TUCSON

WHERE THE SUN IS SHINING
WHERE LIFE'S WORTH WHILE

ARIZONA

INFORMATION RELATIVE

TO THE

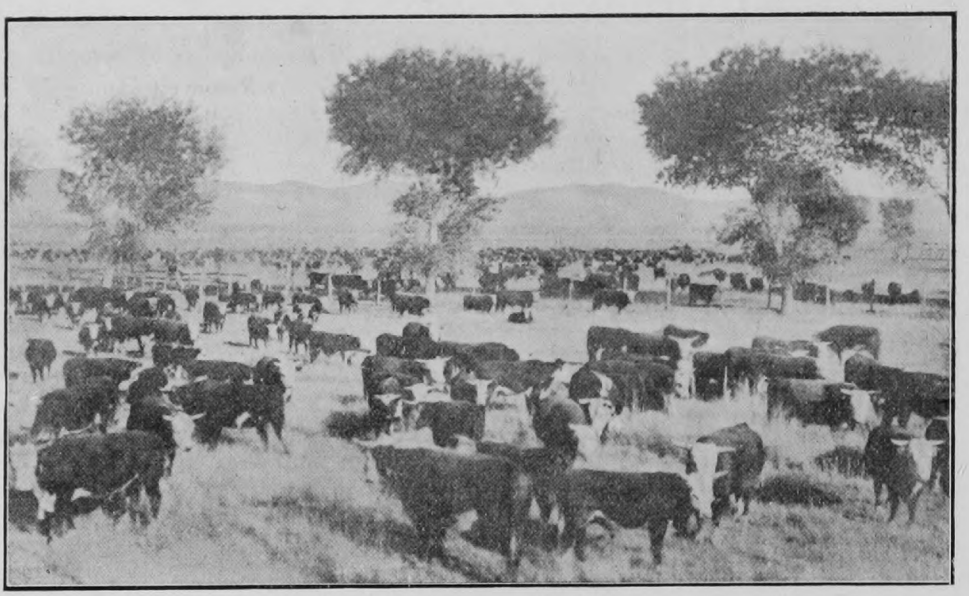
Agricultural Development

IN THE SOUTHWEST

TOGETHER

WITH FACTS CONCERNING
THE
CONSTRUCTION OF SILOS
AND
LIVE STOCK FEEDING
IN RELATION TO SUCCESSFUL FARMING

A FIELD OF ALFALFA ON A FARM ADJACENT TO TUCSON.



CATTLE-FATTENING AN INDUSTRY.
The fattening of range cattle, on ensilage crops, a most important factor, with relation to successful farming in the Southwest.

"Our Agricultural Development"

THE agricultural development of the Santa Cruz and Rillito Valleys adjacent to Tucson, has been brought about since 1910. It has always been considered impossible to develop sufficient water for irrigation in these two valleys, but the development that has been made proves conclusively that there is ample water for the acreage that has been brought into cultivation, and that it is possible to develop sufficient amount for additional acreage.

25000 ACRES IN CULTIVATION.

Approximately 25000 acres of these valleys are now under cultivation, and much more are being developed, while several thousands more acres of the same kind of land will be brought under cultivation in the very near future.

LAND AND SOIL

The soil in these valleys is of exceptional depth and fertility and particularly free from deleterious salts. Actual excavations in the soil of these valleys have shown the depth of the soil to be from 5 to 25 feet, and the Indians of the San Xavier Indian Reservation, where the land has been farmed for more than two hundred years and not been fertilized, are still producing exceptional crops of grains and produce.

WATER.

The reports of the drainage area in these two valleys, compiled by competent engineers, show that the drainage area is equal to one-half of the Roosevelt Dam drainage area, and yet the flow from these streams is comparatively small, the channels of each being insignificant in extent. This demonstrates the fact that the drainage is mostly underground, and engineers in working up the plans for development in these two valleys, have made it possible to obtain a permanent supply from this underground channel, partially by gravity and partially by pumping. The economical methods used in perfecting this development have given a water supply at a very low cost. Owing to the methods used in the development of this water supply, it has not been necessary to construct any long main canals. The water in most every case being diverted and applied to the lands for irrigation within a mile of the main headwork development. This is a very advantageous and economical arrangement, as in other irrigation projects it has been found that the cost of maintenance and construction of long canals to carry the water from the point of diversion to the point of application is very expensive. Both of these difficulties have been overcome in these two valleys, owing to the fact that the point of diversion and application are always together. This means a large saving in the initial cost of construction and later in evaporation and seepage losses.

PUMPING IRRIGATION

Few people realize the extent of the development in pump irrigation during the past few years. In 1900 pump irrigation was considered of no importance and the census of that year contained no data relative to it. The census of 1910, however, re-

vealed some interesting facts. The total area irrigated by pumping from wells, exclusive of the rice fields of Texas, Louisiana and Arkansas, was 307, 496 acres, of which California had the lions share. The total capacity of the pumped wells was 5,426,139 gallons per minute, and in the list of states California stood first, Arizona second, New Mexico third and Texas fourth. In Arizona now there are seven times as many pumping plants as there were in 1910.

COST.

