The first of these districts, Belgium-Holland No. 1, was completed three years ago. On this job we of course made some of the mistakes that inexperienced commissioners are heir to, but taken as a whole we have a pretty good ditch. The crops raised in this district as a result of drainage materially improved the sentiment for drainage in the locality.

The other four districts are completely organized. On two of them construction work is in progress now, in the third district, the Belgium-Holland No. 2, the dredge is on the job ready to begin work in the spring. In this district the ditch furnishes outlet for the sewage system of the village of Belgium, subject to the approval of the state sanitary engineer.

The maximum cost per acre for the main ditch in these districts is as follows:

- Belgium-Holland No. 1 $36.00 per acre
- Belgium-Holland No. 2 25.00 per acre
- Jackson-Germantown 21.00 per acre
- Hartford-Addison 20.00 per acre
- Rockford-Polk (estimated) 25.00 per acre

The cost of tiling, clearing, etc., added to the cost of the outlet, frequently brings the total cost of reclaiming this land up to $75.00 per acre. Reclamation of our marshes even at this price is a good investment.

Most of this land will be cropped as soon as drainage makes it available, but only a few of our farmers know how to manage marsh land successfully. The drainage and development of marsh land could be greatly stimulated if a demonstration field were conducted under expert direction in each of our drainage districts. In this way farmers could observe what good drainage does, and note the kind of crops which are adapted to growing on drained marsh lands. They would be convinced that good drainage pays but that the money spent for makeshift ditches is usually thrown away.

BIG TILE IN PLACE OF OPEN DITCHES

A. K. Reindahl, Madison, Wis.

The Starkweather Drainage District contains approximately 3,000 acres of what formerly were marsh lands and is located immediately east and northeast of the city of Madison.
It consists of two distinct areas, each drained by a main ditch called the east branch and the west branch respectively. These two main ditches converge near the outlet forming one main ditch until it reaches Lake Monona. This main ditch, together with the west branch, form the eastern boundary line of the city of Madison.

Some of the lands in this drainage district lie within the city limits, but by far a larger part of it lies immediately northeast of the city.

This drainage district has 10 or 12 laterals varying from half a mile to two miles in length. Most of them empty directly into the main ditches. These laterals have a theoretical bottom width of three feet, a slope of one to one and an average depth of six feet.

Owing to the delay and inability of the drainage contractor to complete his work we induced the property owners affected by three of these laterals to substitute large tile in the place of these open ditches. They did very reluctantly. These tile drains have given almost perfect satisfaction. Most of the marsh land adjacent to and affected by them has been tiled by the farmers. It has been apparently an inducement to them to tile their land. Of course, these large tile drains are of no particular benefit unless the lands affected by them are tiled, but farmers should expect this.

The open lateral ditches, on the other hand, have not given satisfaction. They fill up with mud and sediment, grow full of weeds, are unsightly and besides waste considerable land, especially where we were not able to locate them on the boundary lines of the farms. Until we substitute large tile drains in the place of cleaning them out they will be a constant source of trouble and expense. The farmers now are all wishing we had put in large tile in the place of these open ditches.

If we had this work to do over again I am sure we would put in large tile instead of these open ditches in every instance except in the lower end of one of them where the water backs up from the lake into the ditch. Even now where we have tiled this land we have already abandoned two of these open ditches and in the place of cleaning them out we have put in large tile in their place, and it costs more to put in the tile now than it would have in the first place.
More land has been tiled and put under cultivation in this drainage district than in any other drainage district in Dane County. I may safely say that at least three-fourths of it has been tiled and a large part of it put under cultivation. About 1,000 A. has been tiled by two organized sub-districts.

The first one of these sub-districts is called the Orchard Farm Gardens. It consists of a tract of level land three-quarters of a mile in width and a mile and a half in length, containing 680 acres of land. It is located two miles from the city of Madison. It is all tiled and under cultivation. Immense crops of all kinds of garden truck and small grain are raised on it as well as various other crops.

From my experience as a drainage commissioner I would like to emphasize the following points:

Eliminate as many of the lateral ditches as possible and put in their place large tile drains. If surface runs are necessary for taking care of the flood waters they can be made better and more cheaply with a Martin grader or an ordinary road grader. They should be made wide and comparatively shallow with a sodded bottom.

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BREAKAGE OF TILE IN SHIPMENT

James A. Reeves, Streator, Ill., with Streator Drain Tile Co.

Car shortage has increased the breakage of tile in shipment. Dilapidated stock cars and box cars unfit for general merchandise have been given us. Furthermore we have been forced to load heavily.

As a great many manufacturers make their prices f.o.b. factory it is easy to see how important the subject of breakage becomes to the consumer, and it is therefore only fair to supply figures showing about what the breakage in shipping amounts to.

All manufacturers should take precautions against unusual damage by properly crating and packing, and there have been certain definite regulations established by classification committees as to how this should be done. Special representatives call on manufacturers at frequent intervals suggesting how improvements in plans can be effected. The drawback is, that in their plans tile are tile, regardless of size and kind of material they are made from. What may insure better results with some