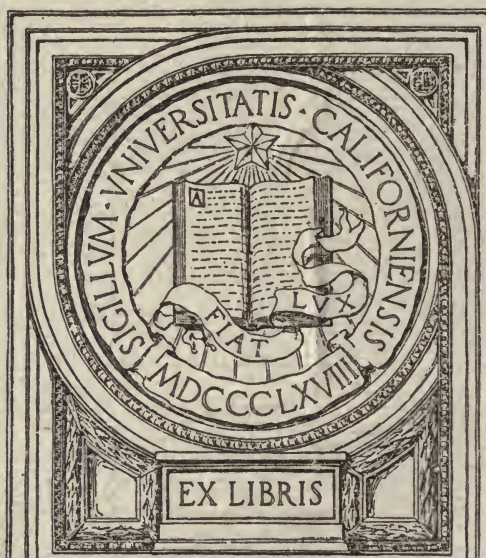
Monolithic Concrete Silos
Polk System
Polk-Genung-Polk Co.



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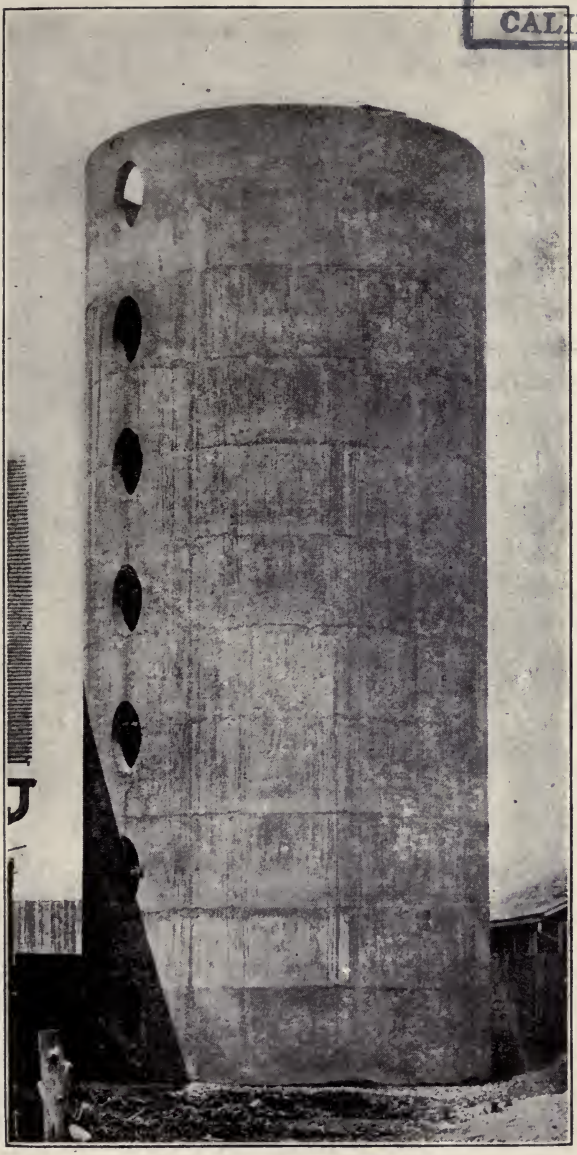


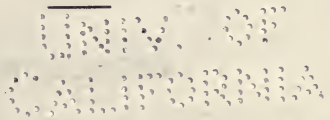
Contents

Monolithic Concrete Silos

The Polk System

OF

RE-ENFORCED MONOLITHIC CONCRETE CONSTRUCTION



Pat. Oct. 23, 1906
Pat. Dec. 29, 1908

C. F. WIELAND
CONSULTING ENGINEER
914 Mutual Savings Bank Bldg.
SAN FRANCISCO, CAL.

POLK-GENUNG-POLK CO.
INCORPORATED
FORT BRANCH, IND.

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¶ *In selecting the photographs for this catalogue, we have made use of those views that illustrate, to the best advantage, those points which we have endeavored to cover, and we have tried to arrange them with some precision that their force may not be lost.*

The cuts of complete or incomplete jobs represent the work of our machines. The photographs from which they are made have never been re-touched, hence you see exact images of actual conditions.

We wish to express our kindest thanks to those who have furnished us cuts and to others for the interest they have shown in this catalogue.

Introduction

THE average American farmer is not one-half as rich as he ought to be. There are too many leaks in the business. The one greatest loss to-day is in the handling of the corn crop by the stockman and dairyman. The progressive man who is feeding silage is getting 100 per cent. of the nutriment out of his corn, while the other fellow is getting only about 60 to 65 per cent. and is losing the remaining 40 per cent.

We are sending this catalogue to you because this is so. We want to give you straight facts in a straightforward manner. We want to show you that you absolutely cannot afford to be without a good silo. The unprecedented rise in land values means that a corresponding return must be got or failure and bankruptcy will follow. The scientific management of the big progressive stockman means that his competitors will have to stop every leak or else get out of the business. The economy of the silo means that you must own one.

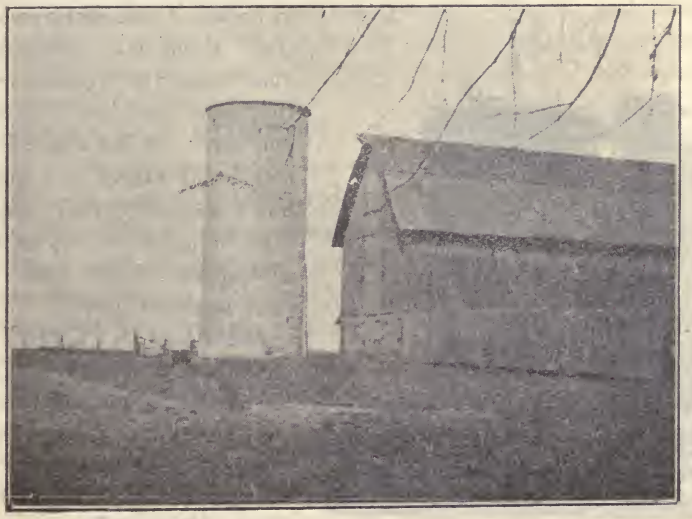
We wish to show you that the best silo you can buy is the only one you can really afford to buy, that you are losing money when you build a silo that won't last you forever. We want you to read the following pages of facts, undisputable and to judge the proposition fairly. Then if you build anything but an imperishable monolithic concrete silo we shall be surprised at you. But you won't surprise us—you can't afford to.

We have never had a single failure or a single complaint. Our efficiency is 100 per cent. Every silo that has ever been erected by the ***Polk system*** has given ***absolute satisfaction.*** Yes, there is a reason. Our machine and our methods don't allow any builder to go wrong.

We hope that you will closely examine the following pages so that we may convince you that our assertions are true.

Concrete—Its Value

THE modern farmer would no more think of trying to get along without concrete than the modern manufacturer would think of dispensing with electricity or steam. Not many years ago concrete was an unknown quantity, the engineer and builder didn't know whether to use it or not. Today no man builds that does not ***consider*** concrete, and no wise man builds that does not use it. Concrete has not only revolutionized our recent ideas of building; it has exploded them. Concrete is supplanting stone, brick, iron, and wood. The farmer, who some not over-wise people say is always



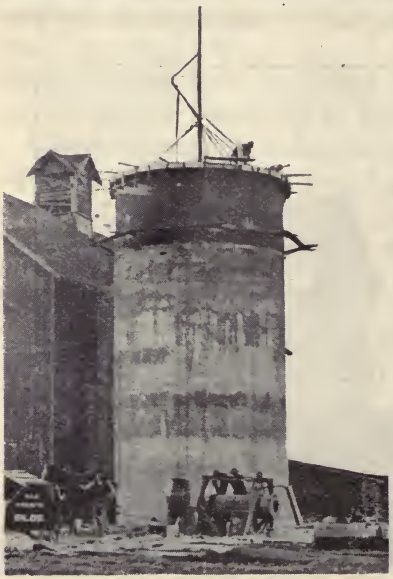
Silo of Mr. C. W. Broughton, McGirr, Ill., diameter 16 feet, height 45 feet. Built by Polk System.

backward about taking up new ideas, has been decidedly in the foreground here, and it is building "for keeps" in concrete, while his less knowing city cousin "burns wood."

