The Farm.

Grasses and Clovers.

The family of grasses is very numerous and much varied in its characteristics. Some species will thrive and flourish where others will perish or drag out a lingering existence; some have an early growth, others a late one; some are annuals, while others retain their life for a large number of years; some are very nutritious, while others are comparatively worthless. All these differences and many others have to be considered in the study of these plants, and as they, together with the clovers, furnish us with a great part of the winter's food and almost all the summer's food for our stock, and may aid in the preservation of soil fertility, they form a very important part of our farm crops, especially on a dairy farm.

The varieties sown together for hay should be ready for cutting at the same time. Those sown for pasture should have their periods of most luxuriant growth following each other, and when cropped should quickly recuperate, so that the stock grazing on them may find food from early spring to late fall. Soiling crops should possess similar characteristics to the varieties sown for pasture. For all purposes the varieties should be nutritious, productive, and adapted to the climate and the soil—its composition, texture and aspect.

Timothy, or Catstail *(Phleum pratense)*, is an extensively grown and widely spread variety. It is nutritious, productive, hardy, and loses little weight when handled in the form of hay. These qualifications are well worthy the popularity they have received. It is, however, only adapted for a hay crop in a proper course of rotation, for it, being a surface feeder, is very exhaustive on the soil, and although yielding a magnificent crop for the first season or two, it will soon so diminish its yield, owing to the impoverished surface soil, that it will be found advisable to plow it under the third or fourth season of its growth. Close cropping is especially injurious to this grass, for as the stem possesses very few leaves, especially at its base, nothing will be left to shade the roots, which, as before stated, are very near the surface. The growth of this grass, if once cut, especially when near mature, is very slow, and unless some quickly growing plant, such as clover, is grown with it, the exposure will continue for a long time, and will injure both the roots and the soil, for soils, unless shaded by a crop, lose considerable nitrogen. By close cropping, especially pasturing, the bulbs of the plant are often injured, which reduces its vitality. Timothy, contrary to most other grasses, will increase in value for feeding purposes even after the seeds have commenced to be formed. Its straw is by some considered to be as valuable as its hay. It flowers about two weeks later than the common red clover with which it is usually sown, and as the latter deteriorates very materially in value after the flowering period, it is evident that these plants, although very valuable in themselves, are not suitable to be sown together for hay. Alsike *(Trifolium hybridum)*, and Perennial Red Clover *(Trifolium pratense perenne)*, flower both at about the same time as Timothy, and are therefore more suitable in this respect to be sown together with this grass. The soils on which Timothy thrives especially well are a rich, moist loam, or a peaty soil. A light sandy soil, unless highly fertilized, is objectionable for its cultivation.

Orchard Grass, or Cocksfoot *(Dactylis glomerata)*, is a very fast growing, early variety, of about the same nutritive and productive qualities as Timothy, but apart from these it is almost directly the reverse of its characteristics. It commences growth early in spring, and continues growing until late in fall, quickly springing up again if cropped down. These characteristics, together with its marked ability to withstand drought, its high nutritive and productive qualities, and its characteristic to live in the shade, make it a very valuable pasture grass. It has a large number of ramifying roots descending considerably below the surface soil, which enable it to withstand the drought better than a shallow-rooted grass, and as these roots gather their food from a much larger area, the plant is much less exhaustive on the surface soil than the shallow rooters. The soil best adapted for its cultivation is a drained, fertile loam, but it has been successfully grown on soils of a very varied character. It retains its full vigorous growth six or seven years, but has been known to grow successfully for a much longer period of time. It flowers at about the same time as the common red clover, and like it loses very materially in its nutritive properties if not cut at that time; in fact, if allowed to nearly mature its seeds, it is comparatively worthless. Unless it is sown very thick, or in combination with some other grasses or clovers, it forms tufts or clusters with intervening bare spaces. The similarity in the rapidity of growth and time of blooming that this grass and Red Clover present, allow them to be grown together with great success. This success is still further apparent when we observe that the gap or spaces the grass leaves are occupied by the clover, and that the former assists the latter in retaining its upright position. They both grow the same year, for the grass, getting as early a start as the clover, is not "crowded out" by it.

[TO BE CONTINUED.]

Stock-Raising and Grain-Growing in Relation to Soil Fertility and Exhaustion.

No. VI.

The secondary issue advocated by the manure theorists now remains to be considered, viz., charging the food consumed by the stock at the cost of production instead of at market prices. We intended to go fully into the book-keeping of this question, but as we are now collecting material from our farmers for the purpose of investigating their condition and entering into complete details, we shall here confine our observations to the principles that underlie the question, and point the fallacies of the professional theorists who pride themselves in being practical. It is our part to inquire whether a statement is true, not whether it comes from a practical or a scientific source, which is of no consequence.

In keeping accounts, the system of book-keeping depends upon what facts you wish to ascertain about your business. If you merely wish to know the total profits derived from your farm as a whole, without ascertaining the profits in each branch, the system of book-keeping in the former case will be different from that in the latter. Finding the total profits may be quite simple, but the knowledge thus ascertained is of little practical value. Indeed, properly kept farm accounts are probably the most complicated of all systems, and all attempts made to simplify them have usually resulted in being able to prove, at the will or prejudice of the accountant, that the farmer is becoming wealthy or impoverished. This fact is amply proved by the recent revelations in the press on the condition of the farmer. All classes of authorities—practical farmers, agricultural professors, scientific agriculturists, and professional accountants—have stumbled here, and few of them even approach the proper methods of investigation. We have always taken the stand that it is the best policy to go straight for the truth at once, and not theorize in such a manner as will please the people because the theories are more easily comprehended than the truth.

We take it for granted that the main object in keeping farm accounts is to ascertain the profits or losses in each branch of the business. A separate account must therefore be kept with each branch; otherwise the farmer cannot ascertain which department should be abandoned on account of the losses sustained, or which should be prosecuted most vigorously on account of the profits derived The profits from all sources may be quite satisfactory, but they would be more so if the unprofitable branches were weeded out.

Now our indictment against Prof. Brown, his disciples, and all the other live-stock theorists is, first of all, this, that they sum up the total profits from all the branches of farming and credit them to the live-stock account. This system of book-keeping makes stock-raising appear profitable, whereas the total profits may have been derived from other sources, and the stock may have been produced at a loss. Prof. Brown (see Model Farm report for 1881, page 168) calculates the cost of production as being 50 percent less than the market prices of the food consumed—in other words, there is a profit of 100 percent in producing the food consumed by the stock—and he posts this profit to the credit of his stock account. Every farmer will at once see the absurdity not only of this system of keeping accounts, but also of making such high profits in growing grain and other farm produce—even in the year 1881. He is not even contented with this partiality shown to stock, but he also actually credits the stock with the fertility in the manure produced (valued at $2.55 per ton), without debiting the same fertility to the crop which extracted it from the soil. For example (see same report and same page), he takes a 2½ year-old steer, feeds him for 220 days, during which time he consumes food valued at $31.26 for the cost of production, and $63.08 for the market price, and then he values the manure from the same food at $32.06, thus attempting to prove that it pays to feed cattle for manure production only. Now it is plain to be seen that this $32.06 worth of fertility came from the soil—and even more, for the fertility removed in the increase of beef would be at least $4, making a total loss in fertility of $33.06, which sum alone is 15 percent greater than the entire cost of the food consumed; in other words, he not only lost the whole labor employed in producing the food, but he is also poorer by about 15 percent of soil fertility removed by the crop.

In order, therefore, to ascertain whence the actual profits are derived, we must keep a separate account with the farm produce and the stock One thing is simple and certain, viz.,