

Tile Drain or Ditch.

1. What size tile will it require to drain the surface water from 200 acres of clay land, drain about 200 rods long, about 8 feet of fall.

2. Which would be the cheapest and best, a tile drain or an open ditch?

3. What would such tile cost; or could you give me the address of some firm which manufactures molds for making cement tile for farm underdrain, and how long should such tile be?

Gas Line, Ont.

G. N.

Ans.—The amount of surface water from a field depends so much upon circumstances, some controllable and others beyond control, that it is impossible to specify definitely the size of tile necessary to carry the run-off. It depends, of course, upon the amount of rainfall, and not the amount merely, but also the intensity—that is, the amount which may fall within a given time. It is obvious that when a fall of one inch of rain occurs in twelve hours, a larger proportion will run off the surface than if the same amount of rainfall were distributed over three days. Then, the amount of run-off depends upon the slope of the ground. In this instance the slope is slight, being about three inches in one hundred feet, consequently the run-off to be calculated upon is less than would be with a greater fall. Further, the run-off depends upon the condition of the soil itself, not merely its texture, which in this instance is clay, but upon the manner of its preparation. The field should be cultivated in the autumn to reduce the amount of run-off to a minimum, for it is better to allow the water to soak into the ground than to wash the surface. A drain to take the run-off from an area this size, must, however, take into consideration the probability of heavy summer showers, when perhaps the ground is relatively packed and smooth. If it were to provide for underdrainage from this amount of land, I would recommend a twelve-inch tile, but for surface run-off merely, I think a smaller size would be adequate. It might be a good plan in this instance to combine the underdrain with the open ditch by constructing a wide, shallow, open ditch, and underneath it placing 8-inch tile, which, with the open ditch to provide for occasional floods, ought to carry the run-off from this amount of land. Eight-inch tile is quoted at \$55 per thousand. Two hundred rods of this would cost \$181.50, not including carriage. Digging the ditch for the tile would cost about \$2.50 for one hundred feet, which would be \$82.50 additional, making a total of \$264 for the underdrain. The quotation for tile is based upon prices at the yards—for drain tile, not cement. Cement tile would, of course, cost more. I have not at hand prices for these.

Undoubtedly, an open ditch would cost less in the first place than a tile drain, although the open ditch might cost more in the end, on account of the constant attention which such a ditch would require, and the loss of land consequent upon the use of the ditch for this purpose.

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To Keep Stacks of Corn from Moulding.

An American exchange prints a cut of a simple device for building shocks of cornstalks around so as to afford a degree of ventilation and keep them from moulding. It consists of four upright pieces, each ten feet long, which are used as corner posts; cross-pieces, each three feet long, are fastened on all sides six or eight inches from the bottom. A set of shorter pieces are provided for placing about half way up, and another set, each eighteen inches long, are nailed on the uprights near the top.

THE DAIRY.

Western Ontario Cheese-factory Instruction in 1905.

During the series of seven district meetings held in the latter part of November at various points by the Western Ontario Dairymen's Association, Secretary G. H. Barr, reviewing the instruction work for 1905, said that of the 217 cheese factories in the Western district, 170 received instruction from the Association's instructors, and, of course, put up the required fee therefor. Of the remaining 47, all but 19 outlying ones could very well have been included by the instructors in the eight instruction districts. These 19 he did not think it was worth trying to include. The instruction this year has been quite satisfactory, factorymen and buyers being more in sympathy with it than ever before. The latter having advised the Association's secretary in certain cases where they knew attention or help was needed. There has been little complaint about the instructors' work, or about the fee charged the factories. Only one man complained about the sliding scale by which the fee was gauged according to the make. On the whole, Mr. Barr thought the sliding scale was advisable. He believed that if all the factories had to pay

the present maximum of fifteen dollars, a good many of the smaller ones would drop out and receive no instruction at all.

The quality of our cheese, taking the season all through, has been the best we have ever had. We have got away from those hard, dry cheese, except for about ten days in July, and an opportunity rise in price let a lot of them out promptly without much injury to anyone. Our cheese are more meaty and fatter, one reason being that we have been shipping out closer to the hoop, and the makers did not require to salt so heavily. Our makers have been paying more attention to cutting the curds in the vats and to cooking them, and that, he added, is where the cheese is really made.

The only fly in the ointment was the fact that the past summer had been the worst for tampering with milk by the patrons in the history of the Western Association. Scarcely a factory but had a case of it. He thought, perhaps, the only way to check it was to show the guilty ones up. There has been only one prosecution this summer, and he thought perhaps patrons were getting the idea that they were in little or no danger of being prosecuted. He seemed to presage a more resolute attitude on this matter next summer.

Under the head of suggestions for 1906, the opinion was expressed that our instructors were spending too much time in the factories. He thought it would be better in many cases if the instructor would go around in company of a local director, or, preferably, the maker, and visit all the patrons on a concession, not singling out the bad ones only, for this kind of discrimination causes friction. The above plan has worked well this summer wherever tried. Then, after such a visitation, let the maker insist upon first-class milk from that territory, otherwise the patrons would come to look upon such a visit as something that need not bother them, and the same kind of milk would be sent as before. First show the people how to take care of their milk, and then let the man at weigh-stand reject any thing not up to the mark. The great trouble is the makers are afraid to refuse bad milk for fear of losing patrons to neighboring factories or to creameries. An understanding among makers was advised, so that none will accept milk refused by another. In the Ingersoll district they are standing together, and one case was cited where a man whose milk had been returned sent to another factory, was refused, went back to his own factory, and has been a good patron since. Wherever you find a maker who is in a position to insist upon good milk, you find the best conditions. In one case two neighboring factorymen had their territory divided with a boundary line. One of them, in particular, insisted upon first-class milk and got it, and turned out excellent cheese. But in some way trouble was brewed between the two, and each went after all the milk he could get. Result: Trouble in those factories this year, and buyers complaining about the quality of the cheese. Some system should be devised by which factories would not have to compete in each other's territory for milk.