The approximate cost in these two valleys of pumping irrigation water per acre per year follows:

Fixed charges	$5.00
Fuel (gas oil)	3.10
Lubricating Oil	.55
Attendance	1.35
	$10.00

The assumed conditions provide for seven moderately heavy irrigations. This should give at least five cuttings, probably five or six tons of hay per acre, or half of the water can be used on a winter crop such as wheat, cabbage, half on a summer crop, corn or melons. Although pump irrigation is comparatively new, it has proven economically profitable and its development will go forward rapidly until the limit of the under-ground water supply is reached.

CLIMATE.

The elevation of these valleys, 2369 feet, and the rainy seasons, July, August, December and January, with the mild winter temperature insures the farmer a twelve months growing season. This condition is of particular advantage because crops can be raised all the year around. Also the buildings which are required for the farmer and for his stock are very inexpensive.

MARKET.

Tucson furnishes the best market possible for all the produce that the farmer will be able to raise assuring the farmer of good prices for his products, and if at any future time an excess be produced, shipments may be made to the large mining centers of the state.

TRANSPORTATION.

The main line of the Southern Pacific Railroad and the western terminus of the El Paso and Southwestern Railway, which run into and through Tucson, skirt these valleys making it possible for the farmers on all of these lands to have a railroad point within a few miles of his land. This railroad transportation insures the farmer for the present and all future time an economical haul for all of his products to Tucson or to nearby points such as Bisbee, Douglas, Tombstone, Ajo, and other large mining camps.

GROWING SEASON.

In the North, during the long winter months, the large investments in land are

unproductive; hogs, cattle and the idle work stock are eating valuable feed, dairy cows and poultry fall far short in production, high priced fuel must be purchased and large amounts of money must be invested in buildings for proper protection of people and stock.

The money you have invested in land, adjacent to Tucson, is productive every day in the year, crops are growing all the time and your work animals need never be idle, your dairy cows and poultry produce maximum results winter and summer. You do not need expensive houses or farm buildings for the protection of your family and live stock and you consume practically no fuel outside of your kitchen. Compare these conditions and see what the money saving will be in a year. A great deal that is now a loss to you in your locality, becomes a profit on a farm in this section.

PRODUCTS OF THE SOIL.

Following is an incomplete list of the agricultural and horticultural products grown on farms adjacent to Tucson: Alfalfa, bermuda grass, barley, broom-corn, cane, clover, cow-peas, egyptian wheat, feterita, hay, kaffir-corn, millet, maize, oats, rye, sorgum, sudan grass, soy beans, sugar-beets, wheat, apples, apricots, blackberries, figs, grapes, olives, peaches, pears, peanuts, plums, brussels sprouts, cabbage, cantaloupe, casaba melons, carrots, cauliflower, egg plant, garlic, lettuce, muskmelons, mustard, okra, onions, parsnips, parsley, peas, peppers, persimmons, potatoes, pumpkins, radishes, rhubarb, spinach, sweet corn, squash, sweet potatoes, tomatoes, turnips, watermelons.

CORN.

It has been demonstrated that corn is a wonder crop on our farms. Two crops can be grown in a year. Planting the first in March, it matures in about one-hundred days; the second is planted June or July, maturing in October. Average yield 65 bushels per acre. Yields of 75 to 90 bushels are common. The prevailing custom is to plant corn as a second crop following wheat, barley or oats. Corn keeps indefinitely here in ordinary cribs.

ALFALFA.

This crop is first in importance ,being unquestionably the leading crop in the Santa Cruz Valley, being sown in September, October, November or February with best results. Four or five cuttings have been made the first year. With proper attention this crop should be cut, after second year, on an average of six times a year, and the annual yield should not be less than eight to ten tons per acre. Fourteen tons per acre have been produced by the Agricultural College at Tucson.

WHEAT

Is sown in September, October or November, as a first crop, and can be pastured until the middle of February. Yields 35 to 50 bushels, and 65 bushels per acre have been grown.

BARLEY

Is a first crop and is sown same months as wheat, matures the same time, yields 40 to 50 bushels per acre. Excellent green feed for dairy or work stock during the

winter months is afforded by grazing or not cutting the barley until about February 20th. This prevents the growth becoming too rank, and results in the barley stooling thicker than ever, producing a heavy grain or hay crop in May or June. If cut for hay instead of grain, the yield is from two to three tons per acre.

OATS.

Are sown in October or November, furnishing green pasture until the middle of February, maturing in May. Ordinary yield, 65 bushels per acre. Yields of 90 bushels to the acre have been made. Oat hay easily yields 2½ tons per acre.

SUDAN GRASS.

One of our most remarkable and dependable forage crops, cutting as high as four crops per year, usually maturing in ninety days, after planting, and a second crop is ready for harvesting thirty days after first cutting, yielding two to four tons of hay per acre per cutting. Stock of all kinds eat it readily. It makes splendid ensilage. Is easily grown and the heavy yield and feeding value makes it a very profitable crop.

BEANS.

Plant the Mexican Frijole as a second crop as soon as your small-grain harvest is over in May or June and they mature in October, yielding 2,000 to 2,500 pounds to the acre.

