that very few of fast-growing trees are handsome, or afford much pleasure beyond the sensual one of shade One thing, most of them are great robbers of the ground, and very few things get a chance to grow well near them. The willows, poplar, silver maple and some others which will make trees as thick as our body in a few years, have roots so numerous that not even a blade of grass is allowed to grow anywhere near them.

Trees which do not grow so very fast are the best for final purposes. Many of them will permit of grass or other vegetation growing quite up to their trunks without injury. People often ask what kind of things will grow under the shade of trees; but it makes a great difference what trees made the shade, as to what things will grow under them.

We see many people bravely planting slow-growing trees for shade, contending that what if they are slow, they are worth waiting for. It is well enough, however, to talk this way in the spring with the thermometer at 90 deg, and not much choice between an overdose of roast meat and a fast-growing tree, it is not in human nature to hesitate as to the choice.

But why not combine the two? If we need to plant two trees before our door, why not plant three, and let one—the middle one—be a fast grower, and the rest of some beautiful slow-growing kind? For instance, there might be two American lindens with a black or some other poplar between them, or two horse chestnuts flanking a silver maple, two Norway maples with a paulownia or other similar combinations, and when the trees are likely to crowd, cut the fast grower away. The labor and cost of an extra tree is nothing to half a dozen years of pleasant shade.

Of each of this class of trees there are now some numbers. Of the fast grower, there are the weeping willow, European alder, silver maple, ailanthus, paulownia, silver poplar, Carolina poplar, cottonwood poplar, grey poplar, black poplar, and American aspen poplar. Of the slower growing trees, which might be planted for permanent ones to occupy the whole space when the more rapid ones are taken away, are the sugar, sycamore, and Norway maples and red maples, tulip tree, magnolia tripeteta, and acuminata, American linden, a beautiful tree for this region, where the European does not thrive so well, the European and American white ashes, the horse chestnut, the English elm, where it is free from the elm leaf bug, and the American elm, which does not suffer quite so badly; and the different kinds of oak, which complete the list of really desirable shade trees Of oaks, there are, we suppose, a good list in most nurseries, as we have seen about Philadelphia many kinds, here and there, that have been set out the few past years We might name the English royal oak, pin oak, burr oak, chestnut oak, swamp white oak, red oak, black oak, scarlet oak and white oak

This, as we have said, is the proper season to study them It would not only afford a great deal of pleasure in study itself, but will be found worth some dollars when the planting time comes round.—*Germantown Telegraph*

## Manure on Wheat.

If L. L. wishes the greatest benefit from his manure, he must apply it after his land is plowed, spread (at once) even, and leave so till the land is sowed, then mix well with the harrow or cultivator—if the application is heavy, use cultivator; sow immediately after that By leaving the spread manure on the surface after plowing up to the time of sowing, the rain will wash out the soluble parts and soak the soil—the top soil with them This is an even distribution—perfectly so, and it is the only way, save by liquid manure, that this can be done perfectly; in fact it is liquid manure the drenching and washing out by the rains Now, an equal distribution is of the utmost importance, as it enables the roots to come in constant contact with the fertilizer; they are immersed in it If the manure is mixed with the soil (plowed under or worked in with the cultivator) only that part of the soil that comes in contact with the manure will receive benefit, and that in excess. In the other case, where the strength is washed into the soil and the remaining manure is mixed with it by the harrow or cultivator, the seed will at once start and grow vigorously, and form by winter a thick pelt, which, with the manure, is a protection. The land, by this method, it will be found, is in excellent condition, the seed bed moist and mellow Where it is wanted to seed down the land, nothing is better than such a preparation. Sow the seed (grass seed, not clover) immediately after the harrow covering the wheat has left the field, and brush in at once.—*Cor. Country Gentleman.*

# The Dairy.

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## Raising Cream.

From time immemorial, cream has been separated from the other parts of milk for the purpose of making butter, yet the best method of effecting the separation is far from being settled.

Opposite practices, in many particulars, are advocated and adopted. A beginner in butter-making is always confused with the contradictory notions of old practitioners, and these differences of opinion and practice are likely to continue till the operators assemble and compare practices and products, and settle differences by discussion.

In the present unsettled state of opinion and modes of operating, an appeal to general principles becomes necessary The statement of a few leading facts will help us very much in deciding what is, and what is not, proper.

The first prominent fact in the separation of cream from milk is, that it rises by reason of its having a less specific gravity than the milk with which it is mingled. But in respect to specific gravity, cream varies very greatly in the milk of different cows; and even in the milk of the same cow, some globules are very much heavier than others, and hence they come to the surface very unequally. The specific gravity of a sample of cream, quoted by Professor Johnston, was 1024.4, of water being 1000, while we have sometimes found it to be .985. It sometimes sinks in water and sometimes floats on it; and the cream on one cow's milk may sink in the milk of another cow The milk and cream of the same cow occasionally differ so little, that the latter never rises so as to indicate any line of difference between the milk and the cream We have recently been experimenting with the milk of a grade Jersey, in which, after standing 24 hours, the cream is seen diminishing all the way from the top to the bottom of the per cent. glass, without showing any point of distinction.

