Water Supply for the Country Home

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THE FREEZING POINT OF ORANGES

A SERIES of important and interesting experiments has just been carried out in the laboratory of Rollins College, Winter Park, Fla., by Dr. O. W. Sadler, Jr., for the purpose of determining the freezing points of the juices of different varieties of oranges. The juices of the ordinary orange, tangerine, grapefruit and tardiff (Valencia), were tested for this purpose.

In preparing for the test, several pieces of each variety from oranges from different trees were selected, and three samples from each piece were used for the test. The juice of each sample was strained and cooled, and with the thermometer immersed in it, was watched closely as the mercury went down, readings of the instrument being taken every few seconds, and at the moment freezing began, the temperature was carefully recorded. The following are the averages of the repeated tests:

Freezing point of the juice of the ordinary orange, 21.79 deg. F. Freezing point of the juice of the tangerine, 22.57 deg. F. Freezing point of the juice of the grapefruit, 22.16 deg. F. Freezing point of the juice of the tardiff, 21.87 deg. F.

The temperature of the freezing varied in the different samples of the same variety, the range being 19.40 deg. to 22.44 deg. F.

The thermometer used was a high-grade instrument that had been compared with the Rollins College standard thermometer, one of Henry J. Green's best instruments.

DISSOLVING GLASS IN WATER

EVERY kind of glass at a sufficiently high temperature must, it appears from German experiments recently made, eventually show complete solubility in water. Under pressure, glass dissolves in water heated to 410 deg. F. Seawater more than 660 feet beneath the surface will remain liquid at that temperature, and if it penetrates the earth's crust where the temperature is equally high, it will, apart from the pressure, liquefy the silicates, or glassy rocks. The German experiments point to the conclusion that, at a depth of about five miles, silicates in contact with water are virtually fluid, and that the level of aqueous fusion in the earth is five times nearer the surface than is that of igneous fusion.

THE WATER MONKEY

AS temperatures rise and the demand for cool drinks increases, it is well to consider some means of securing a palatable cold drink that will not only be free from the objections raised by many to iced drinks, but will also be economical. Those who have been on shipboard in the tropics will recall the water monkey, a porous jar filled with water and hung in a breeze so that evaporation from its surface would cool its contents. Now that electric fans are universally used, it seems someone should invent a convenient, effective holder for a water bottle with wet cloths or some similar absorbent covering for the bottle to place in the range of an electric fan so that the latter would, by evaporating the water from around the bottle or other water holder, cool the water to a pleasant temperature for drinking. This need not in any way detract from the primary purpose of the fan and the cooling device could be made entirely independent of the fan and of the bottle and adapted to receive any desired form of water-holding vessel.

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THE IMPORTANCE OF A WOOD COLLECTION IN THE NATIONAL MUSEUM

PUBLIC attention should be directed toward the urgent need of a collection of North American woods in the National Museum at Washington. The lumber industry of the United States stands fourth in the value of its product. Yet there is no place in the United States where a complete collection of North American woods is exhibited except in the American Museum of Natural History in New York City. Timber merchants and wood users recognize the need of men technically trained for identifying woods. Such work can only be carried on in connection with a complete collection of authentic wood specimens. The demand for authoritative information regarding commercial woods is continually increasing.

Most large colleges and universities are provided with means for giving practical instruction in assaying. Ores and precious stones are in museum collections for observation, study and experiments. Every opportunity is afforded the student to become familiar with the subject in all its phases. It is vastly different when one looks for the same opportunities in that study of woods which is technically known as "xyology." Institutions of learning have collections of mosses and algæ obtained through considerable expense; they have microscopic slides of desminds and diatoms which have no interest to the average layman and only to comparatively few systematists. The economic value of the groups of plants represented by these objects is very small compared to the product of the forest, and yet the latter has received very little recognition in systematic museum work.

There are numerous purposes, each one of which in itself would be amply sufficient to justify a collection of authentic wood samples in the National Museum. The chief purposes are to instruct the public and to furnish materials for the investigator. In the main, the collection should consist of a reference collection and exhibition material.

A collection of woods should not alone be a storehouse of facts, but it is important that provision should be made from the start for a laboratory. The aim of a reference collection is two-fold, the one striving toward a knowledge of the structure of wood and the other toward the diffusion of that knowledge. The former consists in investigating and discovering new facts, while the latter tends toward educating the people and applying the discovered facts to the advantage of all. Aside from the need of this collection there should be a museum collection similar to the one in the American Museum of Natural History, New York city. No pains should be spared to secure similar material for exhibition purposes in Washington. In addition to the exhibition samples and enlarged microphotographs of transverse and longitudinal sections, it will be necessary to show specimens of leaves from the trees and a map giving the range of growth and information as to the uses of the wood.

Not only should every effort be made to obtain representative specimens of native woods, but the plans and buildings should be large enough to hold woods from other countries. It has been estimated that the collection of a complete set of North American wood samples alone would require a million dollars' endowment. Whatever the expenditure, it would be an unusually good investment of national funds. The

Poultry, Pet and Live Stock Directory

buildings and contents of the South Kensington Museum in London cost Great Britain about five million dollars, and competent authorities estimate that an auction on the premises would bring not less than one hundred million dollars. If suitable quarters are provided there is no doubt that a donation in the form of specimens and money, worth many times the original outlay, will be received. Large importers of foreign high-class cabinet woods will be anxious to exhibit samples of their choice woods. Not a few people are attracted by a collection of woods as much as by one of agricultural products. Undoubtedly a wood collection appeals to the public, and where this is the case much that is valuable will soon find its way to the museum. Foresters with zeal and ability will doubtless collect and donate samples of wood from all parts of the world. All that is required is to prepare the place and the proper publicity will guarantee the material in due time. Invaluable material can be readily obtained through consulates. Other museums having material in storage would doubtless loan or donate a considerable share of it to the national collection. Every country in South America would be glad to exhibit in the capital of the United States representative samples of the product of their forests. There can be no doubt that a national institution such as this would attract men of learning, for it would open an entirely new line of work from which the industrial and scientific world could draw invaluable information. Foreseeing the benefits which would result to science and industry by the successful establishment of a representative wood collection, it seems doubly imperative that immediate steps should be taken to carry these suggestions into effect.

TWO NOVEL FOLDING BOATS

THE advantage of a life raft over a life boat lies in the fact that the former occupies less storage space, compared to its capacity, than the latter. On the other hand, the ordinary raft, if loaded to its rated capacity, is far more liable to upset in rough water than the life boat, and is otherwise unmanageable. In order to render life boats less bulky, an inventor has devised a folding boat, which will permit of easy handling and be economical. The flat bottom of the boat is hinged along the center and the sides of the boat are hinged to the stem and stern posts, so that the boat may be folded in a perfectly flat position so that it can be readily stowed away in a minimum of space on board ship. The boat may be extended into position for use by merely operating a winch at one side. This serves to press the bottom down while the sides are extended by means of a pair of cross-braces hinged at one side and provided with rollers at the other bearing against plates on the gunwale. Every precaution has been taken to make the joints perfectly watertight by the use of rubber gaskets and mortise connections.

OIL-CEMENT CONCRETE

AN important investigative work during the last year was the development of an oil-cement concrete, and from results obtained the experiments indicate that it would be practical to use this material for floors, cellars, foundation walls, tanks, silos, manure pits, and similiar construction, where strength, solidity and waterproof qualities are required.

THE EDITOR'S NOTEBOOK

PLANNING THE BUNGALOW

THE dweller in city apartments should find in the bungalow a certain "homey" feeling unknown to the man who lives in the ordinary country house. It is in a sense a detached apartment—a one-floor home, with no stairs to climb, and many city dwellers have almost forgotten how to climb stairs. Because this home does not have to be sandwiched between other apartments, nor be confined within the limits of a 25x100-foot lot, it permits of a great variety of treatment. Bungalow architecture is so comparatively new that we have scarcely begun to realize its possibilities. Discussions of this subject full of practical suggestions, and illustrated with a large number of photographs, will be published in the September issue of AMERICAN HOMES AND GARDENS. Not only is the exterior of the bungalow odd and interesting, but the interior as well adapts itself to a large variety of novel arrangements. It should properly be looked upon as a very informal sort of building, hence much of the furniture and the interior decorations may be made at home. Some suggestions on making burlap curtains, table-covers, pillows and the like will also be contained in our September number.

ENGINEERING AND ARCHITECTURE

HOW comes it that engineering works of magnitude are so frequently devoid of any pretense to artistic beauty? Great dignity they have, and an impressiveness which is almost dramatic; but too often one's eye ranges over the whole length and breadth of one of these structures, in the vain attempt to gain from them at least some measure of satisfaction for that artistic feeling which is present, consciously or unconsciously, in the majority of men.

The engineer, of course, will tell you that a properly designed structure, one that adequately fulfils its purpose, is beautiful by virtue of its very adaptability; he will remind you that since his structures are works of strict utility, their broad outlines, their proportions, aye, and even their very details, are determined, not by human caprice, but by certain underlying and inexorable laws of mechanics, and that any wilful departure from these laws for the sake of artistic effect can be made only at considerable cost. He will remind you that since forces act in straight lines, it is imperative upon him to give to his engineering structures those rectilinear forms which are the despair of the artist and the man of "soulful" tendency.

Now, although the attitude of the engineer, as thus broadly stated, is perfectly consistent with the facts; and although a well-designed engineering work does possess a certain beauty, due to its perfect adaptation to its duty, it cannot be denied that in the case of many such structures, were an architect called in for consultation, he could suggest slight modifications of form, and even a modest use of architectural decorations, which would accentuate the purpose of the work, and, at a comparatively slight cost, add largely to its dignity and beauty.

That the engineer and the architect can collaborate to good effect is proved by the good taste with which architectural embellishment has been applied to that monumental structure, the Manhattan suspension bridge across the East River. Here the massive colonnades above the anchorages, the ornamental iron work of the finials above the main towers, and the slight decorative details of the floor system at once adorn the structure and emphasize its structural meaning.

AVIATION AND THE COUNTRY HOME

THE long-predicted era in which flying machines will be as common as automobiles is now so imminent that it behooves us to consider what effect it may have upon the architecture of the country home, or upon the arrangement of the grounds about it. Not only must the country estate be provided with its garage, but it must have its hangar too. It is possible that in order to provide a good landing place a flat-topped roof may be necessary in the more congested parts, such as country towns, but where there is plenty of room a suitable stretch of lawn will be almost indispensable.

This will no doubt call for changes in the plans of the landscape gardener. It may seem rather early to discuss these points, but it must be recalled that cross-country flying as a sport has gained a firm foothold in France and other European countries, and even in our own land we are making progress, as shown by the recent long flights of Atwood. A general discussion of the probable developments necessary to meet the requirements of aviation as an amateur sport will be given by Mr. Waldemar B. Kaempffert in the September AMERICAN HOMES AND GARDENS.

ALICE M. KELLOGG

WE are deeply pained to record the decease of one of our most valued contributors—Alice M. Kellogg —on the 14th day of June. Her article, "How to Build and Furnish a Country Home for One Thousand Dollars," well illustrates the temper of her mind. In this as in all her writings the practical tendency clearly appears; even the bungalow she felt to be worthy of ennobling thought. Our readers had recognized that her opinions on House Arrangements were conclusive, and turned to her at once for advice when an expenditure in this direction was determined upon. She had not only a refined taste regarding the proper fittings of the house, but a conception of the bearing of these on the life and thought of the occupants. She did not consider that the house was furnished merely because a quantity of furniture, no matter how elegant, had been placed in it; rather she believed that the furniture, like the house, should reflect the character of the owner.

Her book (1895), "House Furnishing Practical and Artistic," proved that she had mastered this new art. Its readers felt it was possible to give expression to noble ideas in selecting and arranging the furnishings of even the humblest homes. Its author must be credited with having labored to bring beauty into the household; with having the fixed desire to add to the dignity and enjoyment of the home.

AN ELECTRICALLY-HEATED STEAM BOILER

A STEAM generator is made by a New York firm for use on trains running over sections of line in which electric locomotives are used. The generator consists of a cylindrical boiler arranged with its axis vertical and having tubes extending between tube plates at the top and bottom. Into each tube, which is closed at the bottom by a screw plug, there is slipped an electric heating element. This comprises a number of steatite tubes threaded on a metal rod with special stellate porcelain insulators of larger diameter between them. These porcelain insulators fit into a thin brass tube and serve to keep the resistance wire, which is wound on the steatite tubes, out of contact with the brass tube. Fine siliceous sand is used to fill up the space between the resistance wire and the interior of the brass tube. All the elements are connected in parallel to bus-bars through fuses which blow when the current rises to 60 per cent. above normal. A boiler 3 feet 10 inches in diameter and 4 feet 6 inches long (between tube plates), with 148 2-inch diameter tubes, has a maximum evaporating capacity of 850 pounds of steam per hour at 110 pounds per square inch, with current at 666 volts. It gave an efficiency of 91.9 per cent. at 653 volts and 470 amperes in a New York Central locomotive.

THE ATMOSPHERE OF CITIES

THE German scientists are studying the atmospheric conditions of their cities. The fact that sunshine lessens as population becomes more dense, and especially when the activity of industrial centers expands superficially and increases in intensity, has long been noted. An increasing tendency to fog has also been observed, and both are effects of the imperfect and incomplete combustion of coal.

Modern industry pays toll for this in the injury of delicate fabrics, the general depreciation in the value of many articles of trade and household use, and the increased cost of cleansing. Since the battle is waged with growing energy against tuberculosis, physicians and students of social science feel that the problem of purer air for the dwellers in cities has become one of the first importance.

Statistics have been collected for some time past. They demonstrate that little sunshine falls to the lot of the residents of industrial cities even when the sun is obscured by smoke particles. In no German city has the loss of sunshine, due to fogs, equaled that of London, where the foggy days during the three months of December, January and February increased from 18 to 31 during the last half of the last century.

INCREASING USE OF AUTOMOBILES BY FARMERS

ACCORDING to the Bureau of Statistics at Washington, a careful compilation of all available returns has shown that last year the farmers of this country purchased 26,000 automobiles—an increase of 85 per cent. over the previous year and more than 400 per cent. over the number of cars purchased by them in 1909. The farmers of the South and West especially have come to realize that the modern auto cars save both time and money for them, besides being put to use in various ways upon the farm. It is no longer a luxury, but a necessity, and consequently all who can possibly afford it are investing in machines.

PICTURE-FRAMING OUTFIT

THE Handy Man's Workshop is not complete without a picture-framing outfit. A device for holding the molding while nailing and gluing which is practical can be easily made as follows: The clamps can be secured from the tops of two old clothes wringers by sawing about three inches on either side of the screw. The base of the device should be a 2-inch hardwood plank, or better still, two pieces of inch board glued together with the grain of one running at right angles with that of the other. The size of the base ought to be 18 by 22 inches. A board 6 by 8 and ½ inch thick should be glued and screwed to the base, which can be readily done. Bolt the clamps to the base as illustrated, leaving sufficient space between the ends of the screws and the holding board to place the widest molding which one would use for any frame. This space must not be too wide, for the screw has a tendency to spring up when heavy pressure is applied. Small blocks are to be used when narrow molding is being held, or on any molding which the end of the screw would dent. The difficulty in making frames is in holding the pieces firmly together while nailing.

BUILDING MATERIALS AND NOISE

A GERMAN scientist named Nussbaum has for a long time been studying the question of the suppression of noise in dwelling houses. He has experimented both in the laboratory and in private houses. One point he has ascertained is that the more solid and tough and strong the building material is the more quickly and loudly it conveys sound, and its conductivity can best be tested by strokes with a piece of metal. The higher the tone the greater the conductivity.

Nussbaum has made many experiments with partition walls. He has found that those of tiles and cement transmit sound most and those of solid clay least. Between the two comes the wall of ordinary brick, and the more the brick is burned the more noise it transmits. A quickly hardening lime mortar is to be preferred to a clay mortar. One experiment showed that when a floor was covered with sand and cork mats spread over it hardly any noise penetrated to the room below, but that when the cork mats were joined together by any material underneath, noises were at once perceptible.

To the question, how are the sounds of the piano or the violin in the neighboring apartments to be excluded? Nussbaum has returned the suggestion that the ceilings be treated as he successfully treated his telephone cell, namely, to line them with a layer of zinc or lead.

DAHLIAS AND POTATOES

BY a kind of horticultural irony the dahlia, that popular flower that so often forms a conspicuous display at flower shows, has a dreadfully prosaic parentage. It has developed from the Mexican tubers introduced about one houndred and twenty years ago by the Swedish naturalist, Dr, Dahl, for the purely commercial purpose of supplementing the potato! The doctor's scheme did not meet with favor, and the dahlia dish soon disappeared from British tables, but the gardeners of the old country at once perceived the great potentialities of the flower, and accordingly proceeded to produce the double dahlia and other delightful floral fantasies.

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The garden front "Villa Aurora"

AMERICAN HOMES AND GARDENS

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"Villa Aurora"

The Home of George D. Barron, Esq., Rye, New York

By Barr Ferree

THERE is a very real quality of livableness in Mr. Barron's home in Rye, which is all the more marked because it is a large house superbly appointed and built in the midst of an estate of about fifty acres. The residence is entered from the porte cochere at the northern end, the longer and more monumental east front, which affords a view of Long Island Sound, being reserved for family use exclusively. Mr. George A. Freeman, of New York, was the architect.

