

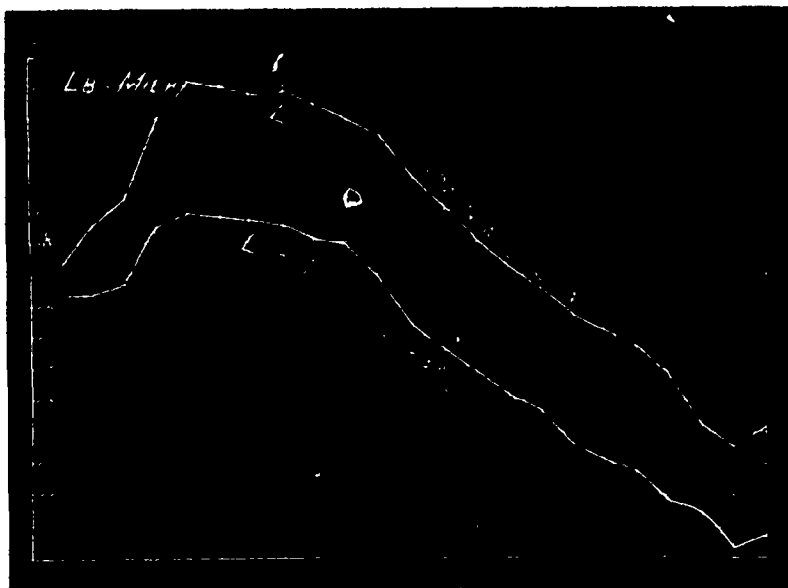
and the results are shown in the accompanying diagrams by the curved lines, which show the great increase in both milk and butter. Every night and morning each cow was fed a half gallon of a grain ration, composed of two parts corn meal, one part bran, and one part cotton-seed meal. The cows also gained rapidly in flesh.

A system of general good farming however, will keep the grass in such sufficient supply that it will not thus be necessary to feed grain at this season. At all events, it is far better to maintain a permanent and productive pasture turf from which a full yield of milk may be produced, than to depend upon a costly grain diet for the same result. It is quite as important for profit to reduce the cost of milk production, as it is to raise the price of dairy goods. It is an obvious fact that the average pastures in this State are not as productive as they have been in former years. There are areas of hill country, where but little good grass remains in the grazing fields, these nutritious species having been run out and replaced by a sort of fuzzy wire grass that soon becomes sere and brown. The botanists call it *Danthonia*, but it would be as worthless by any other name. Now, permanent pastures are what we want, provided that they are seeded to nutritious grasses. The great importance of this

the whole pasture cannot be benefited in this way, a portion of it may be, which would in a drought otherwise be dry and verdureless. If willows are encouraged to grow along the banks of these meadow and pasture streams, their shade will not only prevent a rapid evaporation of the moisture but will prevent a gullying away and destruction of the banks in time of freshets. Let us try to do more to build up our long neglected pastures. There is hardly any part of the farm on which a judicious outlay of money and well directed labor brings better and much more profitable returns than can be secured by the systematic, timely and careful improvement of our pastures. (*American Agriculturist*.)

#### SHADE FOR STOCK.

Stock of all kinds are not unlike mankind in some respects, and seek the shade whenever possible during the extreme heat of summer. To gratify this desire, shade should be provided wherever practicable, and the cheapest manner of doing this is through the medium of shade trees. One or two should be set out in each pasture, and be protected by a fence until thoroughly established. If the field be tilled, set the trees along the south line, selecting those of rapid growth and spreading branches. If



INCREASED MILK FLOW WHEN GRAIN IS ADDED TO PASTURE.

subject is not appreciated by dairymen. As the pastures run out and become less productive the dairymen turns to forage crops raised on other parts of the farm to make up the deficiency in feed. This is all right as a supplement for pasturage, but it is not good management to let the pastures lie unproductive, while depending wholly upon soiling crops. The pastures are the main stay after all, and on their productiveness dairying must stand or fall. If the pasture lot is treeless, plant shade trees at intervals; if it does not yield varieties of grass suitable for abundant milk production, break it up and reseed it to such as are more profitable. Fertilize a sterile pasture, and protect the sources of the springs that water it. Our fathers reclaimed these fields from the forest; we must reclaim them from the neglected and unprofitable condition into which they have fallen. Sometimes a brook or rivulet flowing through the grazing field may be utilised for purposes of irrigation, when the weather becomes dry. This plan involves little expense, and where the lay of the land makes it practicable, is an efficacious way of preventing a mid-summer decrease in the pasturage and milk yield. Although

they be fruit trees, they should be trimmed to a height of at least seven feet, and then allowed to branch out. While the trees are growing, it would be simply humane to provide a temporary shelter of some kind, such as setting a few posts, and covering with poles, upon which are thrown branches of evergreens, or even limbs of oak or other trees in full leaf. (1) This will afford a useful shelter, and if located upon a knoll or other naturally poor portion of the field, it will thoroughly enrich the soil. By changing its position yearly, various portions of the field will be benefited. All this takes but a little time, and can be done when other work is not pressing. By boarding up, late in the summer, the side from which the prevailing winds blow, a fair protection from the chilling blasts will be obtained, and the stock will return you the cost.

