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Where shall I build my house?
Of what shall I build it?
What kind of a heating plant shall I have?
Where shall I put the radio?
Next month's issue contains information on
all of these matters and on as many
more home building problems.

First as to the site; certainly some of
the earliest matters to be decided are
in connection with the lot—its location,
its size, the type of house best adapted
to a particular piece of ground. And
it would seem that there is more to
a piece of land than meets the eye, for
even such mundane details as the depth
of the sewer may have to be considered.
Miss Lois Lilley Howe takes up these
matters next month, continuing her
article which appears in this issue and
adding to it a fund of valuable infor-
mation.

As to construction, we hope you have
been following the series by Mr. Jones.
Have you read in this issue about
wooden walls? Enlightening, isn't it?
Next month there
will be a third article dealing with all-masonry walls. If the
solidarity of all-brick or all-stone appeals to you, you will be
especially interested in the forthcoming article.

It is discouraging to think of our houses as leaky vessels,
spilling expensive warm air, but that
is what Mr. Fansler calls them in
November. Thereupon he proceeds to
deal with what many of us consider the
most vital phase of the whole heating
problem—how to save fuel and thereby
our pocketbooks. Of course by now
everyone knows that the main thing
is to retain the heat within the house,
but the question is, How? Mr. Fansler
suggests many ways, and his advice
comes the more opportuntely because
November is the month when the heat-
ing plant is really beginning to "hit
on all six."

More questions— "What is home with-
out a breakfast nook?" asks Marion
Petri in November, presenting a con-
vincing case for this young relative of
the dining room.

Miss Amsdell is also represented next
month, her subject being the piano,
radio and phonograph, that musical
triumvirate which dominates the Am-
erican living room. Their arrange-
ment in the room of moderate size has puzzled many of us,
for they have an undeniable tendency toward a here-I-am-
what-are-you-going-to-do-about-it air with which it is hard to
deal. Yes, the more we think of the November issue, the
more we think of it.

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Low-lying, picturesque, homelike as a small house may be in its own right, these qualities are intensified if the house is established beneath the overarching branches of a giant tree. Such is the value of contrast.
GREEN WALLS FOR THE GARDEN

By Harvey H. Cornell
Member American Society of Landscape Architects

To every gardener there comes at some time a desire for walls about his garden; not from any selfish motive or wish to hide its beauty from appreciative eyes, but from a desire to be screened from casual passers-by whether afoot or in cars. This is particularly true if the grounds are small and close to the street or hemmed in by other property. The mere matter of acreage affords seclusion to the large estate, but with a single lot and a small rear or side yard, the family who would enjoy to the full their hours out of doors must make a real effort to obtain adequate privacy.

Masonry walls may be the first thought, but they are beyond the reach of most of us. Foliage walls or hedges, on the other hand, are not. It is true they take time and care for proper development, but what of real worth in the garden does not? At its best a hedge forms a thick, living, green wall that establishes the border definitely, that offers ample privacy, and that is in itself a thing of beauty, affording a picturesque background to the garden it encloses that is provided by neither fence nor wall.

Their extensive use in Old World gardens and in the Colonial gardens in our own country proves their importance and possibilities in garden construction. In France tall hedges of Ironwood are still used in the larger gardens, the masses of green enframing the garden picture as the walls about a room. At Mt. Vernon the Boxwood hedges used as barriers and as pattern bedding form an important part of the garden development.

In the past it has been almost a rule that the warmer the climate the greater the use of hedges. In the more temperate climates hedging has been less extensive and less successful, due principally to ignorance and lack of care. In the north central portion of the country
Above—Such an extremely tall hedge forms a definite barrier little less effective than a high wall. Its rich green color and varied color also make an effective background for the informal flower plantings.

Left—An example of the low hedge used for edging flower beds and outlining paths. The hedge of evergreens at the side is unclipped, the natural growth of the trees making a picturesque but informal barrier.

we are accustomed to the old Buckthorn, Hawthorn, and Osage Orange hedges, many of them in decay with wide, gaping holes. These are anything but beautiful, and have dampened the ardor of many a gardener.

There are many new forms of hedges, however, which, although not planted extensively, have proved well worthy of consideration. The widespread skepticism regarding their value is most unfair, for regardless of geographical location hedges are possible in many interesting forms and varieties. If the proper procedure is followed, the results are pleasing in the extreme, and the gardener will be well repaid for the money and labor expended.

The hedge is not a pure luxury, for it serves a number of important purposes. It defines the garden and, as ordinarily planted, the lot line; it affords a definite barrier and a protection for the area it encloses, and acts as a very effective screen. There are three

(Continued on page 20)
In this room a long wall has been made the center of interest. There is an exceptionally good balance with a nice variety in the pieces selected. With equal thought a less expensively furnished room may have the same dignity and quality.

IF THE LIVING ROOM HAS NO FIREPLACE
It May Still Be Comfortable and Homelike

By Meretabel Tharneful AmSebell

E VERY successfully planned and furnished living room must have a focal center, a radiating point which is the center of its whole scheme. The lack of this marks the badly planned and haphazardly arranged room. A fireplace makes a perfectly natural center to a room, and every decorator's heart thrills at a room with this friendly ally. There was a period not so long ago when fireplaces were absolutely banned from the modern house. They were not necessary to supply heat so out they went.

It is gratifying however today to see their return. Even the ultra modern city apartment with its most approved heating system now finds that the addition of "wood-burning fireplaces" makes a wonderful appeal to the prospective tenant. For the benefit of those who want to have in their own homes this satisfying touch of the aesthetic, but have been silenced if not convinced by their more prosaic family, let me offer two very practical arguments for the fireplace even in this modern age. First, in the fall and spring when the weather is so very fitful a small fire on the hearth will give quite sufficient warmth and save the trouble and expense of a bigger fire in the furnace. Second, a fireplace helps the ventilation of a room immensely. Many of us are quite unaware of this usefulness, but it is very evident and very valuable.