The outer doors are provided with a handsome wrought iron grill, lined with plate glass, opening to an oval vestibule, the walls of which have a high paneled dado, the walls and ceilings being of a rich but quiet, low-toned, old-gold finish. The inner door conducts to an entrance-hall, which leads directly into the main or reception hall, which is arranged at right angles to it. There is no intervening door-

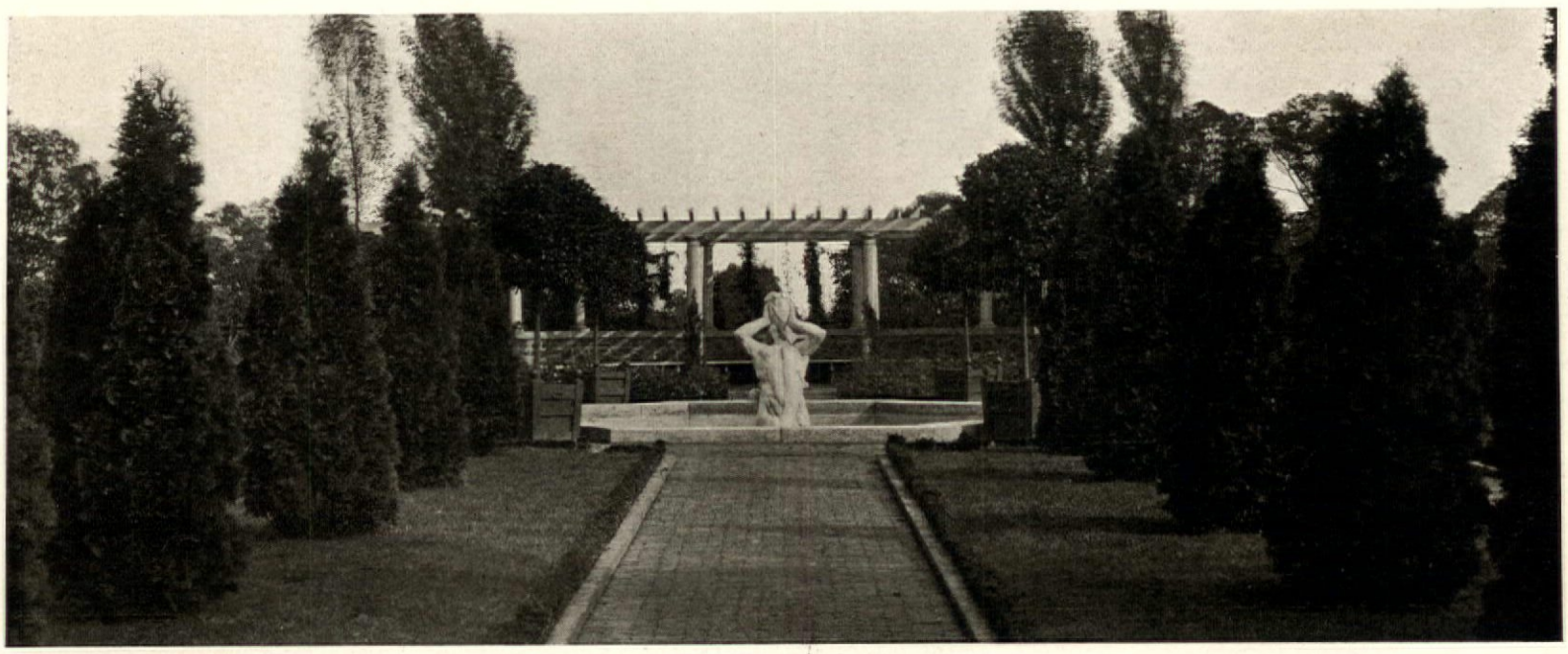
The portico front of the house

way, the whole space being completely open; and as the farther wall of the main hall is closed, the center being occupied with a stately and ornamental fireplace and chimney breast, a very fine perspective is obtained from the vestibule. The entrance-hall is spacious and affords room for numerous large and handsome pieces of furniture, which are placed on either side. The walls have a high wainscot of wood, painted ivory white, with Ionic pilasters that support the ornamented cornice. Above the dado the walls are hung with red silk damask, the color scheme being red and white. The ceiling is plain and the hardwood floor is almost completely covered with a large rug. All the rooms of the first floor are exceedingly lofty in height, and the floor areas are broad and spacious.

Immediately on the left on entering the outer vestibule are Mr. Barron's private offices; on the right is a doorway that leads to the service-rooms, which are completely shut off from the rest of the house. The only important room that opens onto this entrance-hall by means of a doorway, is the ballroom. It occupies most of the space on the left. It is a charming and delightful apartment, the walls being supplied with a low dado of paneled wood, with larger panels that completely fill in the balance of the space below the decorated cornice. These panels have carved tops, and are of wood painted ivory white on a background of French gray. The opposite end is treated as a recess, with curved ends and free standing columns. The north wall contains the fireplace, of Pavonozza marble, surmounted with a decorative overmantel with mirrors in richly carved frames. The white ceiling has an elaborate centerpiece in hand-molded plaster. The window curtains are of white lace. It is a very light and agreeable room, and is completely adapted to the uses to which it is now put.

The portico

As the reception hall opens directly from the entrance-hall, and may be regarded as an expansion of it, the color scheme is also red and white. The walls have a paneled dado of about five feet in height, with Ionic pilasters that form upper panels, lined with red silk damask. The cornice is identical in design with that of the entrance-



The fountain in the formal garden

hall, and the ceiling is plain and without ornamentation. The carpet on the hardwood floor is of dark red to harmonize with the balance of the room, and the dark old-oak furniture is upholstered in the same material and color as the walls. The chimney breast is supported by pilasters. The mantel is of carved wood, the fireplace facings and hearth of polished red Numidian marble, the linings of red brick. A copy of Guido Reni's celebrated painting of "Aurora" is let into the frame of the over-mantel. It was executed in Rome from the original by special permission of the present Prince Pellavicini, owner of the Rospigliosi Palace, where on a ceiling the original was painted by Guido. Mr. Barron's copy is pronounced by Prince Pellavicini the finest ever made.

The staircase

On the east end of the main hall are three windows, which are within the portico of this front; and through which the light is softened by red velvet curtains. On the west is the staircase, very broad and spacious, carpeted in red, and with white balusters and mahogany rail. It rises to a large oval landing, lighted by a great oval bay window, with a built-in seat and white curtains. This arrangement is enormously effective; it admits much more light to the main hall below and to the second story hall above. The form and position of the landing are finely adapted to create a place so delightful in itself as this is. The stairs divide here, and from the landing continue the rise on either side, the balustrade being continued around a circular opening in the upper floor.

Two rooms open from the main hall, the library and the dining-room; the first is on the left, the other on the right. The library is finished in oak, with a wood dado of five feet. The upper walls are hung in green velvet, this being the prevailing color of the room. The curtains are green, likewise the carpet and the furniture. The wood oak mantel is richly carved; the fireplace has facings and hearth of dark red sandstone, with red brick lining. Most of the walls are based with bookcases, with leaded glass doors richly but quietly ornamented. The dining-room is treated in olive green and white, with white

The water garden and terrace

The dining-room

A statue in the garden

dado and pilasters, the upper wall panels being hung with figured olive green silk damask. The fireplace has an enriched over-mantel, and facings and hearth of Alps green marble; the lining, as elsewhere, is of red brick. The window curtains are of the same material as the wall hangings, and are suspended before white curtains.

Beyond this point the house plan contracts to the area of a single room. This is the billiard-room. The woodwork is a beautiful grained chestnut, and consists of a high dado with pilasters to support the cornice of the ceiling. The frieze is light buff, with small patterns in low relief. There are windows on one side, with built-in seat and platform; on the opposite side is the fireplace, faced with large red quarry tile. The over-mantel is at the height of the frieze and is paneled in chestnut. The window curtains are velvet and brown, and the furniture is upholstered in brown leather.

The final apartment in the direction of the axis of the house is the loggia. It is furnished as an outdoor sitting-room and decorated with palms, tropical plants and superb heads, trophies of the chase. It has three large round arched windows on the south front overlooking the terrace and formal garden and a large arched opening on each end. The glass double sash and steam radiators which make

The terrace and steps

The living-room

this room available for use as a sun-parlor in winter, are removed in the summer season, when it has all the value of a covered, yet outdoor palm room.

The whole of the three outer sides of the house is supported by a white limestone balustraded terrace. This is seen at its best immediately without the loggia, where its surface area has been greatly extended. It is paved with brick laid on edge, and has large grass plots, and borders of flowers—chiefly roses—located just within and below the balustrade.

Beyond and at a lower level, is the sunken formal garden. The main axis of this is at right angles to that of the house. On the east end is the pergola, semi-circular in form, the farther or outer boundary being curved and enclosed below with a stone wall. There is a built-in seat all around, and in the center of the open space is an Italian table of carved white marble. The outer side of the pergola is thickly planted with shrubbery and flowers, and is the beginning of the floral development of the garden.

At the opposite end is a great spring-fed pond, enclosed towards the garden by a stone wall and stone balustrade, and reached by a central flight of steps with a section of a semi-circular wall on either side. The opposite side of the pond is left without formal enclosure, but the water there is

A statue in the garden

The pergola

thickly planted with water lilies, lotus and other aquatic plants, so that the formal garden on one side of the pond is supplemented with a natural or wild garden on the opposite side. The water between the two, forms a natural and very effective means of separation.

The formal garden lies between these two special points of interest and is laid out in a regular manner with paths of brick laid on edge, with plots of grass bordered with dwarf box, decorated with evergreens and other shrubs and plants. In the center is a pool with a fountain of white marble, a very artistic figure executed in Italy of a Triton blowing water from a conch. The remaining side of the garden is directly across from the loggia. A thick mass of shrubbery and trees encloses it on this south side, which is here entirely without formal treatment except for four statues of the Seasons in Carrara marble, arranged Hermes-like at intervals on this and on the side immediately opposite. An interesting feature of the formal garden is that the gnomon of the sun dial there, is made of copper from Mr. Barron's mines in Mexico.

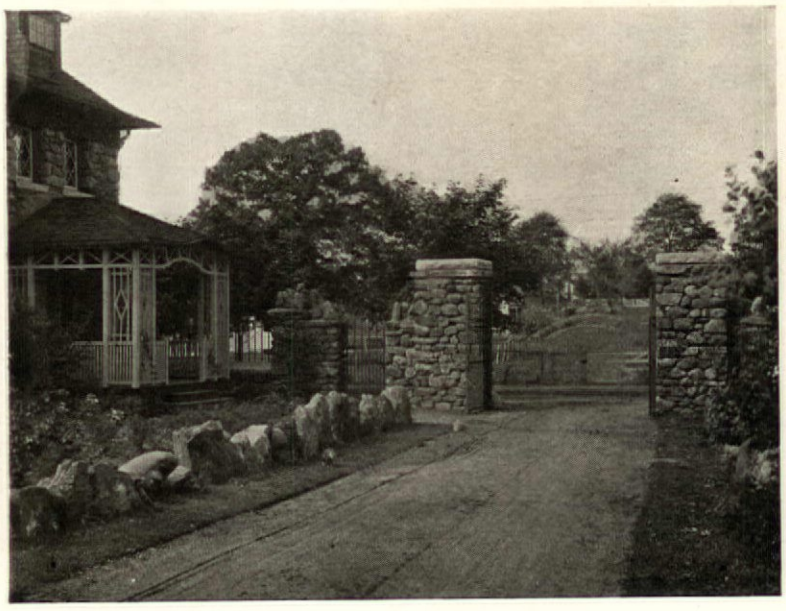
The cow stable

The hennery

The stable

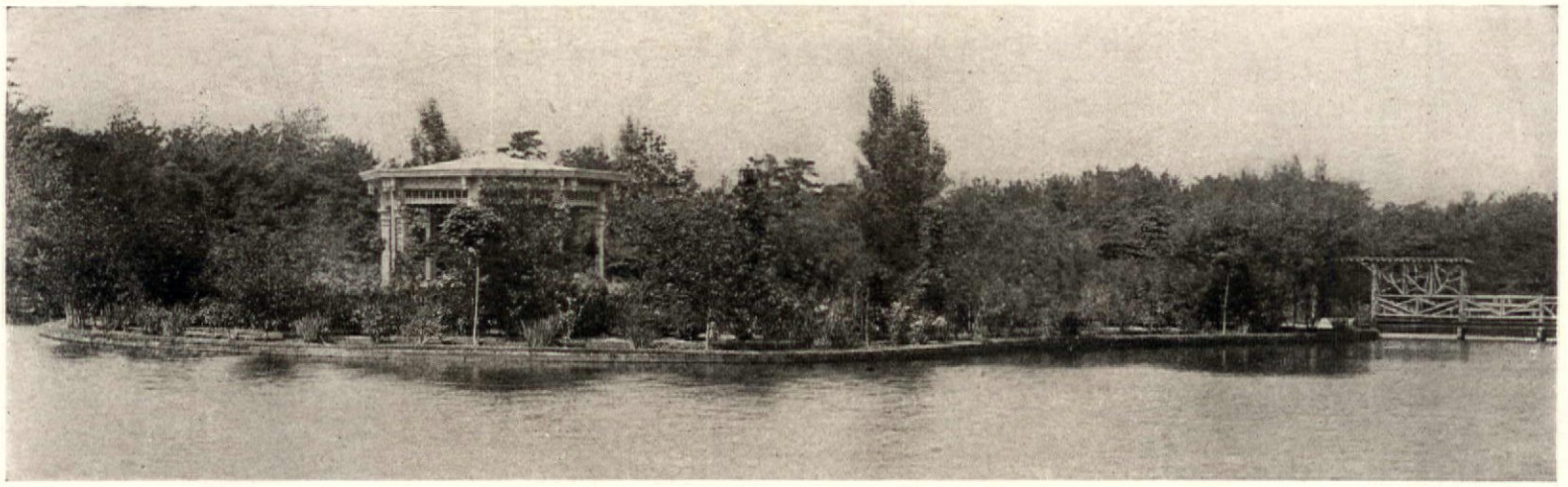
All of these parts and much more, may be seen and enjoyed from the loggia. Beyond the formal garden are shrubbery and trees, with broad open fields. In the distance, on the right, and almost completely hidden from the house, is the tennis court. There is the pond on one side; on the other is a spacious lawn, with meadows farther on, and behind them all are woods, with the world, doubtless, beyond, but here very remote, so very quiet and peaceful is the outlook.

The architectural exterior of "Villa Aurora" is beautiful and dignified. It is a fine example of the Georgian type (1714-1830), of which our modern Colonial architecture is an adaptation. The house is entered apparently from an end, since the longest and most ornamental front is without an entrance feature, the east lawn being unbroken by road or path. The front overlooking Long Island Sound has been selected for the most formal treatment of the exterior, and from the water it appears imposing to a degree.



The main entrance

The gate-lodge



The Management of the Water Supply for the Country House

By John F. Springer

THE very first thing that engages the attention of the country and the suburban resident, in connection with his water supply, is the water itself. But it is a matter of almost if not quite equal importance to know just what to do with the water when secured. There are, no doubt, certain locations and conditions where the distribution of the water supply through the house is a very simple matter. Thus, for a house located far enough below a spring, the distribution can readily be effected by installing a reservoir between spring and house. Gravitation will do the rest. But the combination of such circumstances must be only exceptional; and even in those circumstances the care and protection of the water, the pipes and the reservoir constitute a weighty problem.

Ordinarily, the water has to be pumped to the point from which distribution is effected. There are two prominent methods of exerting the necessary pressure. That best known, and to it some reference has already been made, is the gravity method. This depends upon the familiar principle that "water seeks its level." If there is an elevated reservoir, the water in the house will rise to the same level as in the reservoir, and no higher. If we wish the water to rush out of the highest spigot with some velocity, then the level in the reservoir will have to be maintained at some considerably higher level. Still, in order to get velocity we have to provide a certain excess height to produce the desired pressure, and an additional height to overcome the friction of the water as it flows through the pipes and passes the bends. No very simple rule can be given as to this friction; but a great deal of subsequent annoyance may result where sufficient elevation is not secured when the tank is installed. While no simple and exact rule can be given, we can get a rough idea of the necessary provisions to overcome friction by remembering three things: (1) The smaller the pipe, (2) the longer the pipe and, (3) the more turns, the greater is the friction. The bottom of the reservoir being the lowest possible level of the water, it should be taken as the level. Consequently, if we wish to raise water thirty feet above the sills of the house, the bottom of the reservoir should be put higher yet. How much higher will depend upon the velocity desired, the length and size of the pipes, and the number and character of the turns. It is much better to have too high an elevation than one too low. Those who are accustomed to a smart flow of water from the spigot will deem it an intolerable nuisance to wait for a slowly moving stream or driblet. It should be borne in mind that a single point where the diameter of the pipe is much reduced may have a very considerable effect. To sum up, the following directions may be given: Use large pipe, have as few bends as possible, make these as round as possible, make the length of the pipe as short as can well be, and elevate the bottom of the water tank to a generous dis-

Fig. 1—A brick tower and wooden tank

Fig. 2—A brick tower with the tank hidden by the wall

tance above the highest point of use in the house.

The size of the reservoir is also an important matter. If the supply is liable to fluctuation, as is ordinarily the case, then the reservoir must be at least big enough to tide over the longest period of drouth. In fact, it should be larger than the capacity necessary to cover the maximum "dry spell," for the reason that the reservoir may not be full, or nearly full, when the drouth begins. Indeed, the wise thing would seem to be to have a capacity nearly double the amount for the drouth, so that a sufficient supply would be certain to be present when it began.

The support of a large body of water at a considerable height is really a serious problem, and expert advice ought ordinarily to be sought. In order to realize just what kind of a problem this is, consider the fact that the water which fills a 10,000-gallon tank weighs 83,000 pounds. Ten thousand gallons for a family using 500 gallons per day will only last twenty days. The support for 83,000 pounds must, of course, be a thoroughly adequate one. The tower may be of steel or it may be of reinforced concrete. Timber, brick or stone may be used. In any case, the total weight of water and tank must be thoroughly faced and provided for.

As to the strength of the tank itself, we have to remember that the water exerts a bursting pressure tending to disrupt the side walls. The bursting pressure ranges from nothing at the water level to a maximum at the bottom. If the bottom is ten feet below the level of the water, there will be a bursting pressure outward at that point of four and one-third pounds per square inch. A consideration of such facts will show that the tank must be strengthened to resist the outward impulse, and that the strength should increase toward the bottom.

The tank may be of wood, steel or reinforced concrete. In Fig. 1 we have an example of tower and tank. The tower is built of brick. As here, the tower, with its mantle of foliage, may be a beautiful addition to the picturesqueness of the grounds. Where the tank is of wooden staves, as in this instance, the metal hoops may be provided with turnbuckles, so that they may be tightened at will. The hoops may be placed closer and closer together toward the bottom; or if it is desired to have them at uniform intervals, this may be done. But the interval necessary at the bottom will control. Or equal spacing may be employed where the thickness of the hoops is adjusted to the varying pressures.

In Fig. 2 we have another example of the brick tower. Here the tank is enveloped and hidden by the wall. At the top, such a tower may be designed to provide an observation room. In Fig. 3 is shown still another example. The envelope is a frame one. It is not obvious whether the tank is supported by timbers or by masonry. Fig. 4 shows yet another tower and tank. There is an observation balcony, giving an ornamental character to the tower and affording a view in all directions.

Fig. 3—A wooden tower with the tank hidden by the wall

At Great Neck, L. I., on the grounds of Mrs. B. H. Gilbert, is a tall tower of wood covered with stucco. This supports a tank having a capacity of fifteen or twenty thousand gallons at an elevation of perhaps seventy feet. This puts the water well up above the ridge of the house, and thus provides a good flow in the upper rooms. The balcony is gained from the outside, as shown in the view (Fig. 8). In Fig. 6 we have a wooden exterior in the form of a windmill. It is not always necessary that the tower itself shall be high. It will sometimes stand on a local elevation of the ground, although that may not be the case here. In Fig. 7 we have the same tower used for the support of the tank and for the accommodation of a windmill.

