The Farm.

Sorghum.

Concerning the recent satisfactory experiments made by Professors Weber and Scovell at Champaign, Ill., in manufacturing sugar from sorghum cane, Colman's Rural World has this to say:—"It was an experiment to settle the question whether sugar could be made as well in the North as in the South, in such quantity as to make it pay. The season had been exceedingly unpropitious for the growth of the cane. The latitude was Northern Illinois, and the planting was on the level prairie. The spring had been very cold and wet, and seed lay in the ground a month or more without germinating. Seed planted on the 23d of June matured its cane as early as that planted a month or six weeks before. The rainfall throughout the three summer months in the vicinity of Champaign was 18 inches, while in usual seasons it has not been half that, and the sorgo crop needs but little rain, and revels in drought. The mean temperature during these same months was six to eight degrees lower than usual, while hot weather is needed to develop the greatest amount of saccharine. And yet, notwithstanding all these unfavourable circumstances, on the very first trial, before the seed was fairly ripe, the company were in possession of several thousand pounds of most excellent sugar, and from that time to this, there has not been a single failure in obtaining sugar, at least 40 per cent. of the entire amount of syrup crystallizing, and the balance of course making a number one article of molasses, commanding fully the prices of the New Orleans commodity."

These experiments have proved that there is abundant crystallizable sugar in the Northern cane, after becoming ripe, the whole fall, unless injured by freezing, and in the most unfavorable season for the development of sugar in cane, that one could expect. There need be no longer any fears of embarking in the business. It is as safe, reliable and certain as any other business, and we believe more remunerative, for the seed raised on an acre of cane is nearly equal in value for feeding purposes for all kinds of stock, to corn raised on the same amount of land. The value of the seed will pay for raising the cane, and delivering it at the mill, if near at hand, so there is no cost in production, as with the sugar beet or the ribbon cane, neither having any value whatever, except for making sugar.

The seeds of the sorghum, it appears, sell readily at 65 cents per bushel, and at that price it appears that they will pay all expenses of producing the cane up to the time when cutting begins. The Rio Grande company have housed their seed—amounting to 20,000 bushels—which at the above price will aggregate $13,000. There is yet another product of the cane which it is proposed to utilize, to wit: the fibre left after the juice is expressed. A paper manufacturer in Philadelphia is testing the bagasso for paper. Experiments made by Prof. Collier, of the Department of Agriculture, with that view, have already shown that an excellent quality of paper pulp can be made from it.

A Cheap Cottage.

The following is a design for a cheap and ornament al frame cottage, with descriptions in substance as follows: The house cost $1,000, and has on the first floor three good sized rooms; a vestibule 5 by 6 feet, out of which a door leads to both parlor and dining room; a stairway leading to the chambers opens out of the dining room, and the stairs to the cellar are placed directly under, and open into the kitchen, which is of convenient size. Immediately back of it is placed the pantry, which is 5 by 6½ feet. A rear entry, 3½ by 5 feet, affords means of entrance to the house from the back porch. In the second story there are three good-sized bed-rooms, all nearly square, and each provided with a closet of convenient size. A centre passage way, which is lighted by a low window in the rear, affords means of communication with the several rooms. Space has been fairly economized throughout in the planning of this building. A cellar 6 feet 6 inches in height is under the entire building; there is to be a cistern under the patry, the excavation for which is to be one foot deeper than that of the cellar. A sink in the corner of the kitchen next to the pantry will have a pump connecting with the cistern.

The foundation below the ground is of field stone, while that above the ground is of quarry stone; the walls 18 inches thick. All the rooms, with the exception of the rear chamber, are accommodated by the one central chimney, which starts from the bottom of the cellar. A grate is provided for the parlor, stovepipe thimbles being inserted for the dining room, kitchen, and two front chambers. The frame is of sound hemlock, the principal sills being 4 by 8 inches, and the cross sills 6 by 10 inches; the joists are 2 by 9 inches; 16 inches between centres, with one course of bridging through the centre. The studs for corners, windows and doors are 4 by 4 inches, all others to be 2 by 4 inches, 16 inches between centres. The rafters are 2 by 4 inches, 16 inches between centres. Valley rafters, 3 by 7 inches; cellar beams, 2 by 6 inches; all timber well nailed or spiked together.

The exterior is sheeted with sound, seasoned and planed hemlock boards, over which is a simple

Fig. 1.—Elevation.

