sowing, when the seed has been too deeply deposited, and the germinating energies have all been expended in pushing the attenuated stalk up to the surface, so that too little vital force is left, a sickly and feeble growth results, and no offsets are produced at the point of tillering, *a*. Fig. 2 shows a stalk of wheat at twenty days from seeding, sown at the depth of a little more than one inch; *a, a*, being young plants commencing to tiller out. Fig. 3 gives the appearance of a healthy wheat stalk after tillering has been well established.

Some years ago an interesting trial, involving the question of the proper depth for sowing seed, took place in Ohio. The plaintiff in the case had engaged a party to sow for him a certain field with wheat. The grain was put in with a drill, it is true, but due attention had not been paid to the proper depth of sowing, and most of the seeds, it was found, had been deposited some six or eight inches below the ground. The consequence was that much of the seed never germinated, and a portion that did germinate scarcely reached the surface; while the little that reached the light and air exhibited only a feeble growth, and a very poor crop was the result. Damages were, therefore, claimed by the plaintiff, on the ground of this very improper manner of putting in the seed. We do not know how the case was decided, but in the course of the investigation the following testimony was given in evidence. It was claimed that the extreme depth of sowing was the true cause of the failure of the crop, for around stumps and in stony places, where the drill could not run deeper, the yield was good.

One witness testified—"Where I have had wheat put in deeper than that, after it came up and formed a stool of roots at the surface of the ground, the plant between that and the seed would perish, and the power of the grain is thus exhausted and the plant would show much less vigour. I have examined and experimented until I am satisfied that this is the universal result, &c."

Another witness—"Eight years ago I made an experiment to ascertain the proper depth of sowing wheat—deposited fifty seeds at the depth of eight inches, a like number at seven, six, five, four, three, two and one inches, and fifty grains I raked in on the surface. Of those deposited at eight inches, two came up, but formed no heads; of those deposited at seven inches, about one-fourth came through the ground, but formed no heads. Ten of the fifty seeds planted at five inches made defective heads. I had a few perfect heads in the row planted four inches deep, but most were defective. I think all planted at three inches came up, but the row deposited at two inches was the best, *and came up sooner* than any of the rest." This witness did not state whether the ground was dry at the time he planted his seed, but I infer it must have been, or certainly the seed planted at one inch and raked in on the surface would have been the first to come up.

Another witness—"I should prefer to deposit the seed at the depth of one inch—certainly not deeper than two inches. It is a mistake to suppose that deep seeding is any security from winter-killing. The roots of the plants form at the surface, whatever may be the depth of the seed. But from frequent examinations I am satisfied, that wheat planted not deeper than two inches will stool out better than that deposited at a greater depth—that is, will produce more plants to a grain."

Beet Root Sugar.

SOME light has, it appears, been thrown on the much discussed question, whether beet-root sugar can be profitably manufactured in this part of the world. Experiments have been made at Chattsworth, near the Chicago branch of the Illinois Central Railroad, which have resulted in a highly satisfactory manner. The Messrs. Gennert have erected extensive works at the point above named, but have not succeeded in getting the manufacture going on the large scale they intended, owing to disappointment in the preparation of the requisite machinery. A large proportion of last year's crop was fed to cattle on this account. A series of experiments has, however, been successfully initiated, and we extract from the *Prairie Farmer*, whose editor was present, the following particulars, which we doubt not our readers will peruse with much interest:—The beets are washed, topped, decayed parts cut away, or the whole discarded, if imperfect. A toothed cylinder, two feet in diameter, driven at a high rate of speed, is used as a grater. The beets are fed up to it by a pair of plungers. The pulp and juice fall below in an iron tank, fine, and white as snow. Two hundred pounds of the pulp are put in a centrifugal machine at once, and the juice separated from it by centrifugal force in a few moments. The juice goes thence into clarifying tanks, where it is clarified preparatory to evaporation. In these recent experiments, no bone filters were ready, and hence other methods were resorted to to defecate the juice. The evaporation was done both in a kettle with steam coil, and on sorgho evaporators. The editor says of the first experiment:—"When it had reached a consistency supposed to be right for granulating, it was taken off and set in a warm room for the night. With many anxious feelings we approached the vessel holding it the next morning, when, to our *great delight*, we found the whole mass had crystalized from top to bottom, showing large and splendid crystals of sugar, which, after standing twenty-four hours longer, was allowed to drain. Not more than twenty per cent. of it drained out, much of which was sugar. This would have been less had it been allowed to stand longer." Repeated experiments produced similar results, although the arrangements were so imperfect as to involve much delay in the process, and repeated handling of the juice. The quicker the process the more perfect the granulation.

