

THE POTATO DISEASE.

Last year Earl Cathcart, President of the Royal Agricultural Society of England, offered a prize of £100 for the best essay on the potato disease and its prevention. The committee appointed to award the prize, examined ninety-four essays, re-examining twenty-three of the number. They report that great pains have evidently been taken with the preparation of these essays, and that the theories most frequently advanced by the essayists, may be stated as follows:

Cause.

1. Degeneration of the tuber.
2. Fungus on the tuber.
3. Wet weather and generally superabundant moisture.

Prevention.

- Use of new sorts for planting.
- Steeping or kiln-drying the tuber previous to planting.
- Use of lime as a manure.
- Clumping, tumbling, or hillock-growing. Bending haulm downwards, clear to the tubers. Trying haulm upright to stakes, or growing of sorts having erect stalks.
- Dressing haulm with superior, chlorine, &c.
- Cutting off tops on appearance of disease.
- Sowing disease-proof sorts (either specially mentioned, or generally, as very early and very late vigorous sorts).
- Use of lightning conductors of various modes of construction.
- Avoidance of the use of certain manures.

5. Electricity.

6. Plethoric, or succulent, or diseased condition of the plant caused by the use of specific manures.

Among the 94 essays abundant evidence may be collected both in support and in contradiction of any of the foregoing theories, and it is especially noticeable that the essayists generally considered it sufficient to assign a cause and a mode of prevention of the potato disease, without giving any scientifically accurate theory of their proposed remedy, or sufficient experimental proof of the accuracy of their statements. The judges are therefore unable to admit that any essayist has established the truth of this theory, particularly as the first condition attached to the offer of the prize is that all information contained in prize essays shall be founded on experience or observation.

Like the theories of the cause of the disease, the practical suggestions made with a view to its prevention do not go beyond those with which agriculturists and horticulturists were previously familiar; and, as regard the botanical part of the subject, it must be confessed, that all the essayists appear to be ignorant of the present condition of scientific knowledge.

The Judges have therefore, but with much regret, come to the conclusion, that in accordance with one of the conditions on which the prize was offered, they must recommend the Council not to award it to the writer of any one of the essays that have come before them.

The committee also suggest that there are some points necessary to be studied closely before the disease can be prevented or even cured.

"The natural history of the potato fungus, from the time it attacks the foliage until the potatoes are harvested, is now well known; but the history of the fungus from the potato harvest until its reappearance the following year, is at present entirely unknown, and therefore offers a suitable field for investigation."

"The potato fungus does not usually attack the foliage of the potato until an advanced period in the growth of the plant; and it has been confidently asserted by several essayists, as well as previously in the public press, that certain sorts of potatoes are what may be termed 'disease proof,' on or other of the following grounds:—(a.) That the haulm dies out (and the potatoes arrive at maturity) before the period at which the potato fungus commonly makes its appearance: (b.) That certain late kinds also, as the result of experience, we believed capable of resisting the attacks of the potato fungus."

(c.) That certain new varieties are also able to resist the attack of fungus.

The judges therefore recommend:

That a sum of money (say £100) be granted for the purpose of inducing a competent mycologist to undertake the investigation of the life history of the potato fungus (*Peronospora infestans*) in the interval between the injury to the potato plant and the reappearance of the fungus in the following year.

That valuable prizes be offered for—(a.) The best disease proof early potato. The judges appointed to award these prizes should be allowed three years to experiment with the competing potatoes, and with the produce of those kinds which may be found to resist disease in reference to their cropping, keeping and cooking qualities.

CULTIVATION OF BEET IN AMERICA.

