists (joists measured over), per square	2	0	0
RUBEROID or similar quality roofing, one-ply, per yd. sup.	0	2	3
DO., two-ply, per yd. sup.	0	2	6
DO., three-ply, per yd. sup.	0	3	0
TONGUED and grooved flooring, 1¼ in. thick, laid complete with splayed headings, per square	2	5	0
DEAL skirting torus, moulded 1¼ in. thick, including grounds and backings, per ft. sup.	0	1	0
TONGUED and mitred angles to do.	0	0	6
WOOD block flooring standard blocks laid herringbone in mastic :			
Deal 1 in. thick, per yd. sup.	0	10	0
DO. 1¼ in. thick, per yd. sup.	0	12	0
Maple 1¼ in. thick, per yd. sup.	0	15	0
DEAL moulded sashes, 1¾ in. with moulded bars in small squares, per ft. sup.	0	2	6
DO. 2 in. do., per ft. sup.	0	2	9
DEAL cased frames, oak sills and 2 in. moulded sashes, brass-faced pulleys and iron weights, per ft. sup.	0	4	6
MOULDED horns, extra each	0	0	3
DOORS, 4-panel square both sides, 1½ in. thick, per ft. sup.	0	2	6
DO. moulded both sides, per ft. sup.	0	2	9
DO. 2 in. thick, square both sides, per ft. sup.	0	2	9
DO. moulded both sides, per ft. sup.	0	3	0
DO. in 3 panels, moulded both sides, upper panel with diminished stiles with moulded bars for glass, per ft. sup.	0	3	6
If in oak, mahogany or teak, multiply 3 times.			
DEAL frames, 4 in. × 3 in., rebated and beaded, per ft. cube	£0	15	0
Add for extra labours, per ft. run	0	0	1
STAIRCASE work :			
DEAL treads 1¼ in. and risers 1 in., tongued and grooved including fir carriages, per ft. sup.	0	2	6
DEAL wall strings, 1¼ in. thick, moulded, per ft. run	0	2	6
If ramped, per ft. run	0	5	0
SHORT ramps, extra each	0	7	6
ENDS of treads and risers housed to strings, each	0	1	0
2 in. deal mopstick handrail fixed to brackets, per ft. run	0	1	6
4½ in. × 3 in. oak fully moulded handrail, per ft. run	0	5	6
1½ in. square deal bar balusters, framed in, per ft. run	0	0	6
FITTINGS :			
SHELVES and bearers, 1 in., cross-tongued, per ft. sup.	0	1	6
1¼ in. beaded cupboard fronts, moulded and square, per ft. sup.	0	2	9
TEAK grooved draining boards, 1½ in. thick and bedding, per ft. sup.	0	4	6
IRONMONGERY :			
Fixing only (including providing screws) :			
To DEAL—			
Hinges to sashes, per pair	0	1	2
Do. to doors, per pair	0	1	7
Barrel bolts, 9 in., iron, each	0	1	0
Sash fasteners, each	0	1	0
Rim locks, each	0	1	9
Mortice locks, each	0	4	0

SMITH

SMITH, *weekly rate equals* 1*s.* 9½*d. per hour ;* MATE, *do.* 1*s.* 4*d. per hour ;* ERECTOR, 1*s.* 9½*d. per hour ;* FITTER, 1*s.* 9½*d. per hour ;* LABOURER, 1*s.* 4*d. per hour.*

*

Mild Steel in British standard sections, per ton	£12	10	0
Sheet Steel :			
Flat sheets, black, per ton	19	0	0
Do., galvd., per ton	23	0	0
Corrugated sheets, galvd., per ton	23	0	0
Driving screws, galvd., per grs.	0	1	10
Washers, galvd., per grs.	0	1	1
Bolts and nuts, per cwt. and up	1	18	0

*

MILD STEEL in trusses, etc., erected, per ton	25	10	0
DO., in small sections as reinforcement, per ton	16	10	0
DO., in compounds, per ton	17	0	0
DO., in bar or rod reinforcement, per ton	20	0	0
WROT IRON in chimney bars, etc., including building in, per cwt.	2	0	0
DO., in light railings and balusters, per cwt.	2	5	0
FIXING only corrugated sheeting, including washers and driving screws, per yd.	0	2	0

PLUMBER

PLUMBER, 1*s.* 9½*d. per hour ;* MATE OR LABOURER, 1*s.* 4½*d. per hour.*

*

Lead, milled sheet, per cwt.	£1	13	6
DO. *drawn pipes, per cwt.*	1	14	0
DO. *soil pipe, per cwt.*	1	17	0
DO. *scrap, per cwt.*	1	5	6
Copper, sheet, per lb.	0	1	9
Solder, plumber's, per lb.	0	1	3
DO. *fine, per lb.*	0	1	9
Cast-iron pipes, etc. :			
L.C.C. soil, 3 in., per yd.	0	4	0
DO. *4 in. per yd.*	0	4	9½
R.W.P., 2½ in., per yd.	0	2	2
DO. *3 in., per yd.*	0	2	7
DO. *4 in., per yd.*	0	3	6½
Gutter, 4 in. H.R., per yd.	0	1	6½
DO. *4 in. O.G., per yd.*	0	1	10½