Why has concrete come to the front so rapidly? There are many reasons, but one is, sufficient. ***IT IS EVERLASTING.*** It has a ***cumulative strength*** and a 100 per cent. plus efficiency. The

modern farmer has found it his greatest single agency in the construction of a farm on the business basis. He has circumvented deteoriation—he has no up keep—his profits go into the bank: because, ***simply because*** he has used concrete in the building.

Concrete is vauable on the farm because it can be put to an almost endless number of uses. From the basement to the water-tank, from the barn to the fence-post, from the silo to the cistern, in the corn-crib and the trough, on the floor and the sidewalk, we find concrete. No one ***WHO KNOWS*** builds with anything but concrete. It means sanitary conditions, puts the kibosh on the rats and mice, turns water at the roof and in the basement, laughs at fire and makes the insurance man drive on to the next place in hopes of finding an easy victim. Build with concrete and don't mind the weather even if the wind "do blow." What do you care? Build with concrete and build ***right*** and nothing but a double-geared, back action, hammerless, six-cylinder, earthquake could ever ruffle your peace of mind.



Monolithic silo, nearly completed by the Polk-Genung-Polk system, on the farm of John Creighton, Geneva, Ill. W. H. Warford, Contractor.

BUILD RIGHT! We know how to do that today. A few years ago some mistakes were made by workers in concrete, because they were careless about proportions and mixtures. These mistakes have been given wide publicity as proof that concrete is not a suitable material for this kind of construction, and consequently some of the unwise fear the concrete is tricky. Today the failures by inexperienced and expert are not one in a hundred.

Short Story About Concrete

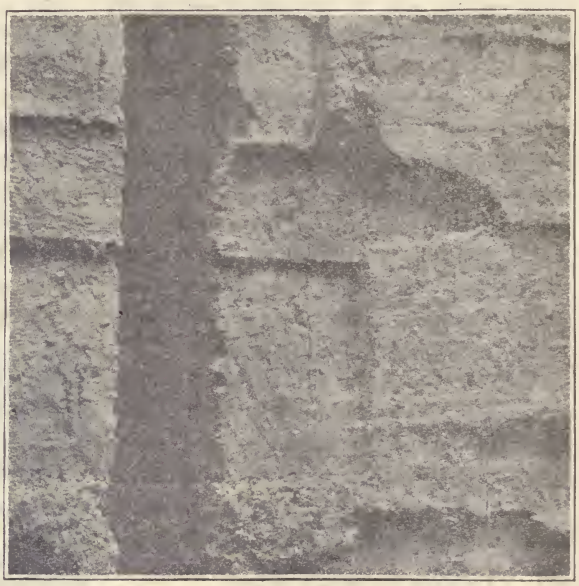
EGYPTIANS. On the top of the huge pyramids of Egypt there are enormous blocks of stone of such size that modern engineers wonder how they ever were put there. They are well preserved and show little effect of the 4,000 years weathering they have undergone. Recent investigation on the subject of this vast engineering feat seems to show that those huge stones were probably carried there in water pails or some similiar contrivances. The Egyptians knew how to make a hydraulic cement, and pieces of wood found within these big blocks together with the conglomerate structure seem to show that they made use of their secret in the erection of the pyramids.

GREEKS and ROMANS. The Greeks also knew about cement. Many of their walls and slabs of stone which have until recently been supposed to be solid rock, have proved to be examples of an enduring concrete construction. The Romans built the best roads that man has ever known. They dug to solid rock, filled in with crushed rock, boulders and pebbles, and then coated the top with a hydraulic cement. Over this they put paving stones. The paving stones have worn away and crumbled to dust, but the concrete mixture remains stronger than it was the day it was put there. Fallen columns, pillars and arches of concrete construction among Roman ruins show much better lasting qualities than the hardest marble that was used for mural decoration.

In this connection the Architecture Record issue of February, 1909 says:

"The Romans mixed their concrete exactly as we mix ours—in a general batch—that is, stones, cement and lime were mixed together and thrown into a wooden form, precisely as we do it today. The marks of the wooden forms are at all times discernible, and especially is this so in the corridor of the house of Augustus on the Palatine (P. 10) where the grain of the wood can be clearly seen. These walls are some twenty-four feet above the ground

level, and though the construction of the forms seems to have been carlessly done, as the photograph shows, yet the result is none the less interesting. Here is a splendid opportunity to see concrete and leisurely inspect it from every point of vantage. Above these concrete foundations rose the palace of Augustus, formed of these stupendous walls and vaults of brick, which here, as elsewhere in Rome, thrust its arches through the air with such poise and precision that they are to this day the admiration of every beholder and gave to the Romans their proud position among the master builders of the world.



HOUSE OF AUGUSTUS
Notice impression of the wood forms as well as actual grain of the wood.

The structure of brick above these concrete walls have succumbed to the ravages of time and to the hand of the destroyer, but the concrete remains without a crack or a fracture that could be discovered by careful and frequent examination. Its adhesion is perfect, and that there has not been the slightest disintegration of even the outside surface is attested by the fact that the grain of the wood from the old forms may still be seen on the concrete, though its imprint was made over two thousand years ago. The silent and sturdy witnesses in the Roman Forum and the Appian Way give convincing testimony as to the efficiency and durability of concrete. Looking back through the centuries in which the

character has been so notably maintained, we must see that there is a material on whose merits we can form a definite and certain judgment, and the judgment thus formed impels us irresistibly to the conclusion that we have no building construction which, viewed from any standpoint, measures up to the incomparable standard established by concrete."

Other evidences of the constructive uses of cement are found in various parts of the old world. In Ireland are old lookout towers, supposed to have been built by the Druid priests more than one thousand years ago. They are made of hydraulic cement concrete, and are cylindrical in form, about six feet in diameter, and 100 feet high. Some years ago one of these towers was undermined and fell over. The shock was so great that the shaft was buried one-half in the ground for its entire length, yet there was not the slightest fracture in the monolithic structure. Any natural rock would have been shattered to bits. In Spain and other countries with a flourishing early history all signs point to an early and extensive use of a rude sort of cement and concrete. The pre-historic people of the New World also knew something of the value of an artificial stone. The Mound Builders who inhabited the Ohio Valley some 12,000 years ago cooked and boiled in vessels that appear to have been made of a rock conglomerate held together by a cement. The Peruvian Incas built themselves houses of a crude concrete to prevent loss from earthquakes and volcanic tremors.

Ed John's Concrete Silo, 16x40 feet, La Fox, Ill. Built by Polk System. W. H. Warford Contractor.

So the Ancients worked in concrete. Of course they had noth-

ing to compare with the highly developed Portland cement of today, yet they did imperishable work. Strange to say, the people of the medieval times lost the secret and all the fine architectural-work of the "dark ages" is fast crumbling into oblivion. Not until the opening of the nineteenth century did man again become interested in means of making artificial stone. The modern searcher after the secret, however, turned his attention to the production of a fine powder that would do the cementing when mixed with rock and water. He wanted a much smoother and neater result than the ancient builder. In England, Germany, and France, chemists and engineers worked on the production of a dependable cement from 1790 until 1850 before they made one that fulfilled the requirements. In 1865 the first Portland cement was brought to the United States, and in 1872 the first home-made product was put on the market. In 1880 the output of all factories in our country was only 82,000 barrels. In 1896 it had passed the million mark, and in 1909 it was sixty millions. That's the way America does things. Today there is practically no foreign cement for sale on our markets.

