

abuse of the use of ice should be avoided; that in the habitual use of large quantities of ice cold water, ice cold milk and ice cold cream as beverages, especially at meals.

Having thus carelessly scanned the uses of an ice supply on the farm let us consider for a moment the ice house. Where should it be built? Near the dairy certainly, adjoining it if possible, if, however, the dairy be small it may be built in any place convenient to the house. How should it be built? If inside a building already up, simply line with common lumber, leaving an 8 in. space to be filled with saw dust. Provide thorough drainage from the bottom and thorough ventilation at the top and the house is ready. An extra layer of 6 or 8 inches of saw dust all around the ice, which should be packed as closely as possible and all interstices filled with ice or snow or both, will ensure the keeping of the ice supply. If sawdust be difficult to get out straw or even uncut straw may be used, but a greater thickness will be found necessary. The size needed will depend upon the uses to which the ice is to be put. For a dairy of 7 or 8 cows about two blocks of ice daily will be needed for the "creamer" (size of blocks 18 in. side, cubic), while a very little extra will supply all the other demands to be made upon it. With a little more expense and labor a very satisfactory refrigerator may be built in one side of the ice house to keep dairy products, with a part partitioned off to keep fresh meats.

A little whitewash applied to the sides and roof of the ice house and the dairy will result in a saving of ice. When intending to use the ice in drinking water or in any such way it should be procured from clean spring water streams as a hygienic precaution.

Regulating Food and Drink.



Too much grain, hay, coarse food, etc., fed the horse, whether at work or not, is, as a rule, injurious. Perhaps a good rule to apply is to feed the horse 2 per cent. of his weight in oats and hay. As the horse has a small stomach he should be fed often. Unlike the human being the horse has a small stomach and no gall sack. Because of the lack of the latter organ a quick digestion follows, and for the former reason but a small amount of food should be fed at a time. The best food is oats rolled or crushed. These are invariably fed by the trainers of race horses and by our best breeders. They are worth from 20 to 25 per cent. more to the horse than whole grain, as the nutrients are more rapidly and easily digested. The digestion of whole grain is poor as the gastric juice cannot enter into them and do their absorptive work. It is said "Eclipse" had the largest stomach of any horse of recent times. By measurement it contained 12 quarts. From this fact it would seem that the stomach being so small and quickly filled, but two or three quarts of grain and a little hay should be fed at a time.

The watering of horses is a matter of paramount importance to the feeding. If this small stomach of the horse is loaded with food and in half hour the animal watered, the grain will be washed out undigested. A horse was fed on coarse beans and watered. Upon dissection these beans were found in the intestines 35 to 40 feet from the stomach. I repeat emphatically horses should not be watered until two or three hours after eating, or they should be watered a short time before feeding. I consider the best plan to water about half an hour before the time of feeding.

The horse is an animal that can get inordinately fat rapidly. In buying a horse rather choose a lean one than one in high condition, and feed him moderately, but not on corn or other almost strictly fattening foods.

Some horses have the habit of eating very ravenously, and very often as a result will always look starved and hawl looking. A good remedy in such a case is to place a quantity of stones about the size of hens eggs in the manger, which will necessitate slower feeding and result in giving him a brighter and better appearance in a very short time.

Agricultural Education.

BUT few subjects that come within the province of our magazine will at all compare in importance with that of education. Agriculture can never take the stand in the ranks with the other professions that its importance would seem to warrant, until those who cultivate the soil are better acquainted with the principles that govern their work, which at present appear matters of mystery and uncertainty even to those who profess to have some little claim to the appellation of educated farmers. The greatest difficulty that teachers, instructors, writers and lecturers have to contend with, in endeavoring to raise the masses into the sphere of higher educational attainments, is to convince the illiterate that they have anything to learn,—that they do not already know all that is to be known.

It always was, and we suppose always will be the case, that a much greater amount of manual labor is expended in the production of the common necessities of life than would be required if the operators understood the cause and effect of their various operations. Science has very liberally lent her aid to art in the numerous manufacturing branches of the day, and now is lending her powerful arm to agriculture, in a manner which does great credit to so useful and noble a profession. Any farmer who has made himself thoroughly acquainted with the science as well as the practice of agriculture, will no longer feel that he is engaged in a menial occupation; but that the cultivation of the soil is, to a man of great mental capacity and refined sensibilities, the most ennobling and instructive profession that he could possibly engage in.

A thoroughly clever farmer may manage his soil so, that with one half of the labor usually expended in preparing the ground for a crop he may obtain fully double the return that would be harvested from land expensively cultivated. At first thought the truth of this may seem questionable; if we visit different portions of our country and notice closely the systems of husbandry still practiced by many, not only the truthfulness of this assertion would impress itself upon us, but we would be forcibly struck with the fact that annually millions of dollars are spent in useless cultivation by farmers who attribute the success and failures of their experiments to the operations of blind chance.

Hitherto, too many of our farmers have been merely taught the labors of the farm mechanically and by rote, without any science. They have been taught the operations and the seasons, but unassisted by any analytical or inductive reasoning; and hence the difficulty to improve them, and the diversity of principles, and the uncertain basis on which much of their practice stands. They may attain a certain skill in practice, such as a working watchmaker may attain in putting together a watch, but no improvement can arise unless the laws and principles on which it must depend are known, and the mind (governed by right knowledge of cause and effect) be brought into action, enlightened but unfettered by previous practice. The time is now come when very different returns for the labor must be realized on the generality of soils, to leave the cultivators any profit, and the expenditure, too, must be lessened—not by a reduction of wages, but by still a more general use of improved machines and implements. One of the greatest misfortunes in the study of agriculture has been, that the varied knowledge its improved practice calls for, is either not understood or far too slowly rated; and indeed, it can be fully appreciated only by those who are engaged in the pursuit with proper education and views. You may make a mechanist, an engineer, an architect, a surgeon, a lawyer, or an accountant, by an education limited to the immediate knowledge to which either looks. An engineer need not know surgery—nor a surgeon the principles of building—nor an architect, law—nor an accountant, mechanics; but unless a farmer be so educated that he may select the best of everything with the most accurate judgment, and prove himself to be thoroughly acquainted with each of the varied departments of his calling, he cannot be expected to farm with the advantages that should accompany his large outlay of capital, and the distant and varied returns that attend it. The pursuit of agriculture is, therefore, one in which the scientists find a boundless field for research and investigation; but it is some times taken up by such too eagerly, and too generally attended with