# **Underdraining and its Advantages**

For underdraining there is nothing better than the ordinary round dram tile. The size i b be used can only be decided by a study of the conditions under which the drain is to work. They should be large enough to carry off in twenty-four to forty-eight hours the surplus water from the they should not be too large, as the cost of underdraining is governed largely by the size of the tile used. It may be mentioned that the capacity of round water pipes is in proportion to the squares of their diameters. That is, under the same conditions, a two-inch pipe will carry four times as much water, and a threeinch pipe nine times as much water as a one-inch pipe. In fact, the larger proportion, because of the greater friction in the small pipe. In ordinary cases, five or ski-nch tile are recommended for the lower part of a main prior, for the branch to you and shaft to three-inch are preferable.

T is seldom necessary to lay drains more than four feet below the surface, and in most cases two and a half to three and a half feet will be found sufficient. The proper distance between branch drains depends on the quantity of water to be carried and the nature of the subsoli. In general practice the lines of tile are usually plated from thy too calls soil, however, thirty feet would not be too close.

The drain may be opened up in the first place by passing three or four times along the same track with an ordinary plow. Then the subsoil may be broken up with a good strong subsoil plow. In this way the earth may be loosened to a depth of two feet or more and thrown out with narrow shoulds. The bottom of the drain should be dug with narrow draining spades, made for the purpose. The dicts should be kept straight by means of a line stretched tightly near that for the edge. In ordinary cases, the dicth nerd not be more than a foot wide at the top and four to six inches at the bottom, the width of course increasing in proportion to the depth of the drain and the size of the tile.

As a rule drains should be given as much fall as possible, and the gradient should not be less than two inches in one huadred feet, if this can be secured. Careful leveling is necessary to ensure a uniform fall throughout the course of adrais. As a simple method for this purpose, one of our leading authorities recommends the under from strips of one-inch boards, three or four inches wide. The length of the standard varies according to the depth of the drain. A cross-piece about two feet long is mailed on the top of the standard. These crossheads are then placed along the line of the ditch so that the cross pieces are in line. The proper grade is ascertained by the use of the ordinary spite a strain. We find the set at the bottom of the drain and marked in line with the tops of the cross-heads; this will, by testing every few feet, give a true grade for the tiles.

When the bottom of the drain has been brought to the proper grade and shape, the tile should be laid very carefully to secure perfectly close joints. With the aid of a tile hook

they may be placed rapidly and accurately without getting into the ditch. Some prefer to place the tile with the hand, standing in the ditch, and stepping carefully on each tile as laid. In covering it is preferable to put the surface soil next the tiles, for if properly packed, it will prevent the subsoil from getting in at the points. The laying should begin at the outlet of the main drain, and where connection is made with branch lines, enough of the branch should be laid to primit the main to all patterns of the main to the main line should be made at an acute angle, or where the fall is sufficient, from above the axis of the main. This is necessary in order to revent the

All junctions of branches with the main line should be made at an acute angle, or where the fall is sufficient, from above the axis of the main. This is necessary in order to prevent the deposit of silt and the consequent blocking of the tile at the junction. Specially made joint tile may be used, or the connection may be made by cutting a hole in the main tile with a tile pick. The outlet of the drain should be so placed that there will be a free flow of water. If protected with masoury and a gatta there will be a free flow of water. If protected with masoury and a gatta there will be a free flow of water. If protected with masoury and a gatta there will be a free flow of the second state of the quark drain tile may be used to advantage for the last ten or fifteen feet to prevent injury by frost. In closing, it may be well to recall the fact that trees should not be allowed to grow near a line of tile, through which water flows during the greater part of the year, as the roots are apt to enter at the joints in search of water, and in course of time close the drain. Willows, poplars and elms are particularly objectionable in this respect.

#### ADVANTAGES OF DRAINING

The advantages of draining may be summed up as follows: (1) The soils are more easily and sooner worked. (2) Lime and manures act better. (3) Seed time and harvest earlier. (4) Larger and better crops. (5) Good natural grasses spring up. (6) Green cropping can be introduced. (7) The climate becomes warmer. (8) Thre are fewer noxious insects. (8) The health of the live stock is improved.

### Ditching Plow

The novelty in this plow resides principally in the changes made in the shape of the plow point and mold boards. The point or share is of the shovel type, with this difference, that the angle of the sides, where they join at the front or cutting edge, is quite obtuse, so that the sole of the



plow is broad and the share cuts a broad slice. This slice of earth cut by the share and its wings is lifted up and thrown out by the mold board to each side. The forwardly presented cutting edges of the wings render unnecessary the use of colters to cut the sides of the ditch, and the outwardly extending wings serve to assist the cutting and lifting action.

## Plowing up the Range Country

Considerable interest attaches to the spectacle of the conversion of the ranch land of southern Alberta to cultivation. There is a large influx of settlement into what was considered at one time the heart of the ranch country, viz. from Calgary south to the boundary. There are two optimers at broad saturated with ranch traditions and regards the land as upprofitable for agriculture. The newcomer generally comes with the full farm equipment of plows, harrows and binders. Thus far the latter has had the best of the argument. Though his encouragement has come almost wholly from the land agents and real estate men, his returns have been bar even in the optiment has the two years been the best in the provinces of Saskatchewan or Alberta. Over fifty bushels of winter wheat and twice as much oats have been harvested.

It is to be expected that the inauguration of cultivation will result in the increase of available moisture from the fining of the soil. Not only will moisture be received readily by the fact of cultivation, but the permanent available moisture will be increased by the saturation of the subsoil.

available moisture will be increased by the saturation of the subsoil. It may be said that the best methods of cultivation are being studied and promoted. It is probable that following will be a prominent feature of cropping, and fall crops will be strongly in vogue. The first breaking is usually done not later than June, by which the winter and pring moiso of vegetation. Breaking is followed by disking almost immediately to break and compact the soil and aid decomposition of the soil. Frequent diskings during summer follow to break the exportation. Grain is sown in July and August, so as to get a good stand and hasten maturity the following season. Grain is sown thin to insure right maturing of a moderat thick crop in case the season is very dry. If the season is favorable a stisfactory yield. The deep feeding alfalfa is going

The deep feeding alfalfa is going to be popular in the semi-dry country, J. McCAIG.

#### J# Farmers' Institute Work

Supt. Putnam reports the June institute meetings as being fairly successful. The seed meetings, as a rule, were better attended than last year, and more interest taken in the work. The Women's Institutes have,