Twin Concrete Silos on farm of Frank White, La Fox, Ill., each 18x45 feet. Built by Polk System. W. H. Warford, Geneva, Ill., Contractor.

Today we stand on the threshold of the ***concrete age.*** The possibilities of a concrete construction are numberless—from the sewer to the tip-top of the sky-scraper—re-enforced concrete is displacing all other forms of masonry and building material. Engineers are doing with concrete, things that we did not dream

about ten years ago. They go straight to dizzy heights with seemingly little attention to the laws of equilibrium; they bridge spans with no attention to the laws of gravity. Concrete means just as much to the farmer, as the same rapid strides that characterize the engineering field are being made—proportionately of course, on the farm. Principles of conservation and permanence are being adopted in the agricultural field just as assuredly as they are in the engineering field. Concrete is more than permanent; it's strength is cumulative. A concrete silo will be stronger ten years hence than it is now and still stronger when your great-great-grandchildren are ready to use it. Concrete annihilates two words—"upkeep" and "repairs."

C. M. Saxby's Concrete Silo, Freeport, Ill., 16x40 feet, capacity 180 tons. Built by Polk System.

History of the Silo

A LONG time ago, even before man had become accustomed to settled agricultural life, the primitive farmers were guessing at the secret of the silo. A "pit" was first used as a receptacle for dry grain. The Greeks called such a pit "siros" and the Spanish have a word "ensilar" meaning—to store grain in a pit. From these two words comes our term "ensilage." The Roman farmers stored green forage in air-tight pits and fed the "silage" to their stock. That was two-thousand years ago.

In 1786 we have our first authentic record of the actual preparation of stock food by the "silage" method when Symonds wrote of Italians preserving fresh leaves for cattle in casks and pits in the ground. In 1843 an Englishman named Johnston who had been observing Germans store green clover, grass, or vetches in pits, published an article giving his views on such a method for treating food. These pits the Germans used were ten or twelve feet square and about as many feet deep. The floor was of packed clay and the sides were lined with wood. The green food was well salted as it was thrown into the pit and the top was given an extra thick layer of salt and then a close-fitting cover of boards was put over it. Then enough dirt to make the pit air-tight was thrown over the top of the boards and the "silage" was allowed to ferment and settle for a few days. Then more green stuff was added to fill the crude silo, and the board and dirt cover was again added. The grass thus treated had the appearance of being boiled, was sharply acid, and was much enjoyed by the cattle. Between 1860 and 1870 Samuel Jones in England experimented extensively with tares or rye. He cut it green, chopped it up, and then allowed it to ferment in air-tight vats.

To Adolph Reihlen, a sugar manufacturer of Germany, belongs the credit for first storing green maize in pits. He had lived a number of years in the United States and had taken back to the old country with him some large dent corn. Since the crop did not always mature in that climate he conceived the idea of treat-

ing it the same way that he had successfully treated green beet leaves and beet pulp. The results of his works were published in the German and French papers at the time and the use of the silo was strongly urged upon the people of France. The French farmers wisely heeded the good advice and built themselves many pits in the earth for the storing of green forage. In 1877 Auguste Goffart, a French farmer, wrote a book giving the results of twenty-five years experience with the method of preserving green forage in air-tight pits. He told little that was new, but what he told was so well put and so well arranged that he now bears the distinction of being the Father of Modern Silage.

Silo of George Dick, Sycamore, Ill., Size: Diameter 16 feet, Height 40 feet. Polk System

Now, when America is not first at anything she is always a very close second, and in 1876 a progressive Maryland farmer named Morris built a structure to contain silage. Shortly after the introduction of the silo in America enthusiasts made many extravagant claims for its usefulness and effectiveness which early experiments failed to vindicate. These early experiments were crude and extravagant, and the silo did not become popular at that time. In

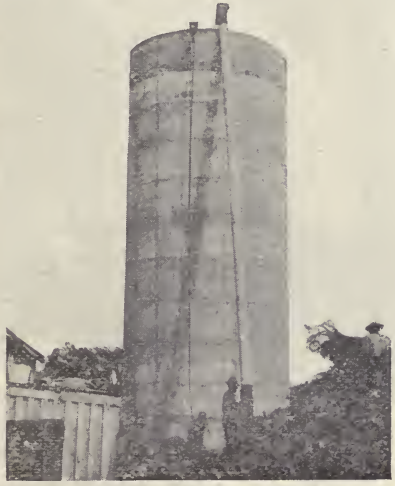
fact in 1882 only 92 American farmers used the silo. Later and more careful investigations by agricultural schools and scientific farmers revealed the true worth of the silo until it is to-day an undisputed fact that no man who raises stock for any purpose whatever can afford to be without one. There are over 500,000 silos in the United States at the present time.

16 x 50 feet monolithic silo of State Hospital Farm No. 1, Fulton, Missouri, showing cutter in position for filling. Built by Polk System.

The Value of the Silo

SILO MEANS SAVE

THE silo offers a quicker and larger return on the investment than does any other improvement that is being considered by the dairy farmers and stockmen of America today. We assert this without fear of contradiction because we have the judgment and experience of the progressive, brainy American farmer to uphold us. We have boiled down a great mass of facts here for your convenience and enlightenment. Our authority for the following statement consists of the experiments of Agricultural Schools and Stations and of the personal experiences of advancing, broad-minded farmers. We have no desire to burden your mind with rows of facts and figures that confuse you and make your head swim. We want to give you in tabloid form some information about the value of the silo. Here it is:

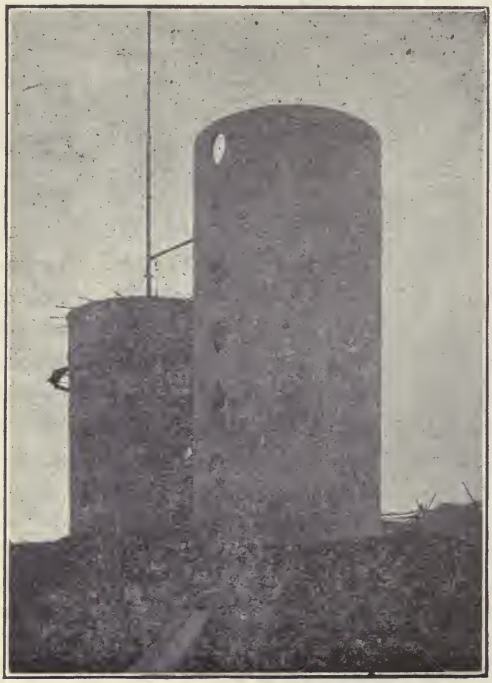


Lewis McNutt's monolithic silo, Brazil, Ind., showing cutter and blower in position ready for filling.

Notice That Every Fact Cited Means a Saving.

