swedes. We claim for this variety the first and foremost place on all farms where the turnip crop is successful, it pays to sow the right variety, and therefore candidly say, grow it in preference to any other, and success is inevitable.

The "Thorburn" Potato.—"Spuds," as they are called on the "Green Isle," require to be carefully thought about as to variety, if you want a good yield, but we want quality as well, and certainly "The Thorburn" fills the bill. From one peck of good sized potatoes cut into seed planting size, fifteen bushels were harvested last fall. "The Thorburn" potato is a self-seedling of the once famous Beauty of Hebron, it is earlier and more productive than its parent, and in quality fully equal to it, which, of itself is praiseworthy, it is a strong grower, and as a field crop, will yield at least a third more per acre. It grows wonderfully smooth and handsome, and what is most extroardinary, a hollow or unsound potato has not been seen. Another important claim we make for "The Thorburn" potate is, that a measured bushel will weigh from three to five pounds more than the same measure of any other variety, and yet it is not heavy in the sense of being soggy when cooked. It is dry and floury, with a compact and fine grain.

John S. Pearce & Co. say:—The M. S. S. corn, for fodder and ensilage, is the most popular and largely-sown variety of all the various kinds now before the public. The above firm introduced it into Canada in 1883, and the demand has rapidly grown; and to such an extent has it spread that they last year shipped this corn in large quantities into Quebec, and even as far as Nova Scotia and New Brunswick. This very large trade is due to the care with which the corn has been selected and handled by the firm. So careful and particular are they in this respect that not a car of it is shipped till it is carefully tested, and the growth must come up to 95 per cent. This is a most important point. Cheap corn, or any other cheap seed, is not desirable, and is dear in the end.

Sheep-tooth is another variety that has some very excellent points in its favor, among them the very small kernel, making a bushel of this corn equal in value for seeding, to 1½ bushels of the ordinary Southern corns.

For planting as a field crop, One-Hundred-Day corn is among the best in cultivation, very early, and a dry, hard, flinty, sound corn. Self-Husking is a good sort, but not so well known or thoroughly tested as the former. Longfellow is good, and the stalks particularly valuable for fodder, as they are not so pithy nor woody as some of the other flinty sorts.

Among the potatoes, we recommend the London, a new potato. The Daisy, Morning Star, Pearl of Savoy, Green Mountain, Rural New Yorker No. 2. We have also eight or ten other sorts.

Among our new varieties of vegetables, are the Wardwell bean (dwarf), the Warren cabbage, Paris Sugar lettuce, Carter's Lightning pea, the new Japanese Pie pumpkin, Mammoth Chili squash, Vine Peach, Celestial pepper, Holt's Mammoth sage, King of the Mammoth pumpkins.

According to Mathew Crawford in the Ohic Farmer, an extensive apple grower of Illinois, is said to plant only half as far apart as the trees should stand permanently, and then he brings three-fourths of them into bearing as soon as possible by girdling, letting them produce all they will until the permanent ones need the room. The girdled trees are then cut out and the others have all needed space for growth and productiveness.

Black Knot.

BY J. DEARNESS.

In March the writer had occasion to call on an intelligent farmer and found him engaged in trimming his orchard. A few plum trees and a considerable number of cherry trees had been heroically pruned for the purpose of cutting out the black-knot. These prunings with those of the apple trees, were all being collected in a pile to be burned—"some time in the spring." The practical purpose of this paper is to point out the danger of delay in kindling such a pile of prunings, so far at least as the black-knot is concerned.

The real nature of this fungus puzzled investigators for a long time. The too familiar cancerous excrescence that marks affected trees was at first, and by many people is even yet, supposed to be a gall produced by the sting or ovipositor of some insect. Strong support is afforded that belief by the fact that in the summer months

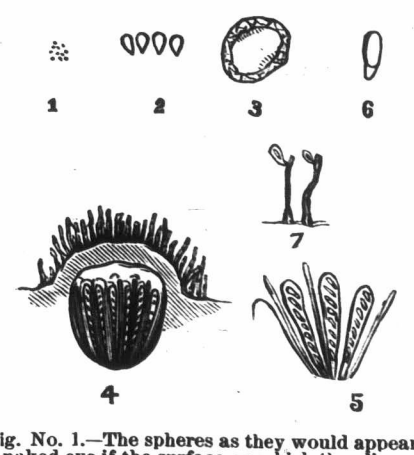

Fig. No. 1.—The spheres as they would appear to the naked eye if the surface on which they lie were transparent. One of these sphere dots is seen enlarged in No. 5.
No. 2.—The sphere magnified 60 diameters.
No. 3.—A cross section of a sphere magnified 300 diameters.
No. 4.—A ripened sphere (in January) still more enlarged, having the shell chipped off. The fragments of filaments that gave the knot its dark green, velvety appearance in the summer show where the summer spores were borne.
No. 5.—Sacs (asci) taken out of the sphere and greatly enlarged. Growing among these are the paraphyses, perhaps barren sacs.
No. 6.—A winter spore taken out of the sac. It is estimated that every square inch of the knot will, during the winter, ripen 1,000,000 of these spores.
No. 7.—Filaments bearing the summer spores (conidiaspores).