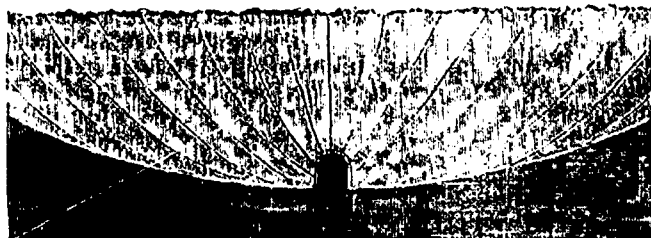
#### WHERE WATER ENTERS THE TILE DRAIN.

L. D. SNOOK.

Most farmers think that the water enters the tile drain only from the soil

(1) Far better build rough sheds than hinder the plough by shade-trees.—Ed.

above. This is certainly a wrong impression, and while it is true that the water in the soil immediately over the drain may enter the tile at or near the top, yet that three feet to each side settles nearly perpendicularly until it strikes the water-soaked soil, and then the natural force of gravity, atmospheric pressure, and absorptive attraction, causes it to enter the drain either at the bottom, or through the joints in the tile near the bottom. (1) The progress of water toward the tile is shown by the lines in the engraving. Immediately over the drain the course is downward; a little farther away the course is a little out of the perpendicular, falling until it strikes the water-



SECTION OF TILE-DRAINED LAND.

soaked soil. Should a section of an underdrain be examined a few hours after a heavy shower, the soil immediately over and in contact with the upper soil of the tile will be found quite dry, while the nearer the bottom of the tile is approached, the greater amount of moisture will be found, while at the bottom it will be completely water soaked. Hence, it is useless to place sods or other porous material over the top of tile at the joints, for the purpose of allowing the water to enter. (2) In fact, sod, hay, straw, or other vegetable matter, is the very worst covering to use, as it is only a matter of a few months when it will perish, leaving a greater or less space, that in time particles of earth will fall or wash into and very much of this loose material finds its way into the drain, often causing stoppage and trouble. For horsehoe tile, a covering of a piece of tough paper, at the joints, is the best thing possible, and may extend down the sides to within half an inch of the bottom. Often, by turning a tile end for end, a better joint is made. Fit them close. There is no danger of getting them too tight. EX.

#### THE FARMER OF THE FUTURE.

Mental, no less than physical perfection, will be the characteristic of the successful farmer henceforth.

The beauty, purity, and true manliness of a farmer's life should therefore be greatly in advance of the days when so much hard labour had to be performed thus wearing the energies to such an extent as to give very little opportunity for study.

It can scarcely be expected that men who have been plodding along for thirty, forty, or fifty years should appreciate the necessity of cultivating their intellects to enable them the better to cultivate their land. But even these should not be too old to learn, but remember that a teachable spirit should remain to the end of life. We have numerous examples in past history and at the present time, that the heart and brain of a healthy and sensible man never grows old.

A will, and a determination, are the chief factors in the achievement of knowledge, let the age of the student be

(1) This we have explained a dozen times before, but a good lesson loses nothing by repetition.—Ed.  
(2) Good.—Ed.

what it may. The greatest statesmen have introduced some of the most important and salutary measures at a period of their lives when it would be supposed their mental faculties would have been weakened by the infirmities of age. Look at Gladstone, who is trying to pass a law before the most determined opposition and the manipulation of which requires the most severe application of all the forces of his nature. Sophocles, Simonides, Theophrastus, Cato, Goethe, after they were eighty, wrote poems which are classics to day, and numerous other instances could be quoted to show that age is no bar to success—in the attainment and the uses of know-

ledge. Then let us old farmers not be clogs upon the energies of our young men by sticking to our antiquated notions, but fall into line and be ready to adopt such methods as the modern inventions and teaching of science may suggest.

There is an old saying that "the child is father to the man."

The present generation, however, have such advantages as never occurred to the minds of a former one, and they who do not benefit by them are greatly in fault.

It is difficult for a man of mature years to realise the wonderful changes that have taken place since the early part of the present century.

Then, machinery for agricultural purposes was almost unknown. Agricultural Chemistry, Entomology, Botany, and the other sciences were not dreamed of as being necessary to the education of a farmer. Muscle was the chief necessity; even reading, writing and arithmetic were deemed superfluous accomplishments in many cases—and the fool of the family was considered wise enough to be made a farmer. These ideas are exploded in this age of electricity and steam, and to keep up with the speed of the present age the farmer must be educated to the profession, if he is to succeed, as much as the Lawyer, the Physician or the Divine.

Among all the social and political events of the century, in any country, none are of greater importance than the improved system of agriculture. Upon the prosperity of the farmer, the hinges of society are hung, and, notwithstanding all the talk of legislation in his behalf, this prosperity depends chiefly upon himself.

As things now stand, over-production of an article of inferior quality only leads to failure. The public, of all classes, have learned to discriminate as to excellence or mediocrity in farm products, and the inferior cannot be disposed of while the superior meets a ready sale; therefore, we want to adopt means by which all we produce is as nearly first class as possible.

To accomplish this, every farm operation must be intelligently performed. The nature of soils must be studied; the influence and quality of fertilising materials understood, the breeds of cattle most suitable to the surroundings taken into consideration and the most economical foods as to profitable results, must be maturely thought of and provided.