SUGAR BEETS.

May be planted in the spring or as a second crop, following the harvest of your small grains, yielding from 12 to 25 tons per acre. Sugar beets can be profitably used for fattening cattle, sheep or hogs.

COW BEANS, SOY BEANS, MILLET, EGYPTIAN WHEAT, HAY, SORGHUM.

May all be raised as a second crop, following small grains, being planted about the first of July and harvested during October. There crops grow with little cultivation, requiring one or two irrigations, and produce heavy yields, being used as ensilage for live stock.

POTATOES.

Irish potatoes grow two crops a year, maturing in May and November, yielding from 200 to 300 bushels per acre. Sweet potatoes are grown as a second crop, following the grain crops and will average 300 bushels per acre. This crop is a large money-maker.

CANTALOUPES AND WATERMELONS.

This valley is adapted to melon growing. Cantaloupes have a very fine flavor, maturing in July, which season comes in between the seasons of the Imperial Valley of California and Colorado, and should the local demand be supplied, they may be shipped at high prices to eastern markets or too communities about Tucson not able to produce them. The growing of watermelons is also very profitable, the quality is excellent, and the demand is good.

Tucson now receives the greater portion of the "green stuff" it consumes from California with a heavy freight charge added to a high price, naturally fresh vegetables bring fancy prices, and Tucson's population is awaiting your garden products, which can be grown and marketed every month in the year.

The world-old economic principle of "supply and demand" is more clearly defined in this section than in any other agricultural district we have ever known.

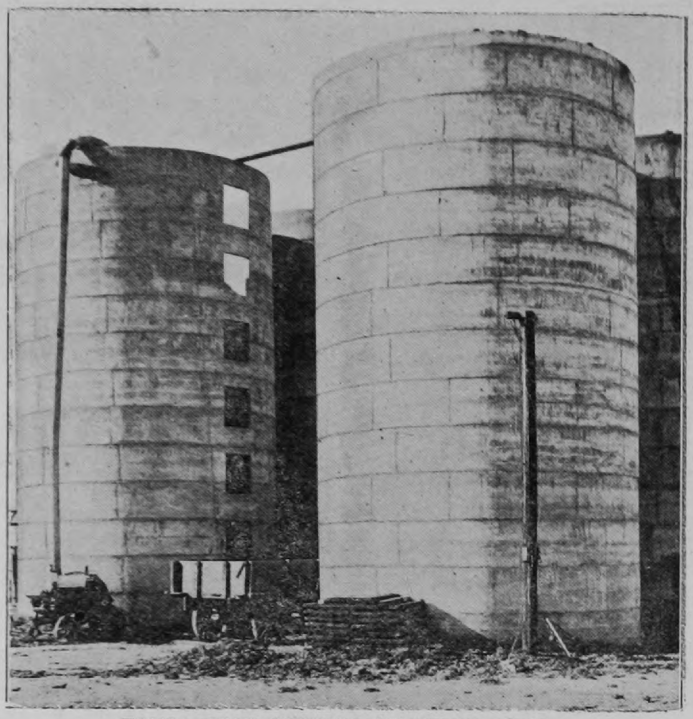
We have our market right here at home. Tucson in addition to consuming what we are now producing, is at the present time paying over $1,200.00 a year for imported foodstuffs and forage.

During December, January, February and March, our gardens mature head lettuce, spinach, table beets, turnips, radishes, cauliflower, onions, cabbage, carrots, parsnips, asparagus, and numerous other vegetables, and during the balance of the year are producing, in addition to the above, green peas, tomatoes, cucumbers, strawberries, string beans, cantaloupes, watermelons, casaba melons, potatoes, etc.

With these conditions, it would seem that the farmer will find in the valleys of the Santa Cruz and the Rillito a fertile field and one well worthy of a thorough investigation, as a stage in the development of these valleys has been reached wherein the homeseeker may make a personal investigation and see for himself the results of the experiments and work of others, to fully satisfy himself that these results have been obtained, before he makes his investment and decides to make this his home.

HOGS FEEDING ON ALFALFA.

The fattening of hogs on ensilage crops a most profitable factor in relation to silo construction in the Southwest.