In case the water tower and tank are in service during the entire year, the resident in the Northern States may need to consider the question of freezing weather. The presence of a layer of ice may be no great matter under some conditions. In many structures it may seem desirable to prevent absolutely all freezing. This can be done by suitably enclosing the tank and surrounding it with a good non-conductor of heat—one of sawdust or tanbark.

Fig. 4—The tower is built in connection with the stable

The methods employed with the elevated tank are time-honored and have had extensive application. Another system, however, has come into vogue in recent years. It is the pneumatic tank system. Apparently this invention was made by Mr. J. L. White. The reservoir is not elevated at all. A pressure there must needs be, and this is supplied by compressed air. Essentially, Mr. White's system is very simple. He pumps water into an air-tight reservoir. The contained air is crowded into a continually decreasing space as the amount of the incoming water grows greater and greater. If the

procedure is continued until the air which formerly filled the tank occupies only one-half the space, then this cushion of air will exert the very strong pressure of about fifteen pounds per square inch on the water. This is equivalent to using an elevated tank with the water surface at the height of 33.9 feet. If we continue to pump water in until the air occupies only one-fourth of its former space, then we have done the equivalent of lifting the water to the height of 101.7 feet. Now, all this is very simple in principle. We can, in fact, get any reasonable pressure desired by pumping in water and compressing the trapped air. A little thought will, however, show us that perhaps the practical carrying out of the principle will not be as easy as it looks. There are two principal difficulties: The air as it is compressed will exert its pressure impartially in all directions; we desire its pressure on the water; we get it there, and everywhere else besides.

As the compression goes on, consequently, the tank will leak, unless it has been manufactured by skilled makers fully alive to the necessities. It is said to be a most difficult thing to construct an air-tight tank that will not leak. It seems that a boiler that will not leak steam under pressure may nevertheless leak air under pressure. The particles of air are, apparently, smaller in size, or are otherwise competent to push their way more successfully through minute cracks. The air-tank must, accordingly, be better than a steam boiler needs to be. One of the principal builders of pneumatic apparatus states that the organization of the best

Fig. 5—Brick and stone tower with tank in the enclosure at top

Fig. 6—The tank and windmill is built on top of the tower

Fig. 7—A wooden tower with windmill at top and tank enclosed underneath

Fig. 8—A stucco tower with the tank surrounded by a balcony

Fig. 9—A tower designed in the form of a windmill

equipped boiler works in the world was unable "to handle the problems connected with the pneumatic system of water supply." Presumably, one of the chief problems was the construction of the tank. This same company makes use of special machines for calking and riveting. With an absolutely tight tank, one great difficulty is overcome. The other large difficulty concerns the pumping. If one thinks a moment he will readily see that as the air pressure in the tank increases the work of the pump becomes more severe. It has to overcome the resistance of the water in the tank, and this water is under the pressure of the air. In consequence of the work which the pump has to do, its parts will have to be very strong and the joints will have to be especially tight. Whatever the pressure of the air in the tank, that is the pressure of the water in the pump trying to get out. The pump, then, must be a fine and strong piece of work—no better, perhaps, than a pump which raises water to an elevated tank whose level corresponds to the air pressure.

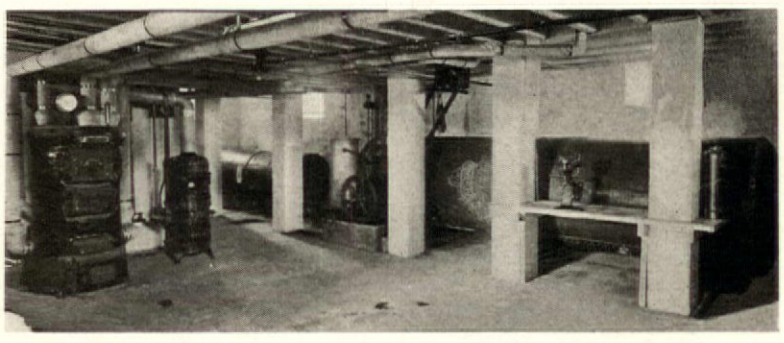
Spraying the lawn by pneumatic pressure

Two streams may be thrown over the house, using 1½ inch hose and ½ inch nozzles

Fifteen sprinklers can be run at one time

What seems to be a very fine thing about the pneumatic water supply system is that there is absorption of air by the water pumped in. This is due, no doubt, largely to the pressure. Air, as pretty much everybody knows, contains free oxygen; and oxygen is a great enemy of impurity. In consequence, the water in the tank will, no doubt, be benefited. Further, water that contains plenty of air is fresher and more palatable. Water supplied by a high-pressure pneumatic system will be filled with air bubbles as it comes from the spigot. The water at first has a milky appearance; but this quality passes, and water well aerated is what we finally have.

Two pneumatic tanks are installed in the basement of this house



The larger tank is supplied from the well containing hard water; the smaller one from a cistern containing soft water

The absorption of air by the water will, of course, in time reduce the amount acting as a pressure cushion. It is necessary, therefore, to replace the air thus absorbed and carried off with the water. This is accomplished automatically in an ingenious way. There is a hollow cylinder made of metal and sealed. This floats on the surface of the water. By an arrangement of rods, it is connected with a valve which opens and closes an orifice opening to the outer air. When the height of the water in the tank is just right to have an air cushion of the proper size above it, the valve is closed and no air can enter through the orifice. This means that no additional air will be drawn into the pump. But when the air cushion gets smaller and the water level rises in consequence, the float rises too and opens the valve. Air is now drawn into the pump and then pumped into the tank. Here, the most of it will rise to the surface and join the air cushion.

As the tank of a pneumatic system is more safely and advantageously situated on the ground level, or even below it, we can if desired increase our pressure. Of course, the tank must be strong and tight enough, and the pump and the available power must be sufficient. Under such conditions, we can add to our pressure. A water tower once constructed would be rather difficult to elevate.

It is rather easy to protect the tank against cold. This may be important for reasons other than those connected with freezing. It would seem better to deliver water somewhat less cold than would be possible with an exposed tank. It would seem, too, that in many cases the repairs would be greater with the elevated tank. If mounted on exposed steel work, a good deal of painting will have to be done from time to time. Sometimes the elevated tank is put into the attic or other high parts of the house itself. In case of fire, the elevation would be insufficient to provide a very effective stream of water. During the fire, the tank supports may fail and all help from this source vanish. If the tank system is used at all, there should be a special tower high enough to provide a good strong stream rising higher than the ridge pole. It is all very simple with the pneumatic system; any reasonable

pressure can be provided. As might be supposed, a perfectly tight air-tank will cost more than one only tight enough to restrain water. A pneumatic tank, made by one of the most prominent makers, is said to cost about the same as an ordinary elevated tank with steel tower. It may be located below the frost line, thus at once eliminating the possibility of freezing.

A further reason for great elevation or a severely compressed cushion is to get pressure to accomplish filtration. A little consideration should make it clear that effective rapid filtration will require strong pressure, since a properly made filtration bed will probably set up considerable resistance to the passage of water. Of course, if the water is so pure that no filtration is necessary, then this additional pressure requirement will not have to be taken into account.

The pneumatic system is by no means in the experimental stage. It has been thoroughly tried out and its effectiveness demonstrated. One firm is prepared to supply tanks as small as six feet in length and two in diameter, containing ninety gallons, exclusive of air cushion, and is prepared to furnish tanks as large as forty feet long and nine feet in diameter, having a capacity of 19,000 gallons. If a greater storage capacity is needed, several tanks may be connected. Another manufacturer constructs tanks up to 15,000 gallons capacity. The 19,000-gallon tank, when two-thirds full of water, would weigh considerably over 105,000 pounds.

Having a supply of water, a tank, a pump, and necessary piping, there yet remains the question of power. There are the windmill and the hydraulic ram; there are the gas engine, the gasoline engine, the hot-air engine, the electric motor, and the steam engine. The conditions of individual cases of most suburban and country houses will eliminate one or more of these at once. Ordinarily, there will not be many to choose from. Thus special topographical conditions are necessary before a ram can be considered. Where it is possible to use it, however, it is probably the cheapest method. The first cost is not great, there is but little in the way of repairs, and the power itself usually costs nothing. With the windmill there is no expense for power; the same can hardly be said, however, as to repairs and upkeep in general. There are times when water is wanted and no wind is blowing. This difficulty can probably be pretty thoroughly overcome by having a sufficiently large tank. The fact that the wind blows at no expense is a powerful argument. If one lives near a trolley line and can arrange with the management, or in a district covered by a company distributing the electric current, then an electric motor may be the thing. Such an apparatus is simple to operate; the first cost is not great; it is compact, clean, and can be depended upon for instant service. The cost of the current will vary in different sections of the country; it will sometimes vary with the time of day when the power is used. Thus, if the current is used in the earlier part of the night—say from 8 to 12 o'clock—a higher price may often be expected because of the demands for lighting purposes at that time. Conditions surrounding the water supply may be such that the householder can do his pumping at an advantageous time, and thus secure a low rate. All this should be remembered in considering an electric motor. The cost of its operation may turn largely on the time of day it is used. He must also consider any dangers that may arise from the use of a heavy electric current. With the most up-to-date safeguards and arrangements, dangers to life and property are minimized. The use of a gas engine will turn largely on the accessibility and cost of a supply. Evidently, economic conditions are much different in a district where natural gas is available, at thirty cents or less a thousand cubic feet, from what they are in one where the manufactured article, at $1.00 per thousand feet, is the only possible supply. However, even where the gas itself is expensive, some other conditions may so control as to throw the choice to the gas engine. The gasoline engine is a very good piece of apparatus. The reservoir should, of course, be located at a distance from the engine and in a situation where the ill results of an explosion are minimized. The hot-air engine is an old and well-tried device. This is extremely simple in operation and is probably economical for small installations. The only direct expense in the production of power is for fuel and attendance. There are, in one of the prominent types, two vertical cylinders in which pistons move up and down. In the one, air is compressed; in the other compressed air is heated. The compressed air finds its way from the compression cylinder into the heating cylinder through a device known as a regenerator. The effect of heat on the compressed air is to give it great expansive power; this expansion is what drives the engine. The heating is done by means of a stove enveloping the heating cylinder. The stove may be run by kerosene, gas or anthracite coal. An idea of the expense can be gained from the following estimate of the makers: An engine able to lift 350 gallons per hour to a height of fifty feet will consume twenty cubic feet of gas, two quarts of kerosene or three pounds of anthracite coal per hour. An engine able to lift ten times as much water to the same height, in the same time, will consume 100 cubic feet of gas, five quarts of kerosene or seven to eight pounds of anthracite coal per hour. The steam engine is another solution of the power problem. Where the amount of work to be performed justifies, it is ordinarily economical.

Handicraftsman

Conducted by A. Russell Bond

Home-Made Summer Furniture

By Mary Edith Griswold

Photographs by Vahdah Van Eaton

BEAUTIFUL furniture for summer use can be made by a handy man or woman with a kit of tools which will cost under a dollar, the only really essential ones being a T square, a saw, and a hammer.

The ability to use these universal and simple tools will grow with practice and the gift to learn new tricks, but they do not require unusual abilities. Taste, tact and perseverance with a willingness to take pains will accomplish any of the things described in this article.

After you have learned how to saw a straight line, plane evenly, mark out your work and fit it together nicely there is nothing known to the ordinary carpenter's skill which you cannot do.

In the most enlightened homes a regular work-bench is found, having vises to hold the work, work stops, and tool rack. Of course upon such a bench are usually found more tools than those designated at the beginning of this article as necessary. There will be planes and bits and chisels and perhaps many more besides. With such an equipment wonderful things can be accomplished.

As such work is usually attempted by the children of the family, pieces which adolescents would naturally construct will perhaps be more suggestive to the greater number of readers.

Girls will usually begin by making something for their own rooms and the boys by making something for mother's. A shirtwaist and hat-box case is good for both. A very neat one can be made of four lengths of two-inch square pine lumber each piece four feet long, a top board of half-inch thick lumber and shorter lengths of the two-inch stuff for braces. These side-pieces also serve as rails on which to slide the boxes in and out.

This is a piece of furniture which can be made from boxes already on hand; the square hat box which is still in good condition will do and if you begin with it you will have to regulate the sizes of the other boxes in consideration of it.

Beautiful patterns of such cases may be seen in the furniture and department stores. They usually have two deep boxes underneath the hat box long enough to hold a lady's dress skirt folded once. They will hold a summer suit each.

The space on the side of the hat box may be divided into two smaller boxes for holding veils, handkerchiefs, or the little accessories to a lady's summer toilette.

The handsome ready-made ones are covered with cretonne, but they are just as pretty and about as durable if covered with wall-paper. The general effect is the same because wall-paper comes in as pretty patterns as cretonne.

Another thing which boys or girls can make with their own hands is a sewing screen. The frame is made of lumber. Any kind will do, because it is completely covered with cretonne. It must be straight and planed off smooth, or the cloth will not lie smooth and will look bad. The points of such a screen do not have to be dovetailed, or done in any fancy way. Cut off half the thickness from both boards so that they will fit together neatly and then nail them together with wire nails and drive the heads down deep with a nail set, being sure to rest the work on a flat iron, or some other solid piece of metal. Sewing screens have a top row of spools of thread, a pocket below to hold things in, and a little table which lets down when required.

A kitchen table used for a desk with book shelves built on top

The wooden frame of this screen must be covered with the cretonne before the outside piece is tacked on so that there will not be any raw edges showing.

These are particularly nice for the nursery because they are light and easily moved about from place to place and they make mother look happy, forming a sort of lovely background for childish memory.

They are also nice for a young girl because they please

her aesthetic sense. Older girls often become very proficient in the making over of their rooms. The illustration of a young lady sewing beside her window shows what a clever girl can do with the plainest of things. The book shelves were made of rough packing box boards, but they look delightful with the gold braid nailed to them with brass tacks. The desk is an ordinary kitchen table which cost a dollar and a quarter. The small articles on the desk were all made of nothing, practically. The blotter is a five cent sheet of strawboard with corners of cretonne. The tray for holding penholders is made of cretonne, as is also the lamp shade and the letter paper holder.

The window is a little bower, made by planting a few seeds in a box and the striped awning itself adds its note of cheerfulness.

The window curtains are cretonne almost the exact size of the window-panes and edged with cotton braid to make them hang well. They look like panels and keep out the strong summer light.

Making a frame for a screen

The beauty of such an arrangement is that one does not have to wear it out before making a change, or feel the folly of extravagance.

In making the shirtwaist cases there are several extra touches which may be put in with only a little more work. For instance it is a great convenience to have a transverse hinge in the lid of the boxes used for these cases. It saves taking the whole box out every time some little thing is wanted. These hinges are made of cloth and glue.

Cut the box lid in halves down a line from side to side, being careful to make a clean cut. Take a strip of strong drill the length of the lid and an inch wide, and cover it thoroughly with glue. To paste on lay the two edges together and smooth out the strip.

Fitting a box lid with a cloth hinge

This strip is for the upper side of the lid. Now if you want to make a very good job of it wait till the first strip has dried and then prepare another strip of the drill with glue, lay the lid over the edge of the bench or table upon which you are working, being sure that the edges are at right angles to each other. When you smooth the strip down to fit closely to the edges of the hinge, the cloth will be at right angles to the other edge. This will give the needed spring to the hinge.

Delightful small cases for the little objects which usually litter the boy's or girl's bureau can be made of old cigar boxes. The frame for such a small case needs to be substantial, though, or the little box drawers will not draw smoothly. The quarter inch boards upon which cloth is wound would make the nicest material for such work. They may be had for nothing from your friend the merchant or the janitor of a big department store, or bought for two cents apiece from a second-hand box factory. They are pleasant to work with because they are smooth and the lumber has been thoroughly seasoned and will not warp.

Good cigar boxes are made of cedar and have a delightful odor after they have been thoroughly soaked in water and the cigar labels scrubbed off. The black lettering which is always printed upon the wood will come off with sandpaper and there you have a perfect little drawer for your case.

The difficulty will be to get four or five boxes of the same size, but there is nothing very serious about such a task if the carpenter has brains.

Cigar boxes may be covered with cretonne or wall-paper can be pasted over them if the maker insists upon their being covered. These cabinets make perfect cases for holding spoons, knives and forks, or for spice closets. For the toilette table they may be made invaluable in holding hairpins, jewels, powder puffs and what not.

In making this as in everything else in life the success will depend upon getting the piece nicely made and in making the proportions right. There is a balance to everything. Especially is this true in regard to the sewing screen. Good measurements for such a screen are three feet by a foot and a-half for each of the two pieces. The brace should not be put in the exact center of the frame because you want

to use it for the spool rack, so about a third of the distance is correct. This piece is first covered with the cretonne and then a row of nails is driven in to serve as spool holders. If thin wire nails with small heads are used you will not need to file them off, but paint or gild them, to prevent rust.

An excess of straight lines is wearisome, so if you can it will be restful to have some of the corners rounded off, and some of the edges sawed into curving lines. The illustration of a sewing table illustrates the beauty of the curving line. The general idea is a box on legs to make it handier to reach into, with a board top and a sliding sort of bin underneath which will pull out and in without disturbing the top of the table.

The making of such a piece of furniture is a perfectly simple process. Its beauty will depend somewhat upon the size and shape of the box. If you wish to make it of a packing box carefully select one at the grocery. After that it may be covered with cretonne, then lined and fastened to the frame.

A simple frame for it will be made of two-inch square lumber, cut into lengths for the legs, with a brace of the same material six inches above the floor connecting the two pair of legs, and a cross-piece to connect them. For light work such a frame will last a lifetime and not jiggle.

The top board must come over the edges of the box about two and a-half inches so as to give the whole a graceful appearance.

The sliding drawer underneath will have to be made to fit the frame. The piece of lumber which edges the top of this bin is two and a half inches wide and a half-inch thick. Small cleats of half an inch square are nailed to the sides for grooves for the bin to slide on. The bottom should be about half the size of the top and the sides must be sawed out to fit. The seams should be glued as well as nailed. Then the cretonne can be put on, and the inside finished with either white enamel paint or lining cambric. A knob to draw it out completes the article.

The top and frame will look nicer if they are painted white and finished with enamel paint.

A sewing table and a chest of drawers

A sewing screen with adjustable shelf and pockets

A chest of drawers and hat box

Cutting Wood With Paper

A TALLOW candle bullet can be fired through a board. A straw driven by a cyclone will penetrate a tree. A stream of water under high pressure will tear the skin off a man's hand. A copper disk, rotating slowly, can be cut by a steel cutting tool, but, if rotating at high speed, it will turn about and cut the steel. These facts suggested the following experiment on the cutting properties of paper. Everyone knows that the hand can be cut badly with paper, but the experiment was undertaken to discover whether hard substances, such as wood, could be thus cut.