1. THE SILO REDUCES THE COST OF PRODUCTION. (a). The cost of feed is reduced one-half. Chemists who have examined fodder as it goes in the shock and as it is when ready to be fed later in the winter find that often only half of the original nutriment remains. The weather and the air have made way with one-half of your feed. The ***Silo*** does not retain all of the food value, but the

loss is ***never greater than ten per cent.*** (b) An acre of corn can be placed in the silo at much less cost than it can be put up as cured fodder. An experiment made in 1903, in filling a 100-ton silo, shows the cost of filling to be only 50 cents per ton. (c) There is absolutely no waste to any part of the corn crop, provided you exercise a fair degree of care in handling it. (d) Careful and fair experiments show that you can feed your stock on ***one-half of the acreage otherwise needed.***



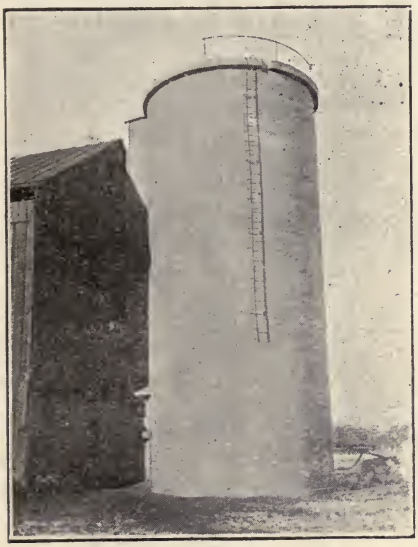
Twin Silos, 16x40 feet, in process of construction by Polk System. Built for W. T. Robinson, Harrodsburg, Kentucky. Scaffolding and superstructure is unnecessary in this System.

II. THE SILO INCREASES THE AMOUNT OF PRODUCTION. (a) Dairy cattle give more milk and cream when fed on silage than when fed on dry fodder and ear corn. (b) The increase in butter fat is enough to reduce the cost of production 9c per pound, from 22c to 13c. (c) Steers fattened on silage show a saving of 50c for every 100 pounds, and bring an average of 20c per 150 better on the market; a total saving of 70c on every 100 pounds.

III. MISCELLANEOUS ADVANTAGES. (a) Ensilage fed cattle have a good appetite—are healthy. (b) Your stock does not have to be reduced during a dry season. (c) There is no exposure to bad weather in feeding ensilage. (d) There is great economy of

storage room. Ten tons of silage occupies the same space that one ton of hay does. (e). The food supply is constant. With the right kind of a silo there is no fear of fire, flood, drouth, lightning nor wind.

A careful reading and a brief review of the foregoing will convince you that the most extravagant farmer in the business to-day is the one who is trying to get along without a silo. Ask yourself if, in the coming days of closer competition, you can stand up against your progressive neighbor who is producing the same goods that you produce at one-half of your cost of production. Be one of those progressive neighbors yourself and let the other fellows wonder where you get the money to keep your farm so well stocked and equipped, and your buildings in such good shape. Let him wonder how you can afford to pay cash for your fine touring car. As any business grows and intensifies, as competition becomes fiercer, there is always a struggle for a decreased cost of production and the man who solves the problem first is the man who makes the money. The silo solves the problem for the man who feeds stock.



C. A. Baber's Monolithic Silo, LaFox, Illinois. Diameter 18 feet, height 45 feet. Polk System. W. H. Warford, Geneva, Illinois, Contractor.

"They are not built of pieces and they cannot go to pieces."

TABLE 1

Dry Matter and Digestible Nutriments in Silage From Different Crops

From Farmer's Bulletin No. 32, U. S. Department of Agriculture.

Crop used for silage.	Total dry matter. Per cent.	Digestible nutriments.		
		Protein. Per cent.	Carbo-hydrates. Per cent.	Ether extract. Per cent.
Corn	20.9	0.9	11.3	0.7
Red clover	28.0	2.0	13.5	1.0
Sorghum	23.9	.6	14.9	.2
Alfalfa	25.5	3.0	8.5	1.9
Grass	32.0	1.9	13.4	1.6
Cowpea vines	20.7	1.5	8.6	.9
Soy bean	25.8	2.7	8.7	1.3
Barnyard millet and soy bean	21.0	1.6	9.2	.7
Corn and soy bean	24.0	1.6	13.0	.7

USEFUL TABLE 2

Showing Acreage Required to Fill Silos and Amounts to Feed

Inside Diameter Feet	Height Feet	Acres to Fill 12 Tons per Acre Average	Amount that should be Fed Daily	Head Dairy Cattle Will Feed 180 Days 40 lbs. per day	Head Beef Cattle Will Feed 180 Days 25 lbs. per day
10	28	3.56	525	12	19
10	30	3.92	525	13	21
10	32	4.25	525	14	23
10	34	4.66	525	15	25
10	38	5.42	525	18	29
10	40	5.83	525	19	31
12	28	5.08	755	17	27
12	30	5.58	755	19	29
12	32	6.17	755	21	33
12	34	6.66	755	22	35
12	36	7.25	755	24	38
12	38	7.83	755	26	41
12	40	8.41	755	28	44
14	28	6.91	1030	23	37
14	30	7.58	1030	25	40
14	32	8.25	1030	28	44
14	34	9.08	1030	30	48
14	36	9.83	1030	33	52
14	38	10.66	1030	36	56
14	40	11.5	1030	38	61
16	28	9.	1340	30	48
16	30	9.91	1340	33	52
16	32	10.91	1340	36	58
16	34	11.91	1340	40	63
16	36	12.91	1340	43	68
16	38	13.91	1340	46	73
16	40	15.	1340	50	79
18	30	11.58	1700	42	66
18	34	15.08	1700	50	80
18	38	17.66	1700	59	93
18	40	19.08	1700	64	101
18	42	20.5	1700	68	108
18	46	23.5	1700	78	125
20	30	15.58	2100	52	82
20	34	18.66	2100	62	98
20	40	23.41	2100	78	124
20	44	26.66	2100	89	140
20	48	30.08	2100	100	159
20	50	31.83	2100	106	169

"They are not built of pieces and they cannot go to pieces."

Flashlight photo of 112 head of "feeders." Low overhead loft prevented good picture. "Do they like ensilage?"

Concrete in Silo Construction

THE REQUIREMENTS OF A GOOD SILO

THE man who has owned the wrong kind of a silo generally knows more about the requirements of a good one than anybody else does. Our broad experience in the silo business, our acquaintance with hundreds of users of silos, and our careful research in the results of experiments in the best agricultural schools in the land have put us in a position to know what the qualities of a good silo are. The ***Silo*** makes six cardinal demands before it allows the adjective "GOOD" to be coupled with it.

I. THE GOOD SILO MUST BE DURABLE AND PERMANENT. A temporary silo has only one thingto recommend it—it demonstrates the value of feeding silage. Otherwise it is a poor investment. Rapid depreciation of value is one thing the seller of any kind of a non-permanent silo says nothing about. ***Since there are silos that last forever, no silo is good that does not.***

II. THE GOOD SILO MUST BE FREE FROM THE NEED OF REPAIRS. This is merely corollary to the first requirement. Anything that is truly permanent never needs repairs. Any farmer knows how much bigger his bank balance would be if he never had to spend anything for "repairs" on his house, his barn, his thresher, his binder, his mower, and his other implements. Just think of owning one thing on the farm that never calls for repairs!

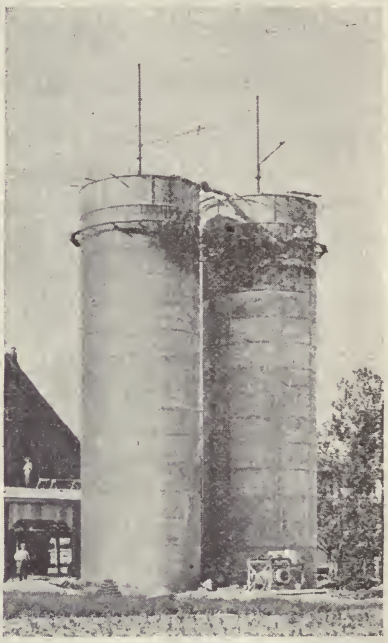
III. THE GOOD SILO MUST BE FIREPROOF. Insurance with extra high rates is the bug-a-boo of the American farmer. The farm building that gets on fire generally burns down. Of course the insurance companies have to protect themselves by making their rates higher. A silo that contains six months or more valuable food supply that is absolutely safe from the fire demon certainly deserves the honor of being called good.

