NORTHWEST ARCHITECT

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WHAT WE ARE TALKING ABOUT IS

DOING SOMETHING NOW to bring building costs down so that our Veterans may be properly housed—not in basements but above the ground. This may mean that Labor take stock to see whether it is delivering a full day's work for a full day's pay—it may mean that Contractors, Subcontractors, Material Suppliers and others look into their operations to see if it might not be just possible to do a little more for a little less *immediate* profit—in other words —let's "Do unto others as you would have them do unto you."

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BUILDING MATERIALS

Percentage of Price Increase 1926 - 1946

Lumber
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Brick and tile
Structural steel 20.1%
Plumbing and heating materials . 14.9%
* CEMENT 6.9%
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TO THE ONE TRACK MIND Behold the mighty Dinosaur, famous in prehistoric lore, not only for his weight and strength but for his intellectual length.

You will observe by these remains the creature has two sets of brains - one in his head the (usual place) the other at his spinal base. Thus he could reason a priori as well as a posteriori.

No problem bothered him a bit: he made both head and tail of it. So wise he was, so wise and solemn, each thought filled just a spinal column. If one brain found the pressure strong it passed a few ideas along;

If something slipped his forward mind 'twas rescued by the one behind: and if in error he was caught he had a saving after-thought.

As he thought twice before he spoke he had no judgment to revoke; for he could think, without congestion, upon both sides of every question. O, gaze upon this model beast, defunct ten million years at least. - The late Bert Leston Taylor

Mr. and Mrs. G. I. of 1954! Plan to stay out of the "red"!!

Sleep

I am only one: But I am one. I cannot do everything But, I can do something. What I can do I ought to do. And what I ought to do. By the grace of God. I will do

A

Well....Let's see, on

3.5

HALL

DRESS

CLO:

re: HEAT

Bath

FIRE

Stores

The big top.

Entrance

Campfire

Flagpole

.

NA

Cook

port

RANGE

by WILLIAM GRAY PURCELL

DAVE AND BETTY decided to get married anyway. DHe had only \$30 and no job and that was 1933! In that year there were plenty of rooms to live in, plenty of lumber, nails and cement, but few young couples had dollars to pay the rent for the rooms, or to put the lumber, nails and cement to work. Today, there are jobs and dollars but there's no place to live, and there are no building materials. Both "post-wars" add up to the same thing. "No home—what to do?"

Dave found a doctor who wanted to build a summer cabin up in the mountains. Dave's an architect. He agreed to make the plans and then build the cabin with his own hands. So bride and groom arrived at the doctor's building site in two feet of snow. They set up a borrowed tent, put an old bathroom basin outdoors on four stakes, and so on. You can fill in the picture (or perhaps you can't)—for there they spent the winter! And the nearest Betty had ever been to camping was a lower berth in a sleeping car.

The other day I was showing the snap shots taken that winter—of Betty standing in the snow under the big pine, washing clothes in the basin, and other "unposed" scenes —primitive life up to date. Patricia, who plans to be married, whose father was a prime minister, (with all that goes with it for his family) looked over my shoulder —"Oh, wouldn't that be fun?—I'd love it!!"

So I showed her the pictures of Betty's next winter. Another house to build, down at Palm Springs. She and Dave, now old hands at this game, have thrown up, on the back of the building lot, a contraption of crates, old doors, canvas, palm branches, etc. This time they've even built in a shower bath. Patricia thought that "would have been wonderful too—the perfect honeymoon." You advertisers and manufacturers, you have the wrong slant on today's soldier and his young wife. It's not the push button, streamline, chromium plated world they are after.

They want something good to do; a certain amount of hardship; an outlet for ingenuity and creative energy; a home that needs *making*; they want to do it themselves, to be the architects and craftsmen of their own fates.

Who's Bossing Who \$

At this point I picked up the June, 1946 Atlantic Monthly. The first piece was about veterans' houses. It was shocking. The politicians with some expert help from "interested" business have certainly wrapped a horseshoe in that soft looking handout. The new veteran had better face it. Does he want to mortgage his life for the next twenty-five years, or the lives of his widow and children if he should die, along with the strong probability of paying for a dead horse for seventeen years after 1954?

Your two-bedroom home will cost (here on the Pacific Coast) at least \$5,000 on a \$2,000 lot. In eight years you will have paid off \$1,561.00 of the principal debt. You will still owe \$5,439.00, and the chances are that your house at that date will be worth only about \$4,200.00. So, not only is your equity gone but you still owe \$1,239 for value you never received and never will receive. Not only will you be paying for a dead horse, but the U.S.A. can take its guarantee fund out of your hide. Meanwhile, your pal who, for the past six or eight years has let us say been living with the folks, or has been renting a place to live, if he was able to find one back there in 1946, he can buy your house in 1952 or one like it for \$4,200 while you will still be paying both the equivalent of high rent and purchase money to the bank for what you have already lost. Go to your library and read this entire June "Atlantic" article "Houses for Veterans—No Cash Down" by Brendon Shea. It should be widely broadcast.

But a boy and a girl with a little pioneering spirit can lick this problem. I shall give you here one solution which nevertheless has as many variations as there are special conditions where you live. This story you are now reading is not so much plans and specifications for you, as it is a sort of spring board from which to take off when you have totted up your land, tools, materials, dollars and personal enthusiasm. At the very least it has a solid base in my personal experience, both in the woods and as an architect, and it recommends a way of life that has brought happiness and prosperity to thousands.

Don't hire someone to do what you can do for your-self.

Don't be in such a damned hurry.

Don't go in debt if you can possibly avoid it (a "six per cent loan" is the quickest way of reducing an equal amount of your wages by 11.9%). Of course, the banks ("this friendly institution, your business home") want you to borrow as much as possible as long as Uncle Sam will guarantee collection. (The "friendliness" cools fast if you miss a payment).

"Your Credit is Good"-good for the creditor.