A sheet of two-ply bristol board was trimmed to the form of a disk, ten inches in diameter, and a wooden spool was glued to the paper at its center. An electric fan was dismantled of its fan and guard, and the spool was bored out to fit snugly on the armature shaft. A wood screw, with its point blunted, was threaded transversely through the spool, and against the shaft, to fix the paper disk securely thereon. The current was then turned on, and a pencil was held lightly against the edge of the spinning paper. Immediately the paper bit into the wood, and cut very quickly, with an exceedingly fine and clean kerf. When the lead of the pencil was reached the progress of the cutter was much slower because the graphite acted as a lubricant.

However, before long the pencil was cut in two and the bristol board showed no material wear.

The front of the house

Two Types of Stucco Houses

By Burr Bartram

THE great movement toward the use of cement in house construction is well exemplified in the two houses which form the subject of this paper.

The house built for Mr. W. L. Serrell, at Kenilworth, Ill., is an artistic expression of the highest accomplishment in cement construction. Mr. George W. Maher, of Chicago, the architect of this house, has taken special care to design a dwelling that would meet all the requirements of the owner, and at the same time afford him an opportunity to put his best efforts into a house of distinction.

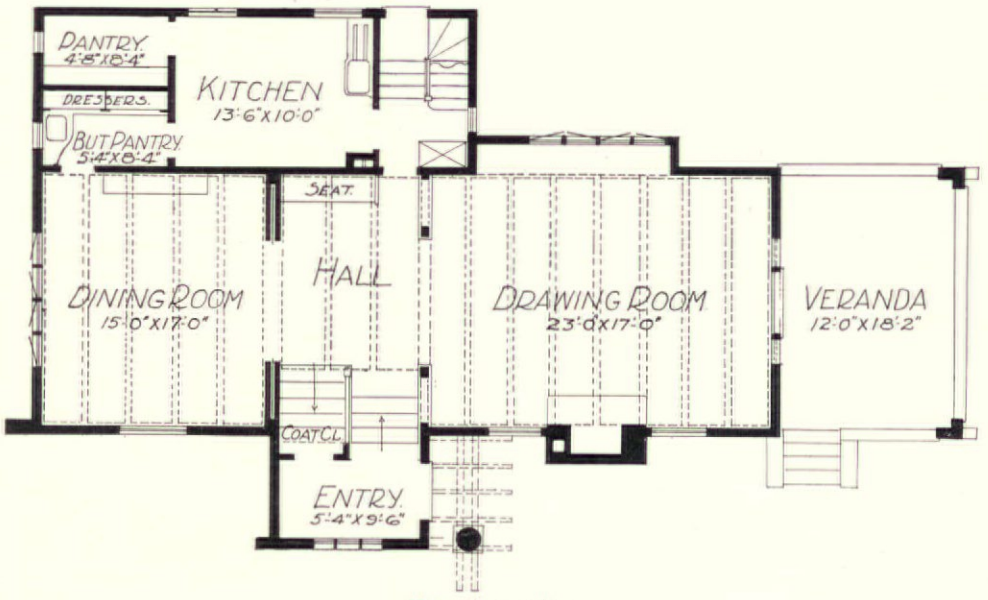
The main walls are covered with cement stucco of a rough gray surface, while the half-timber work and trimmings are painted bottle green. The roof is covered with shingles and stained a moss green.

The interior arrangement of the first floor is perfect in regard to light and ventilation.

The entrance hall is built one step above the grade line, while four steps lead from the entry to the level of the first floor. The hall is a central one, with stairs ascending over the entry to a broad landing, on which there is placed a cluster of lighted small windows.

This hall, the living- and dining-rooms are trimmed with chestnut, stained and finished in a soft brown tone.

The entire ceilings of the three rooms are beamed, forming panels, the spaces among the beams being tinted an écru tone of yellow, which gives life and lightness to the color scheme of the rooms. The main walls of the living-room have a tinted tone of the same color. The fireplace, built of brick with the facings extending from the floor to the ceiling, occupies the center wall space on one side of the room, while opposite the fireplace there is a bay-window furnished with a broad paneled seat. French windows open onto the living-porch, which is the feature of the house. This porch is enclosed with screens in summer and glass in winter; and, being heated by steam, affords a place for the housing of plants during the cold weather.



First floor plan

The dining-room has a cluster of casement windows placed at one side of the room, while the inside wall space is occupied by a built-in buffet. A plate shelf extends around the

Exterior wall of the staircase

Main entrance of the building

The side and rear of the house

The living-room

room at the height of the top of the buffet. The wall space below the shelf is treated in a soft buff tone, while the wall space above the shelf is covered with a large-figured paper in golden brown, blue and green.

From the dining-room the extensive vista through the hall and the living-room to the living-porch is one of unusual range and fascination.

The pantries and kitchen are treated in a sanitary manner, and are equipped with all the best modern conveniences.

The owner's suite and guest-rooms occupy the second floor of the house.

The sleeping-rooms are treated with white enamel paint for the trim, while the walls of each room are finished in one particular color scheme. The bathrooms have tiled wainscoting and floors, and are furnished with porcelain fixtures and exposed nickel-plated plumbing.

The house contains ample storage space and two bedrooms in the third story, and heating apparatus, fuel-rooms and laundry in the cellar.

Considerable cultivation is in evidence about the house, and the lines of the building have been very much enhanced by the beauty of the growing shrubs and plants. The approach to a house is the introduction, and the closely-clipped hedge at each side of the walk presents an inviting appearance in advancing from the street.

The ground plans are simple and permit the laying out of a lawn in front with a few bushes, which with the low hedge and several choice trees give just the effect needed for setting off the dwelling. In the rear there is more horticultural elaboration, as will be seen in the engraving, where there is some approach to a massing of plants and bushes, which with the low hedge and severity, which is the most pronounced, is the garden square built on the highest part of the roof of the living-porch at one end of the house.

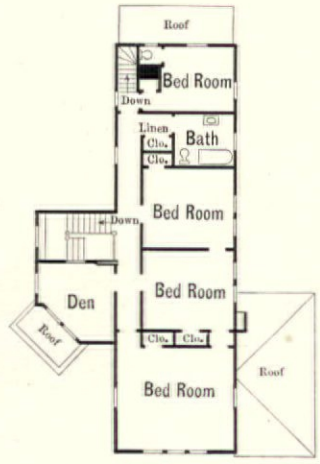
The fireplace in the living-room

The dining-room

In selecting a dwelling of this type of stucco construction, the example presented in the illustrations was found and studied by the writer, and it impressed him with the value of the free style shown in the architect's work. Still another striking feature was the diffusion of colors, a scheme carried out in this instance in a way which furnishes many pleasant effects in the gray stucco and greens of the outside and in the tints of brown, yellow and blue of the interior. The last colors, while infusing the ceilings, walls and the like with warmth and life, also contribute a tone to the inside, which is in pleasing contrast to the gray of the rough cement construction and the opposing shades of the roof, the half-timber and the trimmings. In addition to the architectural points which work in stucco can achieve, he was also impressed by the practical plan of the dwelling and its effective ventilation.

First floor plan

The living-part of the house



Second floor plan

THE residence of George M. Jacobus, Esq., at Red Bank, New Jersey, which was designed by Fred M. Truex, architect, of New York, is perhaps one of the most interesting of its type of cement construction, for the reason that considerable liberty has been taken in the design. The departure from routine in planning this house is a feature of the interior arrangement. The entrance-porch, built at an angle, arrests attention by the unique way in which it is designed. It is separated, as it should be, from the living-porch. The extension of the second story over this porch is also a liberty in cement construction which has proven entirely satisfactory.

The exterior walls of the building are constructed of a light-gray stucco finish, and the roofs are covered with shingles stained a tile red, which harmonizes well with the gray stucco and gives a Spanish feeling to the general scheme. The porch floors and columns are built of re-inforced concrete.

The entrance-hall is built two steps below the level of the first floor. Both the hall and the living-room are trimmed with chestnut and stained and finished in a soft brown tone. The hall has a paneled wood ceiling and a concrete floor marked off in squares. The living-room is well balanced by the fireplace being placed in the center of one side of the room. It is built of light gray brick, and is provided with a stone shelf. The walls have a low wooden wainscoting and a paneled wall extending to the ceiling, which is beamed. The panels of the walls are covered with golden-brown burlap. The dining-room, opening direct from the living-room, is also trimmed with chestnut and is finished in a similar manner. The walls are paneled from the floor to the ceiling, and the ceiling is paneled and cut in between chestnut beams. The floor of the dining-room is laid with re-inforced concrete in red and marked off in squares, and is one step above the level of the floor of the living-room.

The kitchen and the pantry are well equipped with all the best modern appointments. The kitchen walls have a wainscoting of Keene's cement to the height of five feet. This wainscoting and the entire walls of the kitchen are treated with white enamel paint.

The second floor is treated in a dull white enamel, and the doors of birch are stained and finished in mahogany. The den is trimmed with chestnut.

The bathroom is treated with white enamel and is furnished with porcelain fixtures and exposed nickel-plated plumbing. A hot-water heating plant, the fuel-rooms and a

The entrance front of the house

cold-storage room are placed in the cellar, and all these last, the so-called lesser rooms and accessories of a house —the kitchen, bathroom, pantry, fuel-rooms, etc. — need not in this dwelling be considered except that they are models of right dimensions and perfectly furnished.

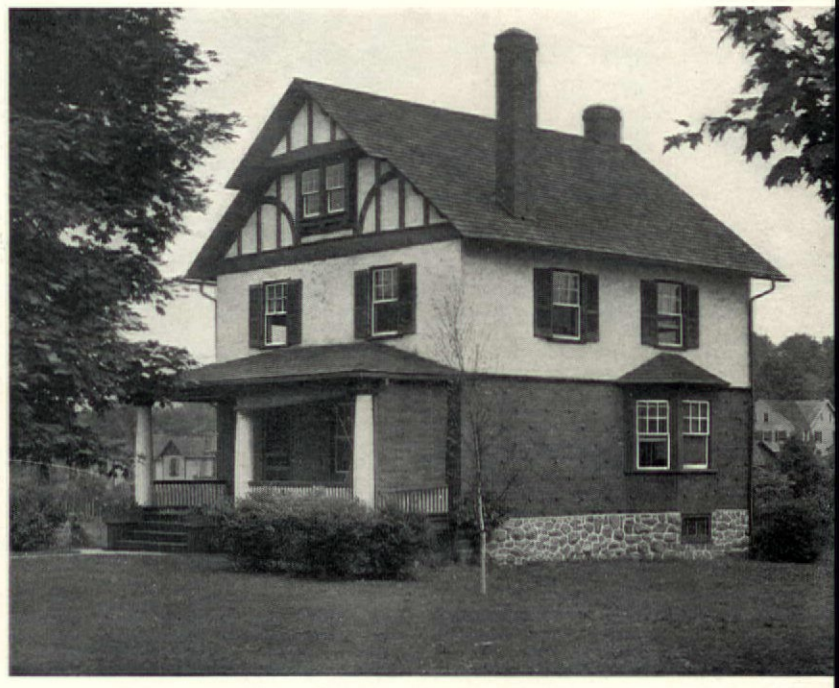
The main structural work of this house has received more than the usual attention given by designers to residences. The dwelling is a rich example of varied combinations and some of these may boast of marked originality; for instance, the boldness of the projection of the small porch and its position in relation to all the lines of the plan. A porch placed in this way is singularly fitted to receive a very imposing and graceful treatment and one which releases the design from any conditions of severity. There is not space here to specify all the features of this house, but the illustrations will allow one to make an architectural excursion around and through this nicely arranged residence, and they point out the adaptability of the lower rooms for the harmonious disposition of furniture and accessories of indoor living. The house is very evidently built with the intention of securing comfort in the variable climate of northerly New Jersey, and will withstand effectively the coldest and most inclement weather, while the very extensive porch area will make outdoor summer life most enjoyable.

The living-room

The living-room, looking into the dining-room

The dining-room

A stone and shingle house costing $5,500



Stone, brick and stucco are the materials used

A gambrel-roof house of excellent design

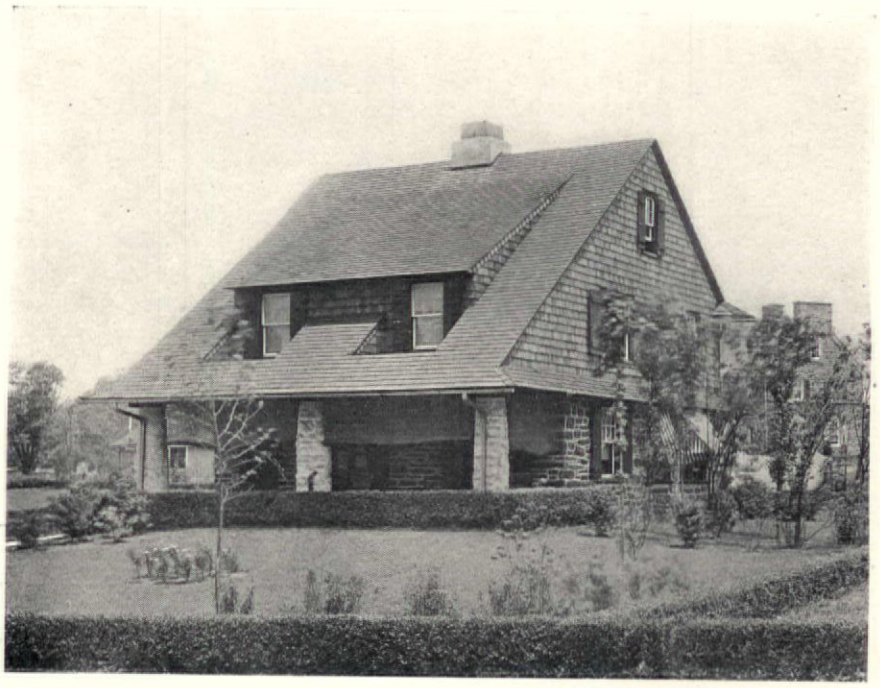
A brick house costing $5,200

A dwelling house of stucco costing $2,500

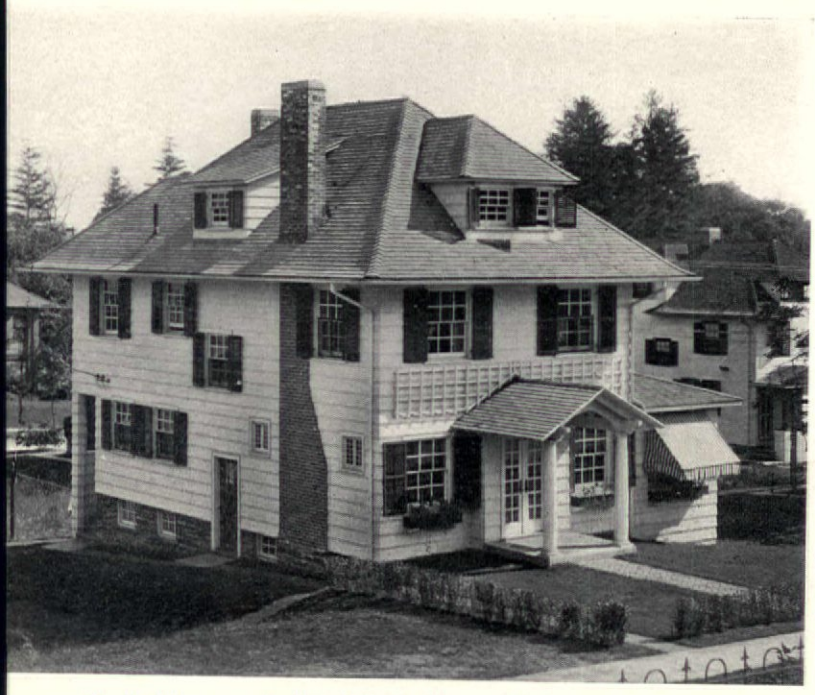
A model house of excellent proportions

A GROUP OF MODERN DWELLIN

A reinforced concrete house costing $3,500 complete



A lean-to roof house of good design



A double-coursed shingled dwelling with hipped roof

An interesting house of combined stucco and shingles

Stucco and shingles are used to build this house

A gambrel-roof house of simple pretensions.

ING FROM $2,500 UPWARDS

The Table

How To Arrange Porch Trays

By Phebe Westcott Humphreys

Photographs by Mary H. Northend

BREAKING away from non-essentials and novelty in dainty serving, is the secret of success for the home caterer in hot weather. The popularity of tray service is encouraging overworked housewives throughout the land to issue their own little emancipation proclamations, in regard to elaborate catering for the family, or the summer guests. Decorative trays of spacious dimensions may now be secured at little cost—in fact the size, the plan, the general durability and attractiveness of the popular porch tray of to-day, with its strong handles, and upright rim to prevent the dishes from sliding off, show the tendency towards simplicity in service; for the popular porch tray is of sufficient size to accommodate an entire meal for two, when it is light luncheon, or Sunday supper, that is being served.

The arrangement of the tray will depend upon the function of the serving. For the porch tea, or the light refreshments for the guest, it should be distinguished by its simplicity. Any effort toward display will detract somewhat from the gracious hospitality of offering cooling refreshment, or the restful "cup o' tea," after the guest is cosily settled in the comfortable porch rocker or among the cushions of the cool canvas-backed sewing seat—ready for a chat while nibbling at the dainty crackers and cakes, and enjoying the beverage.

Trays of assorted sizes should now be found in every summer home, as they may be bought in inexpensive and durable form. It will be much wiser to have several of the less costly, rather than one big, elaborate, unwieldy affair, difficult to handle and not always appropriate. For the little oval tray of the one-guest-size (or, when used for home service, of the supper-for-two-size), may be used with or without the linen centerpiece or the small doileys. With a plate of salted wafers, and one of sweet cakes in the center of the tray, the pitcher of iced grape juice, or lemonade, should stand at one end, and the two tall glasses at the other; and the additional touch, for a festive occasion, may be a single half-blown rose with long stem, simply laid on the tray between the cake plates, to be claimed by the caller after enjoying the refreshments.