almost every "knot" contains one or more larvæ, generally of curculio. Its very suitability for the reception of eggs and development of larvæ afforded an entomologist, Mr. B. D. Walsh, the opportunity of disproving the gall theory by breeding five distinct species of insect found in the knot, but not one of the species proved a gall-producing insect. He therefore concluded that black-knot must have some other than an insect origin. Another entomologist, Dr. Fitch, of the N. Y. State Agricultural Society, reached the same conclusion by a somewhat different chain of reasoning, the chief link in which was that in many cases, at certain seasons, no egg, larvæ, or trace of insect-work could be discovered. He arrived at the opinion that black-knot is a disease analogous to cancer in the human body. Although it is now over sixty years since the fungal nature of black-knot was discovered, the knowledge of the discovery does not seem to have reached half the people interested in it, and many of the experiments and attempts made to arrest the progress of the disease have been futile, because they have been directed towards a cause that did not exist.

The scientific name of black-knot is *Plowrightia morbosa (Saccardo)*, although it is often referred to under the name, *Sphoeria morbosa*, given to it by a botanist named Schweinitz, who died in 1834. So far as I know neither he nor any subsequent investigator has discovered every circumstance connected with the life-history of this destructive fungus What is known is interesting and instructive, and is partly stated hereafter.

Under the name fungi an immense number and variety of vegetable forms are included. Some of the common ones are known as yeast plant, black moulds, mildews, blights, blue moulds, rusts, smuts, puff balls, toad stools, mushrooms, etc., etc. Usually these have a kind of filamentous branching "root and stem" easily seen with the naked eye in the case of a white mould that grows on horse dung, and called the *mycelium*. This branching mycelium commonly sends up stalks, bearing the fruit with seeds called spores in a great variety of shapes, sometimes naked as in blue mould, but more frequently encased as in black-mould and smut. Some of the cases containing the spores are soft, some are leathery, and some as in black-knot are very hard.

Have you ever noticed a lot of little black things like millet or turnip seed on a twig, lying on the ground under a currant or other bush in the garden, or on a decaying carrot in a damp cellar or pit? These are fungi allied to similar but very much smaller little balls embedded thickly in the unsightly excrescences, which mar the branches of a plum or cherry tree smitten with black-knot. The spore is probably wind distributed, and by chance alights on a minute crack in the outer bark, or it may be in the axil of a leaf, and there germinates, sending its filamentous mycelium through the soft bark causing irritation, and producing an abnormal secretion of cellulose, which forms a nidus for the eggs of insects, a sugary food for the young larvæ and a bed for the innumerable little microscopical balls, which hold the winter spores of the fungus. On, or rather, *in* the surface of the knot they are as thick, and to the naked eye no larger than the dots shown in Fig 1; although they are not so regularly distributed. Fig 2 shows what each one looks like when seen under a power of about 70 diameters. When treated in turn with a strong acid, as aqua regia, and then with a strong alkali, as caustic potash or ammonia, the shell of the little ball can be wholly or partly chipped off, revea'ing the little cupful of sacs each containing eight seeds or spores. I have counted as many as seventeen of these little seed sacs in one sphere, and then had not probably the half of them. Just as there are exactly eight spores in each sac, so there may be a uniform number of sacs *(asci)* in each sphere. It is an important fact that these spores do not ripen until late in the winter. In the fall the sac seems filled with granular or grumous protoplasm, which from January to March, separates into distinct spores as seen in the diagram, Fig. 6 When these spores get fully ripened they escape to the winds through a little pore in the sphere, and are carried hither and thither ready for spring operations, but perhaps not one in a million happens to fall and stay where it can germinate, and reproduce its life-history with its accompanying injury to its host. It would be mere repetition to emphasize here at any length, the reason for burning the affected branches before the little balls have time to distribute to every breeze their many sacfuls of spores.

[TO BE CONTINUED.]