"Lean on a Loan," you soon will be,

If you do borrow for land or materials, figure first exactly how you're going to pay it (sure-fire pay back, come hell or high water!). As for the building specialists that you are going to need, plumbing, wiring, etc., etc., "tradeyour-labor-with-your-neighbor," instead of trading your dollars. Families down in Peoria have done it—so can you.

♦ Self-Starter ♦

When I got this far, thinking about Dave and Betty, and looking again at the pictures of snow and desert, all of a sudden right there in the financial section of the *New York Times* (3500 of them come out here to Southern California!). I see where some firm in Hoboken is offering "Navy tents for sale," 20x20, water proofed, fire proofed, nylon fly screens at continuous window panels on 4 sides, all with door and rain flaps, complete with pegs, poles and ropes for \$39.50!! And Army tents were offered last week, of similar construction, but 8'x10', 10'x14' 12'x16' and so on. That was for me the final step-on-it.

The recommendations embodied in this article, by an architect who grew up in the back woods, are the result. It's a good thing that I can't more than suggest the idea, together with a diagram and a couple of pictures to start you planning, for in such a project you certainly have to plan-your-own with almost no outside help. Indeed you can be sure that the "neighbors'll come around and they'll say 'you'll be drowned'!"—well, you know how it goes.

This is as it should be, because for success you must be independent of public and private opinion, you have to be practical, orderly, enthusiastic, and stick-to-it-ive—in short a son-of-a-pioneer.

♦ Sharpen Your Pencil ♦

Now don't follow my plan, make one of your own. Your "real estate" should be 75' minimum, not on a public highway or on a much used street, and not too far from a couple of neighbors. I get this from economist Roger Babson's new book, "Will Inflation Come?" Much good sense in it.

If the plumbing, sanitary and health codes are met, most cities now give the homeless citizen a pretty free hand for moving into tents, trailers, cabins, etc. In the county, outside "city limits," which are frequently "inside" the city, there are the state housing codes you will have to satisfy. For the veteran, these two are now liberalized. But from your own "code" you can never get away, because if you are a sloppy, careless, disorderly person, such a project as I am proposing will never work. An informal, growing project like this has just got to be



TYPICAL CROSS-SECTION OF A DWELLING UNIT

HERE TWO TENTS are proposed, one outside the other, making a vestibule—see plan. The lower walls are formed of groups of these mail order book and cupboard utility cases thirty inches high. In this way the lower edge of the canvas tent "walls" are raised to give good headroom within. The back of the cases, insulated and weather proofed, make a warm, useful wall all around. The "fly canvas" sheds most of the moisture. Quilt type insulation may be laid on the inner tent roof. A light plywood "dormer" with a plate glass top rides the ridge pole to supply ventilation sun and light.

shipshape all the time. You must be a drill sergeant over yourself and run the place like inspection morning. Off-hand housing takes an officer and a gentleman to put it over. No "twirps," jazzbos, play boys or girls should try it. You've got to have the creative urge and the craftsman spirit, say goodbye to nightlife, golf, bridge, beach parties and auto touring vacations. A project of this kind takes *all* your time and you must love it that way.

As I write, I think of a dozen such projects among my friends. In 1890, Billy Green the whittler, and his "prairie farm" in the clearing; in 1896, Old Man Ramsdel, the slave ship sailor, and his home in the end of an old logging camp "wannigan;" Loren Kirk the draftsman and the tent that grew into a home on Minnehaha Creek; Ed Sharritz the leaded glass maker, a city man who retired to the woods in 1920; and then Dave and Betty. Many



ARCHITECT

more I have known. They did it, they loved it, they all came through to a good life, *very*—and no two of their stories are *anything* alike, but they had one characteristic in common. They were "neat as a pin" outdoors and in. These home places had charm, humor, folksy atmosphere, and were as much fun as a barn dance. At heart the authors were all poets and artists.

♦ Rythms of Necessity ♦

You will probably have to begin by setting up the sanitary unit along with the first shelter unit, which for the time being may be serving as kitchen and dining-room as well as bedroom and living room. With tools and materials on the job, the storage unit and a shop-tent will be pretty essential right at the start. The question of burglar protection comes up, but this is easily solved and brings out some most amusing safety psychology. Canvas does not take a second place to glass windows as a discourager of thieves, and we may lift an inquiring eyebrow at the impractical home owner's silliness with \$1.00 locks on the "back door" most used by thieves and \$10.00 locks on the front; not to mention the universal "put the key under the front door mat."

Next comes unit No. 2 which is scheduled as sleeping room at first and perhaps some day becomes separate dining room when family and plant are further expanded. Other expansions are obvious, but all the while you can be sitting around your own campfire, "What—outdoors? at home!" Well, a bird house full of barn swallows on a pole will chase the flies and mosquitoes, and I have sat around a campfire "at home" outdoors with a foot of snow on the ground.

But the real goal of this project is the living room your "great hall"—"the big top" I call it for the kids. The kind here proposed has the shape and construction of a large tepee. This formal Indian tent is really one of the most comfortable of all dwellings. The canvas will last 6 or 8 years and can be gradually replaced with more durable materials preserving the original form.

If you should feel a bit apologetic at the prospect of so informal and common a dwelling, one which might perhaps be comfortable enough, but which seems to offer few possibilities for beauty and the fine arts, I recommend that you read Exodus XXVI. The city dwelling translator of A.D. 1589 finally brings himself to lay aside his \$10 words and admits the facts in verses 11 and 12. Plenty of good ideas here for cabinet work, furniture and color schemes, all ultra modern with polished metal and patterned with wild animal skins. Also note that the owners bought their transportation and a lot of their furniture and utensils before they located the real estate. They had been living in a trailer longer than they intended.