IV. THE GOOD SILO MUST BE AIR-TIGHT AND WATER-TIGHT. Silos that allow air or water freely to pass through them are value-

less. If the air gets in, the silage molds and the cattle refuse to eat it. There is enough air for fermentation left in when the silo is filled. Any silo whose material expands or shrinks with heat or cold, wet or dry weather can not keep from developing air and water leaks. Silage that becomes dry quickly spoils.

V. THE GOOD SILO MUST BE SMOOTH ON THE INSIDE. Silage must be packed tight in order to exclude air. Rough sides, edges, corners and other obstructions to the free settling of silage cause imperfect packing and ruin your valuable food.

VI. THE SILO MUST BE VERMIN PROOF. If the rats can get into your silo they will do so. Build out of something that the rats can not gnaw through. The rat is the forerunner of too much air and consequently damaged ensilage.



Twin Silos, diameter 16 feet, height 60 feet, nearing completion. Built by Polk System on Peter Emge farm, Fort Branch, Indiana.

CONCRETE THE PERFECT MATERIAL FOR THE SILO

Recall the foregoing requirements of a good silo. Read this sentence with them in mind. ***The monolithic concrete silo is durable, never needs repair***, is absolutely fireproof, is air-tight and water-tight, is smooth on the inside and defies the ravages of all vermin. The concrete silo will never warp, rot, crack, burn, leak, blow over, nor waste away. It will never allow your silage to spoil by freezing, WILL NEVER COST YOU ONE CENT FOR REPAIRS, and will make you quit worrying about fire. Not a single good argument has ever been brought against a properly built concrete silo. No man who has owned one has ever considered the erection of any other kind afterward.

There is one false objection that is sometimes raised: It is said

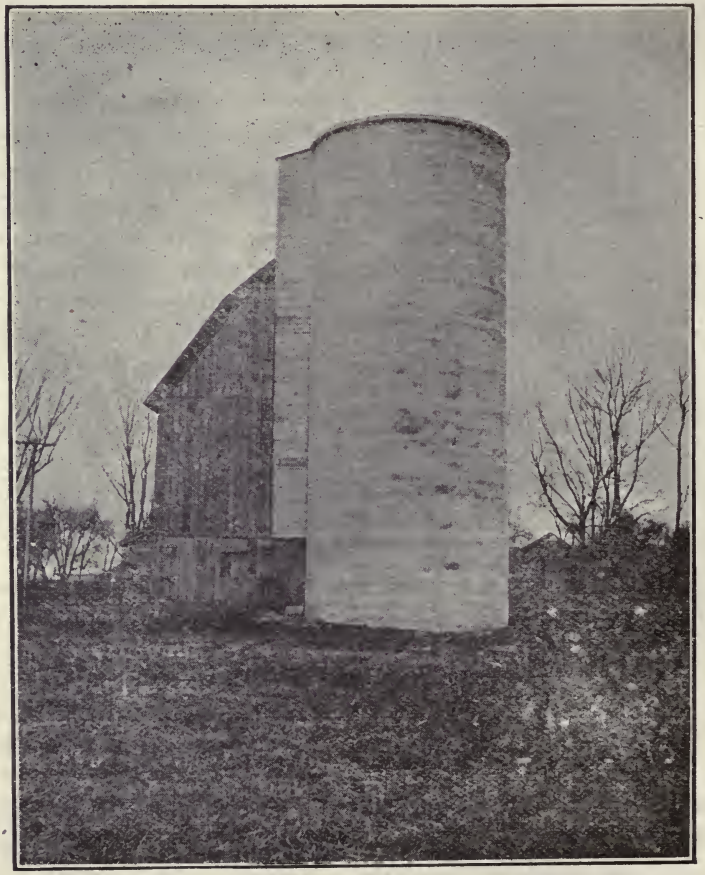
that the cost is too great. We wish to meet this objection squarely in the face by saying that the ***monolithic concrete silo*** is the cheapest silo that can be built. In the first place there is only one cost to the ***monolithic concrete silo***, and that is—the first one. When you have paid that, there is nothing more to go out for repairs or a new silo. A nonpermanent silo is a constant foe to a bank balance; you are never through paying for it until it has burned up, fallen down, or been thrown away. Any article costs as much as you spend for it and on it plus 100 per cent. when you have to replace it. The ***monolithic concrete silo*** never costs but once, and there is absolutely no depreciation in value. For it, total cost and first cost are one and the same thing. If you build a permanent silo the satisfaction of having been wise and far-sighted will remain long after you have forgotten the price you paid.

18 x 45 feet Silo under construction. P. A. Quanstrong, Genoa, Illinois, Contractor. Polk System.

We do not advise the building of a roof because, with our concrete silo the roof is not necessary for the preservation of ensilage, except in extremely cold climates. Moreover the elements have no damaging effect on the interior of our silo—a claim which other types of construction can not make. We have seen less

damaged ensilage in silos without roofs than we have where roofs have been used. Especially where the corn has been put up a little dry the rains will keep it moistened so that there will be no danger of it drying and spoiling.

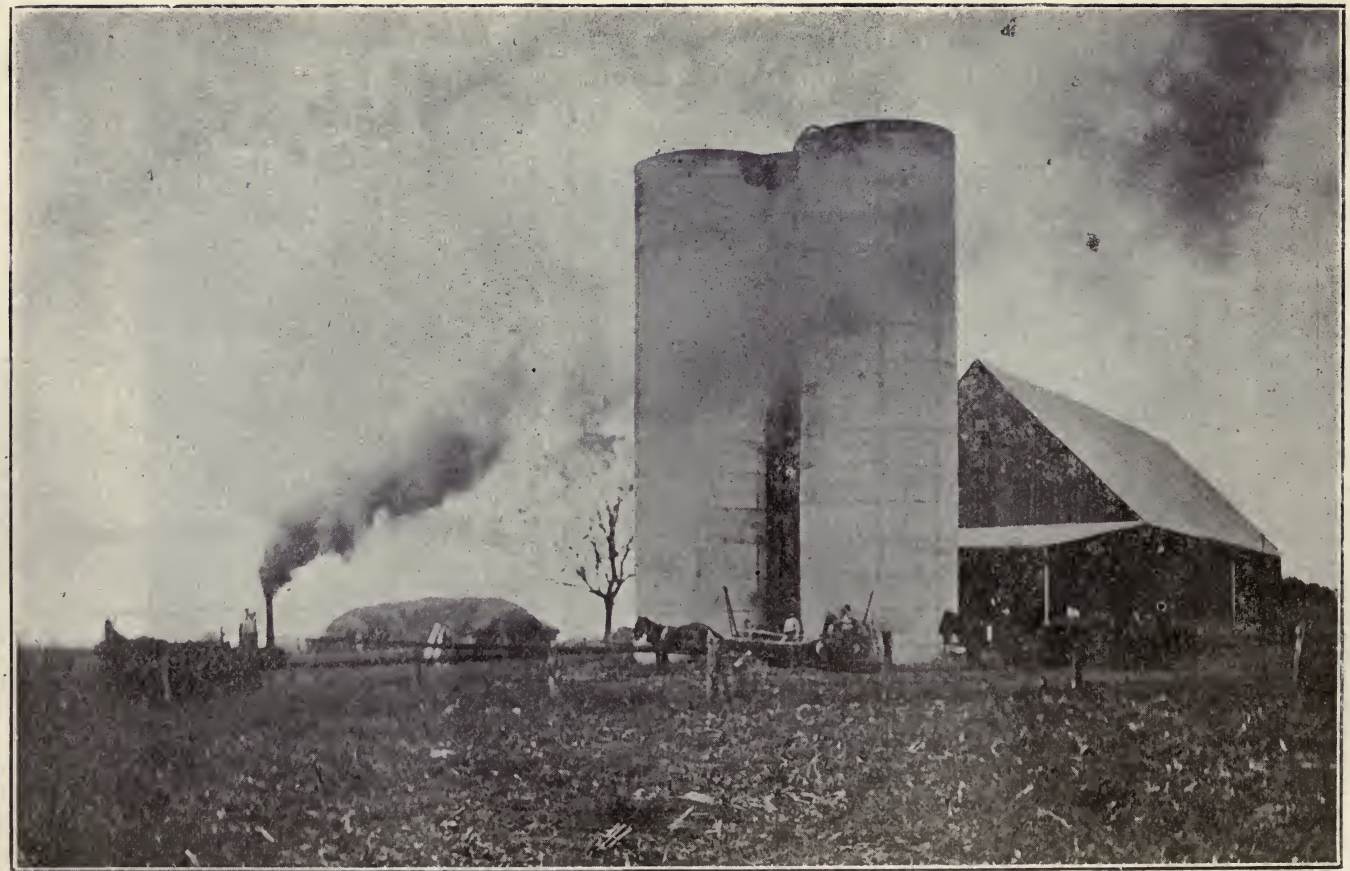
However we are well equipped for building concrete roofs and have an excellent proposition for the man who wishes a good everlasting water tank on his silo.