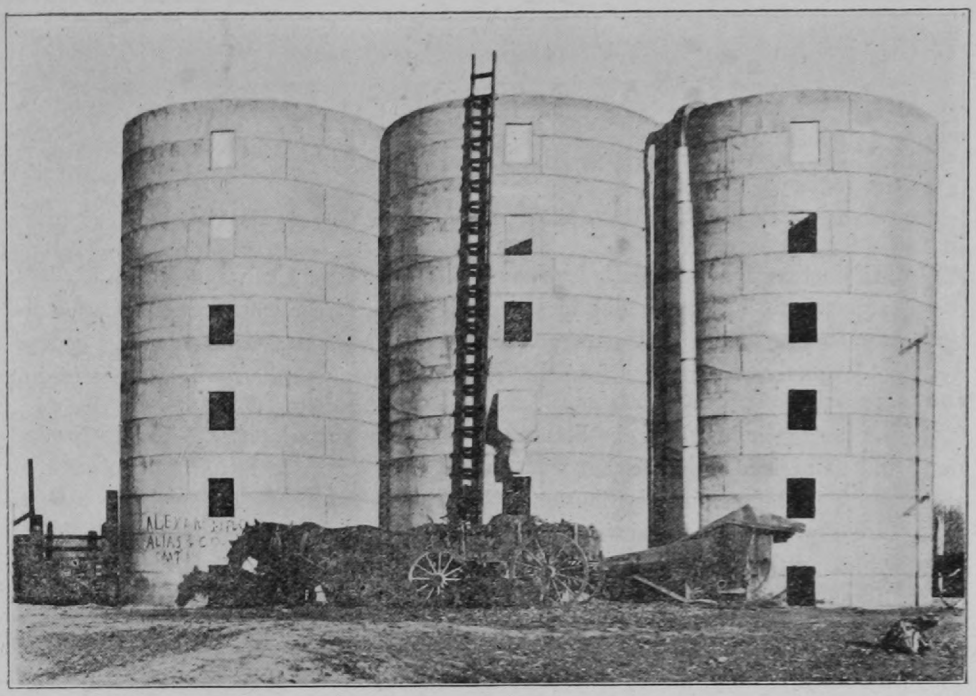


FOUR ABOVE-GROUND CONCRETE SILOS.

Erected on ranch owned by H. C. Kinnison, 2½ miles south of Tucson. Dimensions (each) 18x38 ft. Capacity (each) 212 ton. Corn and Cane used as silage.

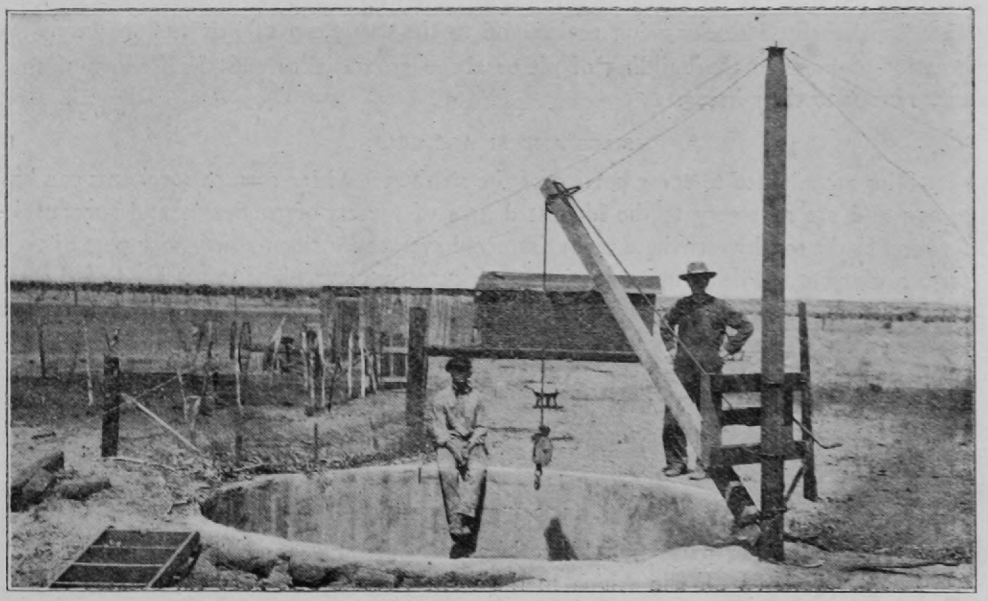
HOME-MADE PIT SILOS.

Showing home made pit silo with partially constructed adobe collar. Dimensions: 12x20 ft. Capacity 40 tons. Cost: Cement, $16.20. Labor, $20.00. Total $36.20. Shows also a home-made derrick for either hoisting out dirt or filling the silo.



THREE ABOVE GROUND CONCRETE SILOS.

Erected on ranch of John Nelson, three miles south of Tucson. Dimensions (each) 16x36 ft. Capacity (each) 100 ton. Corn and Cane used as silage.



PLASTERED PIT SILO.

A 12x24 ft. silo. Capacity about 52 tons. Cost $21.00, not counting the labor, which was done at odd time. Illustrates a home-made derrick for removing the silage.

Silos And Ensilage Crops

With Relation to

Successful And Profitable Farming

THE increased agricultural development in the Santa Cruz and Rillito Valleys, adjacent to Tucson, is due in a great measure to the construction of silos and the feeding of the ensilage crops to cattle. The silo has made possible a dependable supply of succulent feed through the winter months for live stock feeding and increased the opportunities for successful farming in the Southwest.

The leading industry of the Southwest for many years has been "Cattle Production" and today it is still true, but with this sections increased farming population together with its large land distribution it has caused many of the fine large western ranges, that provided natural feed crops for cattle, to be cut up into small farms, thereby making the production of feed crop, the raising, feeding and fattening of cattle on the farms of this section a most profitable and successful system of farming.

LIVE STOCK FEEDING.