♦ Patriarch of Your Clan ♦

By the time you are ready to go ahead with the Big Top unit, economic conditions in the building industry will be very different from what they are now. You will have learned much from experience, and you may decide on some entirely different form and construction for your living center. About that time, too, you will be looking forward to replacing temporary units with permanent. But as your project gets more elaborate, something of the good life will also be lost, for architecture does not consist in material "permanence," but is always the expression of a lived life no matter how temporary the setting. When people cease to use a building its art and beauty "fold When their tents like Arabs and quietly steal away." camping in the forest I have always been struck with the sense of HOME which half an hour's work and a bright new outdoor fire can produce, and I know how sad and forlorn the same spot looks as one goes about obliterating signs of occupancy and giving back the site unspoiled to the squirrels and the deer.

When you have built yourself and your family into this little personal village you won't want to leave it. It will just keep growing more real and substantial year after year. You might as well decide now to be your own ancestor, and to be so colorful a one, that your descendants will talk about you "to the third and fourth generation." After all, the "heads" of all the great "families" of the world—the English Marlboroughs, the American Duponts, the Italian Medici, the Spanish Hapsbourgs all had grandparents too, who were obscure enough. They, like you, were also the end of a "family line" until they went into action in tune with their time and became the beginning of a new tree.

If you ever want to quit, or are obliged to, you won't have lost anything. You will still have it all and the dollars too. When a Japanese gentleman moves, he takes his garden with him. Along with his household furniture go the shrubs, trees, bridges, stone lanterns, everything. You can follow this practice if you wish.

The Beautiful Necessity \$

It is amazing what a small fire is required to keep a tepee warm. You may even start with a hammered earth floor which offers a surface as hard as cement but not so cold. You can have an open fire in the center as the Indians did. Or you can have such a fire on a cement slab. You can carpet the floor with sweet smelling fern. Or you can use the "floor treatment" that the Italians use at Christmastime in their beautiful churches; a floor covering of arbor-vitae. In Carniola they use a matte of sweet fern on the floor. In the spring you clean house with a bonfire that delicately perfumes the whole neighborhood—and your tepee is now cool and summery.

Twenty-four foot poles are needed for this tepee, and if you can't cut them in the woods you will have to order slim ones where the local phone company gets its poles, or assemble lumber yard strips like round tapered trusses to make light but very stiff poles. There are plenty of books and magazine articles about tepees and how to build and live in them.

In conclusion, your biggest problem will be the swarms of visitors who will all want to have a share in your growing estate; help you build it; sit around your fire. Better choose your site a good ways from town and not tell too many what you are up to.

Here in the Pasadena foothills directly across the deep little canyon on which our home faces, a delightful family is now busy in an old avocado grove on just such a project as this. They started with a beautiful palamino mare and her lively little colt. The first "building" was the horse shed. The walls are a sort of large scale grid of 7 crisscrossed 1"x10" boards (probably all they could buy) completed with canvas sides and roof. Next they built the fence and installed a water tap. As I write, I hear the slap-bang of the first load of lumber being detrucked wonder how they got that.

The mare greets Sunday without a calendar. It's the only day she starts to nicker at 8 a.m., for she knows that three or four cars of men, women and children will soon drive up. They set up big beach umbrellas, tables and chairs and unload tools no end. All day long happy noises, pounding, digging, conferences, orders drift across our canyon. In between times they take turns riding the mare -the colt doesn't like to be left but his mother tells him to be quiet. Their friends are always driving up-often we see a string of packed cars and station wagons. Some work is also done there in the evening twilight. I can't yet make out their plans but that will appear in time. They certainly are enjoying themselves. Five miles from town, looking far out over the San Gabriel valley with mountain trails at their backs, they have truly a lovely -W. G. P. place to live. And they are living now.

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Technical Requirements for Hospitals and Data on Government Grants

Portions of an address presented before the South Dakota Society of Engineers and Architects at their 28th Annual Meeting in Pierre, South Dakota, by G. R. Magney of Magney, Tusler & Setter, Architects and Engineers, Minneapolis, Minnesota.

The evolution of the hospital from a refuge for the hopeless to a scientific institution for restoring health has been brought about by social enlightenment and advancement of the medical profession. As humanity becomes more conscious of its social responsibility, and medical science advances in knowledge and achievement, the hospital, of necessity, becomes more efficacious. Thus the physical requirements of the structure are constantly changing. Development of new diagnostic and therapeutic methods and adoption of new techniques create need for additional facilities. Broader concepts of public health and hospital service are influencing hospital design. Improved methods of administration present new problems to be solved. The introduction of new devices for safety, treatment and comfort are progressively changing the conventional scheme.

Economics of hospitalization have progressed with social and scientific advancement. From the primitive charitable institutions established by religious and governing bodies to care for the indigent has emerged the self-sustaining hospital for those capable of paying for their care, and this is the kind of institution desperately needed in your state.

Because of the acute need for hospital facilities throughout the nation, particularly in rural areas and areas financially deficient, the 79th Congress last year, amending the Public Health Service Act, authorized the expenditure of \$1,125,000,000 for grants for survey, planning and construction of hospitals. Provisions of the Act stipulate that the Surgeon-General shall publish regulations prescribing general policies for setting up and administrating state plans for constructing public and other non-profit hospitals, regulations to be subject to the approval of the General Hospital Council established by the Act and of the Administrator. These regulations were approved by the Council on November 14, 1946, and were published in the Febru-ary 12, 1947, issue of the Federal Register. State and Federal hospitals furnishing domiciliary care are excluded from financial aid by the Act.

The Act permits appropriations up to \$3,000,000 to assist states in surveying and planning their hospital needs, and \$75,000,000 annually for the next five years to assist in the construction of hospitals and health centers. The federal government will pay one-third the construction and equipment cost, the other twothirds must come from resources within the state.

The Act provides for construction of general, mental, tubercular, and chronic hospitals and public health centers, all of which should interest you, but, because of the urgency for general-care hospitals in your state, this discussion will be limited to that phase.

It is the intention of the regulations to distribute in the different areas of a state sufficient number of general hospital beds to provide comprehensive hospital service. The number of beds will depend upon existing beds, those under construction, population density and financial resources, and varies in states from 4.5 to 5.5 per thousand population and 2.5 to 5.5 beds per thousand population in areas within the state.

