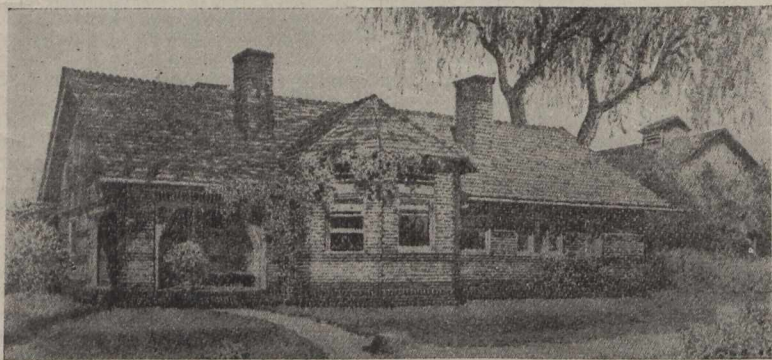


A Modern One-Story Dwelling House.

Recent inquiries from readers indicate that there is a demand for modern farmhouse plans. From the standpoint of economical heating, perhaps the two-story house is most in favor, but viewing the matter from other considerations, the one-story house has its admirers. The plan we illustrate and describe is taken from *The Ladies' Home Journal*.

Breadth, simplicity and comfort—characteristics of farm life—are sought to be expressed in this one-story plan. The living-room is, as it should be, the



A COMPLETE ONE-STORY FARMHOUSE.

main feature of the plan. It is both living-room and dining-room, and contains a broad brick fireplace (built for wood or coal), a sideboard and china case of liberal size, with leaded glass doors above, as well as cupboard below.

A wide opening (closed by sliding doors) joins the living-room with the smaller apartment, which may serve as library, office, and parlor. Bookcases are built in, and there is room for a desk. Through a double-acting door we pass from living-room to kitchen, with its cooking conveniences and a table for the feeding of several extra hands. Over the cooking range is a low arch about six feet from the floor, which assists the ventilating register in the chimney to carry off quickly the steam and fumes of cooking. The sink is of enameled iron, with roll rim. The kitchen and bath-room walls are wainscoted with Portland cement and painted. The kitchen has a long counter adjoining the sink, with its cases of drawers and cupboards, its open space for the flour barrel, and cupboard above, all of which are convenient for the cook. It also has a cold-storage room, with refrigerator built in, to be filled with ice from the outside. The laundry is fitted with set tubs, supplied with hot and cold water, and is handily connected with the attic for drying clothes. This room also serves as an entry and wash-room for the men coming from fields and barn. Space is provided here for a dumb-waiter to the cellar next to the wood box. From the kitchen a door opens directly upon the broad, vine-covered arbor, which serves as an outdoor dining-room during the busy summer season. The floor of this apartment is of hard gravel.

The bedrooms, on a private hall, are well apart from the living-rooms, giving privacy and quiet, with convenient access to the bath-room. Bedrooms and bath-room can be reached directly from the kitchen without passing through the living-room; the broad, shallow closets, with folding doors, open wide. At the end of the well-lighted hall a chest and press are built in for linen and blankets. In the light, roomy attic, there is space at each end for a chamber, with ceiling height varying from six to eleven feet, and abundant storage space in the middle.

The cellar is excavated under the entire house, and contains storerooms, fuel bins, and hot-air furnace. It is amply lighted with large windows on the sides, not visible in the drawings. The foundation walls are of stone and brick. The exterior walls are of hard-burned common brick, ten inches thick, with two-inch air space. Such walls require no lathing. The exterior woodwork is left rough, as it comes from the saw, and is dipped in creosote stain. The interior woodwork is pine or basswood, painted in kitchen and living-room, and basswood, yellow pine, cypress or redwood, stained, not varnished, elsewhere. Floors are of double pine. Walls and ceilings should be calcimined. Such a house should be built on an elevation back from the road and at least two hundred feet from the barn.

This is but a commencement of a number of farmhouse plans we hope to publish, and we would ask those of our readers who have satisfactory farm houses, costing, say, from \$1,500 to \$2,500, to send us photos, plans and descriptions for publication.

Experience with Chess.

The ADVOCATE is certainly a good and welcome visitor in our home. We all read it, and profit a good deal by its advice. We never waste a copy, but send them by mail or give them to friends.

