

as well as fresh-pumped water, which is much preferred to ice-cold water out of a pond or creek. The better the cattle are doing, the more they enjoy the rub around the stack, and will generally lick their feet and legs, as well as body, giving one the impression it is much more humane to water outside than to depend on inside tank- and-pipe system. By keeping records, I think we have saved more than one veterinary bill, as a cow will show it in the pail if sick quicker than in any other way. And, right here let me put in a good word for Epsom salts. No dairyman should be without at least two doses of  $1\frac{1}{2}$  pounds each on hand, as, for anticipated milk fever, caked udder, bloody milk, indigestion, and most other cow ailments, give salts; and for stoppage in the rumen or overdose of grain, add one-half pound common salt, with lots of water, and, if kept moving, this will (if the case is not too far gone when the animal is found) relieve all trouble.

I hope "The Farmer's Advocate" will keep right on advocating this keeping of records, as it will help the expert feeder, as well as the owner of the poorly-kept herd, and increase the output of any factory in two years' time, I am positive, by at least 20 per cent., by getting the patrons interested, and inducing them to feed, breed and wean.

GEO. H. CAUGHILL.

Elgin Co., Ont.

### Weight of a Gallon of Cream.

The standard weight of a gallon of water (liquid measure) is 10 pounds. It is a well-known fact that milk is heavier than water, and a gallon of milk of average composition is supposed to weigh 10.86 pounds. The weight of a gallon of cream will change with its richness, because the fat in cream is lighter than water; but the weight of a gallon of cream of any richness may be obtained by determining the specific gravity of the cream and multiplying this by the weight of a gallon of water. Cream containing from twenty to thirty per cent. fat has a specific gravity of about 1.1; hence a gallon of such cream will weigh the same as a gallon of water, or 10 pounds. The specific gravity of cream containing forty-five per cent. fat is .95, and a gallon of it will weigh  $10 \times .95$ , or 9.5 pounds.

It will take nearly five per cent. difference in richness of cream to have much effect on its weight, so that it may be assumed, as a rule, that:

One gallon of cream containing ten per cent. fat weighs 10.23 pounds.

One gallon of cream containing fifteen per cent. fat weighs 10.12 pounds.

One gallon of cream containing twenty per cent. fat weighs 10.08 pounds.

One gallon of cream containing thirty per cent. fat weighs 9.96 pounds.

One gallon of cream containing thirty-five per cent. fat weighs 9.80 pounds.

One gallon of cream containing forty per cent. fat weighs 9.66 pounds.

One gallon of cream containing forty-five per cent. fat weighs 9.50 pounds.

The weight of a gallon of cream is influenced somewhat by the quantity of air which it may contain from either fermentation, agitation or separation. All of these treatments of the cream may mix more or less air with it, and this will make it lighter; but the figures given are for cream which is sweet and contains little or no air.

### Prof. Dean's Comments Disputed.

Editor "The Farmer's Advocate":

I am indebted to you for placing my letter before H. H. Dean, of O. A. C., Guelph, previous to going to press. He makes an assertion that I have not clear ideas on the science and practice of dairying. According to his comments, I fail to see where he claims any advantage over the article, "Causes of Slow-churning Cream, and Hints How to Overcome the Difficulty," which I have placed before your readers.

I have visited many dairy schools and factories abroad, and come in touch with professors of dairying and buttermakers who all teach and practice the use of a straining-cloth, so am sorry to see Prof. Dean condemn straining the cream into the churn because he does not consider it according to the best practice.

I have seen a good many buttermakers in Ontario and Western Canada pour cream into the churn which was too thick almost to leave the pan, whereas, had it been strained through a cloth it would have been made a proper thickness and "uniform consistency." His idea of straining I consider absurd, as cream that has been properly mixed and stirred during the ripening stage should not have particles of dried cream or curd present. He considers the fall of temperatures alone as cause, while he admits the temperature alone in the room can cause the curd to know that the cream should be made into a suitable consistency before churning, and the cream is the principal factor in buttermaking.

In the winter, a good plan is to keep the cream at about 65 degrees F. for the first twelve hours, and then reduce it to 60 degrees F. for the remainder of the time. So, if we have a quantity of cream at a temperature of 60 degrees F., and the temperature of churning-room be 70 degrees F., to what temperature would Prof. Dean reduce the cream before churning; or, if the cream be 60 degrees F., and room be 60 degrees F., at what temperature would he churn the cream? As I said in my last letter, I could write an article on temperatures relating to dairying, only it would take up too much space in your columns.

Further, he thinks mixing skim milk with cream objectionable. In a weak way he says the result would likely be soft butter. From these last words I conclude the Professor has never tried this remedy, as he seems to overlook the fact we are trying to overcome sleepy or unchurnable cream, and therefore could not expect to have such good results as would be obtained from cream churned under ordinary conditions. I may state here that I have experimented and churned under conditions given many times, so am speaking from practical experience. Shall be glad to hear further on the subject.

W. C. J.

East Grey, Ont.

## GARDEN & ORCHARD.

### "Number One."

II.