Since the goal of the program is the providing of hospitals where most needed, construction funds will

be granted according to priorities by each state's overall construction program. However, laws and regulations establish principles to be followed in determining priority in rural areas and in locations where population groups are less adequately served by reason of race, creed, or color.

In addition, each state is to develop, so far as practical, its program in accordance with the proportionate need for each of the five types of hospitals authorized general, mental, tubercular, chronic and health centers. For all types, priority will be given new construction and additions to existing facilities rather than to replacements.

Standards of construction and equipment, which regulations establish, include minimum requirements necessary to ensure properly planned and well constructed hospital buildings. Standards relate to choice of site, type of architecture, construction, sanitation, and general building regulations.

Applications for construction funds must assure the Public Health Service that hospitals built with federal aid under the Act shall be open to everyone without discrimination as to race or color. Exceptions may be made in this respect in areas where separate hospital facilities are provided for separate population groups, but only if the plan makes equitable provisions for facilities and services of like quality for each group.

Assurance is required also that a reasonable amount of free patient care will be given. To determine "reasonable amount" the state must consider conditions in the area served, including free care availability. The Surgeon-General may waive this provision when it is not considered feasible financially.

The Act stipulates that in order to participate, each state before July 1, 1948, must enact enabling and hospital licensing laws and a law establishing minimum standards for operating hospitals constructed under the Act. There will be no federal control over the operation of hospitals after the construction has been completed.

To participate, the state must set up a single state agency and an Advisory Council to consult with the agency in surveys and planning. This, in most states, will require enabling legislation, but in some states survey programs have been started by an existing agency under executive orders of the Governor.

The rules and regulations for planning government grant hospitals are prescribed by the Federal Hospital Council of the Division of Hospital Facilities, United States Public Health Service, and copies of these documents are available. Because of this, and your familiarity with hospital design generally, conventional features and elements will not be reviewed, but these comments confined to new developments in planning, construction and equipment.

The small hospital is changing from a two-story structure, with duplicated and scattered facilities, to a one-story consolidated unit. The larger multi-story hospitals are discarding the practice of placing surgery on the top floor, obstetrical next to the top floor, and laboratories in the basement and instead are locating surgery and laboratories on second floor, obstetrical and nursery on third floor, and general patients on upper floors where maximum quietness, good light and air are most needed. This improved planning, besides making the building more functional and reducing construction cost, conserves elevator service and labor and simplifies administrative functions.

The minimum economical nursing unit in generalcare hospitals is from 25 to 30 beds. Greater economy

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is effected by having two or more units served from one nursing station, providing the plan is arranged in wings diverging from the station. With this arrangement, one supervisor can administer all units, while if they are remotely located one more will be required for each additional unit. It will also reduce the number of floor nurses caring for patients during inactive periods. The consolidation of nursing units not only saves personnel, but eliminates duplication of space and equipment, and this saving in many instances is sufficient to make possible the inclusion at the station of a supervisor's office, class room and nurses' rest room, which otherwise, because of cost, might not be provided.

The patient rooms, necessarily serving as combination bed, living and dining rooms, must be of size to accommodate the furniture and equipment, and have adequate maneuvering space for doctors, nurses, stretchers, and wheel chairs. They should be placed so that the window outlook is attractive and, if possible, oriented to admit desirable and exclude undesirable prevailing winds. The exposures in this section of the country in order of preference are south, east, then west, and finally north.

Private rooms for either one or two patients should be of adequate size for accommodating two beds, about 11¹/₂ feet wide by 15 feet deep-4-bed wards 20 feet wide by 15 feet deep, the depth in both being from exterior walls to corridor partitions or closet enclosures at corridor partitions. An individual closet of sufficient size for clothing, traveling bag, and other personal effects should be provided for each patient. Having all general private rooms of uniform size and large enough for two beds lends flexibility and maximum capacities for emergencies. About two-thirds of the beds should be in private rooms and one-third in wards. The Public Health Service recommends onethird of the beds in one-bed rooms, one-third in twobed rooms, and one-third in four-bed wards, and this practice must be followed in government grant hospitals.

Every room should be equipped with a lavatory unless a water closet and lavatory compartment is connected to the room or pair of rooms, in which case the water closet should be provided with bedpan cleaning equipment. While the sanitary service compartments require more space and cost more than lavatories in rooms, the additional expense is justified by better nursing care, less labor in bedpan service and private toilet facilities for patients.

It is becoming common practice to keep the bedpan and related accessories in bedside cabinets regardless of whether cleaned in a private compartment or general utility room. This insures individual equipment, which lessens possibility of cross infection by contact, and makes it unnecessary to sterilize the utensil after each usage, saving labor and sterilizing costs.

The recent change in technique for taking care of newborn babies has revolutionized nursery design and appointments. The baby is now completely serviced in its own bassinet instead of being removed for bathing and general care. The doctor does not enter the normal nursery, but the baby is brought in its bassinet to an adjoining room for examination and treatment. It is, however, necessary for the doctor to go to the babies in the premature and isolation nurseries. New type bassinets supported on cabinet with extension service shelf and compartment for the baby's individual supplies and equipment are available. The technique in preparing and sterilizing the baby formula is also undergoing a change. The bottles are filled with the milk formula, nipples applied and capped, and then sterilized under pressure for 20 minutes in an autoclave designed for that purpose. It is generally considered unnecessary, but desirable, to mechanically ventilate or air condition nurseries in this territory. It is essential, however, to provide mechanical means for controlled humidity and temperature. The installation of germicidal ultraviolet lamps in nurseries for sterilizing the air is urgently recommended.

Sizes and general appointments of operating, delivery and related rooms have been quite standardized, but technical equipment is constantly being improved. The first instrument sterilizer was the "boiling" type, requiring an hour to produce safe sterility. Then came the pressure autoclave, reducing the time one-half, and, finally, what may be the ultimate, a device that washes, sterilizes, and dries the instruments in a single operation in less than 15 minutes. These rooms are now being made safer and more comfortable by the introduction of controlled, clean, atmospheric conditions, and maintained sterility by germicidal lamps.