Our experience with chess is as follows: I helped my next neighbor to cradle a field of Deil fall wheat, on new land, first crop. It shelled a good deal, and came up green all over that same fall. The land was plowed and sown with oats next spring. Around the stumps, where it was not plowed, there was a strong crop of chess, with hardly any wheat in it. The oats were a good crop. I sowed a field of new land with purchased seed, and after sowing

the first bag, took the rest home and fanned a lot of chess from it, but could see no difference in what grew from it and what grew from the first bag sown. It was all a good crop.

Simcoe Co., Ont.

RICHARD ANDERSON.

Drainage for Dirt Roads.

We are not inclined to give much thought to road improvement during the summer and early fall season, when the majority of our highways are in good condition; but the importance of the subject forces itself upon us when the fall rains commence, and often in spring dirt roads are nearly if not quite impassable. To improve such roads, the effort is usually to get them graded up and gravelled. This, however, is in many localities overly expensive to carry out, and indeed is unsatisfactory unless the roadbed is properly drained. When this is done, fairly good roads can be maintained even without gravel, as is shown in the following article, written for the *Road Maker* by the expert, E. G. Harrison, U. S. Good Roads Dept., Washington, D. C.:

"Unless attention is particularly called to it, but comparatively few persons are aware of the great value underdrainage is to an earth roadway. While the principles connected with artificial drainage for cultivated land and public roads are the same, they differ in application, as the results to be obtained are quite different. In land drainage we seek to remove what we term surplus water by slow processes, leaving a portion in the earth or soil to feed the plants; in fact, we do not want to make the earth too dry. While in road drainage, we call water superfluous, we seek to turn as much from the surface of the roadbed as possible, by constructing the surface with a slope from center to side ditches, and making it as hard and smooth as we can, and that which enters in and goes down into the earth we remove as quickly as possible.

"It is not generally known how great an amount of water falls on an ordinary public road. If the road is three rods wide, the average rainfall on one mile in the United States is about 25,000 tons. While much of this runs off on the surface into side ditches and is carried from the road, a large quantity enters the soil; the amount varying according to the nature of the soil. In loose, common earth, the voids are about equal to the solids. It is the same in coarser clays and those which are said to "bake" and get quite hard on the surface and show large cracks. In ordinary, common earth, the voids equal about one-third of the space that the solids do; as we dig down into the earth, the voids grow less, being only about fifteen per cent. of the solids; then we say the earth is firm. This is why we dig to get a solid foundation for building structures. In all drainage we seek to lower the level of the water in the earth.

"The water which enters into the soil and is not removed by evaporation passes down into the pores of the earth, which we term voids; as the water passes down and comes to where the voids are smaller, the downward flow of the water is checked and the water is retained in the larger voids near the surface, until in time it sinks slowly down through the finer voids. It is this retained water that causes the mud. The wheels of the wagons sink into the earth softened by water, and churn it up, breaking up the harder parts so they will take in more water; the horses' feet act like a mason's hoe in a mortar bed, and the water mixed with earth becomes mud, which makes teaming expensive and personal travel an abhorrence. How can this condition of affairs be avoided? The answer is, by *drainage*. In *land drainage*, we place the drains deep and far apart, so that plant life shall have all the benefit of the water as it passes through the pores of the soil to the drains; hence, indirect drainage. In the case of *road drainage*, we place the drain tile nearer the surface and close together, so the water will get into the drain tile as soon as possible, and so that all, or nearly all, will pass into the drains and be carried from the roadbed before it will damage the road by softening it and become mixed with the earth and turned into mud; hence, direct drainage.

"In *direct drainage*, we are guided by the laws of nature, and follow them as closely as possible. When we find a roadbed that we call naturally good, we find it has a porous subsoil. The surface may be of fine sand or clay, or of both mixed; as we dig into it and as we go downward, we first find coarse sand, then pebbles, small at first and larger as we go down. This kind of material makes what we call natural drainage, for the reason that the water enters the fine surface, and what is not taken up by evaporation, passes down into the coarser sand and through larger voids in the pebbles, and thus gets away from the surface; the water not being held there as in porous clay earth, it does not mix up with material and make mud.

