left until time for the late plowing, without any light cultivation and working such land is a task which takes a lot out of the horses.

If the conservation of moisture were the only benefit derived, the early cultivation would be justifiable, but, while this is a valuable consideration, the fact that this is one of the quickest and most efficient methods of disposing of some of the worst weed pests that infest grain fields is perhaps the greatest boon derived from this practice. The stirring of soil works the small weed seeds into it, and the first light shower causes them to germinate, or, in many cases they will germinate even if a shower does not come. The young plants grow, and are killed by the later and deeper cultivation, and thus are disposed of to give no further annoyance. It is impossible to estimate the number of weeds that can be killed in this way, and it is equally impossible to estimate the value of this light tillage. The shallower the cultivation the better, provided all the surface soil is stirred, turned or finely pulverized; and the finer the soil is made, the greater the amount of good done both in the way of holding moisture and in the weed-seed germination. The seeds of nearly all of the most noxious weeds are very small, and, consequently, to insure germination, the soil must be very fine. Cultivating or disking should be done twice over to make a good job of the work, and the earlier it is done after the grain crop is removed, the better. It saves considerable extra work the following year in ridding the crop of weeds, and will give greater ease in the fall plowing, insuring more efficiency in the work. Lose no time in getting on the fields after the grain is removed. Next year's crop will show the effects of such labor, and the increased ease of the deeper fall plowing will be appreciated by the horses, and much better work is possible.

Metal Buildings and Lightning Protection.

Protection from lightning is a subject that recurs with the coming of each spring time. In the violence of an atmospheric electric disturbance, accompanied by the awe-inspiring flashes of lightning so common with the thunderstorm, there are few who have not desired the protection of a lightning-proof shelter. The probability of an individual building being struck by lightning is really very slight, but there is always a possibility of such an occurrence, and also that the stroke might be attended with considerable violence, or the building might take fire.

HOW LIGHTNING CAUSES DAMAGE.

The formation of lightning is very imperfectly understood, but experience with its vagaries and a knowledge of the laws of high-tension electric currents has established a fairly good understanding of the methods of constructing lightning conductors for all ordinary discharges. It is very well known that lightning is the discharge of a large amount of electricity in a very short space of time, and that whatever affords it a passage to the earth is likely to be badly damaged, unless the vehicle happens to be a good conductor of electricity and of sufficient size to transmit the amount of electric energy the flash contains, in which case it passes away, doing no damage at all.

As a storm develops, the electrically-charged clouds pass over the earth, and when the electrical intensity becomes great enough to break down the resistance of the intervening air, the resulting discharge will pass into the earth by the most convenient path. This is commonly some high object of the landscape—a building, a pole, a tree, or any other object that extends up from the earth. If the object is a conductor of electricity, and connected with the earth, the lightning will pass into the ground without the least damage being done, but if it is not a good conductor, the havoc wrought in an instant is sometimes appalling.

VALUE OF METAL-ROOFED BUILDINGS.

Buildings with metallic roofs that are properly connected with the earth have better protectors from lightning than could be given by rods. Buildings that are completely covered with sheet metal and well connected with the earth are practically lightning-proof. Covered in this manner, buildings have been known to be repeatedly struck by lightning, without the least damage. The sheet-iron granary, so common in the West, when well connected with the earth, may be considered lightning-proof. The ground connections mentioned above may be made of metallic rods that extend well into the earth, and securely fastened to the metallic covering of the buildings.

In considering the form of lightning conductors, it is well to keep in mind the fact that a metal-covered building well connected with the earth is practically lightning-proof, and that one with a metallic roof, well grounded, is excellently well protected, if not perfectly safe. If, then, the roof of a building possesses a metallic ridge, eavestroughs and down-spouts, these will afford very good protection if they are well connected and well grounded. A roof covered with a metallic screen, as a chicken screen, makes an excellent protector when properly grounded.