This sounds quite as if it were to be an argument for "a fireplace in every room," when it is really to be some suggestions for making up decoratively for the loss of the natural center provided by the mantel and chimney. When we stop to take stock of what we have left architecturally with no fireplace, we discover we have usually a choice either of a long wall space for our center, or of a group of windows, or even of a narrower wall space between two windows. If we have a sense of form we shall unconsciously be seeking for the center of the room, and then we shall try to bring the rest of the room into harmony. In planning the panels of a room it is quite imperative to so arrange them that there will surely be a definite center. In the careless loose way in which most city apartments are finished, it is the rule rather than the exception that panels are badly spaced. Over and over again we find on one long wall just one panel, while on the opposite wall there will be two panels with the dividing line between them directly opposite the center of the panel on the opposing wall. In a large
The davenport on the long wall ties up with the table in the window with its inviting chair at each side. The desk at the right, so placed that the light comes pleasantly from the side, completes the circle. The furniture is all reproductions of late eighteenth century designs sold at moderate cost.

At the left we are given a glimpse of a room that apparently has been arranged around a large wall space. The hospitable and convenient arrangement of chairs and tables is most inviting. Note also the careful placing of pictures. The seat over the low radiator is one solution to an ever present problem.
Here a lovely window has been made the center of the scheme. It naturally pulls the whole room toward it. There is an informality and sense of hominess in the simple arrangement, which might well be copied in simpler and less expensive homes.

room where the two walls are not dependent upon each other for good arrangement this condition is not so bad, but when the room is narrow it is quite impossible. It prevents any fine arrangement of furniture and to a sensitive person literally pulls the whole room on the bias. This all goes back to what I have said many times before that we need center spaces for good arrangement, and need them we surely do.

Let us suppose that our room in its plan offers us a long wall space that is obviously the center, the pulling force of the room. Then our thought should be to build it up and help it to live up to its responsibility. We shall find that usually our choice for the piece of furniture we shall feature there will lie between a long sitting piece like a settee or a davenport and a table. Either of these pieces just naturally makes a center. Above the large piece of furniture, whatever we finally choose, if we have our sense of design at work, we shall just have to have something very important, a good picture, handsome embroidery, or a large mirror. This space is comparable in its importance to that over the mantel, and should be treated as seriously. It will of course naturally be a large piece, its shape and height depending upon the size and shape of the room and the particular wall space. If the room tends to be low and to have a horizontal “feel” we should choose something higher than it is wide. If we hang a fabric it is often well to have it sufficiently large that it comes below the line of the table or other piece of furniture in front of it. This gives a sense of oneness that is lacking sometimes when a smaller piece is used. In our whole scheme of arrangement we need always to be striving for the feeling that everything belongs together. This should be our goal in building and in furnishing.

Now that we have a center arranged and planned we are just about in the same position that we are when the mantel and its decoration are installed. In fact, if we keep in mind the thought that in this room without a fireplace we must make the most important space serve the central function in our scheme, maybe it will make it easier to furnish. Especially if we have a long wall we should make that wall do the same work in the room decoratively that a fireplace would have done. Naturally then, when we have the wall furnished, we shall arrange our chairs about it in the mystic and hospitable half circle. In fact we just can’t do anything else. The chairs and tables will almost arrange themselves if we have made the proper start. If the wall space is quite wide we will doubtless need something each side of the picture or whatever we have chosen for the center. This is a place where a pair of objects works in very well, perhaps a pair of small pictures, or small mirrors. Small pictures are usually the best choice. Sometimes very small shelves are hung against the wall in such a space, and either some decorative object or a pot of ivy put on each. This gives a very ornamental touch.

The relation of our center space to the other spaces in the room is very important and should be considered next. If another wall space is directly opposite our center we shall need to pull (Continued on page 22)
WOODEN WALLS AND VENEER CONSTRUCTION

Continuing Next Month With Walls of Solid Masonry

By ROBERT T. JONES, A. I. A.

MEN have been building walls for ages. Some of them, the oldest, still stand. Probably the most famous of these is the Chinese wall, which extends across northern China for hundreds of miles. Only the fact that progress has not touched these areas has kept that wall in place. Often we see cracked boards, crooked walls, scaling stucco, crumbling brick work. Many of the walls we are building now will look no better in twenty years than these we see. Why? Because they are not well built.

You, Mr. Home Builder, become first of all a wall-builder. These dreams of yours—pleasant rooms, colorful gardens, happy family life—are to be enclosed within walls of material substance for which you become responsible. Home builders take the walls for granted, at least most of us do. Most of us see only the surfaces of them, the texture of the stucco, the width of board or shingle, the coursing of the brick or the texture of tile or stone. The surface is important. It gives character to the house, but it is manifestly of greater importance to be sure of the part we cannot see, to be sure that the walls will not look as though they had been the plaything of Time in a relatively short number of years.

This story is about wall surfaces. It is also about what lies beneath. Let us consider the inside first. Suppose it is of wood. We go back to the builders of old England to learn how best to build a wooden wall. But we do not have to go so far to find extraordinarily fine examples of them. Early New England builders supplied these. They built the best kind of a wooden wall because they had plenty of time and materials. Labor was inexpensive, timber was cheap, so they notched their pieces of wood to together. They did not lap them or butt them together as we do and spike them with nails, for nails were hand wrought and expensive. When they needed to fasten beams together they used a wooden pin. Furthermore, every piece of wood was selected for its grain. Only the best was used. Material such as we would save for furniture making was then used for beams and posts. Then they seasoned these wooden pieces; they dried them thoroughly by a long process so they afterwards held their shape, and did not warp and twist as unseasoned wood necessarily must. We cannot build walls in that particular way, but we can build them just as soundly. Our modern wooden walls follow the principle that governs all modern construction, the principle that makes lightness and speed of building the essential element.

Now lightness makes a wooden plank, a 2x4 or a 2x12, take the place of the ancient heavy timber. The old girts and sills that used to run around Colonial buildings contained enough lumber to make many a wooden joist or stud for our modern method of building. There is lightness for you! And because these pieces can be put together rapidly, there is speed of construction. But the curious thing about it is that even though they are light they can be made just as strong as that old heavier construction. How? By employing an extremely simple engineering device.