course of 8-pound rosin-sized building paper. Good, white pine siding forms the outside finish. The roof of the bay window is covered with tin, while the main roof is of the best quality of sawed white pine shingles, 18 inches long, and laid 5½ inches to the weather. The roof, preparatory for shingling, is sheeted with hemlock boards, laid with 1½ inch open joints. The cornice, window frames, corner boards, parlor bay window, and all outside casings and trimmings, are of good white pine lumber, thoroughly seasoned. The glass required is of the best quality that is made, single thickness. The sashes are 1½ inches thick, fitted with pulleys and weights. The outside doors are 1¾ inches thick; the inside doors (with the exception of closets), 1½ inches thick, and the closet doors, 1¼ inches thick. All are four-paneled excepting the porch doors, which have glass above the middle rails. The hardware used about the doors is the best of its kind; the lower doors are hung with three bolts each, and provided with two tumbler mortise locks, with brass bolts and keys. The doors for the front vestibule, parlor, and dining-room are fitted with jet knobs, with bronze roses and escutcheons; all others have white porcelain knobs with porcelain escutcheons. The inside finish is white pine in parlor for all parts except the mantel, which is of white oak. The dining-room is fitted with ash wainscoting and casings, with cherry plinth, cap, and mouldings, The kitchen and other rooms are finished in white pine; the casings for the bed-rooms are 4½ inches wide. The roses are 5 inches wide. The pantry is ceiled up 2 feet 6 inches high to the counter shelf; above the counter shelf there are four shelves supported with rabbeted cleats. Cupboards are constructed under the counter shelf, having two shelves each. The closets have three shelves each. The plastering is put on in the best manner and of the best material. The exterior woodwork is painted with three coats of the best lead and oil; the color a light greenish drab with trimmings a few shades darker; the window blinds are of a color between the two.

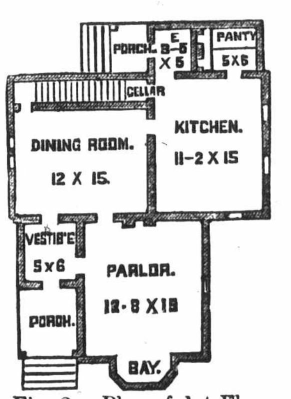

Fig. 2.—Plan of 1st Floor.

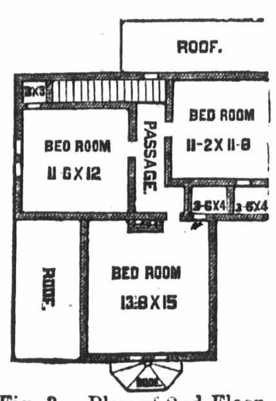

Fig. 3.—Plan of 2nd Floor.

Draining.

(Continued).

BY C. G. ELLIOTT.

ACTION OF DRAINS UPON THE SOIL—HOW WATER ENTERS A TILE DRAIN.

A correct understanding of this will help us to determine the best way to make the joints, and also to locate the lines as regards their distance apart. The tiles should have their ends joined as closely as the inequalities arising from moulding and burning will admit of. When this is done there will yet remain sufficient space for the water to pass in or out, but not enough to admit soil, except in the form of very fine silt. At the bottom of the drain and nearly on a level with either side of it, the earth is saturated with water, that is, it can hold no more. The plane forming the upper surface of this saturated earth is called the water-table. When rain falls upon the surface it descends directly downward by the force of gravity. When all the particles of the drained soil contain all they will hold by absorption, the water passes down until it reaches the saturated soil, when, as it can go no further, it saturates the lower portion of the drained soil, thus causing the water-table to change its place and rise higher. As the water-table rises, the water rises through the joints of the tiles, and they being inclined, a flow begins and continues until the water-table recedes to the floor of the drain, when the flow ceases. It will be seen that the water-table will vary in height with the quantity of drainage water in the soil. When the water-table rises to the top of the drain, the tile will discharge a stream as large as its calibre. If the water-table rises higher than this additional head is given and the velocity of flow is increased, but the depth of drained soil is decreased. The fact that the tiles are porous does not increase the flow nor add to their draining properties. They would be as suitable for draining purposes if made of glass, or of glazed ware, as when made of porous clay, for they will be taxed to their full capacity by water flowing into the joints. The water-table does not extend on a level indefinitely either side of the drain, but rises as it recedes, the angle of rise varying with the nature of the soil. This fact will be alluded to again in the discussion of the distance apart of the drains.

HOW TILE DRAINS AFFECT THE SOIL.

Depth of Soil.—From what has been said before, it will be seen that the depth of the soil is increased by the action of tile-drains, since, were it not for the presence of the drain, when the water-table rises high, thus decreasing the depth of drained soil, it would remain so until the surplus water was carried off by slow natural drainage, in place of rapidly, as by the drain. All the soil acted upon by the drain is made similar to that at the surface. Air takes the place of the surplus water, so that a chemical action is begun. The inert soil matter is slowly changed into plant food, making the whole depth of drained soil the natural home for the roots of plants. It is often thought that the roots of farm plants penetrate but a few inches into the soil, and that if the surface is dry, rich and porous to a depth of ten inches, the plants have sufficient room for growth.

Temperature.—A warm soil is another effect of under-draining. When the soil becomes saturated and no means are provided for the removal of the water except by evaporation, no heat is absorbed by the soil until the water at the surface has been changed to vapor. In the summer the air is very much cooled by a shower of rain, because a certain amount of heat is required from the air and earth to convert a portion of the rainfall into vapor. The same change is necessary when the soil is saturated. If the rainfall is frequent but very little soil is warmed, all the heat of the sun being required to change the water at and near the surface into vapor. If this is true of the surface it doubly true of the soil several inches below the surface, for the water at the surface must be evaporated and the temperature of the soil raised before any warming process can go on in the lower portions of the soil. A drained soil has been found