the surface exposure as much as possible. It should not be less than twenty feet. Two-inch plank, any width up to ten inches wide and twenty feet in length, will do in a silo sixteen feet in diameter. If the planks are not long enough any mechanic can put up the silo by splicing them. The planks must be jointed, but not bevelled on the edges. The foundation may be stone or cement, if convenient; if not convenient, make a rim of double inch cedar boards like the rim for the curb of a well, and of the size intended to be built. Bend the first hoop, putting the nuts on the extreme ends of the rods or hoops, and lay it two inches from the bottom by the contemporary blocks. Bend the fifth hoop and raise it twelve feet from the bottom by means of stays, and plumb over the lower hoop. Raise the first plank and set it on the foundation inside the hoops, plumb the edge; drive a four-inch wire nail through under each hoop and bend it round the rod; this will keep the plank in its place. Set up the planks all the way round until the circle is complete. Tighten the hoops already on; put on the three between them and two above, when the silo will be ready for use. The hoops are made of five-eights round iron, the threaded ends being three-quarters. The blocks may be of hardwood (end pressure) or cast iron.

The only bottom required is the earth itself. It should be banked a little on the inside to keep the air from coming in under the planks. A roof, though an improvement, is not an absolute necessity, and adds to the cost. All the rain that will fall on the silage will not injure. In the winter put some poles on top, and cover with pea straw to keep out the snow.

(Since writing the above, experience has shown that if corn is well matured it is not necessary to plane the planks or joint them, if the planks are reasonably parallel. Go to the mill or lumber yard and if you can get them the length you require take them home and set up. If you cannot get them the length you require make two and set one on top of the other. Example: Required to build 24 feet high with 16-ft. plank,—Build 16 feet high; then cut 16-ft. plank in two and put eight feet on top. They will have to be exactly the same diameter. Use flat hoops at the joint two inches in width, covering the joint. The plank should be cut square at the top of the bottom half and also at the bottom of the top part. When up, toe-nail at the joint. This saves all need of a planer and the cost incurred, and will answer all practical purposes.)

[NOTE.—The writer in constructing a 30-foot silo, 15 feet in diameter, last summer used 16- and 14-foot planks. Instead of placing all the 16's in the bottom, they were alternated with the 14's, so that a broken splice was made. This we consider stronger than Mr. Gould's plan. The planks, however, need to be sized in such a case.—EDITOR F. A.]

The following table will give the approximate capacity of various sized silos. It is safe to estimate fifty cubic feet per ton and four and a half tons for each animal during the winter.

| DIAMETER OF SILO IN FEET. | DEPTH OF SILO. | | | |
|---|---|---|---|---|
| | 20 feet. | 22 feet. | 25 feet. | 30 feet. |
| 10 | 31 tons | 34 tons | 40 tons | 47 tons |
| 12 | 45 " | 49 " | 56 " | 65 " |
| 14 | 63 " | 68 " | 77 " | 90 " |
| 16 | 80 " | 90 " | 105 " | 130 " |
| 18 | 100 " | 110 " | 125 " | 150 " |
| 20 | 125 " | 135 " | 155 " | 185 " |
| 22 | 145 " | 160 " | 180 " | 215 " |

Ontario Co, Ont. JOS. E. GOULD.

## The Octagonal Silo and Summer Feeding of Silage Growing in Favor.

To the Editor FARMER'S ADVOCATE:

SIR,—In answer to your request in May 16th issue of the FARMER'S ADVOCATE relating to the silos in this locality, I may say that I have looked the matter up a little and will answer the questions to the best of my ability. I find on enquiry at the Avonbank cheese and butter factory that they had during the winter of '97-'98 something like 92 patrons. We took the amount of milk received in one day at the factory in the second week of April. This would be the milk of two days, as it was only drawn every two days at that time. The amount of milk received was 25,300 pounds, of which the patrons, 31 in number at that time, who have silos sent 12,750 pounds. Since the cheese-making season has commenced, on May 1st, many of these patrons have gone to other factories which are more convenient, leaving somewhere about 70 patrons at the present time, 31 of whom have silos. These 31 patrons will furnish two-thirds of the milk received. All the large patrons have silos, with two exceptions. The first silo was built in 1890. Last year there were built five silos—three octagonal and two tubs. This year preparations are being made for five, four of them being octagonal, and one is being built with the barn. There are only three stave silos in the district. There are more silos than the number given in this district, but their milk is taken elsewhere, some to St. Mary's creamery and elsewhere.