Instead of having the central sterilizing work and supply department in the basement, or in the surgical suite, it is now generally placed on the same floor as the operating rooms, especially if surgery is on the floor between the administrative and patient floors. This location is excellent for supervision and central to where most of the dispersed materials are used.

In many hospitals, because of the lack of proper facilities on the patient floors, the pharmaceuticals and pathologicals are stored in the food and nourishment refrigerators. This practice is unsafe as well as unappetizing and should be discontinued, and special refrigerators installed for the purpose conveniently located.

One of the first things the health authorities look for in examining plans for general hospitals are facilities for the temporary mentally deranged and contagion suspect. Every hospital, regardless of size, should have at least one psychiatric and one suspect room.

Until 20 years ago unsterile lake and river ice was used by hospitals for all purposes. Then manufactured ice came into existence. The large cubes were handled, stored and crushed in places and under conditions most unsanitary. The old methods and practices are rapidly being superseded by the modern machine that makes flaked ice for technical and culinary purposes.

Mechnical and electrical provisions should be made in all patient and treatment rooms for the use of portable x-ray, diathermy and hydrotherapeutic apparatus and ultraviolet and infrared lamps, and places for their storage when not in use must be provided.

A unified comprehensive code for governing heating, ventilating and air-conditioning is definitely needed, since most of the existing codes are incomplete conflicting and obsolete. Cities, states, federal government, and the Fire Underwriters have different requirements. For instance, the Federal Public Health Service and Veterans Administration specify eight air changes per hour for operating and delivery rooms and the National Fire Protection Association by at least twelve. Because of no definite criteria, many hospital architects and engineers have formulated their own code, based on minimum compulsory requirements, scientific knowledge and practical experience, and the following recommendations are made accordingly.

The best systems for heating a hospital are steam, hot water, or a combination of both, using steam for ventilating and air-conditioning coils, sterilizers, kitchen

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and laundry equipment, and hot water for room radiators, convectors and radiant coils. Hot water is gaining in favor since it supplies more uniform heat, is easily controlled and piping is not difficult to conceal. For maximum economy and comfort, the system must be temperature-controlled by either room or zone thermostats. Individual room control is the most selective, but more costly to install and to maintain. The oriented zone controls are less costly to install and to maintain, give satisfactory results, and eliminate to a large extent the human element. Nurseries and special patient rooms requiring higher temperatures, and heat during cool summer periods, should be supplied by separate piping systems.

When planning a program for mechanical ventilating or air conditioning a hospital, the following must be considered: The supplying of pure and the extraction of impure air. Providing air of characteristics that will contribute to the comfort, relief and recovery of the ill, and the efficiency of the doctors and hospital personnel. The elements of the system required by law are of first consideration, then the minimum for good practice, and finally the ultimate, if economically possible.

The minimum ventilation required by most federal, state and local codes is the exhausting of air from toilet, bath, utility and sterilizing rooms having no windows, and from kitchens, laundries and morgues. Some, but not many, codes require complete ventilation of operating and delivery rooms, and only a few, complete air conditioning.

If a general ventilating system is installed, it should be of a type that will deliver fresh, clean, heated and humidified air directly or indirectly to the patients' room. If rooms are to be completely air conditioned, cooling should be included in the system and the air delivered directly to the rooms. No air should be recirculated but mechanically exhausted directly from the room or through connecting sanitary service room. A recirculating system will distribute sound and foul, contaminated, odorous air to all rooms connected to the system.

One of the most simple and effective systems for ventilating a hospital delivers filtered, heated, and humidified fresh air to all general, technical, and service corridors and exhausts a lesser amount through adjoining rooms to the atmosphere.

Keeping the corridors under pressure and exhausting through rooms will prevent to a large extent the foul, contaminated, odorous air entering the corridors.

Toilet, utility, and other sanitary rooms should have at least ten air changes per hour, accomplished by obtaining fresh air, when possible, from the corridors and mechanically exhausting to the atmosphere.

Operating, delivery and auxiliary rooms, although not generally required by law, should be mechanically ventilated and, when possible, completely air conditioned, with systems changing the air at least twelve times per hour. For ventilating only, the fresh air should be cleaned, heated, and humidified, and for air conditioning it should be also cooled and dehumidified. The treated air should be discharged directly into the operating and delivery rooms—half the amount exhausted near the ceiling and the rest near the floor. Some should be exhausted directly and the rest through the scrub-up and sterilizing rooms, then into the sterilizing equipment space where it will remove the generated heat and vapor, and then be discharged to the atmosphere. The operating and delivery rooms should be individually temperature and humidity controlled.

(Continued on Page 16)

Unification Nears Realization

The architectural profession in Minnesota is on the threshold of unification. On March 29, 1947, the Minnesota Association of Architects in annual meeting amended its Articles of Incorporation in such a way as to allow the putting into effect of the unification program which had been developed through joint committees of the State Association, the local chapters of the A.I.A. and the Duluth Society of Architects. Briefly stated the result of the action of the state association is as follows: The Minnesota Association of Architects' name is changed to The Minnesota Society of Architects of the American Institute of Architects. It will be composed of four chapters, the Minneapolis Chapter (formerly the Minnesota Chapter), the Saint Paul Chapter, the Duluth Chapter and the Minnesota Chapter which will include all non-metropolitan architects. Upon becoming a member of either of these four local chapters an architect will automatically become a member of the Minnesota Society of Architects. The Minnesota Society of Architects will handle all matters pertaining to the profession which occur at the state level. Policies of the state society will be adopted at its annual meetings and will be carried out by its Board of Directors, consisting of nine, two elected by each local chapter and the past president of the state society. On national affairs the local chapters will deal directly with the Institute as at present.