Since we must admit that the "pay-dirt" is found in "Number One," let us further follow the considerations requisite to obtain it. I take it for granted that you have planted the up-to-date remunerative varieties of whatever kinds of fruit you are growing, on properly-prepared and suitable soil, and that you have taken the pains to prepare the heads by close pruning annually. There are, in the main, four positive essentials to the production of "Number One," and very often five. They are (in their order of sequence): First, close pruning; second, feeding (if the land is not already well supplied with nitrogenous and potash properties); third, spraying; fourth, cultivation; and fifth, thinning the specimens of fruit set. There seems to be a prevalent idea that it is not necessary to perform all of these, and that pruning (which in far too many instances is what we term a lame pretence at it), plowing (or cutting down the weeds before or even after their seeds have matured), and picking are all the lines of work that are necessary, that the rest may be credited to the list of voluminous details promulgated by some exacting college professor. This is decidedly erroneous, and is in the line of the practices followed by those who come out with deficits. Selection of varieties is very necessary, but this alone is not sufficient. Close pruning alone is not capable of bringing about this result. Feeding (manuring and plowing under soilage crops, etc.) will not do it alone. Spraying only will not do it. Cultivation alone will not do it. Thinning the fruit will not do it. But, when each one of them has been properly done you will get the desired result, produced by the united effect of each essential—"Number One." You may call in a half-dozen men to assist you in your efforts to get your wagon out of a hole in which your team is not adequate to the task. If each one lifts to his utmost ability alone, nothing but dismal failure will result; but if the whole of them put a shoulder to the wheel at the same time, they will achieve success. United and simultaneous effort is what counts. You may manure, cultivate and trim, and yet have the whole of your work rendered useless by simply a failure to spray; or, you may do it by neglecting to prune, or do any of the other requisites. If profit is wanted, no man can afford to neglect to do that which is necessary in order to gain it. Let the care be judiciously divided among them all, and your product will be such as will encourage you.

There is always a great deal said and written on all of these subdivisions of the orchardist's work, consequently I will confine myself to those of pruning (chiefly) and spraying. I am often amused at what is called "a good trimming" by many growers. I usually tell them to go over it again and take out from one-half to two-thirds of the outer small branches which they have left, and they will then have done a pretty fair job; none too much taken out when that has been done. One should never tackle an apple or other tree with an axe and bucksaw, cut out a large branch here and there, and call that pruning. It is a stave that should be called "butchery" and relegated to the history of the dark ages. Its chief usefulness is to admit copious streams of sunlight in specific places, producing a permanent damage on the larger limbs and whenever they pointedly strike the trunk. It is only occasionally that it is necessary to remove large limbs (the heads should be well cut out and trained while they are young, then this will not be needed later, only a few small branches to cut out in the upper part of the tree, and the main trunk should remain between any

of them. Cut them back and force them to grow strong and stocky to carry their load of valuable fruit when it is on. Open up the tree-head uniformly to admit plenty of sunlight, and yet have it properly distributed through small openings instead of huge skylights. My plan of it is this: I always study to throw the tree-head into the prevailing wind-quarter, and thus maintain the proper balancing of it, and keep it in position to have its own foliage protect its large limbs and trunk. This is done by beginning on the opposite side from that whence the prevailing winds come, and cutting off the branches which are found on the under side of the main limbs. As I work over toward the wind-quarter, I find that I have to cut off those that are on the opposite side of the upright limbs; e.g., if the wind-quarter is that of the south-west (as is the case throughout most of this country), I cut off those branches which are on the north-east side of the main limbs. When I get over on the wind-quarter side I work off those branches which grow on the upper side of the main limbs. When I want to shorten those which I leave, I am careful to select a place where there is a bud pointing toward the south-west, and cut immediately above it. This would be on the same plan as the pruning, and my bud would be found on the upper side of the branch in the north-east quarter of the tree-head, on the south-west side of those which were growing upright, and on the under side of those which are in the south-west quarter. The reason for this is that the new branch always starts out in an angle to the one from which it springs, and I want to take advantage of this in order to steer it as pointedly as possible into the wind, which always exerts a telling influence on it by reason of the surface presented by its foliage while it is yet sappy and not mature wood. After it has had a year or two of growth it will be in better shape to maintain itself in correct bearing.

Another thing to strictly avoid is the interference of branches. I never allowed them to cross each other. Keep them sufficiently apart that a gallon measure can be thrown out from the center of the head without striking a branch. Never allow them to go without being well cut back; the results of this will be seen in after years, when there is a good crop of fruit on them. Do not get impatient, and think that you must have fruit as soon as there are blossoms on your trees; if you allow them to produce when they are young, you may find that you are 100 per cent. a loser in what you should get in the crops of later years, and that your trees have been permanently damaged from taxation when they were too young to stand it.

Another very helpful thing to do, in order to maintain the perpendicular standing of your trees, is to go round them every spring while the ground is yet soft and take out a shovelful of earth from the south-west side and place it around on the north-east side and tramp it down well, while at the same time you hold the tree over in an inclination of about 52 degrees into the south-west. Even after you have done this well each year while the trees are growing, you will find that you have in nowise exceeded in wise precautions; the wind is tireless. Sun-scall is responsible for far more than many may dream of. Indeed, I find too many who do not know what it is. For the information of some who may wish to know this, I will say that it is a burning of those parts of the large limbs and the trunks of the trees which are directly exposed to the streaming heat from the sun for the greater part of the day. The effect is a drying up of their bark, and a subsequent separation of it from the wood, which gradually becomes completely dried, and cracks and rots. I have many times seen trees with the greater portion of their trunks eaten through by this destructive element. It can be avoided if care is taken to follow the practices above mentioned.

W. H. BRAND.

Lincoln Co., Ont.

### Less Weeds and Labor with Low Head.

Editor "The Farmer's Advocate":

Replying to your inquiry re "At What Height to Head Young Fruit Trees," we are much in favor of the best fruit-growers' tendency to head low, as there are decided advantages in this method. Standard apples should be headed 38 to 40 inches in height; standard pears and cherries, the same; peaches and quinces, about 36 inches; some advocate even lower. Some of the advantages are that the wind has less effect on them when in fruit; the expense in picking is less; the ground is kept cleaner of weeds, being more shaded, and moister as well; trees are less likely to be broken. Cultivation may be done with a wide harrow or disk, but even this is made less necessary by the fact that weeds are less luxuriant under the low, shading tops.

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