"Without natural drainage, the next best thing to do is to put in artificial voids; this is called drainage, and consists in making spaces or voids in the earth below the larger voids and, when possible, above the finer or closer voids. Two

drains from two to three feet deep, about eight or ten feet apart, under the center of the road, or where the road is mostly traveled, will answer. If two drains are found to be too expensive, one drain in the center of the most traveled part of the road will be found to answer a very good purpose, but is not as good as two drains. Where the earth is of fine clay, and consequently the voids are few, the water has more difficulty in reaching the drains; for this reason, more than one drain is desirable, so the water may pass off more quickly and not dissolve the finer parts of the earth nor remain there long enough to be formed into mud or made into ice when freezing weather comes.

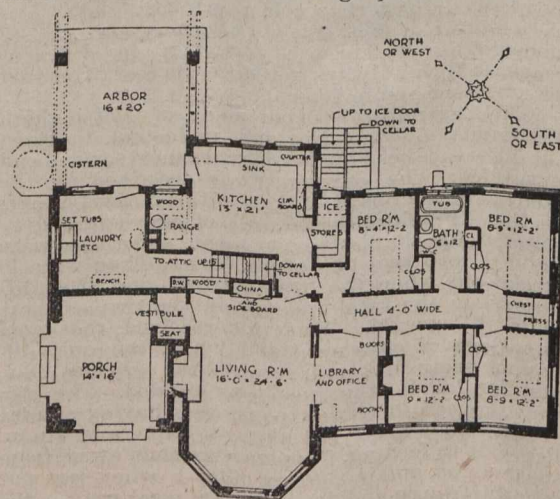
"Let us consider the operation of the rainfall. It only stays with us on the road, or in the road, because we dam it up, and make holes and ruts which hold it. Keep the roadbed smooth and hard, and it will soon run off. If it goes into the earth, it will not remain to trouble us if we assist it to get away by making a place for it to run to. Whenever it is held back by obstacles it cannot overcome, it makes a pool. It is not the nature of water to be inactive, and it begins the work of destruction by dissolving material which surrounds it; hence, a pool in a road always grows larger while it retains water. The earth is softened, and wheels cut into it, taking out the soft mud; the water reaches other earth and softens that, and the work of increasing the size of the hole goes on. Now let us follow the water which passes downward into the earth. The larger voids become filled first, but as more water comes, it passes on down until the smaller voids, taking less water, hold the water back in the larger voids, and the earth is said to be saturated with water.

"When there is no natural drainage, we use the tile drain, which furnishes a large void and receives the water. It finds its way in the loose joints; the surrounding earth voids being filled with water, it soon finds the open space or void the tile furnishes, and the tile being placed on a downward grade, the water flows readily to the outlet. When the rain ceases, the voids in the earth are emptied of water, which goes into the tile and passes off, excepting what is retained in the finer parts of the earth, which we call moisture; this is not sufficient to do much harm to travel, because as the water passes downward, the voids become filled with air, which soon dries the earth and absorbs the moisture, and the earth roadbed becomes hard and dry. This is the operation in the summer.

"Let us see what the tile drains do for us. After the rain has fallen for some time, the voids are all filled, but the water is passing down through the pores or voids as fast as it can get to the void or opening in the tile. The cold soon follows the rain, and the surface is frozen according to the degree of cold—say three inches; the water below this ice crust is passing out of the earth—draining, as we call it. It may not all get out, and freezing will follow; but as there is but little left, or nothing more than has been absorbed by the earth, as moisture, the freezing does not amount to much; as there is very little water to freeze, there is very little ice; instead of having three or four feet of ice formed on the earth, we only have a few inches.

"The few inches of frozen earth all cause some mud as the ice melts, but it will be comparatively little, as the water, when let free, will run down into the earth, find the void in the drain, and pass away. The mud, freed of water, is mud no longer, but simply earth; with voids emptied of water, the air takes its place, and the moisture in the earth is absorbed; consequently, the earth surface forming the roadbed soon becomes dry and hard.

"As soon as it is dry enough, the road machine should be used to level the rough places and put a



PLAN OF ONE-STORY FARMHOUSE.

crown on the roadbed by rounding it up; then let the roller follow, which presses the earth together, lessening the voids and making the roadbed smooth and hard, so that showers and light rains will pass off quickly; then riding is a pleasure, and teaming profitable."

An intelligent farmer has discovered that by planting onions and potatoes in the same field, in alternate rows, the onions become so strong that they bring tears to the eyes of the potatoes so plentifully that the roots are kept moist, and a good crop is secured in spite of dry weather.