

voices in common with the bees of any other hive. They do not know each other by the hats and coats they wear, as we do. Then how do they know each other? I have been sorely puzzled on this same point, and I have sometimes thought that they detected a robber simply because he acted like a robber, and for no other reason, just as a sharp policeman will detect a vagrant or a tramp by the way the fellow acts. He may pretend he has some sort of business on hand, but it is a pretty hard matter to make believe you are a business man when you are not. So I have thought it might be with the bees. A robber may try to pretend that he belongs in a certain hive, and I think they do try to do this very thing; but it is a pretty hard matter to deceive the sharp sentinel. In answer to the query, "What are you doing around here?" the robber is never able to give any satisfactory reply. I think I have seen them take hold of other robbers, and make a pretense of acting as sentinels. But even in this they had a cowardly and sheepish way that was pretty sure, sooner or later, to turn attention toward them.

Now, in regard to the matter of difference in scent. It may be that each hive has a peculiar scent or odor of its own that enables the inmates to detect any bee from any other hive; and it may be, also, that the queen gives this characteristic odor in the way you suggest; but it seems to me almost incredible, even though I can not give any other or better explanation, perhaps. In proof of your position, my good friend Schachinger, this occurs to me: A sagacious dog will scent his master's footsteps, even though a thousand people have passed along the same track—or, at least, I have been told so. Can any one tell me if the same is true? Take it along the busy street, for instance, and over a stone pavement, a thousand people may be passing, and the dog's master is only a certain one among this thousand, yet he follows him unerringly. It just now occurs to me that if each individual of the said thousand were in the habit of washing his feet every day, it might be a little more difficult.

Now, then, to go back to the bee question. Do bees detect robbers by the sense of smell, and no other way, or is it by behavior? One more point in the article above, I think, needs attention, and it is this: That whatever wonderful power or skill the bees possess, they do not learn it as we learn handwriting and language, for they live only four or five weeks; and yet, wonderful as it is, every bee in just these few short days is a perfect graduate in all the arts and sciences known to bee lore.

## Stocks

### Feeding and Watering Horses.

"A consideration of the anatomy of the horse's stomach affords some useful indications regarding feed and watering. When convenient, horses should be fed at short rather than at long intervals. This is an obvious indication, for the small size of the stomach precludes the horse from rapidly ingesting a quantity of food sufficient to serve him for a long period. This applies with even greater force to watering. It is a very common practice to water horses only three times a day, the water being by some given before meals, and by others afterwards. Whatever of these plans is adopted, the system is bad; but it is worse when the latter method is adopted. For when the horse, with his small stomach already filled with food, ingests a large quantity of water, a great portion of the food must be washed on into the intestine before the gastric juice has had time to act on it. And if it be the case that gastric juice is formed even in the fasting stomach, then watering before meals must wash away this juice into the intestine, where it is of no service. Horses should therefore have water at short intervals, and where practicable they should have free access to it in their mangers. When this is the case the horse drinks frequently, but never in quantities so great as practically to wash out his stomach."

The above paragraph in relation to the feeding and watering of horses, which was clipped from one of our exchanges is based on sound principles, but according to our views is not practical in regard to feeding. As a general rule the working hours, customs and habits peculiar to the animal, exclude the possibility, so far as convenience and economy are concerned, of feeding oftener than three times a day. The records of the past, compared with the experience of the writer during a long and successful practice of a veterinary surgeon, has demonstrated that horses which are fed regularly three times a day, in limited quantities, seldom get sick from digestive derangements, unless when previously exhausted from overworking or over-driving. The proper rules to be observed in feeding horses is to select sound oats and hay, and to feed it judiciously in proper quantities—being careful not to feed it when the subject is over-heated, and after feeding to allow a reasonable time for the animal to rest, to facilitate the digestive process. The owner should be satisfied with a reasonable day's work from his horses; if per chance one of them should manifest symptoms of fatigue the diet should be restricted for the time being, exhaustion of the nervous system from over-work deprives the