"They are not built of pieces and they cannot go to pieces."

Two monolithic concrete silos, built by the Polk-Genung-Polk Company. The right hand silo has a water supply tank 4 feet in depth on top. The silos are 16 feet in diameter by 45 feet in height.

The above illustration shows twin silos built by the Polk System. These structures are 16 by 45 feet, the upper four feet of the one on the right being given to a concrete water tank. This shows one of the excellent possibilities of our machine. Here is the stand for a tank of sufficient height to give good pressure—a stand that would otherwise be a great cost—given to you absolutely free of cost when you pay for your silo. WE HONESTLY CONSIDER THIS THE BEST OFFER WE ARE MAKING TO THE AMERICAN FARMER TODAY.



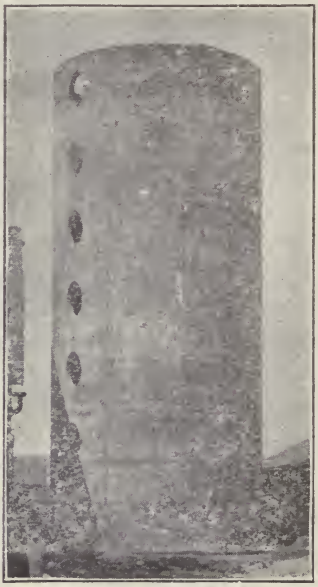
Handling Ensilage to the Best Advantage

NO matter how excellent a silo one may have, it is necessary to use good judgment and great care in the handling of ensilage before one secures the best results.

SIZE OF SILO. Strange to say, the first thing to consider in the handling of ensilage is the size of the silo. Two things will determine the diameter of your silo—the number of cattle you have and how many pounds per day you intend to give to each animal. The statement, that the diameter of a silo should be one-half of its height, has no basis in reason, but is made only by people that can not conveniently build them very high. The weight of a concrete silo makes it possible to disregard wind pressure so that height is not a drawback on this account. The tall silo is really much more economical of space. By reference to table No. 2, page 21, you can determine the size you will want. For instance, a 10 by 28 silo will feed 12 head of dairy cattle 40 pounds per day each for 180 days, or 19 head of beef cattle 25 pounds per day each for the same length of time. It will have a capacity of 43 tons, and will require $3\frac{1}{2}$ acres of corn to fill. You will notice that the amount to be fed daily varies directly with the diameter. This is because silage must be fed in even layers of a thickness of about 2 inches deep each day during the winter season and slightly more in the summer time on account of increased fermentation. We have prepared this table at much expense and the greatest care, and we want it to be of value to you.

TIME TO PUT UP SILAGE. Corn should be put up when it is at its prime—when the ears are beginning to glaze and the indentations are becoming well marked, and just after the husks are beginning to die. This takes place a short time after the roasting ear stage. Corn should be put into silage when the amount of nu-

trition in it is at its highest—before that 40 per cent. of food matter that is not in dry fodder has escaped. Frequently in cutting up corn for fodder the farmer runs across patches that are too green. If, when the corn is shucked out, the grains are loose on the cob, the corn is too green for silage. It is better to put up silage too dry than too green, for green silage is always too sour, while a small stream of water thrown on corn a trifle dry will make good ensilage.



Polk System Silo on George Fox farm, Sycamore, Illinois. Size, 16x40 feet.

PLACING SILAGE IN THE SILO. Putting the corn in the silo is perhaps the most important single step in making good ensilage. In fact most users of silos personally supervise this work or have perfectly trustworthy men to do it for them. Slipshod work here means spoiled silage. The chopped fodder must be well packed in even layers of about two inches thickness. There must be no large bunches or "knots" of it anywhere, for these check regular settling, form cavities for air spaces, and consequently endanger the silage. It is a good idea to keep the silage slightly higher in the middle in filling, because the wall, be it ever so smooth, will have a tendency to retard the settling. An experienced silo man told us recently that he got excellent results from having his silage tramped a little around the edge each day for five or six days after it had been put in the silo. This, you see, overcomes wall friction and insures solid packing.

HOW TO FEED SILAGE. Silage may be fed just as soon as the silo is filled. It is not necessary to wait a few days for the "curing process" to set in; and in our Monolithic Concrete Silo it may be fed at any time after storing that you may wish. The average dairy cow will eat about 40 pounds a day. The silage should be kept

at a level in the bin. This does not leave any part exposed to the air long enough to render it unsuitable for feed. The practice of digging into ensilage and allowing it to remain exposed to the air for a day is bad practice. It deteriorates more rapidly from much exposure when the weather is warm. From one and one-half to two inches should be fed each day. ***Silage should not be fed in the room where the milking is done, nor should it be fed just before milking time.*** No more should be given than the cattle will eat up clean, because what is left around carelessly will fill the air with acid odor that is readily taken up by milk. The complaint, that milk will smell if silage is fed, is due entirely to careless and unsanitary handling, and never to an intrinsic fault of ensilage.