APIARY.

No Alchemy in Apiculture.

The prudent apiarist, says Langstroth, in discussing the feeding of honey bees, will regard feeding—the little given by way of encouragement excepted—as an evil to be submitted to only when it cannot be avoided, and will much prefer that they should obtain their supplies in the manner so beautifully described by Shakespeare, whose inimitable writings furnish us, on almost every subject, with the happiest illustrations:

"So work the honeybees,
Creatures that, by a rule in Nature, teach
The art of order to a peopled kingdom.
They have a king and officers of sorts,
Where some, like magistrates, correct at home,
Others, like merchants, venture trade abroad;
Others, like soldiers, armed in their stings,
Make boot upon the Summer's velvet buds;
Which pillage they, with merry march, bring home
To the tent royal of their emperor.
Who, busied in his majesty, surveys
The singing masons building roofs of gold;
The civil citizens kneading up the honey;
The poor mechanic porters crowding in
Their heavy burdens at his narrow gate;
The sad-eyed justice, with his surly hum,
Delivering o'er, to executors pale,
The lazy, yawning drone."

All attempts to derive profit from selling cheap honey or syrup fed to bees, have invariably proved unsuccessful. The notion that they can change all sweets, however poor their quality, into honey, on the same principle that cows secrete milk from any acceptable food, is a complete delusion.

It is true that they can make white comb from almost every liquid sweet, because wax being a natural secretion of the bee, can be made from

all saccharine substances, as fat can be put upon the ribs of an ox by any kind of nourishing food. But the quality of the comb has nothing to do with its contents; and the attempt to sell, as a prime article, inferior sweets, stored in beautiful comb, would be as truly a fraud as to offer for good money, coins which, although pure on the outside, contain a baser metal within.

Different kinds of honey or sugar syrup fed to the bees can be as readily distinguished, after they have sealed them up, as before.

The Golden Age of beekeeping, in which bees are to transmute inferior sweets into such balmy spoils as were gathered on Hybla or Hymettus, is as far from prosaic reality as the visions of the poet, who saw—

"A golden hive, on a golden bank,
Where golden bees, by alchemical prank,
Gather gold instead of honey."

Even if cheap sugar could be "made over" by the bees so as to taste like honey, it would cost the producer, taking into account the amount consumed in elaborating wax, almost if not quite, as much as the market price of white clover honey; and, if he feeds his bees after the natural supplies are over, they will suffer from filling up their brood cells.

Bees: Their Value As Fertilizing Blossoms.

By R. F. Holtermann.

The report on page 1655 of the "Farmer's Advocate" mentions a resolution which was drafted and introduced by me at the last meeting of the Ontario Beekeepers' Association, and it was passed by that body. This resolution, as far as I am concerned, is the outcome of the experience of many years, and during the past summer I have been saying to my help in the apiaries and the students which were with me during the summer that I would submit a motion which would not only cover investigations along the line of the value of bees as fertilizers, but which would also ask for the testimony of any of those who believe the visits of bees are injurious to crops.

It may be a matter of surprise for many, in fact, the most of your readers, to hear that anyone is under the impression that it lessens the crop to have the bees gather nectar from the flowers. We know that such eminent investigators as Darwin and others have come to the conclusion that bees are great aids in the fertilization of blossoms. And yet there are, I believe, a few who honestly think otherwise. We want to respect those who think honestly, and seek, if we can, to convince them as to what is right, and this resolution goes further than anything I have yet heard of in that, if the Minister of Agriculture grants the request, the evidence, if any contrary to the general thought will be asked for, and if secured, published. I may say that just the past season I have seen abundant evidence of the value of the honeybees in alsike clover (for seed) fields. I had about one hundred colonies of bees at Mr. Robt. Nixon's, Renton, Ont.; I had about the same number three miles south at Mr. C. H. Shand's, and another one hundred three miles north of Mr. Nixon's, at Mr. Weldon Porter's. The day after Mr. Nixon threshed his clover seed he said to me: "Well, I do not know if the bees did it, but I had the finest yield of clover seed I ever had in my life." Four miles east of there I hear clover fields were not worth threshing. Mr. Shand told me: "We had a fine crop of clover seed, and I know now why they have been able to grow clover seed in Mr. Beaupre's neighborhood and not in ours. Mr. Beaupre keeps a lot of bees." Mr. Joseph Brethour, Burford, said to me this fall: "I know our alsike was not worth threshing, but I know it is because not enough bees are kept," and asked me if I could not establish an apiary there. Buckwheat is the same. On one farm where I had an apiary the farmer secured more than 600 bushels of buckwheat; and, while the bees cannot prevent fields scorching if hot winds and sun strikes them when the bloom is in a certain condition, and the bees cannot make the fields fertile, yet, generally, the fields nearest the bees give the best returns. In one township where alsike is grown, near Lindsay—Marion—there were a year ago over 2,000 colonies of bees; an immense number of bees are required to do this work. From the fact that beekeepers are anxious to have these investigations carried on, it is shown we look to the results with confidence, and I do not hesitate to say that, while in all seasons the results are not so marked, yet the best results cannot be obtained in growing the varieties of fruits, clover and buckwheat without the help of the bee. In the days when we are seeking to avail ourselves of anything that will increase the profits in agriculture in its various branches, to carry out investigations which will draw attention to the value of the bee will be a valuable work, and it will convince the few who honestly hold the opinion that bees are not valuable in this respect. Since writing the above, I find in