

production was satisfactory. Observation and experience, subsequently and gradually established for different parts a different alternation of crops. In this, at first, science had no agency: the reason for it was wholly unknown. But whilst the practical farmer was content to rest simply on the facts supplied by experience, and remained satisfied with believing that some plants exhaust the soil, while others do not, the theorist endeavored to discover the key to this remarkable phenomenon, as it then appeared. Different theories were suggested, but it was a long time before one was adopted that seemed exempt from objection. This theory is the same as has been intimated; that the utility of the rotation of crops depends exclusively upon the circumstance that cultivated plants withdraw from the soil unequal amounts of certain ingredients for their nutrition. Assuming this as the hypothesis, all the known facts relating to it are satisfactorily explained. Thus science comes to the aid of experience, demonstrating what was before a mere matter of fact, without a knowledge of the reasons for it.

The question may be asked, that if any one crop is sought successively every year, will there be an entire failure? There may not be an entire failure the second, third, or even fourth year; but each succeeding year, all other things being equal, there will be a diminished crop. But other things may not always be equal. Droughts or cold may destroy or greatly injure a crop of Indian corn one year, and the next year, being no droughts and an abundance of heat, the crop of corn may be far better than the preceding year. The soil too, may be so amply furnished with a particular elementary substance for vegetable growth, that several crops of the same plant may be raised in succession, before material diminution will be perceived; but this makes no exception to the principles for a general rotation. Sooner or later this substance will be exhausted, and there would then be a complete failure.

The theory for rotation may be further illustrated if we take a field for instance, the soil of which contains the mineral and saline materials required to produce wheat, and yet only in a quantity sufficient to produce but a single crop, it follows, of course, that a second crop of wheat cannot be raised on the same field. The soil is completely exhausted for the time, and will remain so forever, if it does not contain substances which may by disintegration and decomposition, furnish a new supply of ingredients necessary to the growth of plants, or if these essential matters are not artificially supplied. Such a complete exhaustion of the soil, however, is not common. The case supposed is for illustration, and is not likely to ever happen in fact. But what really happens, and common enough is, that although all

the salts are not exhausted, yet being present in the soil in relative proportions very different to the amounts required by various plants, a single crop of wheat may deprive the soil so completely of one of its mineral constituents, that another crop of wheat would not grow upon it, and yet this soil may still contain abundant mineral constituents for the production of a good crop of clover or turnips.

There is no fixed period assigned by agriculturists for a complete rotation. It depends upon the particular crops that constitute the rotation. Different individuals vary it according to fancy or to the results of their past experience, or the productions of which they have most need. Five, six, or seven years, is the usual time, unless it be for lands that may advantageously remain a long period in grass. In that case, as long as a good grass crop is yielded, they are permitted to remain. The necessity for rotation is prevented by keeping up an annual supply, by artificial means, of the fertilizing agents of the soil equal to what is taken away by the plants. Thus gardens are usually kept so highly manured as to require no rotation; and, it might not be necessary on the farm, if it were as highly enriched in the same way.

I shall have something more to communicate on this important subject in the next number of your valuable paper.

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To the Editor of the Farmer's Advocate.

THE VETERINARY DEPARTMENT.

Tetanus or Locked Jaw, is derived from the Greek term to stretch, and may be defined to be spasms of the voluntary muscles, and as the disease progresses the muscles of involution become more or less affected. Tetanus may be divided into Traumatic and Idiopathic. Traumatic when arising from wounds or injuries; Idiopathic when attacking an animal without any assignable cause. When the muscles of the lower jaw are affected, the disease is termed *Irisimus* or Locked Jaw, this term being used synonymous with Tetanus.

The causes of this malady are numerous; it has been known to frequently supervene after the operations of nicking and docking have been performed. Wounds or injuries in the immediate vicinity of joints, or in those parts where white, fibrous tissue abounds. One of the most common causes, however, is the foot being punctured by a nail, either accidentally or by the carelessness of the farrier or blacksmith. Tetanus has also been known to come on after the operation of castration; cold, rain, inordinate draughts of air, are all originators of this disease.

It may attack animals at any age, and is seen more frequently in tropical than in temperate climates.

The symptoms of this disease once seen will

never be forgotten, more especially if seen in the latter stages. The first indication of the approach of this disease, is a noticeable stiffness of the head and neck, those parts become rigid; the mouth being closed and the nostrils dilated. The animal becomes very irritable, and will not admit of its head or neck being handled.

The tail is erect and tremulous, and the ears become pointed and rigid. The *Cartilago Nictitans*, or more commonly called the haw of the eye, is pushed over the eye ball itself. As the disease advances, the spasms affects every part of the body. The horse now stands with legs wide apart, the head and neck protruded, and if made to walk moves with a stiff straddling gait; the eyes almost seem to protrude from the sockets, and when the head is raised the haw flies over the eye as a sort of shield. In the early stages of this disease the respiration and pulse are but little affected, but as the disease runs its course, the respiration or breathing becomes irregular and the pulse thin and intermittent. The horse will generally remain standing to the last in this disease, or will suddenly fall, expiring in convulsions.

TREATMENT.—This disease has received all the attention that skill and science could bestow upon it, and no positive rule has as yet been laid down for its treatment. The first thing to be done is to support the system as much as possible, by giving nutritious drinks and very sloppy diet, with admixtures of boiled carrots and turnips. Keep your patient perfectly quiet and give a good strong dose of purgative medicine, which can either be administered with a bottle or with a large piece of gas piping. Envelope the body in hot rugs, and if convenient, apply new-flayed sheep skins over the loins. Administer Nitre Camphor and Belladonna, internally. Quassia and Quinine has also been used with great benefit. Injecting an infusion of white Hellebore into the veins have also been recommended.

It is useless to dwell any further upon the treatment of this disease, as there are so many different modes of treatment now in vogue for the alleviation of the suffering of an animal with Tetanus.

Before concluding this letter, I would remark that my father when Veterinary Surgeon to the 7th Dragoon Guards, and during his long period of service extending over 26 years in the British Army, had treated several cases with marked success by his particular mode of treatment. And I may further add that other Veterinary Surgeons of high professional standing in England, have met with similar successful results by following the treatment as recommended by my father.

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Owing to a few typographical errors in last month's issue,
Pephritis—read Nephritis; Oval—read Ovid;
Burnt Hay—read Mow Burnt Hay; Pephritic—read Nephritic.