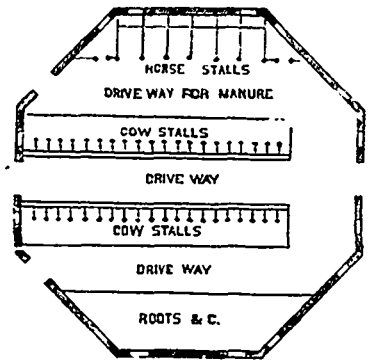
The leading advantages of this form are, economy in exterior walls and siding, and the absence of purlins to support the roof, while the roof cannot spread. It has great strength, without cross-ties or beams. The space above the "big beams" is quite clear of obstructions, and a horse-fork may be run to any part. The large space in this barn is reached from one floor, saving the labor of changing. The barn is 80 feet in diameter, and 50 feet of outside wall are saved as compared with an oblong barn 50 by 108 feet, enclosing the same area as the octagonal one.

The roof is an octagonal cone, each side bearing equally on every other side, giving it great strength. The plates are halved together at the corners, and the lips bolted together with four half inch iron bolts, fig. 2; a brace 8 by 8 inches is fitted across the inside angle of the plate corner, with a three-fourths inch iron bolt through each toe of the brace, and through the plate, with an iron plate along the face of the brace taking each bolt, the nut turning down upon this iron plate, fig. 3. The hip-rafter, 6 by 12 inches, is cut into the corner of the plate, with a shoulder striking this cross-brace, the hip-rafter being bolted with a three-quarter-inch iron bolt



through the plate into the corner post. A purlin rim, like the plate rim, of 8 by 10-inch timber, supports the intermediate rafters. The roof-boards act as a strong tie to hold all together. The posts are 28 feet high, the roof rising 22 feet. The cupola floor is 50 feet above the driveway. It will be seen that the structure, strengthened as here described, must stand with great firmness, and Mr. Stewart informs us that his barn has withstood some very strong gales.

A plan of the barn is shown in fig. 4, requiring but little explanation. The driveway through the centre is 15 feet wide, on either side of which is a line of "big beams," 13 feet high across which a scaffold may be thrown. The space above is clear of any obstruction. The bay for hay, on the left side, will hold 160 tons, and may be filled as well as emptied by separate portions. A scaffold 8 feet high, on the right, is for carriages, machines and tools. Above this scaffold is a large space for grain, enough to thresh 2,000 bushels or more. In the basement, the passage through it is at right angles to the driveway. There is no excavation for the basement, but embankments are made for access.

The Use of Fertilizer Materials.

We trust that most of our readers have cut out and preserved the price-list printed in our issue of February 20. It will probably not vary much during the season. A friend writes us, urging that we do not press too strongly upon our readers the use of the more insoluble forms of phosphoric acid. He says: "You use these fertilizers in large quantities to the acre, intending them to wholly take the place of stable manure. So used, there is enough to be available for plant food all the time. But perhaps you are not so well aware as I am that nine out of every ten who will make up fertilizers after your formulas will use only one or two barrels to the acre, where you use half a ton or a ton. Every one of these men is going to be disappointed, and will be sure to blame you. Dr. Cutting understands the farmers better than you do when he makes them dissolve their bone in acid before using it. He knows they will be stingy of it."

We accept our friend's counsel, and will now give some formulas on his principle, in which all the constituents are in a soluble form, immediately available for being taken up by the plants. But we believe in our heart that this is the wrong way to do. Nature never presents to the roots of plants their food in this extremely soluble form. In our naturally rich soils, that produce the largest crops without manure, all the phosphoric acid, potash and nitrogen are in more or less insoluble forms in the soil, and yet the plants get them. The roots themselves have the power of dissolving them as they require them. If the plant food in the soils of our farms were in this soluble form, the rain and melting snow would wash it all out, and leave them barren in a single year. But here are some soluble fertilizers:

FOR CORN.

2,000 lbs plain superphosphate of lime (15 to 16 per cent soluble)	$20 00
200 lbs sulphate of ammonia	6 00
200 lbs sulphate of potash	3 00
	$29 00
Add for freight at $5 per ton	6 00
Total	$35 00

This is a complete fertilizer, with all the ingredients in an immediately soluble condition. It can be made very nearly, if not quite, as soluble in another way, as follows:

FOR CORN—NO. 2.

2,000 lbs plain superphosphate 15 to 16 per cent soluble.	$20 00
600 lbs cotton-seed meal	9 00
10 bushels unleached hard wood ashes, at 20 cents per bushel	2 00
	$31 00
Freight on the superphosphate	5 00
	$36 00

For a potato fertilizer more ammonia and more potash are required, and for them we should mix eight hundred pounds of cotton-seed meal and twenty bushels of ashes with the two thousand pounds of the plain superphosphate. We wish to repeat, with all possible emphasis, that in order to have these fertilizers effective, they must be very thoroughly mixed. Many will fail in this, we fear.

For wheat, hops and onions, more nitrogen (ammonia) is wanted, and one thousand pounds of cotton-seed meal should be used with ten bushels of ashes and a ton of the plain superphosphate. The first formula can be used, bulk for bulk, the same as the purchased fertilizers, but as cotton-seed meal