The officers and directors of the Minnesota Society of Architects which will begin to function as such upon approval by the Board of Directors of the Institute are as follows:

President—Thomas F. Ellerbe, Saint Paul Vice President—Louis C. Pinault, Saint Cloud Treasurer—C. H. Smith, Duluth

Secretary—Paul M. Havens, Saint Paul

Directors, in addition to the above who are also directors, consist of Arnold I. Raugland, and Donald P. Setter, Minneapolis; Otto N. Olsen, Duluth; Harold H. Crawford, Rochester.

H. A. Rogers Company Elects New Officers

Due to the recent death of their President, Ralph W. Cornelison, the Directors of the H. A. Rogers Company have elected Mr. A. G. Bemmels President, Mr. Myles B. Gow Executive Vice President, and Annabel R. Cornelison Secretary and Treasurer.

The H. A. Rogers Company, Blueprinters and Photocopyers, and dealers in Drafting and Engineering Supplies and Materials for Artists and the Showcard Profession, has been in business in Minneapolis since 1899, having been founded by Mr. H. A. Rogers.

Mr. Bemmels has been active for many years in the milling business in Minneapolis and since the death of Mr. H. A. Rogers in 1939, has been a Trustee of the estate of Mr. H. A. Rogers.

Mr. Gow has been actively connected with the firm for the past fifteen years, first as a Salesman, then as Sales Manager and, for the past year, as Vice President and Sales Manager.

Annabel R. Cornelison, the daughter of the founder,





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NORTHWEST

Something Worth Reading and Knowing About Nails

Three principal factors determine the efficiency of a nailed joint, namely:

The wood. The nail.

The conditions of use.

The harder woods hold nails better than the softer woods, although they are more difficult to nail and have a greater tendency to split. Wood that is green or not thoroughly dry may lose most of its nail-holding power when it dries after the nails are driven. This is one of the reasons why green wood is not recommended for building construction. The resistance to withdrawal is higher when nails are driven into the side grain than when driven into the end grain of the wood, and therefore side grain nailing is always to be preferred.

The common wire nail has attained by far the widest use of the many types developed. By varying the number and size, the kind of point, and the type of surface, the common nail can be adapted to cover a wide range both of every-day and of exacting uses.

The resistance to withdrawal of common nails increases directly with the depth to which driven and increases almost directly with the diameter or surface area; that is, if the diameter of a common nail is doubled, the holding power is doubled, provided, of course, that splitting of the wood does not occur. The resistance of nails to side loads (lateral resistance) increases nearly $1\frac{1}{2}$ times as fast as the diameter, that is, if the diameter of a common nail is doubled, the lateral resistance is nearly three times as great. The development of the maximum lateral resistance of a nail requires a depth of penetration into the member receiving the point of from not less than one-half the length of the nail for dense hardwoods to two-thirds the length of the nail for the softer woods.

The softer woods are often preferred for construction purposes because of their greater ease of nailing the lack of nail-holding power being compensated for by the use of additional or larger nails. For example, in tests of diagonally sheathed panels an *increase of about 40 per cent in strength* (resistance to racking forces) was obtained by nailing with three, rather than two 8d nails at each stud crossing. In tests of wall panels made of a soft pine, a 30 per cent increase in stiffness and 40 per cent increase in strength was obtained with horizontal sheathing by increasing the size of nails from 8d to 10d.

The nail-holding power of wood can be increased by changes in the surface condition of the nail. One of the common methods of surface treatment is the socalled "cement coating," which, if properly applied, may double the resistance to withdrawal in the softer woods, the increase dropping off for the denser woods, like hard maple, birch, or oak, to no advantage over the plain nail. All cement-coated nails on the market are not subjected to the same treatment, so that nails may sometimes be obtained that will show only a slight initial advantage over the plain nail. The increase in holding power of cement-coated nails is not permanent, dropping off about one-half after a month or so for the softer woods. Because boxes are usually built for short-time service cement-coated nails have been used extensively in their construction.



Watering Lawns

By BETH MCCONNELL

★ LAWN CARE is not, strictly speaking, an architectural problem. But it is one that recurs frequently in the actual practice of an architect's work. This article, which appeared in the magazine, *Lawn Care*, copyrighted by O. M. Scott and Sons Company, is presented as an answer to repeated inquiries on the subject.

Everybody talks about the weather but nobody does anything about it, said Mark Twain many years ago. Little did Mark realize that in this day and age everyone would have a lawn sprinkler for making rain whenever it was wanted.

The weather of the past decade has been so abnormally warm and dry that watering the lawn has become a regular part of the summer routine. According to Weather Bureau officials, such warm, dry cycles are just a phase of normal climate. Sometime, they say, the trend will be reversed to cooler, wetter weather. Even then lawn sprinkling will be important, but not quite such an ever-present problem as now.

The brilliant green lawns of the British Isles owe their beauty, not to any closely guarded secrets, but mainly to ideal moisture conditions. Gentle rains fall so frequently and atmospheric conditions are so favorable that there is no critical drying.

In the United States most sections east of the Rockies have an annual rainfall almost fifty per cent greater than that of England, yet the watering problem is more difficult. About the same amount of moisture falls each month throughout the year. Surprising as it may seem, June, July and August even have a slight edge over the other months. Unfortunately, evaporation during the summer is highest and many of the rains come as heavy, dashing storms. They do the grass little good because much of the water runs off the surface before it can be absorbed. There may be many such heavy rains during the summer with severe drouths in between. To offset this fluctuation and provide a more even moisture supply, a careful watering program is needed.

It is seldom necessary to water mature grass just for the sake of keeping it alive, but a carefully watered lawn does hold its spring color throughout the summer. On loam and clay soils a good turf can withstand severe and protracted drouth. It may turn quite brown, but unless cut too short it will be revived by the slow, drizzling rains of fall. This is not true of sandy soils. They dry so completely that even weeds may be killed in dry weather,

Some contend that grass needs a rest in summer and should not be forced by watering. For a direct contradiction of this theory one has only to look at golf course putting greens which are forced all through the summer and present a beautiful appearance year after year. If grass is fed regularly there is no reason for giving it a vacation just when a green lawn is most enjoyed.