Live-stock feeding, through the aid of silos and ensilage crops thereby making this crop the money crop and returning the manure to the soil, enables the farmer to better employ his labor and capital, prevents waste, brings about the proper and profitable utilization of by-products of crop production, enables and induces him to put into practice scientific methods in systematic crop rotation which is the basis of successful farming. If a farmer has a sufficient amount of good silage on hand he can feed cattle on shares or sell silage to the cattle-owners whose cattle can be fed on his farm. The Southwest is primarily a stock-raising region and to the cattlemen of this section we most heartily recommend the building of pit or above ground silos and the feeding of ensilage crops to their herds.

SILOS AND SILAGE CROPS.

Silos are adapted to every portion of the southwest where corn or sorghums can be grown and are necessary to the highest degree of success of profitable and successful farming in the southwest where many farmers have proven them a necessary part of the farm equipment. The farmer of Arizona with twelve cows, eight to ten head of young stock and the usual number of horses, hogs and poultry found on such a farm, could realize on an investment, on a basis of $250.00 for a 10 x 30 silo, the size needed for twelve cows, and approximately $500,00 for cutting and filling machinery, approximately 33 1-3 per cent each year. Silage combines well with alfalfa hay, alfalfa pasture, bran, shorts, oil meal, and in fact scarcely any ration can be fed in which silage cannot be added to advantage.

PIT SILOS WELL ADAPTED.

In the following paragraphs directions will be found for the construction of a home-made plastered pit silo which to the writer, seems best adapted, because of its cheapness of construction, being underground and of uniform temperature the silage cures and keeps better, saves in filling and feeding, and the construction of the pit silo can be done by the farmer at odd times.

SILO LOCATIONS.

In dry farming and irrigated regions where water is obtained by pumping, the pit silo may safely be dug to within two feet of the highest ground-water level. Under ditch irrigation in the irrigated valleys, pit silos may be put in on ridges or other elevated places where there is no danger of seepage of water into the silo. In localities where the underground formation is of very hard cemented nature, or of solid rock, where digging is extra expensive and where a regular and smooth wall cannot be made, and also wherever large boulders or a caving formation are encountered, pit silo construction may not be as advisable as the above ground silo.

COST OF PIT SILOS.

In order to arrive at the average cost of pit silos, below is given a table, on cost of construction, supplied by ten farmers who have constructed pit silos in this section:

NAME	ADDRESS	Dimensions.	Capacity tons.	Cement used, lbs.	Cost of material.	Cost of labor.	Total Cost.
W. Hattje,	Douglas, Ariz.	10½x26	44	6,000	$80.00	$110.50	$190.50
C. B. Emery,	McAllister Ariz.	10 x20	26	1,900	17.10	None	17.10
M. C. Boots,	Pearce, Ariz.	12 x16	35	5,300	50.35	8.00	58.35
W. H. Boots,	Pearce, Ariz.	12 x16	35	4,400	44.00	None	44.00
C. E. Samson,	McNeal, Ariz.	10 x19	23	800	7.20	16 00	23.20
H. R. Fike,	Stark, Ariz.	12 x24	54	2,000	26.00	22.00	48.00
J. E. Brophy,	Lowell, Ariz.	12 x22	46	2,000	65.00	50.00	115.00
R. D. Koontz,	McNeal, Ariz.	11 x22	37	1,100	11.00	None	11.00
P. Adams,	Douglas, Ariz.	12 x32	74	8,500	94.15	120.00	214.15
W. N. Jenkins,	Cochise, Ariz.	12 x24	54	1,900	21.00	None	21.00

CAPACITY OF PIT SILOS IN TONS.

A pit silo should be at least twice as deep as it is wide. The deeper the silo, the better the silage will pack..

Inside Height of Silos. (in feet.)	Inside Diameter. (in feet.)							
	8	10	11	12	13	14	15	16
20	17	26	30	38	44	51	59	67
21	18	28	33	41	47	55	63	72
22	19	30	36	43	50	59	67	77
23	20	32	39	46	54	63	72	81
24	22	34	41	49	57	67	76	86
25	23	36	43	52	60	71	80	91
26	24	38	46	55	64	75	85	97
27	25	40	49	58	68	79	90	102
28	27	42	51	61	71	83	95	109
29	28	44	54	64	75	87	100	114
30	30	47	56	67	79	91	105	119

The number of head of stock which can be fed from a silo of given capacity will depend of course on the amount of silage fed per day and the number of days that the stock is to be fed. The diameter in relation to the number of stock to be fed should be such that not less than two, and preferably three inches of silage are fed from the surface each day. An easy rule to use to determine how wide to build a silo is to find how many cubic feet of silage will have to be fed each day to remove the necessary two or three inches from the top. A cubic foot of silage weighs about forty pounds or about the amount that one would feed a beef animal. Taking the square of the diameter of the silo and multiplying it by 0.7854 and dividing it by six will give the

smallest number of head of mature stock or its equivalent that must be fed daily from the silo at the rate of two inches per day, or dividing by four will give the least number that can be fed by feeding three inches per day. For example, if the diameter is 10 feet, by squaring it we get 100, and this multiplied by 0.7854 gives us 78.54. Then dividing by 6 we get approximately 13, the smallest number of head that can be fed from a 10 foot diameter silo at the rate of two inches a day. If we divide 78.54 by 4 we get approximately 19, the smallest that can be fed at the rate of three inches per day. The height of the silo will determine the number of days that the silage will last, feeding at the above mentioned rate. By multiplying the number of feet, high or depth, by 6 we get the number of days the silage will last if fed at the rate of two inches per day. By multiplying the same by 4 we get the number of days the silage will last if fed at the rate of three inches per day. Many farmers make the mistake of buliding the silo too wide for the number of stock to be fed, but if the foregoing rule is followed, there need be no trouble in this line.