I know a gracious little hostess who possesses the knack of doing just the right thing to please and flatter each individual guest; and when a porch tray luncheon is in progress, or even the simplest of tray refreshments, the guest or guests will find their favorite blossoms on the tray if it is possible for the garden to supply them—whether it is a single beautiful rose, a bunch of violets, pansies, sweet peas, or one of the various annuals blooming in the garden beds at the base of the porch, or in the flower boxes outlining the railings. Flowers laid loosely on the tray are better than any attempt at vase or bowl clusters; as they occupy less room and all stilted appearance is avoided. No matter how carefully and painstakingly the tray has been arranged, it must have the appearance of having been "picked up" on short notice, with its attractive refreshment gathered together with little trouble or anxious

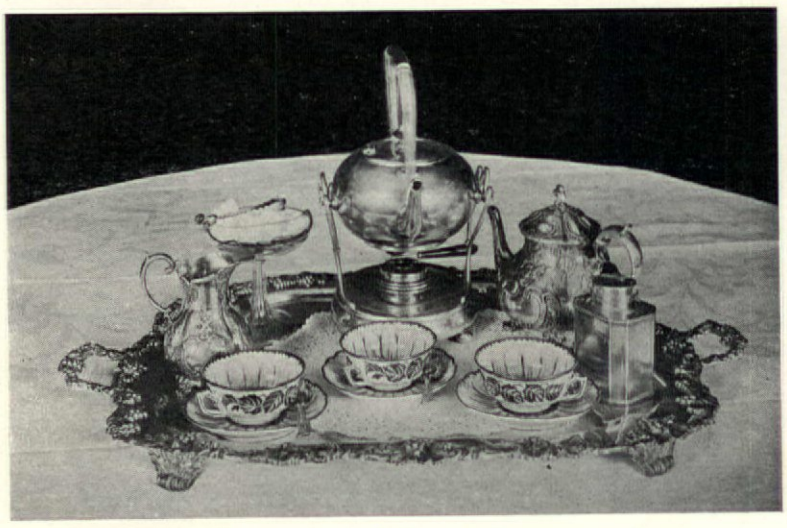


Fig. 1—A tray arranged for an afternoon porch tea

Fig. 2—Biscuits, sardines and coffee are arranged on this tray

thought. It is this knack in appropriate arrangement, that makes porch tray service appear so friendly and spontaneous a refreshment.

The illustrations show some exceedingly attractive trays arranged for serving porch teas and luncheons. Fig. 1 is simply a tea tray arranged for an afternoon porch tea; yet so dainty is the equipment, and the arrangement, that with little trouble in its preparation it will make the daily function of afternoon tea appear a festive occasion.

Fig. 3 is arranged for an appetizing porch luncheon. Here ginger ale, crisp biscuit, cream cheese, deviled herring and prestallets are tastefully presented, the simplicity of the tray corresponding with that of the fare. When ginger ale, sarsaparilla and similar soft or "temperance drinks" are served, the bottles may be set directly on the tray, with the siphon bottle; with a plentiful supply of finely cracked ice in each glass. But the grape juice and the orange or lemonade are more pleasing in a tall pitcher, accompanied by the cooling tinkle of ice in the pouring.

Another porch luncheon is shown in Fig. 2. Sardines, biscuit and coffee form the appetizing repast attractively served. Fig. 4 illustrates a dainty tray equipped with iced tea, lady fingers, sandwiches and cut cake.

It is noticed that Figs. 1 and 2 have dainty little oval tea cloths covering the trays. Where there is pouring of either tea or coffee this is appropriate, and gives additional daintiness to the serving. Figs. 3 and 4 have the polished surface of the trays exposed, where only the cold drinks are served with lighter refreshments.

When a number of guests make it necessary to serve more refreshment than can be accommodated on one tray, two may be set side by side; and their attractive arrangement in this instance will require special care. The square-corner trays, of the same size, will be best; and they may be arranged to appear as one large tray when placed close together on the porch table, with some branches of quick-growing vines—pulled from the porch honeysuckle or cinnamon vine or other thrifty climber—hiding the place where the two trays join. Sweet alyssum blossoms or saucy pansy faces peeping from the vine tendrils will make this double-tray decoration one of exceeding beauty, while serving the purpose of utility. Quick-growing, profuse-blooming annuals, that bloom better when their flowers are picked daily, should form a part of every porch box or flower bed; and their use in the decoration of porch trays will be constantly appreciated.

Fig. 3—Uneeda biscuit, cream cheese, ginger ale and deviled herring are arranged on this tray

Fig. 4—Lady fingers, sandwiches, cake and iced tea are placed on this tray

Notes on Cacti

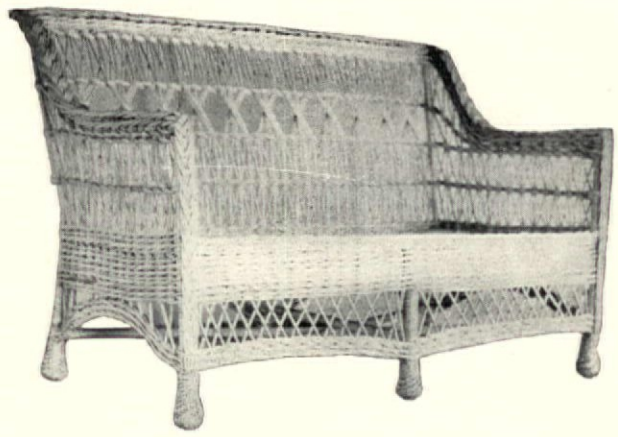
THE Echinocacti or Hedgehog Cacti are perhaps some of the most familiar of all the Cactus family. A number of these flower freely when they attain to a good size, but the group known as Echinopsis is much more worthy of attention. Nearly all these will blossom when they are fairly small, and the flowers produced are among the grandest of all the diffrent kinds of Cactus. These plants like an open mixture of good fibrous loam and small pieces of sandstone, well drained pots, a liberal supply of water in summer and practically none in winter. One of the handsomest kinds is found in Echinopsis Eyriesii, a plant which bears long-tubed fragrant blossoms of a brilliant whiteness.

Another very free flowering kind is E. Tubiflora, a summer blooming species with white blossoms, whilst E. cristata purpurea may be recommended as a variety with beautiful rose-colored flowers. A method which is recommended as a means of making these plants flower is certainly singular, but it has the merit of being successful, when, as occasionally happens with these rounded Cacti, they refuse to bloom. With a sharp knife, cut right across the plant from one side to the other, thus taking its top off. The upper portion will probably grow if planted in sandy soil; but in any case the rooted half will shortly after start to grow very freely. The new shoots will increase very rapidly in size, and as soon as they become ripened will be likely to produce flowers.

In conclusion, mention should be made of the Epiphyllums, which are distinctive in that many of them naturally bloom in the autumn and winter. On account of the liability of most of these species to rot away, it is the custom to graft them upon stock of some other kind of Cactus.

The Epiphyllum Coccineum is a very beautiful variety and of fairly simple culture, provided perfect drainage is arranged. During very hot weather these plants require some shelter from the sun, as they require more shade than any of the Cacti. When the plants are in a healthy state the flowers are very freely produced, and the former can be relied upon to blossom with regularity.

Curved-back armchair



Settee of close-meshed weave

Square-back armchair

Furniture for the Home

Willow Furniture

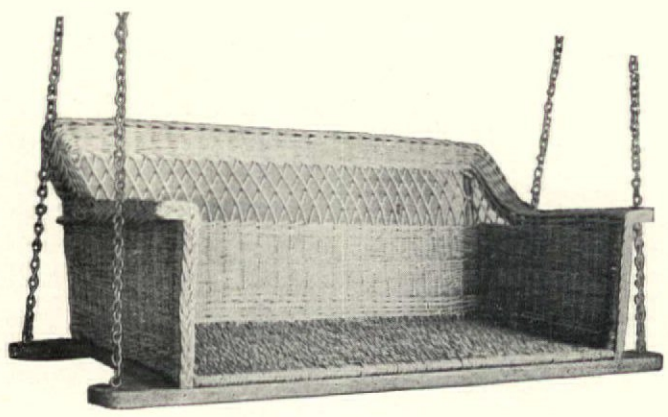
By Vernon Powers

THE willow furniture industry, like so many other lines of business, began in an extremely crude and limited way. About eighteen years ago, two or three Polish families and one Englishman were making willow chairs in their homes and selling them to the stores, a few at a time, as they completed them. Since that period, several factories have sprung up, each employing from fifteen to fifty "hands," and the importation of foreign osiers for furniture-making now runs into the hundreds of thousands of dollars. The best willow comes from France, near the Belgian border, and the traveler may see acres upon acres of beautiful, tall osiers growing everywhere. The willow is planted carefully, and each year the shoots or osiers are cut close to the ground. No shoots or "suckers" from the willow trees are of sufficient pliancy to be of any value.

The osiers, as soon as cut, are gathered into bundles and placed on end in tubs of water, and allowed to stand for some time in order to aid the sap in running throughout the entire length of the stalks. Then the process of peeling is begun. This is accomplished by the aid of a specially designed knife, which is made in the form of a blade, with projections at either end, so as to be held in position by the fingers, thus bringing the blade between the fingers. A skilful "peeler" deftly runs his hand the entire length of the osier, removing the bark in a moment. The shoots are then gathered into bundles and bound by wires, ready for shipment. Each bundle is made up of carefully assorted stock, so as to have shoots of the same diameter in one bundle. About four or five sizes of shoots are required in the manufacture of willow furniture. All of the weaving is done by hand, and several hundred designs of chairs, tables, swings, chaise-lounges, beds, sideboards, and dining-room suits are included. Like everything else made in America, the majority of the manufacturers are at present trying to vie with one another to see how cheaply the goods can be produced, and the department stores of the country are clamoring for low-priced goods. The result has been to sacrifice quality, but a few of the leading manufacturers are adhering to prices which will warrant the making of the first-class goods. Cheap willow furniture is not sufficiently durable to warrant its purchase, but well-made French willow chairs will last a lifetime.

Porch luncheon set

The original use of willow furniture was for the summer cottage or the porch, but today the variety of patterns and beautiful brown and tan colorings have induced consumers to furnish their winter homes in part with willow. Many imitations of the willow furniture are made in reed, which is nothing more than the smaller sizes of rattan, and these goods are not as strongly built as the willow pieces. Willow furniture, like everything else, can be produced at all kinds of prices, but if one desires strength, durability, harmony of color, and pleasing design, it cannot be obtained at cut rates. A tastefully and durably furnished willow room will cost, including cushions, from seventy dollars to two hundred or more. When this is accomplished, the purchaser will enjoy the ease that comes from the use of well-constructed ware when made of very good material.



Broad hanging seat

Wheeled tray

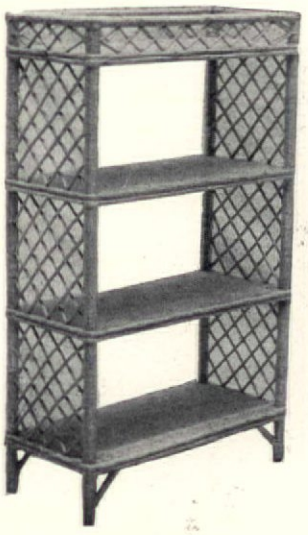
Sewing-room table

Reading table and book rack

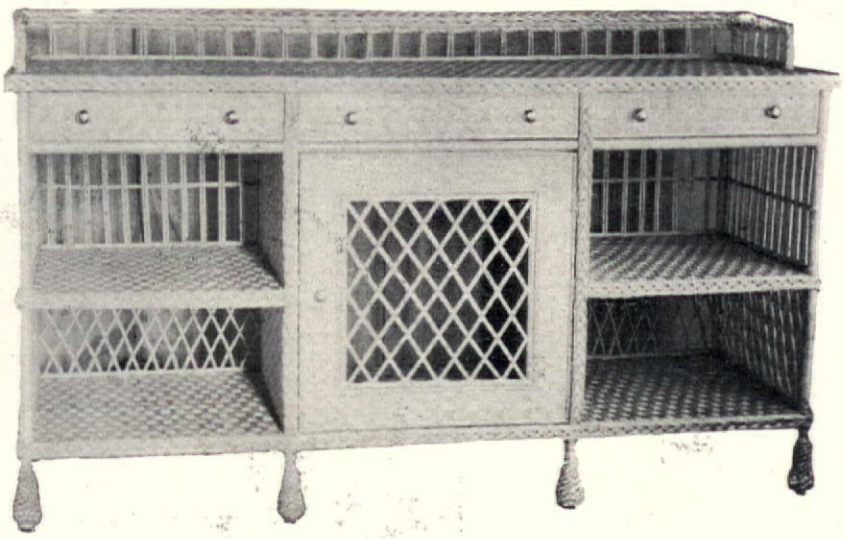
In the modern wickerware stores the willow furniture goods exhibited make a favorable impression by the wide range and number of styles. But a close inspection reveals the fact that the cheaper grades lack the finish and fineness that are needed to stand the hardest usage of house service. This should lead a purchaser to practice real economy by selecting articles that are guaranteed to have the brand of the French willow. These very suddenly leap in price, but their material and workmanship are of so fine a class that the pieces are bound to hold their shape, color and durability for a satisfactory number of years. French willow stands to compete in all these essential qualities with much of the strongest leathers and upholstered materials in vogue, and is able to surpass the mass of furniture output of the day.

A surprising feature of this industry is the skill attained in designing the forms of willow frames. All articles that are fashioned in wood in the current forms of the art can be successfully, if not perfectly, reproduced by the weaving of osiers. A view of the accompanying engravings will show a result which makes it possible to claim that there is no size, shape or type of furniture incapable of being duplicated or invented in wickerwork. Whether the weaving is plain or intricate, the patterns are marvels of adroit workmanship. The most difficult turns, angles and combinations are negotiated in ways that make the contours and elaborations of all styles of willow furniture beautiful in their general appearance. The two massive armchairs, one at each end of the large settee, are different in the mesh of the weave, the forms of the back, and other details, and this variety shows the versatility of design and the skill of the weaver. The settee exhibits the refinement reached in compactness of weaving, and in the other articles representing a desk, a table, a shade chair, a bookcase, a sideboard and a luncheon outfit of table and chairs, are seen average examples of the advance of willow pieces of porch and indoor furniture into their present popularity. Willow furniture of the types shown in the illustrations present many features that suggest articles appropriate to the utilities as well as the luxuries of a well-ordered home. Their appearance indicates that the pieces are capable of combining the means of carrying out one's ideas in making a corner cosy, a porch a place of repose, a bedroom or dining-room as well furnished as if the articles were fashioned of the more sturdy woods, and with the added advantage that all the pieces are easy to handle, refreshing in appearance, cool in use in warm weather, and when amply cushioned, perfectly comfortable for service and pleasing to the eye, in the colder seasons. These designs in numerous cases yield examples that are adapted to beautify a pretentious room sufficiently to aid those other contributions of objects and ornaments that inform it with artistic life. Just as significantly do some answer the practical needs of the working side of furniture, as shown in the wheeled tray, or on the side of luxuries when the summer porch comforts are made very inviting in the hanging settee; points in all these cases obtained without any claim of purity of line or perfect scroll work.

Beach chair



Small bookcase

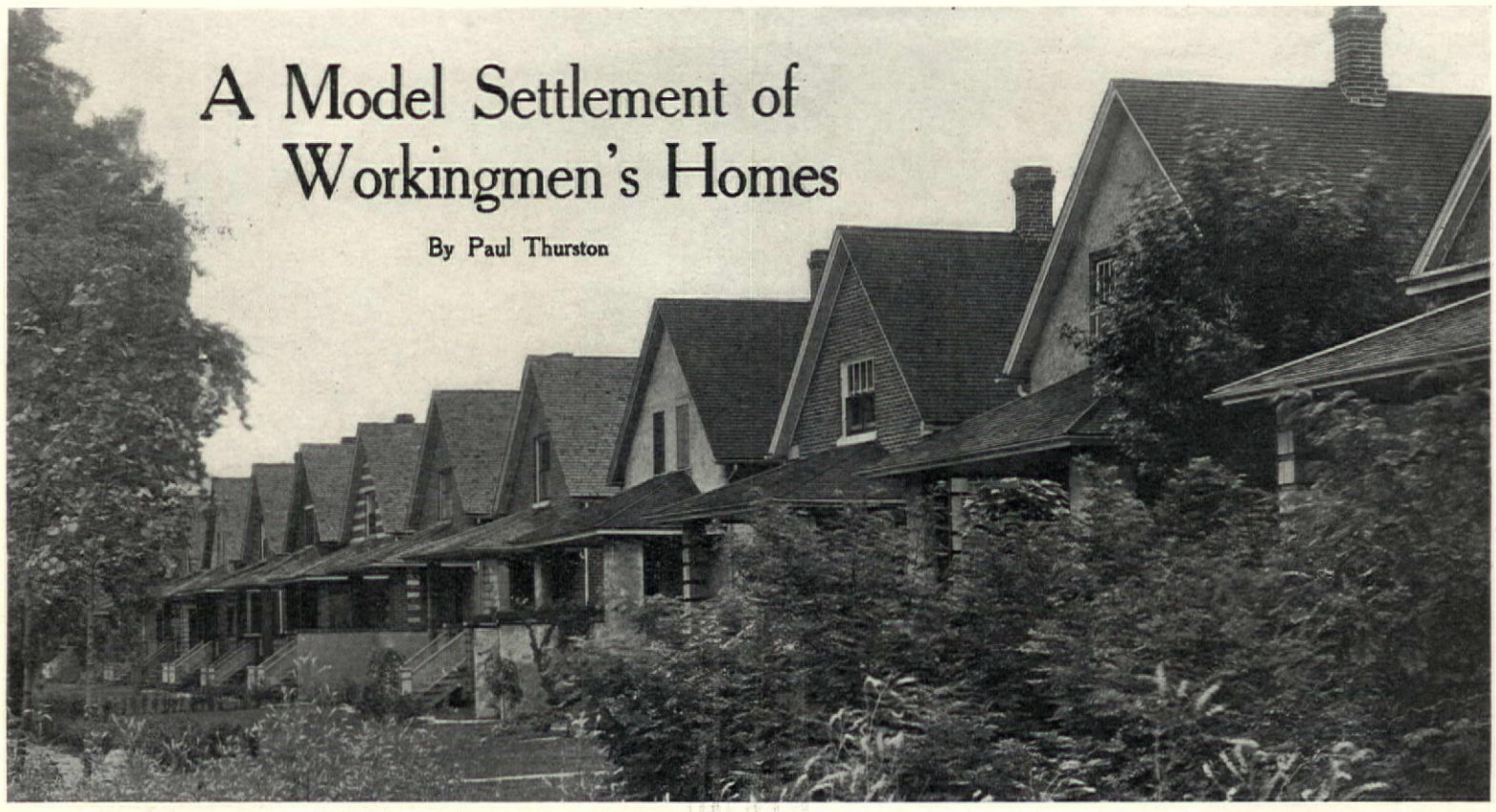


Sideboard for wicker-furnished dining-room

Writing desk

A Model Settlement of Workingmen's Homes

By Paul Thurston



A group of small houses built after one plan, and showing the value in the use of different kinds of material for their construction

THE village of Mayfair, just outside of the city of Chicago, is most fortunate in having two men as enterprising as Messrs. Sorensen & Olson, who have laid out several squares of land and have planned and built an interesting group of houses, some of which are illustrated in this paper. How best to make the settlement beautiful has been a subject of careful consideration. One of the rules of the village is that the front line and the division lines of each of the properties shall be divided only by a closely clipped hedge of privet. Every encouragement is given by the promoters to the land-owners to maintain the proper keeping of their home grounds, so that the beauty of each street, which has been so earnestly sought, may be attained. There are no monotonous and depressing rows of brick and mortar in this group of little dwellings, but dainty individual houses are there, which, in time, will be covered with growing vines, thereby enhancing and creating a more effective appearance than at present obtains. A feature of peculiar interest is that only one floor plan has been used in the construction of these little dwellings, the point of distinction of each of the houses being found in the use which has been made of the various kinds of materials employed in their construction. This is due not so much, however, to the great variety of materials which has been

A brick and stucco house, cost $3,400

A cement stucco house, cost $3,350

A brick and cement block house. Cost $3,300

A brick and cement block house. Cost $3,300

A dwelling built of stucco. Cost $3,300

A stucco and brick house. Cost $3,350

Cement block and brick house. Cost $3,500

A cement block and brick house. Cost $3,400

employed, as it is to the manner in which they have been combined. One of the houses may be built of stucco, another of brick, another of frame and brick, and so on, throughout the entire village, yet the general aspect of each house is distinct in character one from the other. In regard to the planning of these houses, there is only one standard type of dwelling. They have been planned, however, after much thought and careful study. Each house contains a large living-room, dining-room, kitchen and pantry on the first floor, and three bedrooms and a bathroom on the second floor. The houses are trimmed inside with the best grade of oak, for the halls, dining- and living-rooms, and with Georgia pine for the remainder of the dwelling. The floors are laid with maple. A considerable saving of space is attained by the elimination of a hallway, and by building the staircase to ascend from the living-room of the house. The kitchens are furnished in the best possible manner; the bathrooms are provided with porcelain fixtures and exposed nickel-plated plumbing. The cost of these houses ranges from $3,000 to $3,500, according to the materials used in their building. This is a very low expenditure, and is an important feature in dwellings of this character. The dignity and simplicity of these houses are also matters to be considered. These features are of particular moment when one considers the high-priced conditions in the building trade at the present time. In the fashioning of these houses there has been one thought, and that has been to have an exterior which has all that is necessary to give each design an architectural character, and an interior so thoroughly equipped as to meet all the modern requirements of their class, and at the same time to eliminate all unnecessary ornamentation and equipment. These workingmen's homes show to their full advantage in the illustrations. They seem fitted to occupy a nice point between attractiveness and comfort, which consists here in the charming variety obtained after building on a single plan. Exteriorly they have the air of a group of houses worthy to stand in full day in comparison with many less economic dwellings in the suburbs of any American industrial city; and the interiors will show a workingman's family benefits as large as are to be had in many types of homes. Differing as they do from one another, these houses as planned will help the desire of purchasers to own homes with the hallmark of individuality, as here so favorably shown.

