

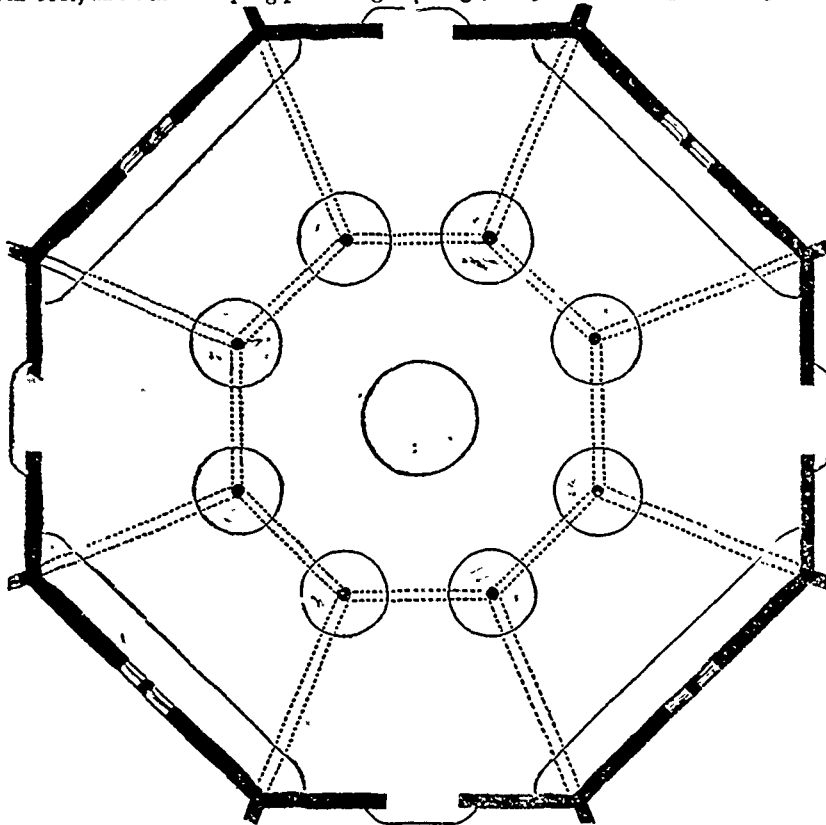
in be as high up as the ground will admit—above the high beams if possible.

If a small barn is required build it side to the hill, wall one side and both ends of the cellar, and have the tie-ups crosswise the barn. Put a cross roof on one side, so as to drive in as high up as possible, and you will find you have a barn with more accommodations than two common barns, with more room for stock, better accommodation for hay and grain, which may be much easier stored, and with less expense than a different sized one. Double brarding is much the best outside finish, and by far the cheapest. Half inch lining boards sawed out of fir or any small timber will answer; nail with twenty penny nails.—*Cor. Maine Farmer.*

Oiling Roofs.

A correspondent of the *Mirror and Farmer* says:—"In 1848 I built a shed from the house to the barn with two roofs; shingled it with sapling pine shingles. One roof or one side I oiled with bank oil, which is the cheapest fish oil in the market—then worth about forty cents per gallon, worth about sixty cents now—and it proved an experiment worth being made known to others. The roof or side not oiled had to be shingled over eight or ten years ago. The side which I oiled is yet good. I oiled it over again last fall and how much longer it will last I don't know, but I do know it has lasted twenty-five years without repairing and without leaking.

"Last fall I oiled other roofs beside the one which was oiled in 1848, and I think sapling pine shingles



GROUND PLAN OF EXHIBITION BUILDING.

well oiled when first laid, if they are dry, and well oiled once in ten years, would last an age. The shingles should be perfectly dry when oiled, and as much oil put on as will strike in."

Concrete or Gravel Wall.

Our plan is to make the compound into brick, by taking water-lime, three barrels to the 1,000 bricks; size of brick three by four. Slowly cure them in the usual way, with water and fair weather. When well cured and laid in a wall with mortar, the wall will last as long as wood grows and water runs.

That body of mortar will not cure in a wall so thick. The brick when well capped and laid in a wall of any thickness, will stand all weather.

We are in the business of making well brick, and also of making straight brick. We are going to lay a wall of the straight brick soon. These bricks cannot be made with safety only from the middle of May to the beginning of September. Light frost injures them. Very hot weather will spoil them, unless wetted three or four times a day. That will make the best wall that can be made of lime and gravel. If any one has a better way we want to hear from them.—*W. Rural.*

Implements of Husbandry.

Importance of Simplicity in the Construction of Implements.

There is no class of machinery subject to so many trying varieties of circumstances as farming implements, that is, which meet with so many irregularities of resistance.