*

MILLED LEAD and labour in gutters, flashings, etc.	3	2	6
LEAD PIPE, fixed, including running joints, bends, and tacks, ½ in., per ft.	0	2	0
DO. ¾ in., per ft.	0	2	3
DO. 1 in., per ft.	0	3	0
DO. 1¼ in., per ft.	0	4	0
LEAD WASTE or soil, fixed as above, complete, 2½ in., per ft.	0	6	0
DO. 3 in., per ft.	0	7	0
DO. 4 in., per ft.	0	9	9
WIPED soldered joint, ½ in., each	0	2	6
DO. ¾ in., each	0	3	2
DO. 1 in., each	0	3	8
BRASS screw-down stop cock and two soldered joints, ½ in., each	0	11	0
DO. ¾ in., each	0	13	6
CAST-IRON rainwater pipe, jointed in red lead, 2½ in., per ft. run	0	1	7
DO. 3 in., per ft. run	0	2	0
DO. 4 in., per ft. run	0	2	10
CAST-IRON H.R. GUTTER, fixed, with all clips, etc., 4 in., per ft.	0	2	0
DO. O.G., 4 in., per ft.	0	2	3
CAST-IRON SOIL PIPE, fixed with caulked joints and all ears, etc., 4 in., per ft.	0	4	6
DO. 3 in., per ft.	0	3	6
Fixing only :			
W.C. PANS and all joints, P. or S., and including joints to water waste preventers, each	2	5	0
BATHS, with all joints	1	3	6
LAVATORY BASINS only, with all joints, on brackets, each	1	10	0

PLASTERER

PLASTERER, 1*s.* 9½*d. per hour (plus allowances in London only) ;* LABOURER. 1*s.* 4½*d. per hour.*

*

Chalk lime, per ton	£2	17	0
Hair, per cwt.	1	5	0
Sand and cement see "Excavator," etc., above.			
Lime putty, per cwt.	£0	2	9
Hair mortar, per yd.	1	7	0
Fine stuff, per yd.	1	14	0
Sawn laths, per bdl.	0	2	9
Keene's cement, per ton	5	15	0
Sirapite, per ton	3	10	0
DO. *fine, per ton*	3	18	0
Plaster, per ton	3	0	0
DO. *per ton*	3	12	6
DO. *fine, per ton*	5	12	0
Thistle plaster, per ton	3	9	0
Lath nails per lb.	0	0	4

*

LATHING with sawn laths, per yd.	0	1	7
METAL LATHING, per yd.	0	2	3
FLOATING in Cement and Sand, 1 to 3, for tiling or woodblock, ¾ in., per yd.	0	2	4
DO. vertical, per yd.	0	2	7
RENDER, on brickwork, 1 to 3, per yd.	0	2	7
RENDER in Portland and set in fine stuff, per yd.	0	3	3
RENDER, float, and set, trowelled, per yd.	0	2	9
RENDER and set in Sirapite, per yd.	0	2	5
DO. in Thistle plaster, per yd.	0	2	5
EXTRA, if on but not including lathing, any of foregoing, per yd.	0	0	5
EXTRA, if on ceilings, per yd.	0	0	5
ANGLES, rounded Keene's on Portland, per ft. lin.	0	0	6
PLAIN CORNICES, in plaster, per inch girth, including dubbing out, etc., per ft. lin.	0	0	3
WHITE glazed tiling set in Portland and jointed in Parian, per yd., from	1	11	6
FIBROUS PLASTER SLABS, per yd.	0	1	10

GLAZIER

GLAZIER, 1*s.* 8½*d. per hour.*

*

Glass : 4ths in crates :			
Clear, 21 oz.	£0	0	4½
DO. 26 oz.	0	0	5
Cathedral white, per ft.	0	0	7
Polished plate, British ¼ in., up to 2 ft. sup. per ft.	0	1	6
DO. *4 ft. sup.* ,,	0	2	9
DO. *6 ft. sup.* ,,	0	3	0
DO. *20 ft. sup.* ,,	0	3	7
DO. *45 ft. sup.* ,,	0	3	9
DO. *65 ft. sup.* ,,	0	3	11
DO. *100 ft. sup.* ,,	0	4	4
Rough plate, ⅛ in., per ft.	0	0	6½
DO. *¼ in., per ft.*	0	0	6⅞
Linseed oil putty, per cwt.	0	17	6

*

GLAZING in putty, clear sheet, 21 oz.	0	0	11
DO. 26 oz.	0	1	0
GLAZING in beads, 21 oz., per ft.	£0	1	1
DO. 26 oz., per ft.	0	1	4

Small sizes slightly less (under 3 ft. sup.).
Patent glazing in rough plate, normal span, 1*s.* 6*d.* to 2*s.* per ft.