The old buildings employed it, even those made of these great hewn beams,
for they had framed into the angles everywhere diagonal pieces. Let us call this now the essential board. That is exactly what it is. If you watch a carpenter framing a new house, you will see that he takes a board, a piece of sheathing, and nails it on so that it runs diagonally from an upper corner of the wall to a lower corner. When he gets his wall built, if he is not a truly expert house builder but just a wood butcher, he takes that board off. He puts it up there at first to square and brace the wall. By the same token he should leave it there. That is the essential board. It makes a bridge out of the wall.

Think how you have seen bridges built of steel. They are made up of triangles. Engineers call them force polygons. You cannot deform a triangle without changing the length of the sides. So with wooden wall building where you have these diagonal pieces you cannot deform the wall without tearing it apart. That is why they must be there.

A wooden wall framed in this way will be a good wall for many generations, well past the period when the house itself may become obsolete because its plumbing and heating plants are no longer in accordance with what science has done to make our houses comfortable.

And those nails! Here again the engineering principle comes in, for these scientists know that if you frame a triangle out of pieces as strong as necessary to carry the load, unless the joints are tight the triangle breaks down.

Once more these steel bridges. You will recall where the steel pieces come together there are numerous rivets. In the wooden wall the rivets are nails. Many a stud has been fastened with two nails where four should have been used.

But something more about bracing the walls. Careful carpenters not only frame in these diagonal pieces but they block the studs together so that they work as a unit. They nail bridging pieces mid-way up the story height between every pair of studs. In this way we get even greater security.

Finally, on the outside, is the sheathing. Sheathing is made up of thin boards less than an inch in thickness. It has a double purpose. Incidentally it serves as a nailing ground for the finish work. Incidentally it serves as a backing for the water-proof paper that should cover it, the paper that keeps wind from blowing through the wall. But structurally it is another element in the bridging process in making these walls like trusses.

Now we have found by an extensive series of experiments in the testing laboratory that the wider these boards are the stronger the wall will be, and also that if we put them on diagonally the wall will take more than twice the total load before it breaks. Also that the bending or deflection of the stud members will not be more than one-fifth of the bending that takes place in a wall sheathed with boards put on horizontally. It takes a little more money to build a wall like this, and a little more material, but you can hardly find the extra cost in the lumber bill. There is satisfaction in knowing that the wall is framed like this even though no one can see it after it is covered over with plaster, boarding, stucco or brick.

The American Society of Heating and Ventilating Engineers says that when you build a wall like this with plaster on the inside, studs to form the posts, sheathing to seal it in, and then wood siding, the coefficient of heat transmission is 0.227. That is a measure of heat that will flow through it under certain conditions. But when you put insulation on or between the studs, this coefficient is reduced to 0.150 as an average. Thus nearly one-half the heat that is normally lost through the wall is saved. No wall is a modern wall without insulation.

So much for the inside of a wooden wall. What about the surface? You can cover these walls with siding, shingles, stucco, brick or stone. These are named in the order of their cost, but some siding—the wide, thick kind—costs more than ordinary shingles, and some shingles—the long, thick, hand-split variety—cost more than ordinary siding.

First costs play an important part in the home builder's choice of the materials he is to use. Since there is not a great difference as to costs between siding, shingles and stucco, the decision as to these ought to be based on the character of the architecture and the finish that goes best with the house as it is designed.

The use of every one of these materials is a story in itself. Here are a few of the important considerations. Let the siding be thick, of well selected clean stock that will have no defects that paint will not cover permanently.

Let the shingles be strictly of edge grain stock, quarter sawed, the longer the better. Have them creased from end to end before they are nailed, and then use copper or zinc coated wire nails.

Try no experiments with a stucco base. We know this should be of metal lath. Experience has taught us that. But let the metal lath be well nailed with special nailing nails or else have it self-furred. See that when the stucco is in place the metal lath is completely enclosed in the stucco, the stucco itself put on by science and not by guess. Instruct your plasterer to follow exactly the specifications of the stucco manufacturers, for these have been evolved from exhaustive experiments carried out by competent men so that all of the mystery is taken out of this method of finishing the wall. Thus we have an assurance of durable qualities.

As I said, you can cover these walls (Continued on page 31)
WHEN you recall the crudeness of the kitchens of our great grandfathers and compare it to the convenience of a well planned, modern kitchen, it is easy to see that progress has been made. In the small home, particularly, the change is the most noticeable, for wherever the American wife has been obliged to do the housework herself she has demanded labor saving devices and scientific planning.

One of the first things to provide today in the kitchen of the small home is good air and pleasant outlook. The day when the kitchen was located in the most unpleasant corner of the house and the outlook from its windows was dreary is gone. If the house is so small that the kitchen cannot be placed in a wing of its own, then it should occupy one of the corners of the house, so that a window may be located on at least two sides to give cross ventilation. But even with good, natural ventilation there should be a hood over the stove, connected to an exhaust duct, and a small electric fan at the mouth of it to suck out the smoke, heat, and odors of cooking. This is particularly necessary in the winter months, when the windows, if left open, would create unhealthy drafts. When the budget will not permit this expense, then a good substitute, for twelve dollars, is a small electric fan, mounted on an adjustable frame that can be made to fit into the top of the window, nearest the stove.

A sunny corner of the house should be chosen for the kitchen, even if it forces this room to the front of the house. If the housewife does her own work, she will be in this part of the home most of the day.
Nothing will keep her spirits so cheerful as sunlight. Some practical planners maintain that a fine outlook from the windows is not appreciated by the worker preparing food at the sink or the cabinet, but even though one may not gaze often out of the windows, those chance glances are very restful and helpful, if they can drift off into a colorful garden or down a shaded street.

As for the general arrangement of the kitchen in the small house, three divisions of space should be kept in mind—space for the storage of food, for its preparation and for its service. The first does not have to be large, as in the kitchen of our grandmother, for it is no longer necessary to keep a large stock of vegetable, fruits, canned goods and groceries on hand, since these can remain in the store until needed. A call on the telephone will bring any of them to the house in a short time, or one may jump in the car and get to market in five or ten minutes. Therefore a large vegetable room, numerous shelves for home preserves, large bins for flour, bags of potatoes, barrels of apples and the like are out of place in the small home of today.