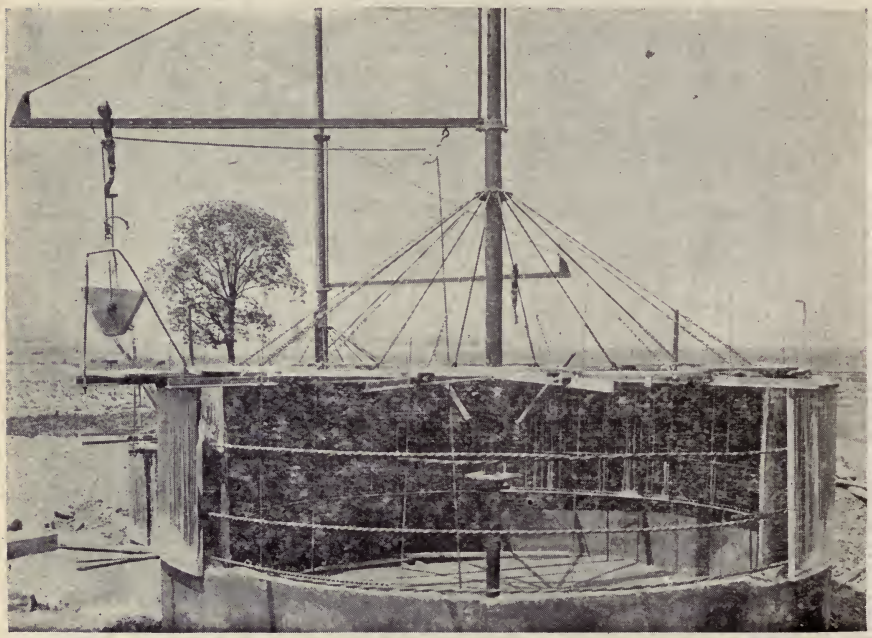
Battery of three monolithic silos, each 16x45 feet, built for A. E. Hundley & Son, Danville, Kentucky, by Dillehay Brick Co., Danville, Ky., Polk System. We might mention that as evidence of the satisfaction these silos gave, a fourth silo was added to the group.

Our System

IN the development of our machine we have kept two things in mind—ease of operation and the erection of an absolutely flawless structure. Neither pains nor expense has been spared to produce a machine that will enable you to put up as good a silo as our best workmen can erect. Our machine automatically keeps the walls plumb, it does away with an elaborate, complicated, risky system of scaffolding, it imposes no strain upon the section of wall already built, and it so unifies and simplifies the work that any intelligent man, after seeing one silo constructed, can easily erect the ***best silo on earth.***

As usual, the thing that makes all this possible is a very simple thing after all. So simple indeed is it, that you will wonder why other builders of concrete waste time, money and labor on costly dangerous scaffolding. The great unifying, simplifying principle in our machine is the use of a centermast. This centermast is erected in the center of the silo floor and is guyed to a perpendicular at the top by means of wires and turn buckles. It is a four inch pipe, provided with a series of transverse openings adapted to receive a key which supports a widely flanged collar, the latter serving to support jacks by which the forms are lifted. Resting upon the jacks is a hub, consisting of a flanged base collar and a top dished collar connected by a central pipe of sufficient bore to work easily over the centermast. On the base collar of the hub radiate T irons which are supported from the upper collar by tension bars. The T irons are rigidly clamped to the top edge of the inner and outer forms, which are made of sheet metal. Each form is composed of separable sections which have angle iron edges. The separable sections are connected by threaded studs which pass through alining apertures formed in the opposite angle irons. The outer forms are bolted together and the inner forms carry a wedge between each segment, the lifting of which will allow the forms to swing free.

Detachably connected to the outer forms is a series of stanchions provided with an inwardly directed overhanging arm which has an aperture for receiving and retaining verticle reinforcing rods. These rods, as the building of the wall proceeds are twined about transversely by horizontal reinforcing.



Polk System machine with two sections of forms removed showing interior. Fully covered by patents in United States and Canada.

Both inner and outer scaffoldings is swung from the radiating T irons, as can be seen in the illustrations.

For filling in between the forms a V shaped dumping bucket is provided. It is pivotally supported by a crane above the hub so that it can readily be swung to any part of the wall space. The bucket is hoisted by means of a rope and series of pulleys so arranged that the hoisting force is applied horizontally from without the structure. A small opening is cut in wall at the bottom of the first setting of concrete through which the hoisting rope works. When the bucket is hoisted it is coupled to a carrier on the crane by the means of a hinged hook.

The operation of the machine is simple. The forms are set, the reinforcing bars arranged, the concrete is mixed, hoisted, dumped packed between the forms, and allowed to set. On the next morning the nuts connecting the separable sections of the forms are loosened and the forms swing free from the wall. Then by means of the jacks the whole mechanism is lifted until in a position for a new "fill" when the forms are again tightened. The raising of the forms for a set of 3 feet, 10 inches does not require more than ten minutes work. ***It takes three men only fourteen days to build a 16 x 40 silo, everything complete. This includes excavating, erecting, taking down and cleaning machine.***

The Polk Silo Doors

THUS far in our discussion of silo construction, no mention has been made of doors, openings for which must be left in the walls. The cut below is an outside view of our door closed and sealed.

The openings which receive the doors are 20x30 inches. They are usually spaced 30 inches apart but the number and location of

Polk System Silo Door

doors are optional with the builders. We have chosen the oval shape in order to avoid sharp angles which invariably cause air cracks both in the jamb and in closing the doors when filling. We use a sheet steel door form, set between the shells of the machine as the work progresses. This form molds a concrete jamb one inch wide and one-half inch in depth from the inner surface

of the wall. Owing to the shape and draft of this form the jamb is left in perfect condition for sealing the door when the form is removed. Immediately after the machine has passed the opening the form is removed, leaving the opening in perfect shape.

The door itself is made of heavily galvanized No. 12 gage sheet steel cut to fit snugly in the concrete jamb made by the form, flush with the inner wall and bent to the radius of the silo. On the outside of the door are fastened four malleable clips in which hook bolts engage and make a flexible fastening. Across the opening on the outside of the silo wooden bars are placed, through which these bolts pass. The desired stress is obtained by malleable tail nuts. This combination gives you a LIGHT, DURABLE DOOR that is air-tight.

In sealing the door, a thin gasket of moist clay is smeared around the inner surface of the jamb; the door is then set in place and drawn tight by turning the tail nuts by hand. When the silage is fed down past the doors, they are replaced in the openings and it is necessary when refilling the silo only to smear the mud gasket back of the door and draw it tight. It is then always in the place in which it is going to be used.

Can you conceive of a simplier operation that will solve the silo door problem? The door is closed quickly, easily, lightly and securely year in and year out without any trouble and expenses other than that bit of clay. It fits as well and tight on the 10th or 20th year as it does on the first. It is the IDEAL DOOR for the IDEAL SILO.

Capacity of Round Silos in Tons

Height in Feet	Inside Diameter of Silo in Feet					
	10 Feet	12 Feet	14 Feet	16 Feet	18 Feet	20 Feet
20	25	37	50	67	83	102
21	28	41	54	71	89	109
22	30	43	58	76	96	118
23	31	47	62	80	103	126
24	34	49	67	85	110	134
25	36	52	71	91	116	143
26	39	56	75	97	123	152
27	40	58	79	102	130	160
28	43	61	83	103	137	169
29	45	64	87	114	144	178
30	47	67	91	119	151	187
31	49	70	96	124	158	196
32	51	74	100	131	165	205
33	54	77	105	136	174	215
34	56	80	109	143	181	224
35	58	84	114	149	189	234
36	61	87	118	155	196	243
37	63	91	123	161	204	252
38	65	94	128	167	212	262
39	68	97	133	173	220	272
40	70	101	138	180	229	281
41	72	105	143	187	236	291
42	74	109	148	193	245	300
43	77	113	154	201	252	310
44	79	117	159	207	261	320
45	82	121	165	215	269	330
46	85	126	170	223	277	340
47	88	131	176	229	285	350
48	91	136	182	236	293	361
49	94	142	188	243	301	371
50	98	148	195	250	311	382

FACTS—NOT FANCIES

¶A wood silo is a good thing; so is a board walk—while it lasts.

¶The practical silo is the high silo; better ensilage, more capacity, cheaper per ton capacity.

¶The Polk System concrete silo can be built as easily high as low. We are bulding sixty feet high, and predict even higher silo building.

¶The Polk System monolithic silo lasts so much longer that it is cheaper than a wood silo would be as a gift.

"They are not built of pieces and they cannot go to pieces."