First floor plan

Second floor plan


A home of stone and brick

Counterfeiting old enamel miniatures

A studio in which imitations of antique vases are made

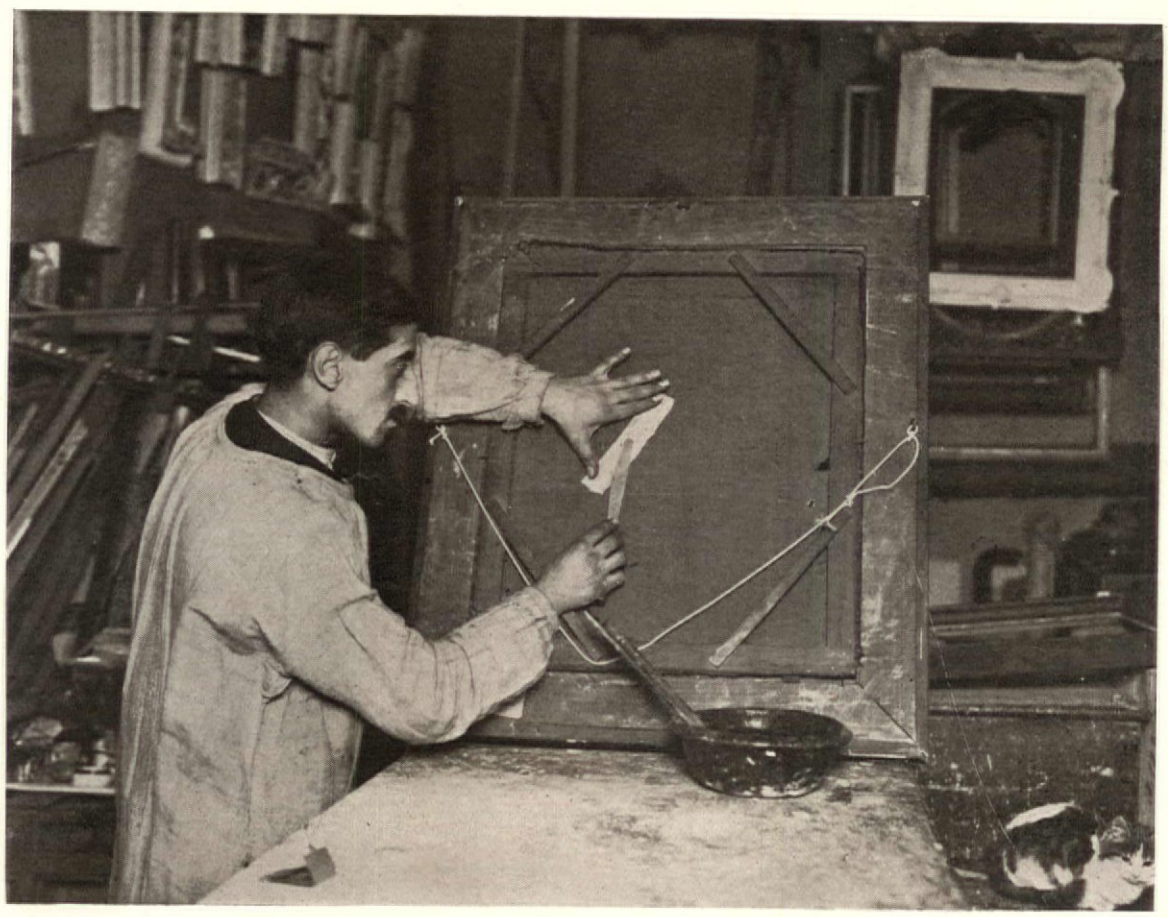
Treating an engraving to give appearance of age

The Counterfeiting of Objects of Art

By Jacques Boyer

THE love of curios and antiquities, which has become so widespread at the present day, has given rise to quite a new industry thoroughly typical of modern technical perfection. This is the science of preparing highly artistic counterfeit reproductions, a science which, under the impetus of a most thriving business, has risen to the highest level of modern attainments. As a striking instance illustrating this state of affairs, it is only necessary to call to mind the history of the famous tiara of Saitapharnes, which was purchased by the Museum of the Louvre at a price of $40,000 as the masterpiece of a Greek artist of the third century. In point of fact, this object, which the curator accepted as an authentic handiwork of a Greek sculptor, was the work of a Russian named Rouchomowsky, who had fashioned it only a few months before in his workshop at Odessa, as was subsequently shown by the expert investigation of M. Clermont-Ganeau. Not only so, but the author of the work himself had in the meantime confessed to its fraudulence, and in order to prove his point, he carved before a number of witnesses, and without having the model before him, a fragment of the celebrated tiara. This performance bore testimony, if not to his honesty, at any rate to his remarkable skill.

It requires no small degree of erudition and a certain peculiar talent to impress upon a new product such a stamp that more or less expert connoisseurs are deceived into the belief that they have before them a real antique. We will pass in brief review some of the methods of the astute counterfeiter. There are consummate miniature artists, who imitate ancient enamels; others, workers in ceramic art, copy with scrupulous care beautiful old vases. We find painters, who, with more ambitious aim, study the signatures of the great masters, which they strive to reproduce with almost incredible fidelity, in order to inscribe them at the bottom of some painting apparently dating from the Middle Ages, and destined for some American multi-millionaire. There is further an army of artists of smaller caliber, men who impart an appearance of antiquity to a recently



Placing a patch on an ancient canvas

printed engraving, others who patch up with old cloth, paintings that they have torn; art furniture makers who impart a coat of patina to various ornaments, or who embellish with finely carved bronze articles of common origin.

There is hardly an object of interest to the archæologist or collector of curios that has not furnished a field for the work of the counterfeiter, from the stone implements handed down to us as a relic of a prehistoric age, to Etruscan vases and other archæological marvels of which certain experts in the art of mimicry make a highly remunerative specialty. In certain of the show cases of the Musée de Saint Germain are exhibited pseudo-specimens of lamps, purporting to originate from the catacombs, and false seals employed for marking the rough Roman pottery made from a red clay. There also stands a cruse of venerable appearance, of which the only authentic part is the neck, the remainder being formed from pasteboard. Europe holds no monopoly of these mystifying ceramic products. The Indians in the suburbs of Mexico carry on an extensive manufacture of Aztec pottery adorned with grotesque caricatures. These somewhat crude professionals do not even take the trouble to copy antiques, they simply carve quaint human figures with eyes and mouth formed of inlaid obsidian, uncouth animals, and various designs composed of concentric circles and transverse lines produced by the impression of a flexible reed. Serpents are modeled to serve as handles.

The genesis of an "ancient" triptych (three-panel picture)

Imitation antiquities are also exported from Porto Rico in the Antilles. A specialty of Augsburg and Nuremburg is the manufacture of stoneware jugs decorated in many colors, and dated as products of the Renaissance period, though commonly only a few months old.

But where the imitator shines in his full glory is in the counterfeiting of paintings. Without attempting to enumerate all the ingenious processes of forgery which these artists employ, we may here indicate a few of the most cunning. The first step is to purchase an old painting of small value from a bric-à-brac dealer. This is carefully washed, and a suitable subject, worthy of one of the great masters, is then painted over the canvas. The colors are mixed with ashes and soot to give them an appearance of age. Sometimes the same result is obtained by the process known as "marouflage." This consists in pasting over an old canvas treated in the manner just described, a recent copy of some ancient painting. With this our artist's work is nearly accomplished. It only remains to "bake" the picture, in order to dry and crack the color. If the scales formed are not sufficient in number, this slight defect can be remedied by the aid of a needle. If there is some little detail in the picture, which the artist finds it above his powers to satisfactorily counterfeit, he invokes nature's aid. He turns himself into a horticulturist of a peculiar kind, and, wiping with a moistened cloth the spot which is to be partially obliterated, prepares the bed for a growth of mold or fungus, which in a few days covers the spot under treatment. Lastly the painting passes into the hands of the "monogramist," who duly inserts a suitable signature. The science of this specialist is one not easily learnt. He must have made a detailed study of the brushes used by the great masters; he has on file the initials and complete signatures as well as the dates of famous painters, copied from originals in the museums at Rome, Paris, Berlin, London or Madrid. He knows that such and such artist always signed his paintings on the left, while this or that landscape painter invariably placed his initials at the bottom. Another, a painter of historical subjects, would sign his initials with a flourish on the right, while still another, the author of portraits would simply put his initials in "printed" characters at the upper left hand corner.

Gilding and varnishing furniture in the old style

It must be said that the "fake" painters of to-day can boast of most brilliant predecessors. Did not Paul de Vos copy Snyders, and has not David Teniers, the younger, counterfeited Tiziano? In the case of modern paintings the task of the expert becomes excessively difficult, for certain

highly honorable modern artists painted in the style of masters of the past. For example Vernon loyally composed subjects that Diaz might have signed. It will be readily understood that in this case all that is required is a change in the signature, and the value of the canvas is doubled or tripled in the eyes of the credulous amateur.

When we come to prints, engravings, and drawings, the list of fraudulent processes is long and varied. We shall here consider only the most typical. One trick of the trade is to print over an old proof some remark engraved upon a copper plate, in order to produce a "rare" specimen not previously catalogued. Another artifice consists in taking an old plate, and filling up the lettering of the title with Spanish white, producing impressions *"avant la lettre,"* which sell for their weight in gold. Or again, the craftsman re-etches an old plate, which is then used for making impressions on old paper. This is finally given a suitable appearance of age by treatment with a decoction of coffee-grounds or other suitable material.

Rebinding a rare edition in a cover bearing the royal coat of arms of Louis XIV

As for the manufacture of "old" enamels, the difficulty in describing the processes available is to make a selection from among the numberless imitations produced in Paris. The simple restoration of enamels is carried out with the aid of ordinary shellac. The buyer can very readily detect this kind of fraud by plunging the article in alcohol, which will dissolve off the "restored" parts. To imitate translucent enamels, gold leaf is pasted upon a metal backing, and when this is dry, it can be painted upon without fear of the colors flowing. The thin gold base, while imparting a brilliant appearance to the painting, imitates to perfection the characteristic transparency which the famous enamel painters of Limoges knew so well how to produce. Terra cotta work is forged with even greater ease than enamel. On the other hand pottery betrays very readily any fraudulent practices. In the first place copies prepared by molding over the original invariably differ from the latter, for in the burning the clay shrinks by about one-twelfth of its volume. Hence expert counterfeiters resort to other means for reproducing ancient masterpieces of this character. Take for example those exquisite Greek statuettes discovered some thirty or forty years ago in the ruins of Tanagra. Upon a wire frame work the sculptor models with fine plaster the figure to be reproduced, such as a castanet player, a satyr or a bacchant. He then applies over this model by means of a brush a mixture of powdered red brick and yellow ochre dissolved in a solution of gum arabic. A few spots of gilding scattered here and there complete the evolution of the statuette, which now presents the characteristic appearance of the Tanagra specimens. The bazaars of Florence, Rome, Venice, Naples and other Italian cities teem with terra cotta "antiques" of this kind, which are sold to the unsuspecting stranger as recent finds from archæological explorations.

Treating bronzes with acidulated water before burying them in the earth to age them

Burying articles after treating them with acid to produce a coat of verdigris

Of pottery and china, innumerable faked specimens are abroad. Ceramic ware of all times and places has been imitated, from common majolica of metallic luster to Bernard Pallissy plates and fine Sèvres porcelain. In order to impart to the forged products the appearance of the real article they are buried in manure, which causes cracks to spread over their surface. The edges of plates are deftly notched, and oil is run into the recently broken surface in order to take away its fresh appearance. Old vases with simple ornamentation are "improved" by the addition of elaborate designs. The faïence of Moutiers, Nevers and Marseilles is copied with great ease. More difficult to imitate is the so-called "Vieux Sèvres," a special porcelain, the manufacture of which has been almost completely abandoned. The mix of these artificial porcelains is composed of alkaline frits and carbonate of lime. The glaze is very rich in lead, easily scratched by steel, and fuses at a high temperature. But this soft porcelain fetches a much higher price than the ordinary hard porcelain, made almost exclusively of kaolin and potash and imitated by ceramic artists of smaller caliber.

Manuscripts and books are forged very extensively. It requires, however, a certain erudition to correctly copy ancient writing, to imitate the illuminations, to apply the colors and the gold with a sure touch, to age the vellum and parchment, while yet preserving their transparency unimpaired. In the case of books, the market price of a work may sometimes be considerably enhanced by merely reprinting the title page. This is a favorite trick of certain unscrupulous second-hand booksellers in dealing with the so highly esteemed works of the Romantic period. Again, there is nothing easier than to rebind a work of the seventeenth or eighteenth century in an old morocco cover which has served as the binding for some royal almanac, and to then sell the volume as proceeding from some famous library.

To imitate worm-eaten, old furniture, crafty cabinet-makers will buy at a high figure old wood from demolished houses and sculpture from this chairs, brackets and the like, which they endue with patina with unparalleled skill.

To cover bronzes and medals with verdigris, they are first plunged into acidulated water and then buried underground for some time. In a few months the articles are well qualified to figure in show-cases of antiquarians.

Rustic Furniture for the Garden

By Helen Lukens Gaut

THE fact that the majority of people fill their houses with seats and leave their gardens unfurnished, is a puzzling one, for it is generally conceded, even by those who neither practice nor encourage the idea, that a garden is the pleasantest place in the world in which to sit and rest, or to entertain one's friends, provided of course the weather is amiable. In the plans and specifications of conventional society, a guest, when he arrives, unless the scene happens to be laid in Southern California, which is famous for its garden entertainments, is ushered straightway into the parlor, where he is supposed to be interested and edified by a view of wall-paper, fresco, nottingham and mahogany, and nourished by a cup of weak tea, briefly enlivened by a clove and a slice of lemon. Under such conditions, unless, of course, he is in love with one of the young ladies of the house, his stay will be short; whereas, if he is led into the garden, where all about him are glinting sunbeams, delicious perfumes of flowers, the buzzing and fluttering of happy wings, and the sweetest music of earth—the song of birds—he will, seated there on the rustic bench that has been offered him, linger on, loth to leave, forgetting time in the joy of it all.

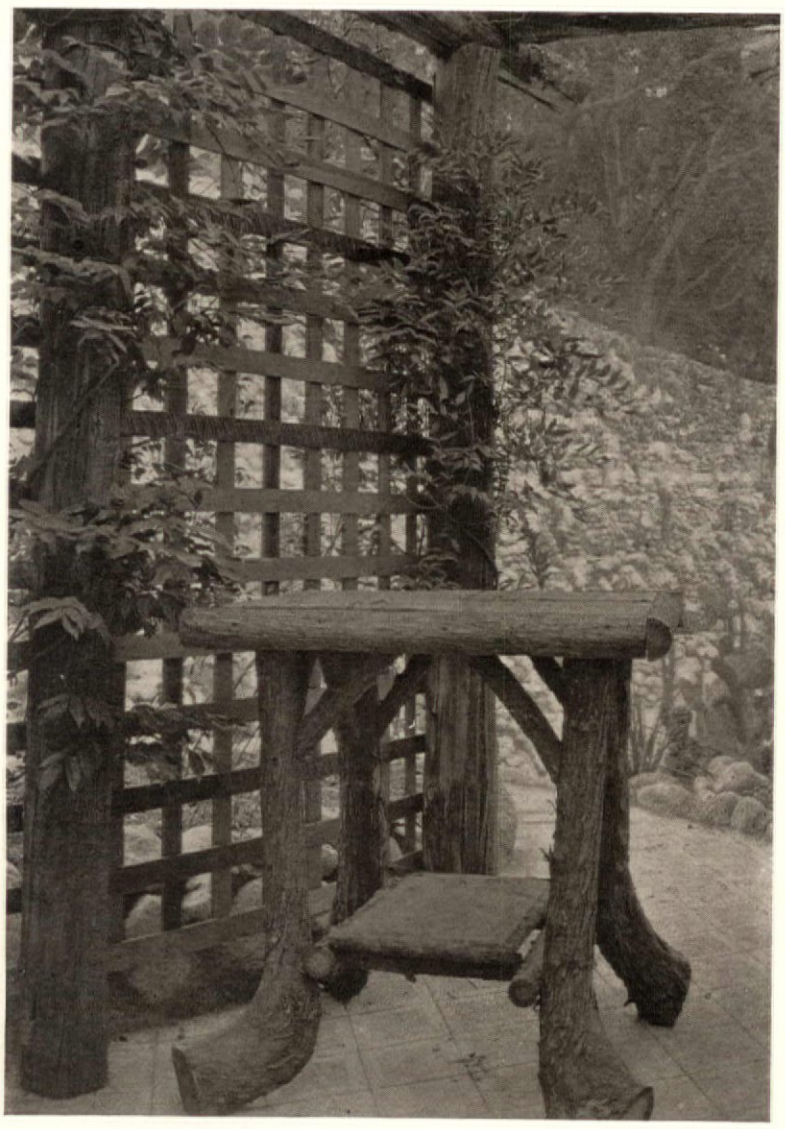
There is no hospitality in the world as enjoyable as gar-

A stone arched bridge with a rail of rustic wood which forms a picturesque safeguard

Rustic garden seat of eucalyptus. Roof thatched with stems of palm leaves

Rustic fence and pergola above a stone retaining wall

den hospitality. There is no home life equal to the garden home life, for with its naturalness, harmony and simplicity, it lifts one out of the mercenary, restless, quarrelsome



Rustic table of graceful design made of pepper wood

Brick makes an effective topping for cobblestone walls and pillars

grooves of thought, to higher platforms, where views of life are clearer and broader; in fact, a good-natured garden is a sort of rejuvenating moral and mental battery that fairly makes one tingle with good intentions and healthy ambitions.