All delivered goods may easily be handled near the door by having a small ventilated vegetable bin with a flat top on which to rest packages just delivered from the store. A small box with an outside door, built in the wall, will make a good receiver for the bottles of milk, delivered in the morning before the family is up, or for those goods sent while no one is at home.

Near these should be a closet for the storage of cans, preserves and dry goods, which preferably should be wide and shallow, having shelves only deep enough to hold two average size cans. It is very convenient to be able, at one glance, to see what needs to be replenished and this is possible with shallow shelves.

Near this closet, vegetable bin and package receiver should be the refrigerator, since this, too, is a storage space for food. It is a mistake to place it outside of the kitchen in a small entrance vestibule, for the number of extra steps required to take out and replace food are wasteful of energy.

Besides a well insulated icebox, in the kitchen, will not let the ice melt any faster than if placed outside of the kitchen. To simplify icing, the back of the box should be next to the outside wall, so that through an icing door, built into the wall, the iceman may replenish the stock without trucking through the kitchen.

Of course the ideal equipment, today, is the gas or electric refrigerator which does away with all the nuisance of the ice delivery and waste-water drainage. The cost of operation in most cases is no more than needed for the purchase of ice, but the simplicity of maintenance is so important that many housewives have remarked that mechanical refrigeration is one of the greatest comforts in housekeeping introduced within the last ten years.

In preparing a meal, since the food is stored in one corner of the kitchen in the refrigerator, vegetable bin and dry goods locker, the least effort need be expended to move it on to the corner where it is prepared. Here should be grouped three standard articles, the

(Continued on page 29)
HEATING THE SMALL HOME

II Heating Terms in Everyday Language: What the Heating Plant Must Do

By P. E. Fansler
Editor Oil Heat

THE heating plant for the small home is called upon to perform an exceedingly difficult task, if it would be truly efficient—and we are thinking of it only in regard to heat production. It must supply heat over a widely varying range, dependent upon outside weather conditions. In the northern part of the country, for instance, the heating plant is required to deliver about 80 times as much heat on a really cold day as it is on days requiring a minimum supply of heat. An engineer knows the difficulty of designing equipment to operate over such an extreme range.

Before we can discuss the operation of heating plants, we must make a yard stick or bushel basket by which we can measure its performance.

Almost all measurements used in Europe are on the decimal system, commonly called the metric system, but we Anglo-Saxons persist in hodge-podge units with the craziest kind of inter-relation. Years and years ago, James Watt, in England, measured the work done by typical draft horses, and, finding the average to be at the rate of 33,000 pounds pulled 1 foot in 1 minute, he adopted this practical unit of work as "23,000 foot-pounds per minute."

And we have, as a measure of dry materials, the bushel, and of liquids, the quart, and so on.

Now, when we get into heating problems, we are concerned with the quantities of heat and with rates at which heat is developed. It is not difficult to get the idea of a unit of heat being that quantity required to raise the temperature of some unit mass of some common substance through one degree of temperature. And as water is common everywhere, that has been taken as the substance, and we have, as our basis of comparison, that mouth-filling phrase, the "British thermal unit." "Thermal" comes from the old Greek word meaning "heat," and British scientists get credit every time we use the term because they established it as the common unit of every-day use. So a British thermal unit, usually abbreviated to "B.t.u.," is the quantity of heat necessary to raise one pound of water from 62° F. to 63°F.

Now we have a practical unit of heat quantity, and we can get a rate unit just by putting in a time element and saying "one B. t. u. per hour." This is the unit used in determining the rate at which heat must be supplied to a house, and is the unit by which warm-air furnaces are rated—only the B. t. u. of such a small unit that a good sized furnace may be rated as 200,000 B. t. u. capacity. The steam fitter, putting in only steam and hot-water radiators, thinks in terms of the radiator sizes.

Careful laboratory experiments have shown that, for every square foot of "effective" surface, a steam radiator, standing in still air at 70° F., will give off 240 B. t. u. per hour, so the heating industry has adopted as a working unit one square foot of steam radiation, which can be directly converted into B. t. u. per hour by multiplying it by 240.

Radiator designs are rapidly changing, and this old-fashioned practical unit will have to be discarded, because different designs of radiation have different abilities to give off heat, so that the up-to-date heating man, when he says "one square foot of radiation" really thinks B. t. u. per hour. A great many workers in the heating industry have no real picture of what a "B. t. u." means, and look upon it as some-thing mysterious.

I have even read an article in a technical magazine referring to "the elusive B.T.U." There is no more mystery about a B. t. u. than there is about a quart of water. We may have a range boiler holding "40 gallons." That is a very definite and easily understood quantity. We could multiply this by 4 and get the capacity in quarts, or we could multiply by 8.34 (the number of pounds in a gallon of water) and get the capacity of the boiler in pounds.

Suppose, now, that we put an electric heater inside of the tank so that it is entirely surrounded by water. Suppose, also, that we insulate the tank so that no heat can escape. (Fig. 1. a.) Then, if we turn on the current, we would know that a definite quantity of electrical energy (which could be expressed in B. t. u.) would heat this water from, say, 70° F. to 150° F., or any other temperature. We could calculate this heat quantity, knowing that it takes 1 B. t. u. to raise each pound of water through 1° F. As the tank is supposed to be perfectly insulated, no heat could get away, and if the water were heated to 150° F., it would remain at this temperature indefinitely.

Then we would know the quantity of heat required to raise that quantity of water to the given temperature.

It is easy to see that the water in the tank could be heated very quickly by using electricity at a high rate, producing heat at proportional rate, or it could be heated slowly. In any event, no matter how long or short a time was taken to bring the water from a
given temperature to a definite higher temperature, the total quantity of electricity, and consequently of heat, would be free—remember our assumption that the tank is so well insulated that no heat can escape.

If, however, we only partially insulate the tank on one side and remove the insulation from the top, (Fig. 1, b) heat will begin to escape as soon as the heater is turned on, and the rate of heat loss will increase as the water in the tank gets hotter and hotter, because the difference in the temperature of the air around the tank and the temperature of the water will increase. If the air surrounding the tank was heated at exactly the same rate as the water in the tank, or was kept at the same temperature, (Fig. 1, c) no heat would escape from the water, and it would act just like a completely insulated tank.