It must be remembered that the ground connection is a positive necessity, and too much care cannot be exercised in its construction. The earth is the great reservoir of electrical energy, and is always kept at zero potential. If a discharge of lightning can be directed into the moist earth by a conductor, its energy is soon dissipated, but the ground connection must be of considerable area, and extend well into the moist earth. A piece of galvanized iron pipe driven into the ground seven or eight feet makes a good "ground." Large buildings must have two or more such "grounds." The connecting wires must be securely fastened to the ground connections.

SIZE OF CONDUCTING WIRES.

In the matter of conducting wires, the United States Weather Bureau, in a bulletin on Lightning and Lightning Protection, recommends a No. 3 galvanized-iron wire as amply sufficient in size for ordinary lightning protection. If metallic down-spouts are used as conductors, the connections should be made with the "grounds" with riveted joints. Copper conductors give no better protection from lightning than iron, if the iron is kept covered to prevent it from rusting.

Wire fences are often the cause of damage by lightning because of the method of construction. If the fence wires are grounded, the danger from this cause will disappear. Ground wires may be made of ordinary fence wire, and should be connected with each of the wires of the fence, and extend into the ground three feet. Such "grounds" should be made for each 100 feet of fence.—[E. S. Keeney, Professor of Physics and Mechanical Engineering, in "Metal Worker, Plumber and Steam Fitter."

Cement Slop Wall Silo.

It is often said that there is no "best breed" of cows. That depends on the conditions of the farm, the preference of the owner, what the cows are kept for, and how they are handled. So there is wide diversity of views, according to circumstances, on the subject of silo construction, and the materials used, whether wood, steel, or cement-concrete in the form of hollow blocks or what is called the solid slop wall. In earlier days, stone and bricks were also used, but these materials have generally fallen into disuse. There seems to be more agreement that the silo should be round than over any other one point, and also that the bottom should be well drained. Though it adds to the outlay, most men agree that the silo should be roofed, but in hundreds of cases this is still neglected. It is desirable to keep out the cold, wet and snow of winter, and, for summer feeding, the silage in an open silo is very much more liable to ferment and spoil after heavy rains.

Slop Wall Cement Silo.

At filling time on dairy farm of Dr. Chas. A. Cline, Middlesex Co., Ont.

In response to inquiries where good sharp gravel is available, by persons who wish to erect slop cement wall silos, "The Farmer's Advocate" has secured information from a number of Middlesex County men who have used them. A. W. Venning estimates the cost of his 12 x 40-ft. silo, inclusive of a tasteful-looking roof, at $200, besides his own labor. The wall is 14 inches thick at bottom and 9 inches at top, and required 57 barrels of cement. He expects ten acres of corn to fill it.

H. J. Barons, after having a lengthy experience with a cement silo on another farm, found it so desirable that he erected another on his present place. He did a good deal of the work himself, and kept the cash outlay down to about $85. It is five feet under ground. This helps to keep the silage better in summer, but in such cases, usually, drainage is essential. His silo is 12 x 36 feet, and he owns the set of rings used in its construction.

One could not ask for a neater-looking or more satisfactory silo than one built two years ago on the farm of Andrew Dodds. This silo is 14 x 35 feet; wall 18 inches thick at foundation, starting 10 inches thick at ground line, and tapering to 6 inches at top; walls very hard, smooth and true. He used eight or ten loads of stone, twenty-eight loads of gravel (one-third cord to a load). Thirteen loads of the gravel were fine, and fifteen loads coarser; 41 or 42 loads Portland cement, at $1.35; paid 25c. a load for gravel and sand; $2.25 per foot of height for building; reinforcing iron, about $5.00, two strands ⅜-inch iron being placed in every ring. The total cost of this silo is figured at $160 in cash. It has five doors 2 feet 1 inch across in jamb, by 2 feet 9 inches high.

Chas. Jackson built silo in 1910; height 35 feet, 12 feet inside diameter; wall 14 inches thick at bottom, tapering to 8 inches at top, 3 feet below ground; five openings 2 feet by 2½ feet each; small opening left about one-third down for blower, but not needed. A good deal of heavy stone was used in foundation. Material used: 42 barrels of cement, at $1.40—$58.80; 10 cords gravel,

"Pointon Cracker 4th."

Lincoln two-shear ram, first and champion, Royal Show, Norwich, 1911.