Factors Affecting Water Needs

The amount and frequency of watering should be determined by the type of soil, height of cut, exposure of the lawn, temperature and rainfall. Some soils have a greater moisture retaining capacity than others. If there is an abundance of organic matter this acts as a sponge to retain moisture and release it to the grass as needed. Because of their finer particles, loam and clay soils hold more water than sandy and gravelly ones.

Evaporation is reduced by cutting the grass $1\frac{1}{2}$ to 2 inches high, because the longer growth shades the ground. Furthermore, high cutting promotes deeper rooting so grass can reach to a greater depth for moisture.

Steep slopes receive less benefit from rainfall and watering because there is more surface runoff. Those facing toward the south are subject to greater loss of moisture by evaporation.

When to Water

The amount and type of natural rainfall are the main factors affecting the timing of the watering program. A slow, soaking rain of $\frac{1}{2}$ inch will do more good than a driving downpour of several times that amount. When rains have been missing for a week or two, it is time to examine the soil to see if it is getting too dry. Sometimes this condition develops much earlier in the spring than is realized. A bright sun and brisk wind can evaporate a lot of soil moisture within a few days, even in April. Therefore, the important thing is to start watering early enough in the season. Do not wait for the grass to show signs of withering. Once the soil gets too dry it is difficult to bring the moisture up to optimum again, especially if it is a heavy clay which bakes hard and cracks open.

A good lawn watering program cannot be scheduled by the calendar. The need for water is best determined by occasional examination of the soil. A good plan is to cut a small plug 2 or 3 inches deep with a knife or trowel. If the upper inch or so reveals any sign of dryness it is time to water. It is easy to replace moisture to that depth but if the soil is dry much deeper the task is more than proportionately greater.

Selecting the Sprinkler

Manufacturers of irrigation equipment have long since outmoded the old method of "sprinkling" a lawn by sitting on the step and flicking a stream of water over the lawn with a hose and nozzle. There was something fascinating about the job but it didn't help the lawn much.

A fine mist is not desirable because it is easily blown by the wind. On the other hand, a coarse stream is harmful because it washes the soil and puts the water on too fast. A sprinkler that provides the effect of a slow, easy rain is best because it allows the water to soak in as it falls and not flood the ground or run off the slopes.

In selecting sprinkling equipment the home owner should consider the size of his lawn and try to get a sprinkler which will water an area large enough so it won't have to be moved frequently. Some types cover a circular pattern, others a rectangular one. It is important to get a sprinkler that will operate satisfactorily WHEN THE CATHEDRALS WERE WHITE—Le Corbusier, translated from the French by Francis E. Hyslop, Jr., and published by Reynal & Hitchcock, New York. Lists at \$3.00.

An entertaining, instructive book about America by the famous French architect and painter which gives one a real chance to discover one of the original minds of our times. The author's revised plan for a vertical New York, the city where the skyscrapers are too short, is provocative and revealing even for those who may not agree. His contention that city dwelling must become a planned way of life and that housing is not merely a question of haphazard buildings subject to the whims of builders and dwellers alike will likely find a wide and receptive audience. Many readers are going to wonder, however, where the author obtained some of his ideas about how America lives. A visit with Carl Sandburg might have corrected some misconceptions.

THE CASE FOR REGIONAL PLANNING — Directive Committee on Regional Planning, Yale University; published by Yale University Press, New Haven. Lists at \$10.00.

If this excellently edited report on regional planning does nothing more than to shake the good people of the New England states free from their inertia in respect to the situation which this factual analysis discloses, it will have accomplished much. Those interested in broad scale planning will find this publication a valuable guide which will suggest the research and develop-ment of a similar report for any other region of the United States. It is a "must" for postwar planning committees since it presents the process of planning in a broad perspective of basic democratic values and contemporary scientific attitudes not customary in purely technical planning literature.

PANEL TYPE DOORS PRE-FERRED FOR DECORA-TIVE HARMONY

Greater beauty and decorative harmony are given as reasons for preferring paneled interior doors, according to a recent nation-wide survey conducted by Ponderosa Pine Woodwork. The survey shows that of those who prefer the panel type of interior doors, more than 60% base their preference on decorative harmony and architectural design.

According to the survey, the popularity of panel doors is especially strong in the South and East where the charm of traditional architecture is preserved in many of the finest and most modern homes. However, more than 84% of respondents from all over the country have panel doors in their homes at present.

Flour City Ornamental Iron Increases Fund

The School of Architecture at the University of Minnesota is again the recipient of a gift of \$2,000 given by the Flour City, Ornamental Iron Company. This increases a fund originated by a similar gift from this company in 1945. The fund is known as the "Flour City Architectural Education Fund" and is used for scholarships for students in the School of Architecture. This Fund provides also for an annual prize of \$100 for the winning designs involving the use of ornamental metal. This prize is known as "The George B. Melcher Prize" in honor of Mr, Melcher of their firm.



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FACTORY REPRESENTATIVES

IN PRINCIPAL CITIES



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(Continued from Page 10)

If the air is changed at least 12 times an hour, and if the operating lights cannot be turned on unless the ventilating or air-conditioning system is in operation, according to good authority, there should be no danger of explosion caused by vapor-proof light fixtures. In rooms not having the required number of air changes, explosion-proof operating lights must be used.

Food preparation and serving rooms should have the air mechanically exhausted to remove heat and odors and to prevent odors entering other spaces. Air from laundries, laboratories, autopsies and isolation rooms should be extracted by separate systems.

Every hospital with or without general ventilating or cooling systems should have at least one room completely air conditioned with a system supplying air free from pollen at selective temperatures and humidity. Asthmatic hay fever patients require pollen-free air and low humidity for relief.