Now, let's try to make another picture. Assume that the tank is in a room that is kept at zero temperature, and that we want to keep the water in the tank at 70° F. We'll put no insulation on the tank (Fig. 2a.) You can see that the little electric heater will have to be "on" continuously, and, if the heat that is given off from the tank to the air in the room is removed from the air in the room, so that the air in the room, is kept exactly constant, and if the room air is still, the heater will use electricity at an exactly constant rate, corresponding to the rate at which the hot tank loses heat energy to the cold air in the room.

All right, now let's go another step. Suppose that the air in the room is not kept at a constant temperature, but changes temperature without following any set rule, getting colder or warmer in a haphazard way. Also suppose that at times, the air is set into violent motion so that it blows around the tank. (Fig. 2b.) You know what happens to your cheek when you go out on a cold windy day. It isn't the low temperature that you feel, but the bitter wind that literally blows the heat from your cheek. As a matter of fact, if it is cold enough and windy enough, the rapidly moving air can take the heat away from the surface of your cheek faster than the blood can replace it, and you are "frost-bitten." So you readily can see that a wind blowing against the tank increases the rate at which heat must be supplied to maintain the 70° temperature of the water. And it doesn't take much imagination for you to appreciate that the electric heater will have to give out more heat if the wind were blowing continuously against the tank, with a room temperature of 20° F. than it would if the tank stood in still air that was much colder.

Now you wonder why there has been so much talk about a water tank, when we are supposed to be discussing house heating. Just for the reason that, if you have really been able to picture each of the situations described, and actually visualize the little electric heater producing heat in accordance with the demand placed upon it by each condition, you will find it very easy to grasp all of the essentials of house heating.

Your house, during the winter season, is not unlike the tank in the last picture. It is indeed a tank, containing air instead of water, and the main purpose of the heating plant is to maintain this inside air at a definite temperature, approximating 70° F., while the outside air may be anything between 65° F. and—well, just as far down the scale as it gets in your locality.

What a wonderful thing it would be if you could heat with electricity, as some fortunate people in certain localities can. In the first place, you would know that all—and that means 100%—of the energy you paid for was being converted into heat energy, for there is no loss when changing electrical energy into heat. But those of us who buy wood, or coal, or oil, or gas, must appreciate that some of the heat energy in the fuel we buy is not turned into heat, and that some of the heat that is liberated from the fuel is lost up the chimney and otherwise, so that we get no benefit from it. So, where fuel is burned to produce heat, we must face these losses and burn more than we really need.

As we go on to a consideration of the many interesting angles of house heating, we shall see that it is possible to use at least 90% of the heat of our fuel, even though the "efficiency" of our heating plant, as engineers determine it, may be as low as 50%. We shall see the reason why inside chimneys are to be preferred to those on the outside, particularly on the north, or worst exposure. We shall learn to put a certain

(Continued on page 28)
LOTS TO LEARN ABOUT A LOT
The Questions You Ask Before Purchasing May Save Innumerable Regrets Later
By Lois Lilley Howe, A. I. A.

It was David Grayson who taught us the possibilities of adventures in everyday life and surely of all great adventures none can compare with that of building a house! Of actually making a dream come true, and if, alas, the realized dream is not exactly the fairy palace we had in mind, at least we can with care prevent ourselves from having a rude awakening.

The first requisite, of course, is the means—the humdrum consideration of cash—of financing our vision. How sordid it sounds! This can be so much better told by others that we shall imagine here that we know just how or where those precious and necessary dollars are and will proceed to the legitimate business of choosing the site.

Naturally in good Yankee fashion we begin with asking questions. What kind of a house do you want? How large? How many are there in the family? Do you want an all the year round house? A summer house? Are you a commuter? How many automobiles have you? Where is your place of business? And the like, all of which may make you impatient because you want to be starting right out to look at sites, and yet here is the very gist of the matter.

Let us suppose, therefore, that you have recently married, are tired of living in an apartment, and want a small house in a suburb within train or motor distance of your office. Distance is the first consideration. The other two important factors are neighborhood and exposure.

You will probably have opportunities to visit new “developments” of many kinds. The location, which means here the distance from your office, is the most easily determined. A mere road map or a knowledge of the country will tell you that. (There was once—and perhaps there are many such now—an agent who had an office in a high building in the city where he kept a telescope and could show prospective buyers his land from that window, distance undoubtedly lending enchantment to the view.)

As for the other two points, they are not quite so easy. We may all of us be democratic and want to associate intimately with the world at large, may even be very good mixers, but we would like to live near neighbors who are agreeable to us or who would be congenial. We see the signs “exclusive neighborhoods,” “restricted lots”—they may mean much or little not only to our pocket books but from other points of view. They will bear investigation.

Find out for a certainty what are the restrictions, who your neighbors are or are likely to be. It isn’t only the man who keeps chickens or who borrows your lawnmower that you want to know about. Perhaps it is you who have no lawnmower or want to keep chickens. You need to find out the general character of the place. What do the “restrictions” mean—the type and style and expense of the houses, the distance they must be set back from the street. Is there also a good town plan—a zoning law, or at the least legal restrictions for twenty years so that you may be fairly sure that no future developments will injure the value of your land and lower its sale price?

This, of course, is easier to do in some localities than in others. On the
edge of a well-known suburban community you may be pretty sure of conditions. If you go farther afield to developments in the country with high sounding names you must be more cautious although your land will probably be cheaper.

The wisest and happiest way under these circumstances would be for a group of young married people to get together and form a nucleus which would settle the tone of a community and might conceivably influence the plan of lots.

In the well-known suburb you will probably find public utilities of all kinds awaiting you as a matter of course—paved streets with sewers, town water supply, gas, electric light, telephone.

A typical lot in an old New England pasture. Note the stakes marking the location. The house is to be set on the upper level with a broad terrace in front.

a proper arrangement for collection of ashes and garbage. In the new development where the land is cheaper, you must investigate these things. Town water supplies and electric light often precede sewers and you may have to consider the cost of sewage disposal in the cost of your house. All these things will be reflected in the price of your land and in your taxes.