The second essential point is the fact that fats expand and contract more with heat and cold than water, and more than the other elements of milk.—The difference in specific gravity between milk and cream is varied by the circumstance of temperature. It is greatest when hot, and least when cold, and this fact materially affects the rising of the cream.

A third important fact that affects the separation of cream, is the growth of minute organic germs in the milk, which, up to a certain point, is greater the higher the temperature.

There are thousands of germs in all milk exposed to the air, that are ready to start up and grow whenever the milk is warm enough for them to do so, and by their presence, hinder the upward passage of the cream globules The sour milk cells, illustrated in a previous number, are the principal obstructions in the way of the rising cream They begin to form long before the milk begins to appear thick. The growth of other germs does more injury by altering the flavor

Are these facts appreciated by butter makers? Most people seem to have the opinion that milk must be cooled to make the cream rise fast; and that the colder they can get it, the faster the cream will rise. The fact is exactly the reverse The colder the milk, the slower the cream rises, because there is less difference between the specific gravity of the cream and milk, and because the milk is more dense and offers more obstruction to the motion of the cream globules. It does not rise as fast at 60 as at 160 degrees. In cheese-making the waste of butyraceous matter is confined almost wholly to the minutest particles of cream. These rise with great difficulty and very slowly—Those who make butter from whey often heat the whey to 170 degrees, when the difference in specific gravity between the fat in the cream and the water in the whey becomes so great, that the cream all rises to the top in a short time. By cooling to 60 degrees, five or six times as much time is required to effect the same result.

Milk for butter-making should be cooled, not to make the cream rise faster, but to prevent souring, and other changes which would hinder the cream from getting up. The highest point at which these changes can be stopped, or held in check long enough for the cream to come to the surface, is the point to which milk should be cooled Every degree it sinks below that point hinders the creaming process, and prolongs the time necessary for the milk to stand in the dairy-house Not to reach that point is to make the milk thicken before the cream is all up, thus diminishing the yield. The great majority of experimenters agree in putting that point at 60 degrees, but variations that reach from five degrees above to five below are made by some parties with very fair success.

The common error in private dairies is to allow the milk to be too warm in hot weather, and too cold in cold weather. The cream will not rise perfectly in either case, and the resulting butter will be imperfect. The loss sustained in failing to get all the butter that a given quantity of milk is capable of making, is much greater than is generally suspected. Few farmers know how much milk they are taking to make a pound of butter. They seldom weigh or measure, or even guess, at the quantity they are using. From what we have seen, and from facts gathered during a series of years, it appears that 28 and 30 lbs. are usually required. Where the facts could be got at, the amount has varied all the way from 34 down to twenty pounds. If the practices in creaming and churning could be suddenly made so perfect as to get all the butter from milk that it is capable of yielding; every fifth cow could be thrown out of the dairy, and the same quantity as at present obtained. If farmers would take a little pains to know more precisely what they are doing, such losses would not be endured.

Creameries and butter factories usually give us precise figures, but even they are not always fortunate in showing the happiest results In factories recently visited, the difference in amount required for a pound of butter has run from 22 to 28 pounds, and this difference is due, not to the milk, but to the different modes of managing it In a future number, the practical operations of butter-making associations will be analysed and the effect of the different practices explained Comments are therefore omitted here.

There is no mode of raising cream so perfect as to separate all the cream from the milk. It has been already remarked that different parts of it rise unequally. The larger globules meet with less resistance in proportion to their bulk than the smaller ones and hence they get to the surface soonest. The smaller the globules, the slower they rise; and some of them dwindle down to such minuteness that they would not rise through three inches in a week, if the milk could be kept sweet that length of time Cream will continue to rise till the milk gets thick, be that time short or long. The best part rises first. If milk is skimmed every 12 hours, and the cream of each period churned separately, the product of the first period will be the highest flavored and the highest colored, and the color, quantity and flavor of each successive skimming will diminish to the last, but the keeping qualities will grow better. The 4th and 5th skimmings will be quite pale and insipid, but can be kept sound a long time. Where a high flavored article is desired, it is not advisable to continue the process of creaming too long. What will rise in 48 hours, at 60 degrees, on milk four inches deep, is all that is generally profitable to separate. What comes up after that is so white and tasteless as to do more injury, by depressing the flavor and color, that it can do good by increasing quantity.

There are other essential features in the creaming process, such as deep or shallow setting, the influence of light, manner of cooling, &c, that need especial attention, which will be discussed in subsequent numbers.