The cultivation of the beet, says the *Irish Sportsman*, and manufacture of sugar from it, is largely extended in some parts of the American Continent. We understand that the most successful results as yet have been obtained in California, where two companies are in operation—one the California Beet Sugar Company, at Alverada, producing more than 1,000,000 pounds of sugar from one year's crop, and this only the second year in operation. From the report of the manager of the above company we extract the following:—With respect to the last varieties of beet yielding the most sugar I should name the white Silecian. For the manufacture of sugar the smaller beet, of which the root weighs from 1 to 3 lbs., are preferred. The seed is sown by a machine that we manufacture ourselves, which sows four rows at a time; the rows are 15 inches apart, and when the plant first comes up we hoe the rows to keep the weeds down, and then thin out the plants, so as to leave the plants 8 inches apart; they will then stand in the rows 8 inches by 15 inches. Though most countries and climates permit the culture of sugar beet, there is, of course, a choice of soil, if the highest development of saccharine qualities is desired. The root of sugar-beet penetrates deeply into the ground and always flourishes best in deep, rich, loose, mellow, warm, and fertile soil, free from saline and alkaline constituents, not sour, and of a nature little liable to suffer from drought. The yield per acre, on an average, has been about 15 tons, although in some cases it has been as high as 20 tons. The best sugar business in the United States is still in its infancy, and, with proper encouragement, there is no doubt it can be made one of the best industrial interests we have. At the present time we are feeding 350 head of cattle from the pulp of the San Francisco market."

SALT.

Salt gives relish to grass, hay, and other kinds of raw food, and it acts universally as a stimulus to digestion. It gives tone to the stomach when impaired by an excess of food or labor. Experienced herdsmen have always found that it acts as a vermifuge, destroys intestinal parasites, and it is well known to be a powerful agent in tanning and overcoming the natural timidity of animals. It is also well known that salt is an excellent abater of internal as well as outward inflammation; it improves the quality of excrement of animals for the purpose of manure. But in its internal uses, whether as a condiment or medicine, it should be administered in small doses. If animals are constantly allowed access to salt they will consume too much for their good but when it is given them at intervals of once or twice a week, a small handful is sufficient for a horse or cow. In fattening calves that are weaned fed upon gruel or other semi-liquid food, salt in small quantities should always be given, not only to prevent sickness but to enable the animal to relish the somewhat unnatural food. Salt also in moderate quantities promotes the health of hogs. A table-spoonful once in twenty-four hours mixed with the food of each hog, will not only aid in the thorough digestion of the food, but insure perfect health. We have not the least doubt of the efficiency of salt in preventing many of the diseases which have made such havoc among the swine in portions of the country during the past few years.—When the use of salt was first introduced into the piggeries of Ireland, it was claimed that the hogs fattened on about one half that was required without it, simply in consequence of improved or more thorough digestion. Were it necessary we might quote from hundreds of our greatest agricultural authorities to show

the benefits that may be derived from the free use of salt among our domestic animals. One of the best known means, both as a preventative and cure of foot-rot among sheep is the scattering of salt over the affected land.

Salt for destroying insects.—It has long been known that salt operates fatally upon all cold-blooded animals that live upon land or in fresh water. Sir John Sinclair many years ago, said in Scotland where the oat crop was destroyed by grubs, it had long been the practice to mix salt with the seed in the proportion of one to thirty-two, but sometimes one to sixteen. If we scatter salt upon the land infested with vermin, it destroys them, and their bodies become the food of plants. Great care should be taken in applying salt upon growing crops, as too much is sure to be injurious. One to five bushels per acre may be spread broadcast upon meadows in the spring or upon land at the time of sowing grain.

Salt for Fungoid Diseases.—Soaking seed wheat in urine or brine, to prevent smut or blight, has been practiced thousands of years, as we learn from the writers of Cato, Virgil, Pliny and Columella. Still it remained by our scientific men to positively determine its value in agriculture, and the results all tends to show that it is one of the most important mineral substances known. The use of salt upon sheep pastures has been observed in Spain and Germany from a very early period. Its efficacy against murrain or rot was known in England in the sixteenth century, and for fertilizing land it was extensively used in the seventeenth century. The long and almost obstinate indifference of our farmers in the use of salt is almost beyond comprehension but the time must come when it will be extensively employed as a manure. —*New York Sun*.