There are also some other points to be considered. How far away is your nearest grocer or chain store? In other words, is housekeeping going to be easy? How about a good doctor? There may come a time when schools and their convenient location will be of importance. Where are the post office, the bus line, the railroad station or trolley line? Perhaps even the distance from "movies" may have a direct effect on your upkeep in the way of "help."

As to the actual choice of a lot, presumably you will have had a plan of the entire development shown to you, the lots still available marked and the number of square feet stated, and of course the points of the compass. You (Continued on page 2.)

This is an average suburban lot. Unfortunately it was not possible to keep the tree. The level of the lot above the sidewalk was kept, giving the appearance of a terrace with three or four steps up to it. The next lot to the left was treated in the same way with very good effect.
Beauty in Brick and Half Timber

With Sufficient Irregularity of Plan to be Picturesque,
Yet Logical Enough to be Practical

CONSISTENT in its irregular arrangement and picturesque details, this house has what architects call unity—a plan and exterior which go together. The living room is unique in design, the dining room, two steps higher, is exceptionally large. The dining nook is of a size to accommodate table and chairs.

The bedrooms are generous in size. One with windows on three sides opens into its own bath. A second complete bath serves the other two rooms. Capacious closets feature each bedroom, while the linen closet and clothes chute in the hall are additional conveniences which the home builder will appreciate.
CHARMING DETAILS GIVE CHARACTER TO THIS DESIGN

STANDING at the end of the long living room and looking toward the dining room, you would see from that position all that is shown in the above sketch: adjacent archways, two steps above living room floor level, which lead to dining room and hall, a stone-arched fireplace with plaster ornament above it, and French doors leading to the terrace at the rear. The sketch below this shows these same doors from the exterior, together with a view of the terrace.

The entrance vestibule, as shown at the top of the page, is enclosed in half timber work and picturesquely situated beside the chimney stack. This has a striking brick pattern that greatly enhances its beauty. Gable ends in half timber and a bay window in the front bedroom are other details which add to the interest of the exterior.

To show clearly the efficiency of the kitchen and the arrangement of its equipment, the artist has also sketched one wall of the room, the long outer wall against which range, sink, and cupboards are located. Their close proximity, together with good lighting and ventilation from the two windows, eliminate much of the drudgery of work in the kitchen.

This house has been designed for north facing. The walls are of solid brick, the roof of shingles or slate.
Simplified English

Refuting the Complaint that English Houses are Expensive to Build

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Four bedrooms, a downstairs lavatory, glass-enclosed dining alcove are important details of the plan.
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and roofed with Winthrops

FROM this hill top home of tan stucco and gray stone, in English cottage type, D. M. Swarthout, Dean of Fine Arts, looks across Crescent Road and over Wakarusa Valley to the university campus, Lawrence, Kansas. For such an ideal home, Professor Swarthout, his architect, Clarence E. Shepard and associate, Harry L. Wagner, selected Winthrop Tapered Asphalt Shingles—40% Golden-Buff, 40% Slate-Red and 20% Fire-Buff.

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If you are the usual home builder or one of that great army of present home owners who are thinking of remodelling and painting up, you will want to know not only about these things, but also about color and how to decorate furniture of various kinds, radiators, pipes, floors.

Very well. The paint manufacturers banded together and produced a beautiful little book for just those purposes, to give the layman a working knowledge of the fundamentals of painting, varnishing, lacquering, and enamelling. It is being distributed by Save the Surface Campaign, 18 East 41st St., New York, N. Y., and you can get it postpaid for twenty-five cents. Its value can be multiplied by many times that sum.

R.T.J.

If the Living Room Has No Fireplace

(Continued from page 9)

the two together. Oftentimes a high piece of furniture such as a secretary desk is the happy choice, or a bookcase may be the right thing to use.

When there is a narrow space between windows we may find that a table in the center is what we need, or we may make a formal arrangement using a console or small chest of drawers as the important piece.

The room without a fireplace is really much harder to do than the room that has one. If we remember however that in our furnishings and their arrangement we are to supply the architectural distinction that is missing it will help very much to clarify our needs. Sometimes a fake mantel is set up in such a room, but if a person has even a rudimentary sense of the need of structural honesty he will not want to do that. There is something offensive about the very idea that puts it in the same class with faked ceiling beams and faked timber construction. Such a plan is all right for the stage or a show window, but not for an honest to goodness house.

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Balsam-Wool can easily be carried through any opening that will admit the body of a workman. Strip of Balsam-Wool cut to proper length in the basement or garage can be carried to the attic by a single workman.
are properly thrilled but how different it seems now after a while how the place will look, but the actual scene! If you have one of the very last looks at the field you will be able to understand the scene! If you have one of the very last looks at the field you will be able to understand.

A wide stretch of what was once meadow land with no special features, or a thick grove of second growth trees, may dampen your ardor, especially as you are among the first comers it will require considerable imagination on your part.

You must have some thought for your neighborhood here you may get a great deal of sunshine and the prevailing breeze. If you are planning to build a house both outside and inside. It may be cut down in a few hours. It could not be replaced for a generation. The necessity of saving a tree has often affected the location of your house. Will this be between you and the street or behind the house? (You must be forming a plan of your house in your mind all this time.) It has been the fashion to have all living rooms on the street regardless of exposure and if you want this arrangement you must have your street to the south and place your house near the back of the lot. Where then are your neighbors likely to set theirs? Are your parlor windows to look into their kitchens and vice versa? Perhaps you expect to spend a great deal of time in your kitchen yourself. Then how pleasant it would be to look out on a garden at the back. Many modern plans of developments put the houses in one block around a square so that all of the gardens are together.

You must have some thought for your neighborhood, too. Many houses now are being built with their garages under them. If possible, this is a much better way than having the garage take up the best part of a small lot.

There are other considerations which crop up. Perhaps there is a view and that may be to the north. You can meet this. We won't say how until in a future issue, when we shall talk of (Continued on page 28)
Will Your Home Be Modern in 1949?