A locomotive is made up of many parts, and is essentially a complex system of machinery, but having a smooth surface to traverse, this machinery works uniformly and steadily, and is consequently uninjured, but if, in its progress, it met with formidable obstructions and uneven resistances, it would soon be broken to pieces. Now an implement for use in or on the soil is constantly meeting with the most varied irregularities, such as hills and hollows, hard and soft soil, roots and stones, all mixed up together, so that complexity in their construction would be the surest requisite for their speedy collapse. A complex machine that meets, while in motion, with an occasional severe obstruction, receives upon each occasion what is equivalent to a heavy blow from a sledge; and when this is repeated frequently, the pro-

bolted together, thus becoming as it were one. For this reason, with its moderate weight, it moves through the soil with little difficulty, turning aside from obstructions on account of its wedge-like form when it cannot remove them. The harrow also, although composed of many pieces, becomes a fixed solid frame, and moves onwards through the soil in, to all intents and purposes, one solid piece; so also with the more simple cultivators, scarifiers, &c., &c. But let us contrast either or all of these for a moment with the more complex machine, for example Pratt's ditcher, considerably used a few years ago, but ending in complete failure. The construction was ingenious no doubt, and the machine was well and strongly built, and so long as it remained new, with every part uninjured and in good working order, it worked admirably in some kinds of soil. But it was made up of a multitude of parts and it weighed about ten hundredweight, and these two facts fixed its doom as an implement for general use. It is one of the fundamental principles of mechanics that the body delivering a blow receives one just exactly equal to the one given. A complex machine therefore, weighing half a ton, and moving along at the rate of from three to five feet per second, cannot possibly encounter a formidable obstacle without sustaining a correspondingly formidable jar, and a continuation of such jars result simply in the ruin of the machine. Such has been the history of the ditcher mentioned. Continuous jars bent or broke its parts; the bent or broken parts retarded or stopped the machine; time was lost, and money with it; so the machine had ultimately to be laid aside. This machine is not at all the one now so popular and so much used in different parts of the country. We have only taken it as a simple example of over-complex heavy machines for use in the soil. Mowing and reaping machines, though not subjected to the same kind or quantity of resistance, are open to a similar charge just in proportion to the complexity of their build and construction. Farmers know only too well how it is with the best, strongest, and simplest kind of them when they are driven against obstructions by careless teamsters.

There is another formidable objection to complex machinery, and that is, its cost. The more complex the more costly. Even with some of proved value the expense is a serious item with moderate farmers, and becomes more serious when an investment is made in one of those absurdly complex arrangements with which some of our neighbors across the lines are flooding the country. Mowers and reapers cost in the neighborhood of \$150; grain drills, \$80 to \$90; threshing machines, from \$100 to \$400; horse rakes, from \$30 to \$50; hay tedders, from \$80 to \$100; iron rollers, \$50 to \$100 and so on. Placing all these sums together the cost is quite an outlay—more economical by far, it is true, than by doing without them; but greater simplicity, with consequent cheapness and durability, would facilitate progress in agricultural improvement. A single machine, known on the other side as Comstock's Spader, is offered at \$25, twenty times the price of the best cast-iron plough, and ten times that of the best finished steel plough, and yet it is applicable only to land free from stones.

The object of these remarks is to caution farmers against investing money in newly-invented contrivances of high promise at first, but which are liable to the objections pointed out; and also inventors and manufacturers themselves against engaging in enterprises having seemingly golden promises at hand, but fraught with failure in the distance.

How to Build a House.—A writer in the *Country Gentleman* writes: "We will suppose a frame enclosed with clap-boards or siding ready for the mason. Have strips of an inch, or inch and a quarter wide, sawed from any common boards and nailed in the centre, up and down of the studding, upon which nail a course of lathing. Let your mason apply what they call a scratch coat of strong coarse hair mortar from ceiling to the floor, without a skip. When this is done let him commence the lathing upon the face of the studs in the usual way for the regular side walls.

bability is that some part will be bent, twisted, knocked out of place, or broken. The lighter the machine the more favorable are its chances, but if heavy, its momentum proves such that it is scarcely possible for it to escape injury. The more complex it is also the more decidedly are its chances adverse, for the displacement, breakage, or bending of one part, however small, usually retards the whole and stops its working, keeping men and teams standing idle until the injury is repaired.

From these facts, established by long practical experience, men are gradually falling back upon the simplest possible kinds of machinery. The common crow-bar, for instance, has nothing complex at all about it; and whilst it is one of the oldest implements on record, it is likely to hold its place to the end of the chapter. For simplicity, of course, it cannot be exceeded. Spades, hoes, forks, &c., are all of a similar character. The plough also, although made up of several different parts, yet assumes the character of a simple machine when these parts are fitted and