HOW TO MAKE A PIT SILO.

1. *Selection of Site*—Should be placed as conveniently as possible for filling and feeding. The less the hauling of silage the less the expense of handling. It has been found to cost an average of 58 cents per mile to haul a ton of silage.

2. *Starting*—First level off the ground and drive a stake at the center of the location where the silo is to be built and saw off the stake a few inches above the ground. Nail one end of a board across the top of the stake for a marker. Measure off on the board the distance of the radius of the silo, i. e., one half the diameter. At this point drive a large nail or spike through the board for a marker. At a point six inches or more beyond this, drive a second spike in the same manner. By revolving the board, two circles are described. Between these two circles dig, with a tiling spade, a trench at least 18 inches deep, keeping the inside wall perpendicular and as smooth as possible, so as to make the inside of the collar likewise smooth and perpendicular. Fill in the trench with concrete. This forms the underground collar. The above ground collar is placed upon this. If the ground is not too porous, the above-ground collar may rest upon the solid ground without having an underground collar of concrete.

3. *The Above-Ground Collar*—If collar is made of concrete outside and inside forms are necessary. Four inches is thick enough, and some are made but 2½ inches thick. If more than four feet high the collar should be reinforced by placing wire between the forms when concrete is being put in The inside diameter of collar must be the same as that for the balance of the silo.

Adobe Wall for collar is all right if properly made. Should be 15 to 20 inches thick and plastered on both sides. When this form of a collar is used, forms are not necessary and the collar may be made after balance of silo is completed, thus making excavation easier.

4. *Keeping Wall Smooth and Perpendicular*—Most of the excess expense in putting in pit silos is caused by not keeping walls smooth and straight. It is very difficult to make a wall straight once it has become crooked. Uneven walls also cause air pockets and the spoiling of silage.

5. *Plastering the Wall.*—Plaster on a thin coat (one-half inch) of one part cement and 3 or 4 parts clean sharp sand, dampening the dirt wall before plastering. The socond coat (one-fourth inch thick) must be put on as soon as first coat is dry enough to hold it. If first coat is allowed to become too dry, the second coat may not

adhere well. For second coat use one part cement to 1½ parts fine, clean sharp sand. It is essential that the wall be whitwashed or painted two or three times with a mixture of pure cement and water about the consistency of medium thick cream, applied before the second coat of plaster is dry. This closes the pores of the plaster and makes the wall stronger.

ESSENTIAL POINTS TO REMEMBER IN MAKING A PIT SILO.

1. Be sure the wall is smooth and perpendicular.
2. Use good cement, clean sand, and have them properly mixed. Mix well before adding water.
3. Plaster on to a damp wall.
4. Put on a second coat of plaster as soon as the first one is dry enough to hold it.
5. Use two or three paintings of pure cement and water, applied to wall as soon as plaster is hard enough not to be smeared or injured by brush.
6. Dampen the wall every day for a week, and it is also better to cover the top with canvas to prevent too rapid evaporation. This will prevent too rapid curing and the result will be a stronger wall. Pockets made in wall by boulders may be filled with adobe mud instead of cement.

THE CONSTRUCTION OF ANY TYPE OF SILO.

The Agricultural Extension Service of the University of Arizona recommends the silo to every farmer and cattle ranch owner who can to advantage use a silo and furnishes free, upon request, a bill of materials together with instructions for the construction of any type of silo.

ADVANTAGES OF PIT SILOS.

Where the water table is not too near the surface and where the ground formation is such that a ground silo can be put in, the pit silo has many points in its favor, some of which may briefly summed up as follows:

1. Cheapness. The pit silo is the cheapest form, costing from one fourth to one-third the price of an above ground silo of the same make and capacity. Pit silos can also be put in by the farmer during odd times when perhaps his labor would not count much elsewhere or he can hire cheap labor for the work of digging.
2. There is no danger of its being blown over or of drying out, cracking, falling in, or burning if properly constructed.
3. Being underground, the cemented or plastered coat does not dry out as rapidly and is cured more easily than above ground and hence is more tough and durable.
4. Being underground and of uniform temperature, the silage "cures" and keeps better and has less waste when silage is properly put in.
5. Can be placed wherever most convenient for filling and feeding.
6. Saves in filling and feeding.

a. Requires one-half or less power to fill than above-ground silo. Takes as much power to elevate silage in above-ground silo as it does to cut feed.

b. Saving in cost of silage cutter. Blower costs as much as, and generally more than, the cutter.

c. Engine and cutter can easily and cheaply be hauled from place to place—from one silo to another.

SILAGE CROPS.