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MODEL NO. 5
While graceful and often of great beauty, alders are allowed to grow in their natural form.

The informal barrier is just a row of shrubs, the formal barrier, and the low hedge edging is low, some­times no more than three or four inches in height, and is used principally to define paths, flower beds, or various intricate patterns in the beds of the formal garden.

The evergreen hedge deserves considerable favor in many sections of the country. When once established it is not difficult to maintain, and it provides a permanent screen throughout the year. White Cedar heads the list, and second comes White Spruce. Both trees, when properly handled, will form a compact growth of interesting texture, but White Cedar is less expensive to establish. Other desirable varieties are Pseudotsuga douglasi, Tsuga canadensis, and even the Pinus strobus, where a large mass is required. For a lower hedge in White Cedar the Thuja occidentalis waverana can be used, with an ultimate height of approximately four feet.

One of the best shrubs for a low hedge is the Berberis thunbergii, its ultimate height, when clipped, being approximately two feet. The Barberry may be planted as an informal hedge because it is extremely compact and well shaped. Another shrub equally fine is the Alpine Lilac. Currant, and additional low forms of hedging are the Paeonia lutea alba, Spiraea arguta, and Spiraea callosa rosea. The Hydrangea mentioned is more usually maintained as an informal rather than a clipped hedge. Among the roses the low growing varieties such as Rosa humilis and Rosa nitida may be used as either formal or informal hedges.

Cotoneaster acutifolius easily heads the list of the Intermediate varieties, providing a fine texture, and easily maintained at a height of from three to four feet. Equally as good but not as hardy is Ligustrum amurense and Liguustrum amurense regelianum. The California Privet is one of the finest hedges of this type, but is hardy only in the warmer climates. Other good varieties include Philadelphus lemoinei, Spiraea arguta, Acanthopanax pentaphylhum, Spiraea Vanhouttei, Lonicera morrowii.

Of the comparatively coarse and larger types of hedging, to be maintained as clipped hedges of five to six feet in height, are many recommended shrubs. Heading the list come the Honeysuckle, Lonicera tatarica alba, Lonicera tatarica lutea, Lonicera tatarica rosea, Lonicera bella albida. The Lilac comes in this group, although of course only the common varieties such as Syringa persica and Syringa vulgaris should be used. Acer tartaricum will make an interesting hedge, being especially colorful when the leaves turn in the fall.

Far better, however, is the Caragana arborescens, of the Honeysuckle. This type of plant can be kept within bounds as a wall approximately four to five feet high and as narrow as eighteen inches in width. Philadelphus coronarius and Philadelphus coronarius aureus afford good hedge material although coarse in texture.

(Continued from page 6)
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BESSLERS are made in six models, selling from $15.00 up. Every one is a convenient, easy working, durable disappearing stairway,—not a ladder. A Bessler makes your home more desirable, either to live in yourself or for a prospective purchaser. It takes up no space in the room below for it slides up into the ceiling when not in use.

HEATING THE SMALL HOME

(Continued from page 15)

portion of our building money into construction refinements, saving as much on the cost of the heating plant as we spend. In short, we shall arrive at a point where we shall consider the ideal air conditioning unit, made possible in cost because it has been reduced in size through intelligent reduction of the heat requirements of the house. (Fig. 3.)

And when we have weighed all the factors and considerations involved in heating the little home that you are going to build, or even that is now finished, you will begin to see the reasons behind the changes in house arrangement that even now are evident to the keen student. I know of several groups of houses and not a basement in the lot. Basements are passed under certain conditions—and you want to know if these conditions apply to you.

Not many months ago, in addressing a gathering of architects, I ventured the assertion that homes of the future would not have basements and that the heating plants would be installed in the attic. This brought forth a general laugh, but, when I had explained my reasons, there was quite as general an agreement that such an upheaval was not only possible, but probable.

As I said at the outset, the art of heating, as applied to homes, has stood nearly at rest for many years, but developments of the last three or four seasons have brought about a new era, involving many possibilities not dreamed of by the home owner of yesterday.

Now we will follow through the story of the water tank and see how closely it is paralleled by your home in winter. Why is it that we can't fire up the furnace in the early fall, get the house all warmed up and then let the fire go out? Why the necessity for continually burning fuel through the nine months of the heating season?

LOTS TO LEARN ABOUT A LOT

(Continued from page 24)

plane. Your lot may not be flat but very sloping. Here is where you can perhaps manage to put the garage under the house, not taking up any of the valuable room in the yard. Do not be afraid of the slope, anyway. If the street is cut down lower than the surrounding lots you must allow something for the cost of a retaining wall and steps.

Having decided what amount of money you can invest in this adventure, with due consideration for taxes, cost of upkeep, etc., it would be a good plan to budget it—so much for land, so much for house, including its interior decoration, and so much for its exterior decoration. Do not be satisfied merely with a walk to the front door, a drive to the garage, a bush on either side of the front steps and a handful of grass seed on a smooth slope from the front to the street. Remember that you are largely responsible for the attractive quality of the community—that even your small house may give the neighborhood an expression.

For this reason, do not buy too small a piece of land so that your house covers almost the whole of it. It would be better to build a smaller house. Land or "grounds" about a house give a return not only in opportunity for a garden or a playground for children, but also in the possibility of privacy and in aesthetic value, all of which would be reflected in the re-sale price.
Build with TILE and Avoid Painting Upkeep

TILE walls retain their original beauty. There is never any painting expense or other upkeep costs. The painting necessary every few years to freshen the appearance and preserve the surface of a frame building is never needed where tile is used.

An Architect on Kitchens

(Continued from page 13)

kitchen cabinet with its sliding top table, the stove and the sink, as near to one another as possible.

Good natural light from windows should fall on the kitchen cabinet, stove and sink. It is customary to locate the sink directly under a window for the light it gives, but it is better to have a small area of blank wall over the center of it and windows on each side, to provide space for a little cabinet for brushes, soaps, cans of scouring powder and other cleaning powders. The stove can be provided with good natural light and ventilation if it is located in the outside corner of the kitchen. Windows, then, on each side will give cross drafts. With this arrangement the kitchen cabinet may be on one side of the stove and the sink on the other.