Of the many improvements in hospital lighting, the development of a new fluorescent direct-indirect fixture for bed rooms is probably the most noticeable. In the past, bedroom, lighting usually consisted of a direct or -at best-an indirect fixture in the center of the ceiling. The direct type was most annoying to the patient, as its glare was directly in the patient's line of vision. Even the "hot spot" on the ceiling caused by the old type indirect fixture was anything but comfortable. To offset this, an unsightly, inefficient bed light was usually installed behind the patient and out of his line of vision. This caused no direct glare, but being so close to the lighted object cast a bad reflection.

The new method is a fixture installed on the wall 6'6" above the floor and directly over the head of the bed. General illumination is furnished by two 20-watt fluorescent lamps mounted under clear glass in the top section of the fixture, illuminating the entire ceiling without "hot spots" and giving pleasant, shadow-face, glare-free light. The fixture has one 20 watt lamp in the bottom section covered with a translucent sheet of plexiglass for reading or added illumination. The top lights are controlled by a switch at the door and the down light by a pull switch on fixture. The use of both up and down lights provides sufficient light for examinations and surgical dressing, which in the past required a supplementary portable floodlight. Germicidal lamps for air sterilization is another

new application. These are used in operating and delivery rooms, nurseries and contagious wards. Germicidal lamps properly installed will kill 99 per cent of air-borne bacteria, thus providing a practically sterile atmosphere and greatly decreasing the chances of infection in surgery and cross-infection in contagious wards. Their operating cost is negligible.

"After the Traditional Manner" no longer applies to the employment of colors in hospital decoration. Gone are the chipped bedsteads and the glossy white walls that have characterized hospital interiors in the past. Brighter colors, scientifically selected and harmoniously blended are beginning to find their rightful place in the modern hospital, not only for purposes of decoration but for the therapeutic value as well.

Certainly there must be cheerfulness. There must be relief from monotony, relief from fatigue, physical and emotional tension. Color rightly applied creates moods favorable to efficiency, to physical and emotional comfort and to convalescence. The technique is not merely one that promotes beauty for its own sake, but beauty as it may be controlled and engineered to serve definite ends.



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Watering Lawns

(Continued from Page 14)

on the pressure and volume available at the time of day when watering is done. The local water company should be able to give a close estimate as to the pressure available.

A convenient method of lawn irrigation is provided in the automatic underground sprinkler systems. These save time and labor and will do the job nicely if properly designed and installed by capable engineers.

Sometimes these systems are misused. It is so easy to turn on the water and leave it on, that there is a tendency to over-water. Some installations are automatically turned on and off by a clock. Favorable results presuppose that the moisture need is the same over any given interval. That presumption is usually wrong and too much water is applied. This may not do much harm in a light sandy soil but it will be injurious on heavier soil. Over-watering drowns grass roots.

Quantity of Water

As the soil dries out it should be necessary to replace only as much water as was lost during the interval by evaporation from it and transpiration from grass leaves. From an average loam soil this loss on a warm summer day would be about 50 gallons per 1000 square feet. In 6 days that would be 300 gallons or the equivalent of about $\frac{1}{2}$ inch of rain. The length of time needed to replace that would depend upon the sprinkler and water pressure. A good type at 20 pounds pressure would need to run 2 or 3 hours.

In the case of a sandy soil, the moisture loss should be replaced long before it amounts to as much as a half inch of rain. Even though such soils absorb water quickly they actually hold less moisture and lose it more readily. They need to be watered more frequently, but in smaller quantities.

It is easy to check the delivery of a sprinkler over any given time by placing coffee cans under the spray and measuring the depth of water collected. To be sure of complete coverage it is necessary to overlap the borders of the area covered by the sprinkler.

It isn't necessary for the lawn grower to become involved in calculus to efficiently water his lawn. He needs only to moisten the soil as deep as dryness has occurred, be that one inch or four. By examining a plug of soil occasionally during watering, the length of time to operate the sprinkler can readily be determined. Similarly a few observations will soon enable one to decide in how many days his soil dries to a depth of an inch or so, at which time watering should be resumed.

Water Not Cureall

The fact that a lawn is brown does not necessarily mean that heavy watering will bring back its beauty. Perhaps the browning was caused by a fungus disease, Grubs of the Japanese Beetle, or injury from a dull and poorly adjusted lawn mower. Here again the soil is the key. If it is moist and the grass is still brown, then watering is not the remedy for the trouble.

Common Fallacies

Many people inquire if chlorine and other chemicals used in purifying city water are harmful to grass. If water is suitable for human consumption or even for laundry purposes, it is not likely to hurt grass. It is doubtful if enough such water would ever be put on a turf to cause any appreciable concentration of chemi-

ARCHITECT

cals. The lime in some water may tend to alkalinize soils but never harmfully so.

Some people think that grass plants absorb water through their blades and stems. This is possibly due to the fact that grass looks so much fresher right after watering. Actually grass can make use of moisture only by taking it up from the soil through the root system. Merely wetting the grass and soil surface does no good. The water must be put into the ground where it becomes available to the roots.

There is widespread belief that to water during the heat of the day may result in "scalding" the grass. In fact, the water has a tendency to cool rather than burn. Those who say that water drops act as millions of small lenses magnifying the heat of the sun, forget that the drops evaporate before any such burning could result. If damage to the lawn occurs after watering, look to some other cause. The important thing is to put on the right amount of water and this may be done at any convenient time of the day.

Careful tests have shown that cold well water or warm tank water will not harm grass. Even ice water or boiling water would be close to air temperature by the time it passed through a few feet of hose onto the lawn.

The common pest, Crabgrass, is called watergrass by many because they associate it with watering and think "sprinkling" brings it on. Actually, Crabgrass will grow in drier soils than will desirable grasses but like most plants it also enjoys abundant moisture. People don't notice it until well into summer, probably soon after they start watering; hence the association. Excess watering may encourage Crabgrass by drowning the lawn grasses, thus removing competition.



17

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