Perhaps one fourth of those with silos have fed ensilage in the summer months. The others have not silo capacity to save any from winter consumption. Those who have fed it speak highly of it, some going so far as to say that in two summers' feeding they consider that the cost of the silo has been realized. The number using it in summer is increasing, and will increase just as those who are without silos are planning to have them as soon as circumstances permit.

There are no cement silos throughout. Some of them have cement foundations, but the superstructures are all of wood. This is partly owing to the fact of two or three cement silos cracking in the adjacent localities two or three years ago through bad construction. Cement answers well for a foundation, and would, if carefully built, make the entire building, though costly at first, practically indestructible. My opinion is that the coming silo will be made of cement, and round. If wires and iron rods are built in the cement it makes a perfectly strong structure. While many will continue to build stave silos and other cheap forms, chiefly on account of time in building and cost, it is a foregone conclusion among those that have them that the best is the cheapest. JOS. MOUNTAIN.

Perth Co., Ont.

P. S.—Since writing you *re* the silos in the Avonbank district I have learned of four others building this season, three of these octagonal and one tub. The octagonal ones will be built of cement foundation chiefly and lumber superstructure. The tub is being built by a renter. For such they are the best, as they can be taken down and taken away. Some of those building the octagonal will make an excavation of three or four feet. The earth taken out will be banked against the cement, thus making a cool receptacle for summer feed. We are now feeding from a tub silo. The feed is poor—the warm weather has a bad effect on the silage. The tub is not best for summer feeding, as the one thickness of boards admits the heat readily. I have heard men who have built partly of cement and partly of lumber regret that they had not built all of cement. There is some complaint of rats doing damage this year in some silos. In building this should be guarded against. J. M.

## Rape for the Sheep and Young Cattle.

The value of rape for fall feed for sheep and cattle, other than milch cows, is only fully appreciated by those who have learned its worth by experience. Not only does it come in at a season of the year when other pastures are usually bare, but its food value per acre should give it a place on every farm where cattle or sheep are reared. No other pasture crop we know of seems to promote growth and put on flesh as rapidly as rape, especially when the crop is well grown before turning into and when care is exercised in accustoming stock to it. It is especially valuable for sheep, and serves an excellent purpose in toning up ewes for the breeding season, thus preparing for a full crop of vigorous lambs. For lambs, after weaning, it fills the gap well, causing the youngsters to forge ahead instead of losing their lamb flesh and standing still, as young animals are liable to do after weaning. We know, too, that rape is well suited for pasturing young cattle before going into winter quarters, either to be held over in nice growing condition or to be fattened. For many years we have grown rape for sheep fodder and have found it especially valuable for ram lambs to rush them on to be ready for breeding in their first fall, but we esteem it of great value for all ages and classes of sheep. In recent years, however, we have used it for calves, yearling and two-year-old cattle, and we are convinced that no other sort of pasture will cause young animals to thrive as rapidly. It seems to loosen up their hides and lay on flesh in a remarkable way, which seems to continue right on through the winter with ordinarily good feeding on such as ensilage, straw, hay and roots, provided other favorable conditions are supplied. For sheep pasture we usually sow rape as we do turnips, on similarly prepared land and about the same time. When sowing on land that requires cleaning, we sow in drills 24 to 28 inches apart, about two pounds of seed per acre. This, if frequently cultivated, will grow a crop that will supply an enormous quantity of fodder. We believe Mr. Rennie, of the Ontario Experimental Farm, saves the rape he feeds to fattening steers up till Christmas, by cutting it and piling it in small heaps just before freezing up. He places great value upon it as an invigorating starter for the fattening period. On land that is clean and mellow broadcast sowing does well provided the season is not too dry, when cultivation would, if it could be given, save the moisture and cause a continuous growth. We have grown good crops of rape sown on inverted sod after hay has been taken off, or where barley or early peas have grown, in moist seasons, but not infrequently germination is slow and uneven at that season. It is, therefore, well to prepare a piece of ground properly and sow it during the first three weeks of June. For sowing broadcast about four pounds per acre is sufficient, sown like clover seed alone on well-prepared soil and followed by harrowing and rolling. We usually mix in a little white (Greystone) turnip seed, about one pound to six of rape, and often get good-sized roots in spots where the rape is thin. Both sheep and cattle seem to enjoy gnawing these out, and no doubt do well upon them. We do not see why a sprinkling of cabbage seed would not be desirable, although we have never given it a trial. It would afford variety of good foods, and that is a desirable thing. We would like to hear of more people giving rape a trial, as we are convinced it will do them good service.