Our contemporary above mentioned, and other well-informed United States journals, are confirmed by these experiments in the conviction that beet sugar is to become a staple product of American industry, and that it is especially to flourish on the Western prairies, where the deep, rich soil is so favourable to root culture. Our readers know that, for various reasons, we have doubted whether this branch of European rural industry would flourish on this continent. We shall be glad to have our doubts removed by the unanswerable logic of facts. It is certainly encouraging to read the foregoing narration, and we hope our American friends, who are putting this thing to the test, will succeed to the full extent of their wishes. Their success will be ours also; for Canada, though it lacks the prairie soil, is just as good a region for beet culture as Illinois, and in some respects our manufacturing facilities are greater than those in the far west can possibly be.

New Varieties of Wheat.

IN our last issue we alluded to the propriety of trying such new varieties of wheat as promised any mitigation of the disadvantages under which wheat culture has suffered for some years; and while we would not advocate the practice of purchasing largely and without due caution any new variety that is brought into notice, yet it is certainly right for every farmer to gather all reliable information respecting the various kinds of this grain that from time to time come into notice. It seems to be the fate of almost every sort, even the best, to deteriorate after a time, perhaps from want of due attention in the culture: at all events it becomes necessary in almost every instance to make a change sooner or later. This fact, while it should make us willing to accept any apparently good variety, should also allay too sanguine expectations in regard to the various novelties in this class that are frequently far too highly vaunted. With this caution we would just briefly allude to several kinds of wheat that now seem to be gaining favor, and which are doubtless worthy of trial. The "midge-proof" has become pretty well known among us, and need not be again recommended. It has hitherto proved one of our best and surest of wheat crops; and though the millers have rather depreciated it, we believe it is quite adapted, with proper treatment, to yield an excellent quality of flour.

The Mediterranean wheat is rather a revived than a new variety, and is again receiving the attention which we think it deserves.

For the last two years a new variety, under the name of Diehl wheat, has been highly spoken of, chiefly by our neighbors in the United States. In the same quarter the Treadwell and the Wicks wheat are being pretty extensively tried, and with encouraging results.

A writer in the *American Agriculturist* thus speaks of some of these new sorts:—

"A few days since I received a letter from a subscriber of the *Agriculturist* in Kentucky, who wished to get, for himself and a half dozen of his neighbors, some of our leading varieties of wheat. Their plan was for each to sow one variety, and if it proved good, to distribute the product among the others. The idea is a capital one. He says they have been raising the 'New York Premium' wheat. When they first got the seed from this State, the crops were excellent, sometimes forty bushels per acre, but they have grown it so long on the same land that it has degenerated, and the yield is now very light and the quality poor.

"A miller and farmer in Maryland writes to the same effect. He has introduced a good many varieties of wheat, and for a few years they do well, and then run out. Is such really the case? Do not farmers, when they get a new kind of wheat from a distance, select their best land, give it extra care and culture, and consequently get good crops; while after a few years, when the seed is common, they bestow only ordinary culture, and get only ordinary crops?

"John Johnston writes me, July 23rd:—'My Diehl wheat is pretty good. One field may yield about as well as last year's; the other, not. Cause: *Not manured for many years.*' The variety has degenerated on the one field, but not on the other! Mr. J. adds: 'If plenty of manure were applied, there would be less loss from midge. All that is needed to insure good crops is more and better manure. Diehl wheat is excellent for rich land, but not good for poor.' This is not a popular doctrine, but it is true."

A correspondent in the *Western Rural* has the following on the same subject.

"This is the second year since the introduction of the Diehl wheat into this county. Its yield last year was considered above the average of other kinds of wheat sown here, and the consequence was it was much sought after to seed with last Fall, and the whole crop was bought up at three dollars per bushel, at that time being from fifty to seventy-five cents per bushel above the market price of other white wheat. In consequence of the high price asked it went into the hands of many, and has been sown on all the different soils of our county, from light sand to heavy clay. The growth of straw has been good on all, but it promises the best yield on the rich lands, and where sown early. Where sown late and on the same day with the Treadwell, it was very much injured by the midge, and the Treadwell was uninjured.

"I cannot say positively what its merits are when compared with the other white wheats. Many think there is nothing like it, whilst others are not ready to express their opinions. There has been but little of it threshed yet. After it has been generally threshed, it will assume its position.

"To sum up—with our present knowledge of the Diehl wheat, if we had a good fallow, rich and clean, we would sow the Diehl wheat, and sow early. If the land was of moderate richness and to be sown late, we would sow Treadwell. We think the Diehl requires a dryer soil than the Treadwell. Persons wanting Diehl wheat for seed this year should not pay fancy prices for it, but should willingly pay for good, sound, clean seed sufficient above the market price of wheat to recompense for the labor of making it so."

In regard to the Wicks wheat, Mr. G. A. King, a good farmer and sensible writer, thus writes in the *Boston Cultivator*:—

"For many years the need of an early and productive variety of wheat, and one free from the 'midge'