Corn is universally considered the best crop for silage, this crop grows well here,

makes a large tonnage and a good amount of grain, it is no doubt the best crop. However, there seem to be some varied opinions concerning this matter. Several of the farmers reporting, who have used corn and other crops for silage, state in some cases that milo is better than corn, and some state kafir makes the best silage. The results largely depend upon the stage of maturity, condition when put in silo, how put in and which crops of crop will yield the most actual stock food per acre. Whichever crop produces the largest amount of grain in proportion to the total weight of plant will make the best silage, when considering the non-saccharine crop, while the value per acre is determined by the total amount of food values. Corn has been greatly improved during the last few years and it is being more and more bred up and adapted to the Southwest; however, kafir and milo will usually outyield this crop under dry farming. Kafir, on account of its large yield of grain, large and succulent stalks, abundant leaves, and big tonnage per acre, is considered one of the best silage crops.

The sweet sorghums (sumac, orange, amber, etc.) also produce big acre yields and are considered by some farmers to be the best silage crops—especially orange, honey and sumac sorghums. These crops will generally outyield in total tonnage either corn or milo. If harvested at proper stage and properly put up, on account of the large amount of nutritious saccharine matter these crops are considered by many cattle feeders to make the best silage for beef stock.

The following are the leading Silage crops for the Southwest:

Kafir: Dwarf black hull white; *Cane*: sumac, red top or club, orange and honey; *Corn*: Sacaton June; *Milo and Feterita, Egyptian Wheat or Shallu.*

Cornstalks and grain sorghum from which the grain has been harvested are also used for silage. In using such, however, sufficient water should be added and the silage well packed.

ENGINE AND CUTTER.

Most of the silage for pit silos is cut with small engines, sizes ranging from 1½ to 6 horsepower. The cutters used are also small, costing from $30 to $50. An eight-tons-per-hour-cutter, and a 6 horsepower engine make a satisfactory outfit for filling pit silos. A carrier on the cutter is not necessary for filling pit silos.

FEEDING SILAGE.

While silage is primarily a feed for cattle, it is also valuable food for other forms of live stock. In fact it is good for all kinds of live stock.

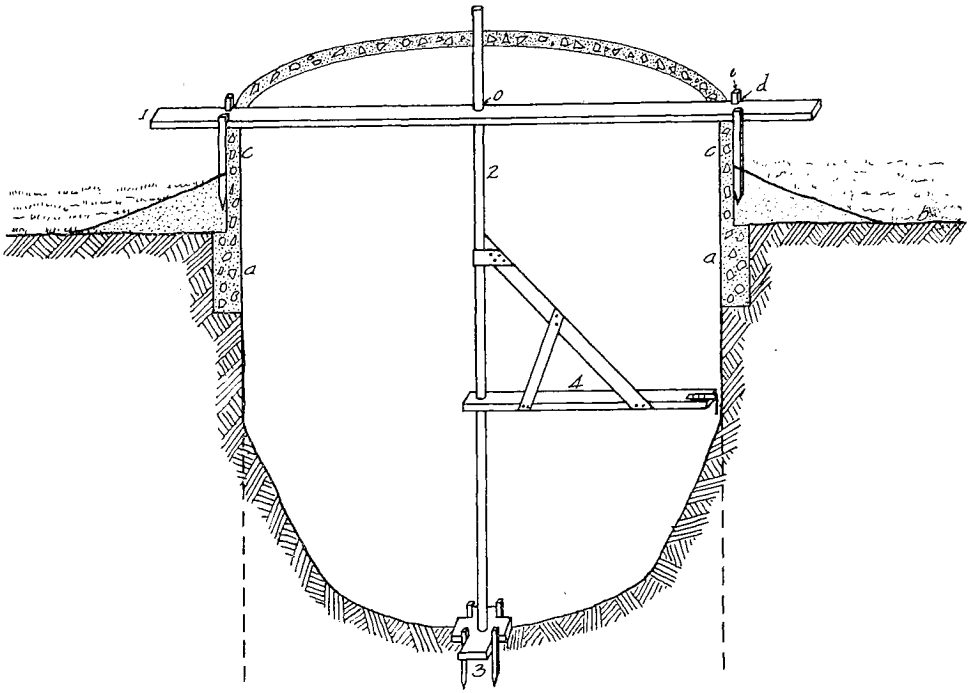
Cattle—Several farmers have reported that they have fattened beef ready for the market cheaply with silage alone. Silage with a good proportion of grain, such as crops producing 35 to 50 bushels of grain per acre, can be depended upon to produce fine beef; however, this can be better done when some concentrate, especially cottonseed meal, is fed with the silage. Feeding tests, particularly with dairy cows, have shown that this is best and most economical. Cattle receiving silage and concentrates will eat on an average of about 40 pounds of silage a day.

Horses—Care should be exercised in feeding silage to horses, seeing to it that no mouldy silage is fed and that they become accustomed to it gradually. They will consume only a few pounds at a feed.

Hogs, Goats, Sheep and Poultry—Silage is also very good, taking the place of and supplementing pasture.