# APIARY.

## Preventing After-Swarming.

The swarming season is an anxious one with the beekeeper, especially with the novice or amateur. Small hives or those crowded for room for the queen to lay induce swarming unduly. Any impediment to the free access to all parts of the hive, not only for the passage of the bees, but for the free circulation of air, will tend to make them uncomfortable and induce the swarming impulse. Separators, drone-traps, queen-excluders, and other like contrivances that have been praised from time to time by enthusiasts, but which hinder or confine the bees, are sure to help inhance the swarming fever, says C. P. Dadant, in *American Bee Journal*. It is for this reason that it is wise to favor open sections, so as to allow the bees to pass freely from one to another. With closed sections the bees have to descend to the lower department, or rather to the space above it, in order to pass from one super to another. This can be compared only to a house in which the upstairs rooms would have no door of communication with each other, but would have each a stairway communicating with the lower department.

Mr. Dadant's treatment of swarms coming off after the first swarm has been secured in a separate hive is to return the swarm to the parent hive about forty-eight hours after swarming. This does not prevent swarming, but simply disposes of the swarm and the inconvenience and loss by having too great a number of weakened colonies, and the result is finally the same (except the labor involved) as if the colony had not swarmed. With the first swarm this has little effect, but with the second or third it usually has the full effect of subduing the excited condition of the bees. The colony is thrown back into the normal state, and honey gathering is no longer interrupted, unless a protracted honey crop of great proportions or the neglect of the apiarist to give room should cause another spell of feverish excitement later.

When hiving a second swarm to be returned to the parent hive, it may be temporarily put into any kind of a box, a nail keg, or in fact any vessel that will hold them for a short time. As a general rule, it is well to look to the comfort of the bees, otherwise to give them plenty of room and plenty of air and shade.

Another method to prevent after-swarms consists in removing the hive from its stand at the issue of the first swarm, and place the swarm in its stead. This removes all the old bees and throws the entire working-force on the first swarm, which then becomes the main colony, and may be looked to for the largest yield of honey.

Still another plan of dealing with a swarm that persists in leaving the hive is to catch them in a bag swarm-catcher, and leave them in it for twenty-four hours, when they will be so glad to get home they will not care to leave again.

# DAIRY.

## The Aeration and Cooling of Milk.

Scientists tell us that the milk coming from a healthy cow, fed pure food, is virtually free from germs, but practice teaches us that it is impossible to secure the milk in that condition.

Even if the milk comes from a perfectly clean stable, where the cows and everything else are kept clean, the immediate aeration and cooling of the milk is of incalculable value, providing always that it is done in a room where the air is clean.

Though no scientific explanation can be given us as to the reason why aeration improves the milk, yet it seems to be possible that it may be caused by the fact that many of the bacteria causing taint develop best where the air is excluded. That aeration eliminates many odors caused by gases is acknowledged by all.

That cooling the milk at once after milking is an enormous help in preserving it is easily understood when we know that the development of all spores and bacteria is retarded exactly in proportion to the reduction of temperature. This is best understood by the bacteriological experiments, which showed that milk containing originally 975 bacteria, kept at 59 degrees, multiplied in three hours 1.06 times; in six hours, 2.5 times; and in nine hours, 5 times; whereas at 95 degrees they multiplied in three hours, 4 times; in six hours, 1,290, and in nine hours, 3,794 times. On the other hand, if kept at 45 degrees, having been cooled to that temperature at once after milking, there is hardly any increase at all. It is thus evident that, combining aeration with cooling as soon as possible after milking, we gain a double effect, and that is best obtained by letting the milk flow over a surface of tin or tinned copper which is cooled by cold water or ice.

In view of some practical experiments made by me, I cannot urge the aerating and cooling of all milk too strongly, not only for direct consumption, but for creameries and cheese factories.

I do not fear being accused of exaggeration if I claim that if all milk brought to our factories were thus treated, it would improve the quality of our butter at least one-fourth cent and our cheese one-half cent per pound, and this would virtually be an increased annual value of these products aggregating over one million dollars.—*Prize essay by J. H. Monrad, Ill.*