Testimonials

In compiling this booklet our object has been, not the production of a literary selection, but a thorough, concise and honest exposition of the monolithic silo and our system of building it. Our aim has been plain straight forward facts, which we take pleasure in endorsing. We know, of course, just what the Polk System is, and what it will do, and we back all our statements concerning it, with all the facts and figures that the reputation and reliability of our company guarantee. Of course we may be prejudiced so we wish to conclude our booklet with the opinions of just a few of our well pleased customers, whose reliability we gladly vouch for. Lack of space precludes the possibility of a long list, so we have chosen a few representative endorsements that substantiate our position.

Concrete Silo on Stevens Farm near Sycamore, Ill.

Ensilage is the cheapest and best feed for all kinds of live stock.

A Concrete Silo will keep Ensilage perfectly,
Will Stand
Forever, and
Will Not
BURN,
BLOW DOWN,
OR ROT.
NO PAINTING,
NO ADJUSTING
HOOPS.
Cheapest Of All
In The End.

GET OUR PRICES.

GEO. A. FOX
PHONE 128

HEBER L. TIBBITS
PHONE 38

Fox-Tibbits Concrete Silo Co.

BUILDERS OF

RE-INFORCED CONCRETE SILOS

421 DeKalb Ave.
SYCAMORE, ILL. 12/7/11

Polk, Genung, Polk Co.,

Fort Branch, Ind.

Gentlemen:

Replying to your favor of Dec. 4th. we beg to advise that the Polk System Silo Machine which we bought of your company has given us splendid satisfaction. We built ten silos with it this season and they are a fine lot, not one of them showing any defects whatever, and every one of our customers are well pleased with our work. The machine is substantial and apparently as good as new.

Further beg to advise the silos you put up a year ago as well as the one you put up two years ago in this vicinity are giving fine satisfaction and are keeping ensilage as well, if not better than any of the other silos in this vicinity.

We know Menolithic Concrete Silos are all right and are more than pleased with our Polk System Machine.

Respectfully,

FOX-TIBBITS CONCRETE SILO CO.

Per H. L. Tibbits.....

"They are not built of pieces and they cannot go to pieces."

Genoa, Illinois.

October 12th. 1911.

Polk, Genung, Polk Co.,
Fort Branch, Ind.,
Gentlemen:-

The cement silo you built for me last year we filled during the month of Sept. 1910.

On December 1st. we commenced feeding forty head of steers after removing the cover from the silage which consisted of cut straw with a bushel of oats scattered over the top. The oats sprouted and grew to form a sod.

After removing the straw we found only about two inches of silage spoiled. All the rest of the whole surface was in perfect condition and cattle ate it with great relish. We continued to feed silage with a ration of corn and cotton seed meal until May.

I will say that we never secured as rapid and cheap gains on dry feed. We thought so well of the cement silo that we engaged your local Agents here Messrs. Fox & Tibbits to build us another this season of the same dimensions 16' x 40'.

You can rest assured that the CEMENT SILO is all you claim for it.

Yours respectfully,

A. F. Parke

BELL
TELEPHONE
GENEVA
1201

W. H. WARFORD
CONTRACTOR
Using The Polk System Of
RE-ENFORCED CONCRETE CONSTRUCTION
ALSO ALL KINDS OF GENERAL CEMENT WORK

THIS SYSTEM IS ESPECIALLY ADAPTED TO THE BUILDING OF CIRCULAR GRAIN STORAGE, SMOKE STACKS, STAND PIPES, SILOS, AND RECTANGULAR BUILDINGS

Geneva, Illinois Nov. 29. 1911.

Polk,Genug,Polk Co.,
Fort Branch,Ind.
Dear Sirs:-

Replying to your letter of 28th. inst. relative to the success and operating expenses of your system, I am glad to state that I have been successful far beyond expectations, my machines having been busy from the start until too cold to do more work.

My expenses for a year's work has not been a cent on the machine proper except for a few cheap bolts to replace those worn out and it is in first class condition, ready to do another year's work.

After having had a years experience with your system I would not trade for anything I have seen yet.

Yours truly

W. H. Warford

CHAUNCEY W. BROUGHTON
CARLTON, ILL., P. O. McGIRR, ILL.
TELEPHONE BELL
DE KALB, ILL. MAIN 204-11

January 10, 1910.

Polk, Genung, Polk Co.,

Fort Branch, Indiana.

Dear Sirs:

In regard to the cement silo that you built for me will say that I am well satisfied with it and think it is all right in every respect, but I have not as yet opened it so I cannot say as to the condition of the ensilage. Just as soon as I open the silo I will write you again but I have not the slightest doubt but that it is all right.

Yours very truly,

C. W. Broughton

Seward, Ill., Dec. 5, 1911.

Polk, Genung, Polk Co.,

Ft. Branch, Ind.

Gentlemen:

Have had a very successful year with your silo machine. Built six without any expense as to repairs, and don't look as if there was much wear on the machine.

Everyone that I built for was well pleased and thought it was a great labor saver.

Yours truly,

D F Longacre

STATE OF ILLINOIS.

Illinois Farmers Institute.

CREATED BY ACT OF THE THIRTY-NINTH GENERAL ASSEMBLY

OFFICE OF THE SUPERINTENDENT
487 NORTH LAKE STREET
AURORA, ILLINOIS

January 2, 1910.

TO WHOM IT MAY CONCERN:

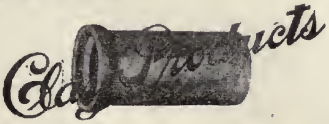
In the spring of 1909, the Polk, Genung, Polk Co. of Fort Branch, Indiana, built for me a reinforced concrete silo, 12 ft. by 40 ft.

The structure seems to be perfect in every respect, and the men who built it, so far as I can judge from my dealings with them, are courteous, competent, reliable business men. They know their business and promptly do as they agree.

Frank H. Hall
for
Hall & Hall

OUR SPECIAL FEATURE IS ANYTHING IN THE CLAY GOODS LINE IN STRAIGHT LARS

LEWIS McNUTT



SEWER PIPE
HOLLOW BUILDING BLOCKS
FLUE LINING
FIRE BRICK, WALL COPING
CEMENTS, ETC.

LONG DISTANCE TELEPHONE
HOME, BLACK 80
INDEPENDENT NO. 6

24 SOUTH WALNUT ST.

BRAZIL, IND., August 10, 1909.

Messrs. Polk, Genung, Polk Co.,

Fort Branch, Indiana.

Gentlemen:

Let me commend you for the workmanship and the square dealing on the silo that you built for me, 14/40 ft. It exceeded my expectations. I could not realize that a silo that tall could be built perfectly straight both in the radius and the perpendicular, and the manner in which it is re-enforced I think it is impossible for it to ever give way in any particular.

I do not know when I have had anything done that gave me as little anxiety and trouble as this job did. Everything went along smoothly; the contract was carried out to the letter and settlement made without the least hitch. I do not believe I could consent to have it removed for considerable more than it cost me.

I also want to speak a word for the gentlemen that did the work, for they were everything that the word gentleman means.

With kindest regards. I am,

Yours most respectfully,

Lewis McNutt

LM-JB.

Remember

1 That the Polk System monolithic silo lasts forever.

2 That "they are not built of pieces and they can not go to pieces."

3 That there are no bands or any wires to adjust and re-adjust.

4 That they are rat proof.

5 That they are "insurance agent proof."

6 That the wind has never yet blown strong enough to blow one down.

7 That high silos are the practicable silos and easy, high construction is the Polk System's "long suit."

"They are not built of pieces, and they cannot go to pieces."

TIMES
PRINT
FORT
BRANCH,
IND.