stomach of the necessary nerve force to perform the important function of digestion. The expenditure of nervous vital force in performing extra work naturally creates a desire for food, then the tired, worn out horse craves for the necessary nutriment to recuperate his wearied body, and the food that is fed to him is eagerly devoured; food taken into the stomach under such circumstances is rarely half masticated. If the reader will take sufficient time to look this matter over in a sensible manner, he will have to admit that one of the prolific causes of disease in horses is overwork imprudent feeding. Where does the trouble commence? We answer in the mouth. Instinct does not teach the exhausted, hungry horse to stop to consider whether the stomach is in a condition to receive the ration that is set before him; he devours it before it is half masticated, and the larger the ration the more he enjoys it. As we have already remarked the stomach of the horse (worn out from fatigue) it is not in a condition to receive this double ration, and especially when not half masticated. What is the consequence? The stomach not being equal to the double task imposed on it, fails to perform its functions, and indigestion in its most aggravated form is the result. The remarks in regard to watering horses is, according to our views, to a certain extent correct; water should not be allowed for at least one hour after eating, for the simple reason that the water in passing through the stomach to the *cæcum* (one of the large intestines of the horse), its proper receptacle, is liable to wash out of the small intestines some of the food before it has been acted on by the gastric secretions. There it would be liable to become a source of irritation and a cause of colic or some other serious disease. We do not think that any well-founded objection can be made to giving water to a horse before eating, provided the animal is not overheated, or unless the water is lower than the average temperature in warm weather. Very cold water given to the horse immediately before is liable to arrest the gastric secretions for the time being, and as a result impede the digestive functions. The proper way is to water often through the day while the animal is being worked, and to give it in small quantities.

### Cooking Food for Swine.

J. M. Stahl in a recent article says:—In cold weather much good is done by feeding hogs heated food. It warms up the body, and stimulates the digestive organs to vigorous action. It pays always to warm slops in cold weather. The main reason farmers do not feed more cooked food to their swine, is

fancied labor and trouble of preparing it. A good utensil is a large iron kettle, swung upon two poles of sufficiently strong wood. The bail is removed, and a piece of chain, forming a loop a foot long, is passed through each eye of the kettle, and over the respective poles. The poles are placed on forked sticks, set in the ground. The poles should be parallel, and as far apart as are the eyes of the kettle. Place near the kettle a large, light trough, made of two-inch pine boards, which may be situated in a small lot separated from the hog lot by a fence with a small gate. Old broken fence rails make excellent, cheap fuel; they ignite readily, give a quick, hot fire, and soon die down. When the cooking is done, rake the fire to one side, and bring the trough partially under the kettle on that side from which the fire has been removed. Raise the pole from that side out of the crotches, and let it down. This will tilt the kettle on the edge of the trough, and most of the food will be deposited in it; the balance is easily scooped out with a board or pan. When only one pole is used, it is difficult to get the cooked food into the trough. After the food has cooled sufficiently, open the gate in the fence, and let the hogs in to the feast. Managed in this way, the labor of cooking a kettle of food can be done in five minutes, and the only expense of making the ration is a few pieces of old rails.

### Winter and Spring Care of Calves.

The first winter is a trying time for calves. Some, who mean to be judicious feeders, think the calf needs to be toughened the first winter, so that he may not become too delicate, and may have a healthy strong constitution. So the calf is often required to dig for his grass under the snow, pick at straw stacks, exposed in the most inclement weather with insufficient nutriment. If this is a good way for the young animal, why not apply the same practice, comparatively, with our children? If scanty nourishment and exposure strengthens the constitution, why not carry out the principle where it will still have a more beneficial effect? The result of this most pernicious practice is too often seen in our thin, unsteady-gaited calves in spring, whose constitutions have strengthened to the last degree of tenuity. Such thin animals are supposed to gain faster on the sweet early grass of spring; whereas they will require two months to regain full weight, and two months more to reach the point they should have attained at the coming of spring grass. It is a most important point that the calf should never lose the thrift it possessed as a suckling calf—or, as it is sometimes expressed, should never lose its "calf flesh." When the calf is to be grown for beef, this view would seem to be too clear to require argument.