(Note:—A. L. Paschall, County Agricultural Agent of the University of Arizona, and United States Department of Agriculture, is the author of an article on "How to Make Pit Silos," and it is from that article that much of the detailed information contained herein on construction of pit silos has been taken.)

A PARTLY CONSTRUCTED PIT SILO



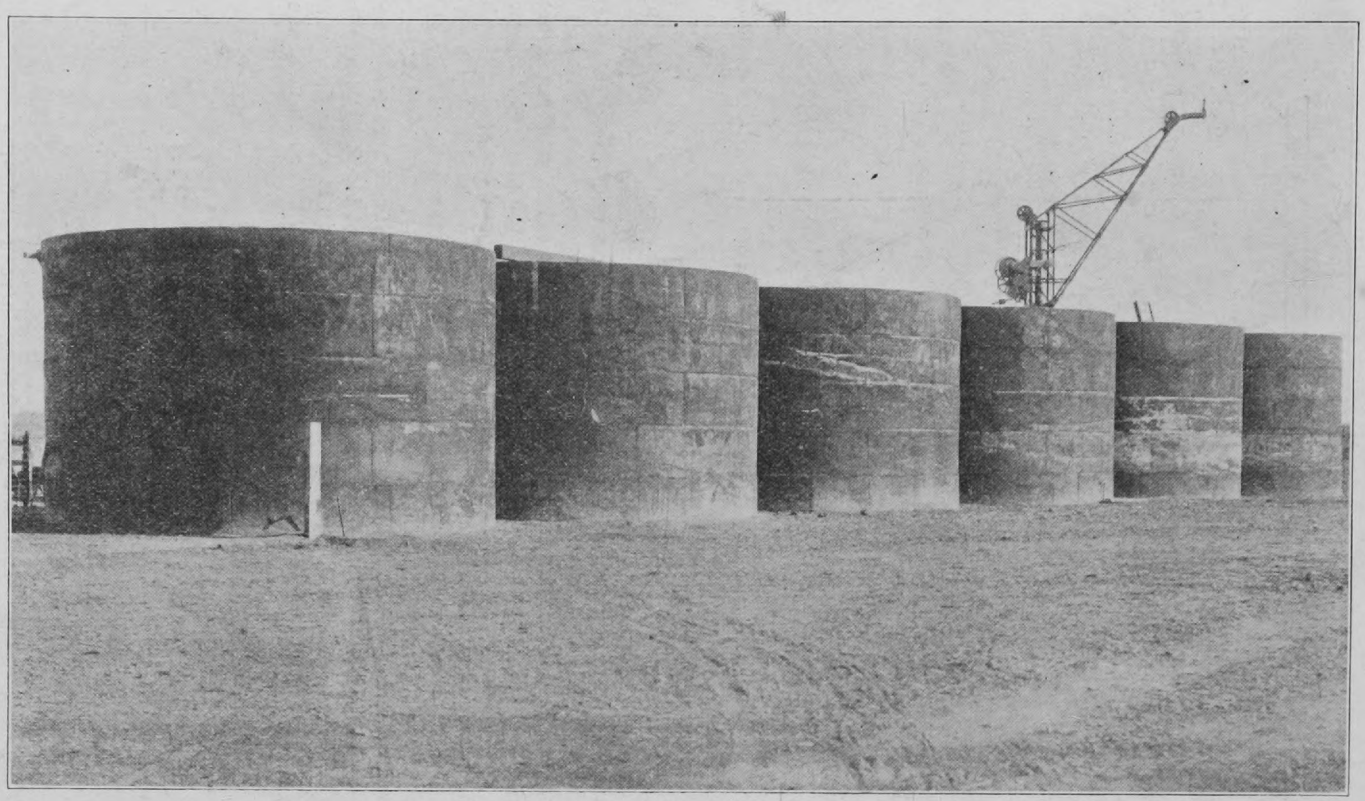
EXPLANATION

Cross section of partly constructed pit silo, showing method of construction and device for keeping the wall smooth and perpendicular. (a) represents underground cement collar, 6 inches thick and 18 inches deep; (b) is ground level; (c) is above ground concrete collar 3½ feet high, 4 inches thick. (1) represents the 2x6 inch cross piece, with hole in center through which the upright (2) is passed and held in place. Notches at (d) into which the stake (e) works, hold the piece (1) in place. A plumb-bob is suspended from the center hole (o) in piece (1) and the center foot block (3) is set in place and made secure by means of stakes, the pit having first been dug to a depth of 5 feet,roughly. The upright (2) is now passed through the hole at (o), through the eyes of the guide (4) and into the foot block (3). The guide (4), with knife secured on end, revolves and shaves the wall or indicates where irregularities are. When the wall has been smoothed to the level of the foot block (3) these inside devices are removed, the wall properly plastered, the excavation is again done roughly to a depth of 5 feet, the wall smoothed and plastered as before, and so on until the silo is completed.

This booklet compiled, issued and sent free upon request by the

CHAMBER OF COMMERCE,

Tucson, Arizona



SIX SEMI-PIT CONCRETE SILOS.

Erected on ranch owned by L. H. Manning, 2½ miles south of Tucson. Dimensions, 18x38. Capacity (each) 175 tons. Milo maize and corn used as silage.