After the home builder has furnished his house and planted his garden, he usually considers that he has done his duty to himself and friends, or, if he does realize what a garden seat or two might mean, he may have exhausted his funds, and finds that furnishing the outdoors is quite beyond his powers. In such cases, the suggestion of home-made rustic furniture may be happily received, for it is a type inexpensive, and quite appropriate for use in any garden, except in the dignified, formal garden, where only concrete, iron, brick or factory-made seats look and feel at home. If a man is even moderately clever with hammer, saw, chisel and nails—for these are all the tools required—he can make tables and chairs and benches himself, and derive both exercise and fun after office hours by so doing. When he has equipped his outdoor drawing-room with comforts, and he sits down cozily with his evening or his morning paper, or settles himself for a Sunday afternoon siesta, while good old Nature fans him, bathes him with perfume and inoculates him with music, he will wonder how he lived and endured the old, close, stuffy life between four walls, and his thoughts and heart will reach out in sympathy and regret to the lost years that were empty of this wonderful species of new-found rest.

Few practical suggestions can be given for designing and making rustic furniture, for it is an entirely personal matter with the builder, who should make the best of his individual taste and ingenuity. A curve or an angle in branch or limb will suggest some scheme, and as there are scarce two tree forms alike, there can hardly be exact similarity in the design of two pieces of rustic furniture, the size and shape being entirely dependent on the form and character of the material to be used. If possessing artistic notions, the builder can produce most graceful, attractive and comfortable results. A tree limb with a wide double curve will make an admirable top for a tete-a-tete chair. The fork of a tree will make an interesting back for a bench, or if consisting of three branching limbs, will answer for the legs of a table. A pleasing top for a rustic table is a thick round slab cut from a tree trunk. In making rustic furniture, in choosing the wood and putting it together, one should not overlook the fact that strength and durability are essential, for being constantly exposed to the weather, and in many cases the rompings of children, it is subject to considerable rough usage. Great care should be taken to nail the connections firmly. The wood should really be used when it is green, as at that time its natural dampness will rust the nails. It is claimed that a rusty nail will hold tighter than a smooth one. If the home builder lives near a forest, or if he is for-

Rustic pergola and seat make an attractive entrance to the garden

tunate enough to have a number of trees in his own yard, getting material for rustic furniture will be an easy matter. A limb cut off here and there from thick-foliaged trees will never be missed, and will, most likely, benefit rather than injure the tree. Brittle wood should be avoided for making furniture. Oak wood, with its shaggy curves and knots and twists is especially desirable, for with it can be made odd and original, as well as the strongest and most durable furniture. Sycamore, pepper, manzanita, cottonwood, alder, evergreen, eucalyptus and many other woods make substantial seats for the garden or veranda. Placed under a rustic, vine-covered pergola they are charming, and when ensconced in some secluded corner of the garden, with a quaint little palm-thatched roof above them, they are irresistible. A rustic bench may also be made into a delightful swing for the children, by attaching iron chains and hanging it to a rustic frame, which may, or may not be roofed or thatched. If any thought is given to dainty summer gowns or white flannel trousers, the seats of benches and chairs should not be of rustic, but of milled lumber, either in wide boards or narrow slats. Of the two, slats are much more attractive. Care should also be taken to see that the backs of the seats are smooth and free of splinters and rough places that will tear the clothing.

With rustic wood, some ingenuity and a little dexterity with tools, any number of interesting things may be made for the home garden, from chairs, swings, benches, tables, stools, flower baskets and bridges, to drinking fountains and sun-dials. While crude, and in many respects rough, there is a fascinating element about home-made garden and porch furniture. It has decided individuality, a quality that can not be found in manufactured goods. True, there are many beautiful examples to be found of shop-made rustic furniture, like old hickory, willow, etc., but at first glance you can tell that machinery has had a hand in their manufacture, and somehow they do not have the same restful message for you that one of your own creations would have.

It has been said that few practical suggestions can be given for producing rustic work, but one may be indicated with some chance of profit to the amateur, in the woodwork seen in the photographs. These will serve as studies of the effects produced in rustic structures and furniture. Their range shows types so varied and unexpected that one must conclude that he need neither despair of designing something as good nor fear that he cannot conquer, in a short time, all the details of the construction he has in view. The engravings encourage one to think that, in the absence of much experience and skill in designing and putting parts well together, he may get attractive and enduring results without much stopping to mechanize or to fret about the lay of each particular inch, as must be done in classic carpentry. If, at the end of his crude task, flawlessness is not attained, he may count on the free and plentiful aid of friendly leaves, boughs, stones, etc., to patch here and there some minor defects, which are somewhat apt to happen.

Eucalyptus wood effectively used in building a summer-house

Rustic flower basket made of eucalyptus wood

GARDEN NOTES

This department is conducted by an experienced and practical landscape architect, who extends an invitation to the readers of AMERICAN HOMES AND GARDENS to send to the Garden Editor inquiries on any matter pertaining to the developing of the garden and the home grounds. Letters accompanied by return postage will be answered promptly by mail. Replies that are of general benefit will be published in this department.

Saving Vegetable Seeds

By M. ROBERTS CONOVER

THE gardener who saves his own seeds has a distinct advantage over those improvident soil-workers who rely solely upon dealers. He can perfect a desired variety of vegetable, insure the vitality of the seeds and vouch for their purity.

The work is not difficult, as it merely requires vigilance to see that the ripened seeds do not escape, and to use care as to their proper selection.

That the seeds may possess full germinating power, the fruit or pod which nourishes them must be allowed to fully mature upon the vine. Always select from the finest specimens as to form and flavor so as to insure these characteristics in successive crops.

A difficulty which confronts the gardener whose vegetables are close together in the small garden plot is that of crossing kindred species of vegetables which borrow one another's characteristics. It is very annoying to harvest watermelons and to discover that the "hard-head" or preserving citron which grew near the parent melon the previous year has influenced its character and flavor. It is equally vexing to have some of your summer crook-necked squash sharing the traits of the Boston marrow squash, or the latter mottling with the green of the Hubbard squash, which was a close neighbor last season.

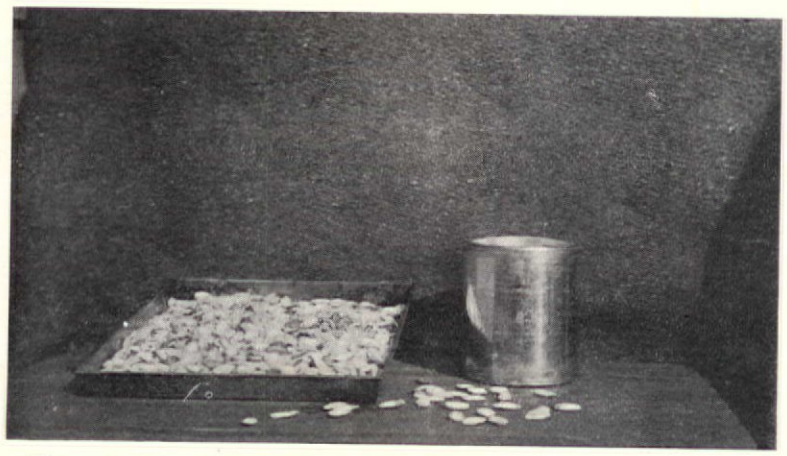
The seeds of squash, cucumber and melons cannot be relied upon for purity if grown near one another.

Of course, this "mixing" is very noticeable among different varieties of the same vegetable if they are planted in proximity.

The only preventive is to plant similar vegetables from which the seeds are to be saved as remote as possible, and with intervening space occupied by unrelated vegetables.

To preserve the seeds, they must be separated from the fruit, cleaned, dried and stored in a dry place where mice cannot reach them. Tin cans with tight covers make excellent receptacles for seeds.

With pulp or marrow vegetables the freeing of the seeds from the pulp may be entrusted to the natural process of decay, the seeds being secured as soon as the pulp has entirely ceased to adhere to them.



Tin cans with tight covers make excellent receptacles if the seeds are thoroughly dried

In the case of cucumbers which are eaten in the green state, the fruit must be allowed full growth and be allowed to turn yellow in the sun. They are then removed from the vine and laid aside until they soften, when the core and seeds are scraped out into a receptacle. With melons, squash, tomatoes, etc., the seeds are taken when the vegetable is in its most edible state.

The seeds of all pulpy and marrow vegetables are loosened from the core by decay

After the seeds of these vegetables are removed they are washed in lukewarm water and rubbed gently between the hands to loosen the adhesive pieces of the core. After several washings, they may be laid upon a frame of small-meshed wire and dried quickly near the fire. Leaving them warm and moist, however, would cause them to sprout. When thoroughly dry, a shaking in a draught of air will remove any particles of dried core remaining.

In the case of tomato seeds which separate from the core with great difficulty, the former and the pulp may be placed in a muslin bag and allowed to ferment slightly, with the result that the pulp will be easily washed away. At this stage it is very con-

venient to use a wire sieve of small mesh. Water may be poured through this over the seeds until they are clean. They are then spread out to dry.

The seeds of peppers do not require washing. They need merely to be cut away from the core, separated and dried.

Beans and peas are taken from the pod when it is dry and cracked, but the pods should be taken from the vine just before this condition is reached.

Radish, turnip and lettuce seeds are gathered by crushing the dried pod and shaking the seeds into a receptacle. Spinach and carrot seeds are saved by shaking them when dry over a pan. They need no washing.

In saving corn, use the finest ears and let them mature on the stalk. Turn back the husk and hang them in a dry place with the kernels exposed.

SOME FIRST FLOOR FURNITURE

NEXT to the dining table the sideboard is the important article in the dining-room. If the ordinary sideboard to match the dining-room furniture is to be used, it looks its best when standing against the largest wall space. Sometimes a built-in sideboard is preferred, and this is fitted into a recess that is usually reserved for it in the architect's plan.

Attractive china closets may be designed for the dining-room when the plan of a house is under consideration. One lover of Colonial ideas transplanted a china closet from an old house and made it the keynote of interest in his new dining-room. In another home the same idea was carried out, but the closet was built into the living-room, where it held a collection of antique china and silver. The handwork on the old wood made an entertaining study for everyone who entered the house, adding to the interest of the contents.

In the modern bathroom the medicine cabinet is now built into the wall with no projection of the door into the room. These cabinets are made for this purpose with the inside enameled with white paint and the shelves arranged to adjust at different heights. The door is usually covered with a mirror.

In the house of the bungalow type there is a special fitness in furniture built in to suit the needs of the household, as it lessens the care of a vacation home. The style and variety may be only limited by the ingenuity of the designer and the outlay that is to be made.

For the living-rooms one may make a wide bench or lounge with spiral springs and a cotton felt mattress, over which a spread of heavy linen may be laid. Although a lounge by day, it may be converted into a bed by night if there is an extra visitor to put up. Or, to economize space in the bedroom, one sleeping bench may be placed above another, like the beds in a Pullman car—a device that appeals especially to the young boys of a family.

If closet room is lacking in the bedrooms of a bungalow, a corner wardrobe is easily arranged with a top shelf on which to fasten a chintz curtain, with hooks against the wall for holding coat hangers. A box to hold underwear or shirtwaists may be contrived from a large soap box, covering it outside with a figured cotton goods, and on the inside with paper muslin. Some wide boards for a washstand may have attached two supports slanting backwards from the under part of the top to the wall in the simplest kind of construction.

HELPS FOR THE HOUSEWIFE

If the readers of AMERICAN HOMES AND GARDENS desire any information concerning the subjects treated under this department, write to the Household Editor and receive such assistance as may be desired. All letters accompanied by return postage will be answered by mail. Replies that are of general benefit will be published in this department.

Canning and Preserving Fruit

By MARIA PARLOA

THE common fruits, because of their low nutritive value, are not, as a rule, estimated at their real worth as food. Fruit has great dietetic value and should be used generously and wisely, both fresh and cooked. Fruits supply a variety of flavors, sugar, acids and a necessary waste or bulky material for aiding in intestinal matters, and they are generally rich in potash and soda salts and other minerals. Most fresh fruits are cooling and refreshing. The vegetable acids have a solvent power on the nutrients and are an aid to digestion when not taken in excess.

Fruit and fruit juices keep the blood in healthy condition when the supply of fresh meat, fish and vegetables is limited and salt or smoked meats constitute the chief elements of diet. Fresh fruit is generally more appetizing and refreshing than cooked. For this reason it is often eaten in too large quantities, and frequently when underripe or overripe; but when of good quality and eaten in moderate quantities it promotes healthy intestinal conditions and rarely hurts anyone.

If eaten immoderately, uncooked fruit is apt to induce intestinal disturbances. If eaten unripe, it often causes stomach and intestinal irritation, overripe, it has a tendency to ferment in the alimentary canal. Cooking changes the character and flavor of fruit, and while the product is not so cooling and refreshing as in the raw state, it can, as a rule, be eaten with less danger of causing stomach or intestinal trouble. If sugar be added to the cooked fruit, the nutritive value will be increased. A large quantity of sugar spoils the flavor of the fruit and is likely to make it less easily digested.

Nowhere is there greater need of a generous supply of fruit than on the farm, where the diet is apt to be restricted in variety because of the distance from markets. Every farmer should raise a generous supply of the kinds of fruit that can be grown in his locality. Wives and daughters on the farms should find pleasure in serving these fruits in the most healthful and tempting form. There are a large number of simple, dainty desserts that can be prepared with fruit and without much labor. Such desserts should leave the pie as an occasional luxury instead of allowing it to be considered a daily necessity.

In the season when each kind of fruit is plentiful and at its best, a generous supply should be canned for the season when both fruit and fresh vegetables are scarce. A great deal of the fruit should be canned with little or no sugar, that it may be as nearly as possible in the condition of fresh fruit. This is the best condition for cooking purposes. A supply of glass jars does cost something, but that item of expense should be charged to future years, as with proper care the breaking of a jar need be a rare occurrence. If there be an abundance of grapes and small, juicy fruits, plenty of juice should be canned or bottled for refreshing drinks throughout the year. Remember that the fruit and juice are not luxuries, but an addition to the dietary that will mean better health for the members of the family and greater economy in the cost of the table.

FRESH AND PRESERVED FRUIT FOR THE MARKET

If the supply of fruit is greater than the family needs, it may be made a source of income by sending the fresh fruit to the market, if there is one near enough, or by preserving, canning, and making jelly for sale. To make such an enterprise a success the fruit and work must be first-class. There is magic in the word "home-made," when the product appeals to the eye and the palate; but many careless and incompetent people have found to their sorrow that this word has not magic enough to float inferior goods on the market. As a rule, large canning and preserving establishments are clean and have the best appliances, and they employ chemists and skilled labor. The home product must be very good to compete with the attractive goods that are sent out from such establishments. Yet for first-class home-made products there is a market in all large cities. All first-class grocers have customers who purchase such goods.

To secure a market get the names of several first-class grocers in some of the large towns. Write to them asking if they would be willing to try a sample of your goods. If the answer is favorable, send samples of the articles you wish to sell. In the box with the fruit inclose a list of the articles sent and the price. Write your name and address clearly. Mail a note and a duplicate list at the time you send the box.

Fixing the price of the goods is important. Make it high enough to cover all expenses and give you a fair return for your labor. The expenses will be the fruit, sugar, jars, glasses, boxes, packing material, wear and tear of utensils, etc., transportation and commission. The commission will probably be 20 per cent. of the selling price. It may be that a merchant will find that your prices are too high or too low for his trade, or he may wish to purchase the goods outright. In any case it is essential that you estimate the full cost of the product and the value that you place on your labor. You will then be in a position to decide if the prices offered will compensate you for the labor and expense. Do not be tempted, for the sake of a little money, to deprive your family of the fruit necessary to health and pleasure.

PACKING AND SHIPPING

Each jar or jelly glass must be wrapped in several thicknesses of soft paper (newspapers will answer.) Make pads of excelsior or hay by spreading a thick layer between the folds of newspapers. Line the bottom and sides of the box with these pads. Pack the fruit in the padded box. Fill all

the spaces between the jars with the packing material. If the box is deep and a second layer of fruit is to go in, put thick pasteboard or thin boards over the first layer and set the wrapped jars on this. Fill all the spaces and cover the top with the packing material. Nail on the cover and mark clearly: Glass. This side up.

The great secret in packing is to fill every particle of space so that nothing can move in the receptacle.

In the preservation of foods by canning, preserving, etc., the most essential things in the processes are the sterilization of the food and all the utensils and the sealing of the sterilized food to exclude all germs.

BACTERIA, YEASTS AND FERMENTATION

Over one hundred years ago François Appert was the first to make practical application of the method of preserving food by putting it in cans or bottles, which he hermetically sealed. He then put the full bottles or cans in water and boiled them for more or less time, depending upon the kinds of food.

In Appert's time and, indeed, until recent years it was generally thought that the oxygen of the air caused the decomposition of food. Appert's theory was that the things essential to the preservation of food in this manner were the exclusion of air and the application of gentle heat, as in the water bath, which caused a fusion of the principal constituents and ferments in such a manner that the power of the ferments was destroyed.

The investigations of scientists, particularly of Pasteur, have shown that it is not the oxygen of the air which causes fermentation and putrefaction, but bacteria and other microscopic organisms.

Appert's theory as to the cause of the spoiling of food was incorrect, but his method of preserving it by sealing and cooking was correct, and the world owes him a debt of gratitude.