THE DECLINE OF GRAIN FARMING IN THE EAST.

A single firm in the Mystic Valley, Conn., imported and sold 30,000 bushels of corn in the year 1872, and this probably was not half the Western corn consumed in a population of 10,000, of which nearly one half are farmers. This corn went to the supply of families in the villages, livery stables, cart-horses, and a good deal of it to the horses and cattle upon farms as a substitute for hay, there being but a little difference between the price of hay and corn per pound. This fact indicates the great change that has come over the large part of the Massachusetts, Connecticut, and Rhode Island in the last thirty years. They do not raise their own breadstuffs or provender. Wheat ceased to be a remunerative crop long ago, and the sight of a wheat-field is exceedingly rare. Even rye is so scarce that the straw sells for \$20 to \$25 per ton, and is worth more per acre than the grain in ordinary crops. Oats are raised but in diminished quantities, and as a rule are consumed upon the farms. Almost everywhere in the section indicated, the manufacturing interest thrives. Smart towns have sprung up in the valleys of all the streams, and there is comparatively little water power that is not utilized. The old homestead is frequently sold to the next neighbor at a sacrifice, because the farmer's interest is depressed and the demand for farmers is small. Many farms are sold every year at a price that would not more than pay for the original cost of the buildings. When men think they can make more money in manufacturing industry than upon the farm they will not cultivate the soil. Grain farming, which comes into competition with the prairies of the West necessarily declines. A new class of people, Germans and Irish, are coming in and cultivating the suburban farms. They have much more frugal habits than Americans, are eager to become land-holders, and in a few years own the farms. This decline in the grain products of New England has in its compensations. Fruits and vegetables take the place of the cereals, the cities are more cheaply fed and all classes are better paid for their labor. —*American Agriculturist*.

NEW AGRICULTURE MACHINE.

The *English Mechanic* says, Messrs. McDonnell and Leuchan, of Dublin, have invented a machine which performed the operation of rolling, sowing, and harrowing simultaneously. The roller is of wrought iron, riveted on cast iron wheels, forming a cylinder six feet in height by three feet in diameter. Immediately above the roller is a sowing apparatus, by which the seed is

rapidly delivered, a star wheel of four points keeping the conductors in constant motion. As the seed is strewed a harrow of four rows of oblique teeth set in a central axis turns up the earth over the seed. The harrow is kept in motion by an endless chain or belt which passes round the extreme end of a large cylinder, and fits the groove of a small wheel at the corresponding end of the harrow. Every time the large roller turns over, the circular harrow turns nearly five times, causing the teeth to tear up the soil about twenty times at each of the revolutions. Meanwhile the seed cultivator and distributor rises and falls twenty times during each of these revolutions, and there is a contrivance by which the quantity required to be sown can be regulated. A lever is also connected with the support of the harrow, and rest upon the fulcrum placed at a suitable part of the frame of the machine, by means of a lever the harrow portion of the machine can be raised off the ground and the roller only used; and the distributor or sower may be worked simultaneously by means of the chain-band, which can be closed and the flow of seed stopped. The machines can be easily made to suit either the purpose of sowing corn or grass for pasture.

The Horse.

SAND-CRACK OR FISSURE IN THE HOOF.

One of the most prolonged and aggravating causes of lameness among horses is "sand-crack," or fissure in the hoof. Why it was named sand-crack is not generally known, some authorities asserting that horses of the desert and sandy soils generally were first affected; while others contend for the origin in the circumstance that the fissure affords lodgment for grit, sand, &c. So much, therefore for the name, which we estimate at little value as an indication of the disease in question. As to the nature of fissure, we may venture an opinion with greater confidence on mere mention of the word. It is an opening or splitting of the hoof, extending from the coronet or fleshy band at the top more or less towards the bottom. The widest part is at the upper end, and through this may be seen protruding not unfrequently in bad cases, a strip of angry looking or inflamed flesh, which during motion is severely pressed, and the result is bleeding and lameness.