LEAD LIGHTS, plain, med. sqs. 21 oz., usual domestic sizes, fixed, per ft. sup. and up	£0	3	0

Glazing only, polished plate, 6½d. to 8*d.* per ft. according to size.

PAINTER AND PAPERHANGER

PAINTER, 1*s.* 8½*d. per hour ;* LABOURER. 1*s.* 4½*d. per hour ;* FRENCH POLISHER, 1*s.* 9*d. per hour ;* PAPERHANGER, 1*s.* 8½*d. per hour.*

*

Genuine white lead, per cwt.	£2	7	6
Linseed oil, raw, per gall.	0	3	6
DO., *boiled, per gall.*	0	3	8
Turpentine, per gall.	0	4	0
Liquid driers, per gall.	0	8	6
Knotting, per gall.	0	18	0
Distemper, washable, in ordinary colours, per cwt., and up	2	5	0
Double size, per firkin	0	3	6
Pumice stone, per lb.	0	0	4½
Single gold leaf (transferable), per book	0	2	0
Varnish, copal, per gall. and up	0	18	0
DO., *flat, per gall.*	1	2	0
DO., *paper, per gall.*	0	16	0
French polish, per gall.	0	17	6
Ready mixed paints, per gall. and up	0	15	0

*

LIME WHITING, per yd. sup.	0	0	3
WASH, stop, and whiten, per yd. sup.	0	0	6
DO., and 2 coats distemper with proprietary distemper, per yd. sup.	0	0	9
KNOT, stop, and prime, per yd. sup.	0	0	7
PLAIN PAINTING, including mouldings, and on plaster or joinery, 1st coat, per yd. sup.	0	0	10
DO., subsequent coats, per yd. sup.	0	0	9
DO., enamel coat, per yd. sup.	0	1	2½
BRUSH-GRAIN, and 2 coats varnish, per yd. sup.	0	3	8
FIGURED DO., DO., per yd. sup.	0	5	6
FRENCH POLISHING, per ft. sup.	0	1	2
WAX POLISHING, per ft. sup.	0	0	6
STRIPPING old paper and preparing, per piece	0	1	7
HANGING PAPER, ordinary, per piece	0	1	10
DO., fine, per piece, and upwards	0	2	4
VARNISHING PAPER, 1 coat, per piece	0	9	0
CANVAS, strained and fixed, per yd. sup.	0	3	0
VARNISHING, hard oak, 1st coat, yd. sup.	0	1	2
DO., each subsequent coat, per yd. sup.	0	0	11

SUNDRIES

Fibre or wood pulp boardings, according to quality and quantity.			
The measured work price is on the same basis . . . per ft. sup.	£0	0	2½
FIBRE BOARDINGS, including cutting and waste, fixed on, but not including studs or grounds, per ft. sup. . . . from 3d. to	0	0	6
Plaster board, per yd. sup. . from	0	1	7
PLASTER BOARD, fixed as last, per yd. sup. . . . from	0	2	8

S

Asbestos sheeting, $\frac{5}{32}$ in., grey flat, per yd. sup.	0	2	3
DO., *corrugated, per yd. sup.*	0	3	3
ASBESTOS SHEETING, fixed as last, flat, per yd. sup.	0	4	0
DO., corrugated, per yd. sup.	0	5	0
ASBESTOS slating or tiling on, but not including battens, or boards, plain "diamond" per square, grey	2	15	0
DO., red	3	0	0
Asbestos cement slates or tiles, $\frac{5}{32}$ in. punched per M. grey	16	0	0
DO., *red*	18	0	0
ASBESTOS COMPOSITION FLOORING : Laid in two coats, average ¾ in. thick, in plain colour, per yd. sup.	0	7	0
DO., ½ in. thick, suitable for domestic work, unpolished, per yd.	0	6	6

S

Metal casements for wood frames, domestic sizes, per ft. sup.	0	1	6
DO., *in metal frames, per ft. sup.*	0	1	9
HANGING only metal casement in, but not including wood frames, each	0	2	10
BUILDING in metal casement frames, per ft. sup.	0	0	7

S

Waterproofing compounds for cement.
Add about 75 per cent. to 100 per cent. to the cost of cement used.

S

PLYWOOD, per ft. sup.

Thickness	$\frac{5}{16}$ in.			½ in.			⅝ in.			¾ in.		
Qualities ..	AA. d.	A. d.	B. d.	AA. d.	A. d.	B. d.	AA. d.	A. d.	B. d.	AA. d.	A. d.	B. d.
Birch	4	3	2	5	4	3	7½	6	4½	8½	7	6
Alder	7½	3	2	5	4	3	6½	5½	4½	8	7	6
Gaboon Mahogany	4	3	3	6½	5½	4	9½	7½	—	1 0½	10	—
Figured Oak 1 side	8½	7	—	10	8	—	11½	—	—	1 6	—	—
Plain Oak 1 side	6½	6	—	7½	7	—	9½	—	—	1 0	—	—
Oregon Pine	5	4	—	6½	5	—	8	—	—	—	—	—