be done in a careful manner. The better way under most circumstances is to stack at the barn, then the grain is near the granary when it leaves the machine, and the straw may be saved where it is needed for feeding, bedding and manure.

In building a stack of sheaves, the following rules, adopted from our own experience, will be found perhaps of profit to some of our inexperienced readers at this time:

Where a pen is not used for foundation, set up two bundles against each other, and others against these until a circle is formed sloping from centre to circumference, each row half the length of a sheaf further out than the one before it. Carry out the foundation in this way until it is of the desired size, and then at outside lay a double row of bundles and press them down well. The foundation being now prepared build upon it by laying the tiers of sheaves from outside toward the centre each row lapping butts to bands. Gradually lay out until the stack has attained the height desired—that is, let each row of bundle butts project over a trifle further than the one beneath, so that the circumference of the stack will gradually increase in size as it goes up to a half way point, and then gradually draw in until the top is reached. Caution must be used not to make the stack too flaring; it is only necessary to make a little difference in the circumference of the base and centre to obtain the desired object, that of protection against heavy rain storms. When building the stack, always keep the centre a little the highest and well tread down, for in this lies the great secret of having either grain or hay keep well. The outer surface, by being less compact, will settle a little more than the centre, and consequently protect the whole from damage by not retaining moisture. We have found it a good plan to let one tier of bundles project some four inches at the point where it is decided to begin drawing in for the top; this furnishes what may be termed eaves. If the stack is to stand an indefinite time before threshing, it will pay to give considerable attention to thatching the top, at all events it should have a topping out of bog grass or poor hay.—*Ohio Farmer*

Ploughing and Preparing the Soil.

The following observations on this important subject are from Ville's "School of Chemical Manures:—

In the Bas Rhin, and doubtless in many other departments, ploughing is but superficial, and no deeper than 3 to 5 inches. This thickness is evidently insufficient, and should be increased to 12 to 16 inches, in order that the plants may thrive. The proportion of mineral substances in the soil is in the ratio of the thickness of the tillable layer, and will be doubled or trebled by deep ploughing. A system of rotation of crops becomes at the same time more easy. The great majority of agriculturists who persist in superficial ploughing, do so for fear of bringing to the surface sterile soils. It is a mistake, since a good subsoil plough allows of the simple stirring and gradual incorporation of the under layers, without bringing them to the surface. Experience has, however, demonstrated that deep ploughing is always advantageous and without the fancied inconveniences. We should fight each prejudices.

The arable layer, when its thickness is no greater than from 3 to 6 inches, is insufficient for the development of the roots of plants, and does not protect them against the influences of an excess of dryness or dampness. As the tendency of plants is to grow as much below as above surface, it is evident that they cannot expand properly in a thin layer. Therefore, the principal condition of a deeply tilled soil is seldom met with for plants sending their roots deeply into the ground. Even cereals, which are believed to vegetate at the surface of the soil, will have deep roots in properly prepared ground.

With an arable layer of 3 to 6 inches thickness the roots of plants will not acquire their natural growth, and will greatly suffer by the inclemency of the weather. An abundant rain will flood the plants, and when the water escapes over the surface of the field, it will carry away the soluble and more fertilizing substances. By drying, the damp earth will become compact and will compress the roots, the development of which will thus be hindered. After a long drought the plants which have their roots near the surface of the soil, finding no dampness, remain stationary, or even perish.

On the other hand, and in arable layers 12 to 16 inches thick, plants are able to penetrate and grow properly, and are protected against drought and the inclemency of the weather. An arable layer of this thickness easily absorbs water; during an abundant rain, water penetrates and is drained through the bottom, without carrying away any earth or manure.

Grasses and Forage Plants.

Vacant Places in the Turnip Field.

These will occur under the best husbandry. A stoppage in the drill, failure of seed to grow, or the ravages of the fly, sufficiently account for their existence.

They look bad. Every good farmer feels that they are an eye sore. Passers-by on the road notice them and say, "That would be a good field of turnips but for the gaps in the rows."

They cause considerable loss. Turnip ground, properly prepared, is the best on the farm, and is too valuable to be wasted. Often the profit of a turnip crop is materially diminished by these vacant places.

Why should they not be filled up? It is easy to do it, and thereby both appearances and profits may be greatly improved.

There are various methods of filling these ugly gaps. Later varieties of turnips may be drilled in our own by hand. The Yellow Aberdeen, Early Harvest or White Stone, are very suitable for the purpose. They will not grow so large or winter so well as the swede, but "half a loaf is better than no bread;" they can be fed in the fore part of the season, and will help to eke out the general supply.

But we are inclined to think the best method of supplying these vacancies is to plant cabbages. They are more nutritious than turnips, will be eaten more greedily by cattle, and are especially good for milch cows. It is too late now for the farmer to grow his own plants for this purpose, but in many instances a supply might be bought cheaply; and if those who are annoyed this year with unsightly and unprofitable gaps in their turnip fields will "make a note on't," and take care next spring to sow a good lot of cabbage seed, they will find their account in it. Cabbages are well worth growing as a field crop, and if any reader doubts the statement, let him put it to the test, by planting an acre or so another season, and we are quite sure he will give us a vote of thanks for the suggestion.