In their investigations, scientists have found that if food is perfectly sterilized and the opening of the jar or bottle plugged with sterilized cotton, food will not ferment, for the bacteria and yeasts to which such changes are due cannot pass through the cotton. This method cannot be conveniently followed with large jars.

Bacteria and yeasts exist in the air, in the soil, and on all vegetable and animal substances, and even in the living body, but although of such universal occurrence, the true knowledge of their nature and economic importance has only been gained during the last forty years.

There are a great many kinds of these micro-organisms. Some do great harm, but it is thought that the greater part of them are beneficial rather than injurious.

Bacteria are one-celled and so small they can only be seen by aid of a microscope. The process of reproduction is simple and rapid. The bacterium becomes constricted, divides, and finally there are two cells instead of one. Under favorable conditions each cell divides, and so rapid is the work that it has been estimated that one bacterium may give rise, within twenty-four hours, to seventeen millions of similar organisms. The favorable conditions for growth are moisture, warmth, and proper food.

Yeasts, which are also one-celled organisms, grow less rapidly. A bud develops, breaks off, and forms a new yeast plant. Some yeasts and some kinds of bacteria produce spores. Spores, like the dried seeds of plants, may retain their vitality for a long time, even when exposed to conditions which kill the parent organism.

CORRESPONDENCE

The Editor of AMERICAN HOMES AND GARDENS desires to extend an invitation to all its readers to send to the Correspondence Department inquiries on any matter pertaining to the decorating and furnishing of the home and to the developing of the home grounds.

All letters accompanied by return postage will be answered promptly by mail. Replies that are of general benefit will be published in this Department.

Problems in House Furnishing

By MABEL TUKE PRIESTMAN

"WE have an old house in the country built of stone. On the first floor there are a great many windows, all of which have outside shutters. The closing of these every night is a serious problem. In the summer the fly-screens make it a difficult task, and in the winter one is chilled through, on a cold night, long before all the shutters are closed. Have you any suggestions to offer as to how our shutter-closing could be made easier?"—J. M. B., Mass.

There is a shutter-worker on the market that will solve your problem. It is a practical device for opening and closing shutters without raising the window, and it is self-locking and adjustable. The working parts of this shutter-worker are encased in the woodwork of the window, and are therefore not affected by heat or cold. They can be used on the windows of an old house as well as a new one; and they are attached in the following manner: A hole is bored through the casing to allow a rod to be pushed through it and fastened to the shutters on the outside. On the inside there is a handle and a small escutcheon-plate. This arrangement does not interfere with the sash-weights, and can be attached in any position on the blinds. When it is desired to open or close the shutters the handle is turned and they are opened, closed, bowed, or fixed in any position from the inside of the window without raising the sash or fly-screens. As the shutters lock automatically, it is impossible for them to flap, even in the most violent storms. The box holding the shutter-worker is small and neat in appearance. The handle is two inches long, and with the escutcheon-plate is not unsightly on the window. The prices vary from one dollar and a half to two seventy-five for a set consisting of two upper hinges, two hinge shutter-workers, handles, and escutcheons, according to finish.

A request for suggestions for window-seats comes from a "North Carolina Reader," who has bought a country house and finds that it does not possess a single window-seat.

There is no doubt that the window-seat gives an excellent opportunity for a decorative and convenient feature, especially when it is successfully incorporated with the architectural lines of the house. The living-room especially seems incomplete without some form of window-seat, particularly if it possesses a bay window. The bay may be circular or square, but whichever it is the seat should form part of the curtain scheme. The curtains with valances may be made so as to have the same color scheme as the window-seat, thus making the seat part of the whole. When planning for window-seats do not have them too high or too narrow. As they usually have a mattress, allowance must be made for the additional height that it will give. The majority of homes do not have enough room for stowing things away. The window-seats may be utilized for this purpose by having them boxed with hinged lids. If the windows are placed high in the wall, a very decorative effect can be obtained by introducing a window-seat the entire length of the window. The high window is invariably long and narrow, and thus allows for a padded back between the seat and the window-sill. Another form of window-seat that gives service and adds to the general appearance of the room is when a window at one end of a room has a seat built and extended to the far side of the window in another wall. The seat built at right angles gives opportunity for the placing of a few book-shelves above the back of the seat on the longest wall space. An extended seat of this kind is greatly improved by the addition of a settle end on one or both ends, especially if the house is Colonial.

"I want your advice about color schemes and the decoration of a dining-room. The house is Colonial, and will be ready in the fall for occupancy. I have decided to have the library green, and the parlor must have some green, as it opens into the library, but I cannot make up my mind about the dining-room. We have mahogany furniture, and a beautiful old mantelpiece will be in this room. The woodwork is birch. There are handsome folding doors opening into the hall. I enclose a rough plan of the lower floor, giving the size of the rooms. I may add that our furniture is strictly Colonial and somewhat heavy; most of it is old. The glass cupboard was made to go with the old furniture. The chairs need new covers, and we shall have to buy a carpet or rug. Kindly give your advice about recovering chairs and floor-covering when suggesting color schemes."—D. S.

The rooms of your new house are large and well proportioned and call for a rich background. If not already in the specifications I would certainly have a paneled dado to the height of a chair-rail. Above this a scenic wall-paper would be appropriate. These papers are many of them copied from old scenic wall-papers; some of them are rich in coloring, while others are delicate in tones of gray. The choice being limited in this style of paper, the color scheme would have to be worked out later according to the tones of the paper. The woodwork must be painted white or ivory white, but the doors into the hall would look best mahoganized; as the wood is birch, it will take the stain very nicely. The other doors leading into the hall should be stained to match those in the dining-room. The woodwork of all the lower floor would look best painted white—a Colonial house demands it. I would have glass door-knobs or brass, and the floors of the downstairs rooms mahoganized. If the paper selected is in pale-gray tones a clear foliage green would look well on the chair-seats and for the heavy curtains. Green damask has an old-time appearance and would look well for chairs and cur-

tains. If plain velour is preferred, it or upholsterers' velvet could be used with equally good effect. Haircloth the same shade could be used on the chairs if the velour or velvet is used for curtains. A green Brussels carpet made into a rug would carry out the color scheme in green and grays better than an Oriental rug. An entirely different scheme for the dining-room could be carried out in yellow and blue. There are some reproductions of Colonial papers sold to-day in self-tones; the patterns are small and inconspicuous. One I have in mind is yellow; this paper would look well with your old mahogany furniture. The chair-rail is needed, but it would not be necessary to go to the expense of paneling below the rail. The wall could be painted yellow to match the upper wall-paper, or the two-toned paper could be run below the chair-rail. This was often done in Colonial days, and is permissible. An Oriental rug with some clear blue would be my choice, and a large rug would suit the size and shape of the room best. If the price of such a rug would be prohibitive there are Wilton rugs in the finer qualities in golden tones that blend with the yellow paper I have in mind. The curtains and chair-seats should be Colonial blue in corduroy, damask or mercerized armure; the last material has a small Colonial figure and comes in very useful for Colonial furnishing. It is only one dollar a yard fifty inches wide. A heavier material would be more serviceable for the chair-seats; haircloth if the blues were the same tone. The patterns are very similar in the mercerized armures to the haircloths. If this simple treatment is carried out in the dining-room I should be tempted to use a light-tone foliage paper in the halls. There are several small patterns that are Colonial and furnish a hall better than a plain paper. If a scenic paper is used in the dining-room the two-toned yellow paper suggested for the dining-room would be admirable for the hall. It has a quaint appearance well suited to a Colonial house.

A reader from Ohio writes that she wishes for something new in the sofa-pillow line. She wants new pillows for library and parlor. The library is brown, furnished in Mission style. The parlor is lived in and simply furnished in green, with walls of tan-color felt paper.—Mrs. S. M. B.

Badly chosen pillow-covers frequently spoil a room that is otherwise well and tastefully furnished. It is therefore an important subject, deserving much more attention than is usually given to it. Perhaps the most important part of selecting pillows is the choice of the right coloring. They must be in harmony with the room. The pillows that are seen in the shops are usually trivial, and are too evidently made up of remnants. A pillow must never be purchased because it is cheap; it must be part of a complete whole, and show individual taste. The small amount of material required in the making of a pillow-cover allows for richness of effect and for individual treatment. It is impossible in a limited space to do justice to a topic of such vital interest; it can only be a mere hint as to what to avoid and what will be appropriate in the majority of homes. The library will call for strong substantial-looking pillows; some may be hair-filled and covered with leather, provided some of the chairs have leather seats. A large roomy Mission sofa would need leather cushions or Arras cloth covering, and it would be best to have the pillows to match in material and color. They should, how-

ever, have some sort of embellishment in the form of appliqué in a severely simple design. Such pillows would be used as a support for the back. One or two additional pillows for the sofa could be made of raw silk in bright red or yellow, just to add a touch of strong coloring to the brown room. A pattern of some kind could be embroidered on the silk, or a motif in block printing partly concealed with darning would be appropriate. The design must, however, be conventional and unobtrusive, and be a decorative flat mass of color rather than anything of a pictorial nature. The colors introduced in the pillows give opportunity for emphasizing some dominant note in the room. The rug or the lamp-shade may suggest what this touch of color should be. In a handsome room where leather is used a few cushions of the same material would be very harmonious. Leather appliqué, cut leather, or tooled leather would give an appearance of richness and simplicity, but there must be a soft down or feather filled pillow for use when lounging. Leather being a repellent surface could not be used except to lean against. The parlor pillows give more opportunity for variety. If there is a roomy sofa covered with a plain green fabric the background conditions are ideal. Embroidery, darning, or appliqué can any of them be used to ornament the pillows. Chinese self-toned silks, Shikii silks, the English cotton velvets with their beautiful designs by Morris and Voisey are all appropriate and for a room with tan walls; the atmosphere requires an individual treatment in the pillows and ornaments. The washable pillow-covers must not be overlooked, for they give a freshness to the sofa group, but they must be dainty in texture and exquisitely worked. Italian cut work, or Greek lace, or even Filet net, may be brought into service. They are made in the form of loose covers over silk pillows. The finish of a pillow must be appropriate. Fortunately, the days of frills and bow-knots are a thing of the past, and no woman who moves with the times will be guilty of such indiscretions. A silk cord for the silk pillow, or a plain seam or a hem extending beyond the edge of the pillow, are always in good taste. The leather pillow may have the edges left and be sewn with coarse leather thongs or stitched the size of the pillow with edges left free.

WONDERFUL EFFECTS OF FORESTS

A STRIKING example of the transforming effect of forests, not only on the appearance, but on the productivity of a country, is afforded by the department of the Landes in France. At the close of the eighteenth century about 2,500,000 acres in that region were little more than shifting sand-dunes and disease-breeding marshes. At the present time the same lands are among the richest, most productive and healthful in all France, and the change has been brought about by intelligent cultivation of pine forests. Even the character of the climate of the region has been ameliorated, and it has become mild and balmy. A thin layer of clay beneath the sandy upper surface of the soil, formerly impervious to water, has been pierced by the pine roots, until a thorough drainage is established to the spongy earth that lies below.

NEW BOOKS

THE AUTOMOBILE HAND BOOK. By L. Elliot Brookes. Chicago: Frederick J. Drake & Co. 12mo.; 701 pp.; illustrated. Price, $2.

With its alphabetical arrangement of topics and its inclusive scope, this hand book is a veritable encyclopedia for the automobile owner or operator. Its leather covers of red and gold seem to embrace every principle and part of the automobile. Those who have it in one of the earlier editions will be surprised at the amount of new matter that has been added. It embodies all the more recent improvements, and everything connected with automobile construction and operation is explained and illustrated. While the gasoline motor receives, as is its due, the lion's share of the space, yet steam and electric propulsion have by no means been neglected. Transmission, wheel construction, and repair work are each taken up in turn, and plates and sketches are used whenever they are necessary to a clear understanding of the principles under discussion. A chassis plan on a large scale is the subject of one insert, with its thousand-odd parts all numbered and named. With all this abundance of information and suggestion, the volume lives up to its name and just comfortably fits into the hand.

DYKE'S AUTOMOBILE ENCYCLOPEDIA. By A. L. Dyke, E.E. St. Louis: A. L. Dyke, 1911. 8vo.; 407 pp. Price $3.

There are so many treatises of this nature, each one claiming some advantage over the others in arrangement or manner of expression, that it is becoming increasingly difficult to fairly appraise their qualities or to justly commend one above the rest. Here we have twenty-nine lessons, positively packed with diagrams and illustrations. We are told how to choose, drive and maintain a car. Every point of construction and operation that it is necessary or advisable for owner or chauffeur to know is here given in the simplest language. One lesson is devoted to the rules of the road, the State laws, etc. These latter give the registration fee, the allowed speed and the required lamps. Another lesson covers the aeroplane and aerial engines. A chapter is given over to a discussion on building a home workshop, a garage, and the overhauling of old cars. The final section is a dictionary of motor words and terms. We must accord a word of praise to the way in which the illustrations have been shorn of all intricacy, showing only just what is necessary to the understanding of the question in hand. As a reference book, this should prove an acquisition to the motorist's library.

ELECTRIC POCKET BOOK AND DIARY. London: Technical Publishing Company, limited, 1911. 567 pp.; illustrated. Price, cloth, 50 cents net; leather, 75 cents net.

This stocky little annual has been brought down to date, and new matter has been introduced on the various rotary-converter equalizer systems; on balancers and boosters; on metallic filament lamps, and on the Edison storage cell. Altogether a large fund of information is compressed between its covers, and a feature of its make-up is the section of blank pages at the back, ruled as a daily record.

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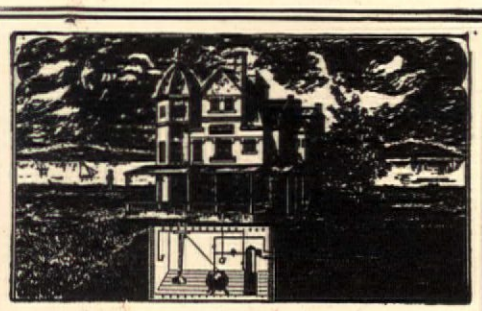

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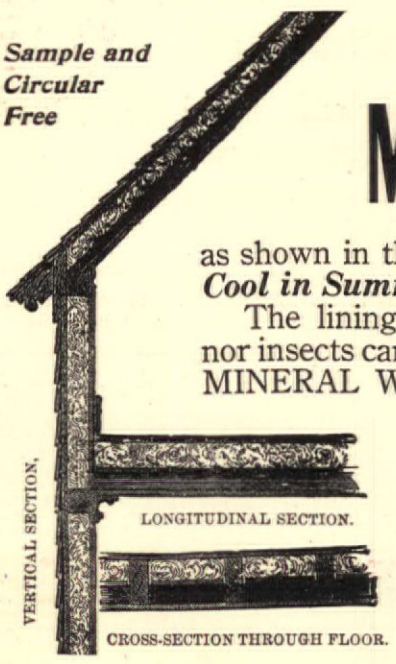

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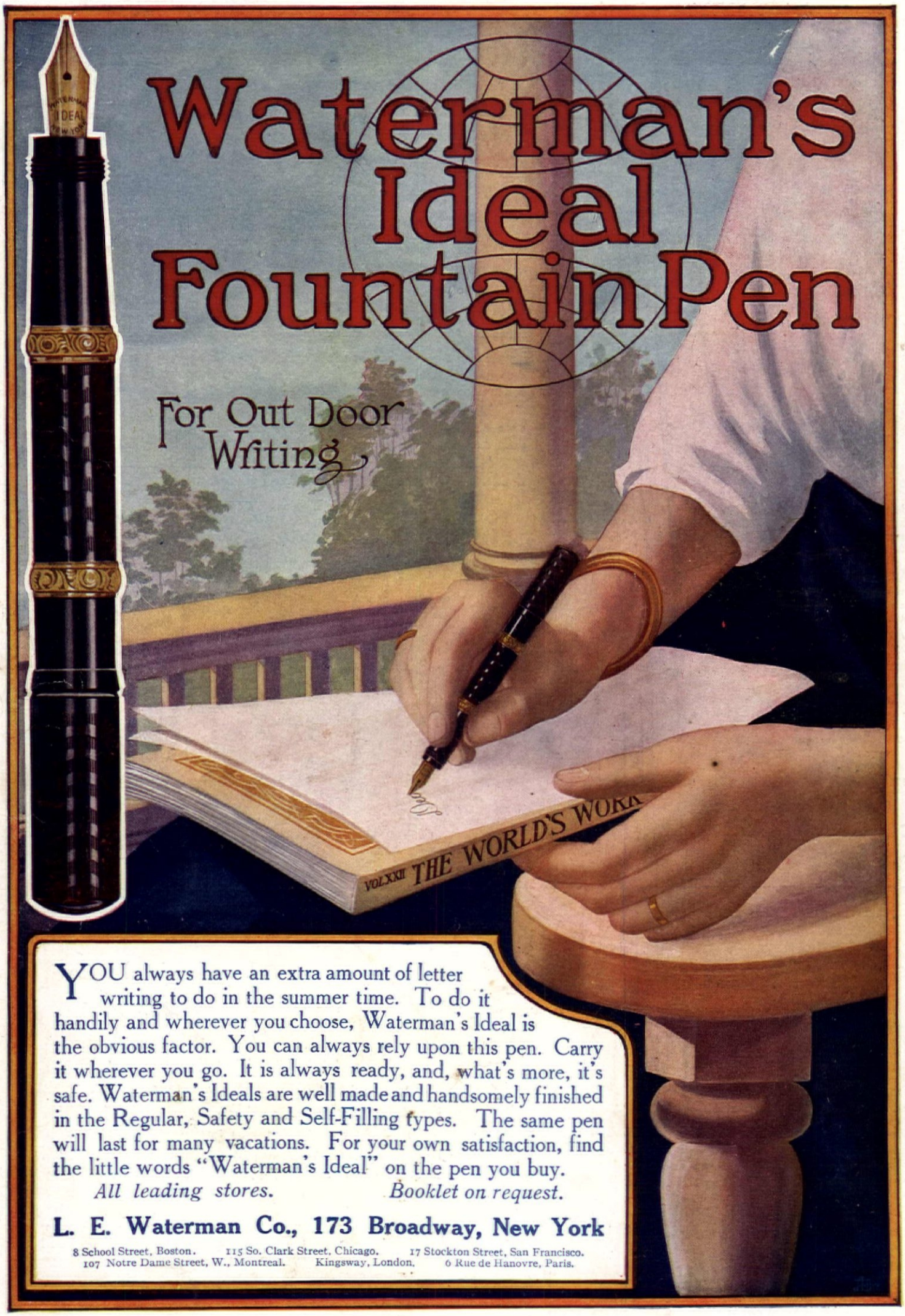

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