Fissure always becomes worse by work, and non-removal of the original cause.

Fissure is never present in strong, sound unutilized hoofs. The most common locality is the inner quarter of the fore foot (though sometimes the outer quarter is also liable), and the front of the toe of the hind foot. Those animals having thin, shelly, weak hoofs, more especially when in the shoeing much parting of the sole and rasping of the wall or outer part is practised, are the common subjects, and the liability becomes greater as the work is prosecuted on hard roads. Frequent losing of shoes, use of large nails driven high up, add materially to the occurrence of fissure as causes of destruction, and these need only be applied to sound, strong hoofs for a short time, when the origin of fissure will be demonstrated in its full force.

The immediate cause of fissure is unnatural strain, weight unequally diffused throughout the hoof, which insures pressure in opposite directions, and as a result, tearing open or separating the substance of hoof at a point mid-way from the extremities of other parts subjected to the action. In order to comprehend this more fully, we need to bear in mind that when fissure appears, the hoof is already reduced considerably in natural firmness and strength by the causes already enumerated, and the inevitable result of this is an irregular form of lower or ground surface. It is broken, split and weak, and pressure weight cannot always be equally distributed over a level iron shoe.

Too commonly, however, the method pursued is that the very reverse of right, for the shoe is made level on the anvil for the crooked surface of the hoof, and when this is nailed upon it, the effect is of so many forces pulling in contrary directions, the ill-matched opposing surfaces of hoof and shoe constituting additional levers, and the whole during motion causing the hoof to give way at some portion of the upper margin where the least resistance is present. We must not omit also to name as an important evil in the category of causes, that of cutting the foot to suit the shoe. By this practice the hoof is materially weakened, and much judgment is required in fitting the shoes to it; but the smith often fails to see that he should fit the iron to the hoof and produce that equal distribution of weight which is best understood as giving the animal a level bearing. It is not, however, our intention now to enter upon the debatable question of "pro-

per shoeing," our purpose being to draw attention to the actual disease under consideration, and to detail the course of the disease, and the remarks on the adoption of the shoe will be given.

Fissure in the hoof. When a breach is once part at the coronet, it bottom as the hoof grows to form sound hoof without interference. effect of motion as we arily practised, is to p the breach and to prev ing of it by the forma

Horses that are very require rest, probably little cooling medici measures are being junct in treatment is which is covered 3 or dust or tan. Wheth covered by a layer of may decide; the obje of providing such me the shape of the und thus produce, under t equal pressure on eve desired amount of cor pain will be afforded, greater facilities wil means of cure.

Several plans are practitioners for the e following as the r is recent, slight, or c ness, the animal may and a cure effected, be properly fitted, an cord passed round th times. This will pre or tear open, and sup The rest of the treat over the coronet, imm and the space of an i wards the breadth of ordinary blistering o a hickory nut. A blister may be repea eral times, until the downwards in a so dition.

With regard to th it may be explained between it and the h as that which is p planted on a yielding dust, and for this pur which the frog may that part beneath th lived. The nails u flat, and care must sound portions of ho to be driven.

Added to this, s embrace the major Charlier, so far as t and the fitting of th cerned, and by the called, will not only may be restored to sound condition. —

CHARCOAL.

Nearly all anima proper eating. In digestion is wrong efficient and rapid a majority of cases. An example of its in with the intellige cows was very sick posed the usual c owner being ill and cow, concluded the over-eating, and or ized charcoal given placed in a junk h ward, and the wat downward. In fiv was visible and in was in the pastu Another instance c with a heifer wh eating green apples bloat was so sever most as hard as a —saleratus—was correcting the acio put it down alway little good. Half charcoal was next the appearance of heifer was well.

Take white pin honey, one oz. each together over a slo so that the parts m also makes good a cuts, and sores o cattle.