Hill or Level culture for Corn.

The question, "Which is the best method of filling corn for profit, by hilling, or by level or flat culture," was recently taken up and discussed by the Hingham (Wisconsin) Farmers' Club, as follows:

W. Higby remarks that as far as his experience leads him, level or flat culture is preferable. He tried, and seen tried by others both methods in same field, and invariably the level or flat culture gave larger and heavier yield of corn per acre, and would stand up better. By the hilling method when blown over by storm it would break the stalks near the ground, therefore would not rise again, whilst by the other method the most would straighten up. Further every time the corn is hilled up new brace roots are thrown out, consequently the growth of corn would be checked until such roots were formed and the maturity of the crop would in like manner be retarded.

J. Hasner has been used to the hilling method, and uses the plough with half mould board to work between corn. Hills up, but not high, sharp hills to carry the rain off, but rather a flat hill. Had on his place raised by this method, some 70 bushels per acre, and by using the cultivator and level culture had raised 90 bushels per acre. Thinks the cultivator cuts the rootlets that spread out in the soil in search of plant food, deteriorates the crop, and concludes the plough far better than the cultivator to work among corn.

C. Rogers had experimented in the cultivation of corn and taken notes of results. Finds several reasons why the level or flat culture is best. Corn naturally has a set of brace roots at or near the surface to support the stalk in an upright position, and by hilling the corn you stop its growth until it throws out an extra set of roots, and every time you add to the hill you cause a new set of roots to start out, consequently you retard the maturity of the corn from one week to two weeks and more. Nature does not cause hills or mounds for plants to grow therefore the nearer we imitate nature the better, and keep the soil level or flat. After the corn has thrown out the proper brace roots, it then starts out a set of fine rootlets or feeders through the soil in search of plant food to mature the crop, and by ploughing you cut them off and shorten the supply of food, &c. He cultivates often and keeps soil mellow and free from weeds.

J. De Lyser says his experience in former years in the state of New York was by ploughing and hilling corn. Result, rain would run off hills into furrows, and corn would suffer for moisture, except in very wet seasons, and would not get a good crop, which was the general rule thereby the hilling method. Since he has been here he has practised the level culture with results far better, by using the cultivator in dry weather, the more moisture in the soil to supply the wants of the plant. He also finds that it is less labor to plough a corn field after the crop is removed than it is by the hilling method.

Unprofitableness of Mammoth Roots.

We learn from the *North British Agriculturist* that at a recent meeting of the Royal Agricultural Society of Ireland, a paper was read by Professor C. A. Cameron, M D, chemist to the society, which showed very conclusively the wisdom of growing medium-sized rather than extra large roots. The paper, with its accompanying table of analysis, is rather long for insertion in full, but we may briefly give the gist of it. Ten specimens of roots grown at Brockley Park, Queen's County, were carefully analyzed. They consisted of five specimens of mangolds, two of turnips, and three of carrots. The treatment given them was the same as to preparation of soil, sowing, and after-culture, but varied as to the distance apart of the drills and the thinning of the plants, the object being to compare the yield of medium and mammoth roots. In weight of crop, the large roots had a decided preponderance, especially in the case of a variety of mangold known as "Carter's Mammoth Long Red," which, grown rather closely, and averaging a size of 6 or 7 pounds weight each, yielded 42 tons 15 cwt. to the acre, while, grown thinly and averaging 18 pounds each, the product was 70 tons to the acre. Superficial observers would pronounce this result conclusive as to the superior policy of growing large roots. But the tests of the laboratory tell a different story, and show that the smaller yield actually contained by far the larger amount of nutriment. The thickly grown roots yielded 19,782 pounds weight of dry food per acre, while those grown more thinly and developed to an enormous size, only yielded 11,681 pounds weight of dry food per acre. Here is loss in actual product, and further loss in carting and handling a vast and useless bulk of water. Professor Cameron points the moral of the experiment so admirably in the concluding portion of his paper, that we cannot do better than allow him to speak for himself. He says:—"We learn that no useful results, but rather the contrary, can be obtained by growing monster mangolds or turnips. Since the introduction of green crop husbandry into these countries it appears to have ever been the farmer's ambition to exceed his neighbors in the production of gigantic mangolds and swedes. It has always been the practice, too, of writers in agricultural journals to encourage the growth of roots of abnormal dimensions. I have not a shadow of doubt upon my mind but that this practice has been carried out to an extreme and mischievous extent. An able agricultural writer, Mr. Baldwin, of Glanmire, has forcibly pointed out the absurdity of awarding prizes to show roots merely because they are the largest. By "spoon-feeding" (as it has not inaptly been termed) a few roots it would be easy for a man with a few perches of a garden to produce more promising roots for show purposes than a farmer could who grew his 20 acres of roots in an ordinary and, I may add, a proper manner. Let us see how far the results of Mr. Young's experiments and my own justify my statement that very large roots should not be grown. At Brockley Park, Mr. Young sowed Carter's mammoth long red mangold in two plots. The mangolds grown in one plot were not thinned out widely, but were allowed to grow rather closely together. In the other plot the mangolds were supplied with a very large amount of manure, because the plot was the site of a former manure heap. The mangolds