The third part of the kitchen has to do with the serving of the meal, storage of service ware and cleaning of it. In large houses the pantry is set aside for the purpose of storing chinaware and service articles, but in the small house it is not advisable to spend money on this space but throw it into the kitchen area, or else into a small breakfast nook with built-in table and benches. China closets may be placed on one wall of the kitchen at one end of the breakfast nook and in one corner of the dining room.

Space for a little service wagon on which meals can be served and rolled into the dining room is desirable alongside of the kitchen sink, for when the dirty dishes are removed from the table, they may be brought up to the sink in the wagon and left there, until time is found to wash them.

After disposing of the scrapings from the plates, the left over food must be returned to the refrigerator, but as this has a logical place with the storage closets and bin a number of trips over to it will be necessary in clearing up the meal, which is of course inefficient. But to offset this, the china-closet should be located as near the sink as possible in order to cut down on the labor of putting the pieces away after they have been washed.

The best materials for the floors and the walls of the kitchen are those which are non-porous. Tiles are ideal, but too expensive for the little house where every cent is counted. Linoleum which has been made non-porous by a treat-ment of lacquer or wax is most commonly selected, and many consider it easier on the feet than the hard tile. Hard wall plaster, painted with enamel or lacquer or covered with a washable wall-paper is, if tile is not used, the best decoration.

All wood trim should be covered with gloss paints which are easily wiped off with a damp rag. A black baseboard is serviceable in that it does not show the marks of the wet mop.

The coal range with its ashes is a thing of the past in the new house, for even in those parts of the country where no gas is available, there are oil and gasoline burning stoves and so-called canned gas stoves that are very satisfactory. The day is not far off either when electric stoves will be standard equipment for the first class kitchen. The old-fashion hot-water boiler, too, is now definitely consigned to the cellar, alongside of the house heating boiler, so that an auxiliary winter heating attachment may be connected with it. And so it goes; each year you will notice a change in the kitchen more noticeable than in other parts of the house. Indeed, you can tell the age of a house more by its kitchen equipment and bathrooms than by its architectural details.

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Green Walls for the Garden

(Continued from page 26)

ture. *Rhamnus cathartica* is a common type of hedge, but it requires considerable attention in pruning.

Where a larger barrier is needed the Hawthorn and Willows will provide excellent hedging material. Varieties recommended are: *Crataegus cocinea*, *Crataegus crus-galli*, *Crataegus mollis*, *Salix lucida*, *Salix pentandra*, *Salix vitellina aurea*, and *Salix vitellina brittensis*.

The success of a hedge depends upon its method of establishment no less than upon the care it receives later. It is almost impossible to rectify a wrong start and achieve the type of hedge most desired, one that is thick from the base to the top. The tall scrappy shrubs often used will never branch out thickly at the base. On the other hand, small whip-like shrubs with only a few branches will seldom develop into thick-growing material. The ideal type of shrub is low and compact, branching thickly not only at the top but laterally very close to the ground.

Proper planting is of the greatest importance. The ditch should be of sufficient width and depth so that the roots will not be cramped. Good soil is desirable, and if it is poor, fertilizer should be provided liberally. For some time after planting the hedge should be watered freely to insure immediate and healthy growth.

The distance between shrubs is another important consideration. It is far better to plant smaller shrubs at short intervals than larger ones spaced more widely. It is a peculiar fact that in most cases the lower the hedge or the smaller the type of plant used, the greater the spacing desirable. This is because the average low, compact shrub spreads more naturally in a lateral direction. The Japanese Barberry is a good example. If fine specimens are used, the plants for a Japanese Barberry hedge may be planted eighteen inches or even farther apart, depending upon the size of the shrub. If small plants are used, twelve inches is a good distance. Where a larger hedge is to be established, spacing ordinarily should be between eight to ten inches and small plants used.

Careful pruning is necessary from the start. An annual clipping is essential in most cases, and is best done after the early spring growth. If clipping is done late in the fall or very early in the spring, the vigorous spring shoots coming later will give the hedge an irregular appearance and the work of shearing will be practically wasted. Without exception the hedge should be broader at the base than at the top, with the sides tapering slightly all the way to the top. This allows light and air to reach the lower branches, and permits the rain to drip through to them. Shaping in this manner ensures thick growth from top to bottom, without the withered leaves and twigs at the bottom that result from insufficient light, air, and water.

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us a line and we’ll tell you who
he is.

W*OODEN WALLS AND VENEER CONSTRUCTION

(Continued from page 11)

with brick or with stone. We call it
veneer. It is undoubted that a solid
masonry wall 8 or 12 inches in thickness
is more substantial than one of 4 inches
backed with wood, yet the veneered
wall, if well built, will stand a lot of
buffeting.

Some architects praise it, others con­
demn it. In certain cities it cannot be
built at all, but we have seen both
good and bad walls build in this way.
The Building Code Committee of the
Bureau of Standards, Department of
Commerce, having interviewed many
architects and builders for their opin­
ion of this wall, says the consensus of
opinion may be summarized as follows:
"So far as architectural stability is con­
cerned, opinion favored well built
veneered dwellings of the same height
and under the same circumstances as
those with solid 8 inch brick walls."

They have much more to say about this
wall, and if you would like to read it,
I recommend that you secure the book­
let entitled, "Recommended Minimum
Requirements for Small Dwelling Con­
struction." You will find here a wealth
of information which every home builder
should know.

When they speak of well built,
veneered walls they mean that the
veneer should be securely attached to
the backing with some fastenings that
will not corrode. City ordinances re­
quire that there shall be such a con­
nection at least once in every 72 square
inches. That means if the wall is brick
veneer, and the brick courses with
mortar joints 3" in height, then there
should be a bond thru the wooden part
of the wall for each brick, in every third
course. Many walls we see do not have
half that much bonding.

This brings us to solid masonry walls—
walls of brick, stone, concrete block,
poured concrete, and tile blocks. I wish
there were space in this issue to dis­
cuss them, but this will have to be post­
poned until November. There is much
to be said about them, they make a com­
plete story in themselves.

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