

cow whose milk is examined is in a healthy condition, and the food and milk are normal.

A short time ago I ordered and received a Feser's lactoscope graduated for testing cream as well as milk. I have been making tests with reference to the butter capacity of various qualities of cream, with satisfactory results, but the tests have not yet been numerous enough to justify publication.

The lactoscope is not sufficiently accurate for testing skim-milk, the results usually indicating 50 to 75 percent higher than those obtained by chemical analyses; the more completely the fat is removed from the milk the greater will be the difference. The average difference in centrifuge skim-milk amounts to nearly one percent; but by this method of separation, there is an average of only about 0.20 of fat in the skim-milk against 1 to 2 percent by the ordinary methods of separating the cream. This discrepancy arises chiefly from the fact that the fat alone is not the only cause of the opacity of the milk, the other solids also playing a more or less trifling part.

There are many styles of the lactoscope in use, but the one constructed by Prof. Feser is the simplest and most accurate.

(To be continued.)

Salting Butter with Brine.

Mr. G. D. Brill, a student in Cornell University, read a paper on the above subject before the New York Dairymen's Association, which is condensed as follows in the *Country Gentleman's* report: The cream was allowed to sour slightly, and was then churned until the butter was in granules. The butter was then washed in the churn, in pure water. Three pounds were taken out, and about one and one-half quarts of a saturated solution of salt poured on it and allowed to stand for thirty minutes, with an occasional stirring. The brine was then poured back into the dish, in which some of the salt still remained, and after being shaken up and allowed to settle for a minute, the brine was poured back and left, with an occasional stirring, for thirty minutes more, making one hour that the butter was in the brine. The salt had been weighed before it was dissolved, and now the water was drained from the butter back into the dish, and the butter packed tightly in a stone jar with scarcely any working. What brine was pressed out by the packing was also poured into the dish with the rest of the brine. The whole amount of the brine was then evaporated and it was found that the three pounds of butter had taken up 1.4 ounces of salt, or 47-100 of an ounce to the pound, which is almost half an ounce. A sample of butter was taken from the jar, and the water evaporated. It was found that it contained 11.29 percent of water. The average amount of water in butter is given as being from 9 to 14 percent, but some place it as high as 16 percent. So this butter contained rather below than above the average amount of water.

In another experiment he salted three pounds of butter with the brine and also three pounds with dry salt, at the rate of an ounce to the pound. After the butter had been worked enough to mix the salt with it thoroughly, the brine that had worked out was evaporated, and it was found that 1.3 ounces of the salt had worked out in the brine, leaving only 1.7 ounces in the butter, or 0.57 of an ounce to the pound. The difference between the butter salted with dry salt and the butter salted with brine was only 0.1 of an ounce in favor of that salted with dry salt. Of course more salt is used in salting with brine than in salting with dry salt. In this experiment about one pound and twelve ounces were used to the three pounds of butter. Whether the salt can be washed out of brine-salted butter or not he does not know, nor can he see the objection if it could as long as there is no more water in it.

The Apiary.

Spring Management of Bees.

BY W. H. WESTON.

This subject is of the greatest importance, and although many have written about it, there is always something to learn in respect to this trying season. When we can all say that we winter our bees without loss, it will then be time to confine ourselves to the spring and summer care of these lively little insects. I am sure there is hardly any person that keeps bees but what would like to know more about the spring management, as at this season there is usually a far greater loss than during winter. Men who have kept bees for a number of years generally have a way of their own—men who make a study of the subject; but it is not to them I am writing, but to the inexperienced, who are just starting to keep bees and are anxious to avoid mistakes. It is impossible to avoid mistakes once in a while, and in bee-keeping, as in all other industries, "the well laid plans of mice and men gang aft aglee." However, it is advisable to give them the attention necessary at this season, and thus avoid all errors and omissions possible. Bee-keepers often notice that a colony that appears very strong when put out will dwindle down to a mere handful in a few days. There is a very large number of bee-keepers who winter their bees in clamps, and to all such I would say, don't disturb them if they have sufficient food and a clean hive, till the warm weather comes and the willow is in bloom; then, on a warm, still day, take out the frames and put them into a nice, clean hive (which has previously been prepared for the purpose). It is necessary to retain as much heat in the hive as possible. So when you take the frames out of the hive in which they were wintered, lift them, bees and all, and brush off the dead ones, and the frames that contain the most honey, and those with brood, if any, and place in the new hive. Do not put in more frames than the bees will cover, and move up the division boards so that they will be as warm as possible. It is wise to pack between the division boards and the side of the hive with cushions of chaff or sawdust. Now cover the frames with a number of sheets of paper or enamelled cloth, or any other quilt that will keep the heat in, with a sawdust cushion on top. Contract the entrance and do not disturb them till they give signs that they require your attention. I might here remark that it is advisable not to open the hive till the thermometer shows the temperature above seventy degrees. Bee-keepers who winter their bees in the cellar used to carry them out as soon as possible in the spring, but now the most successful bee-keepers advise to keep them in the cellar till all chance of chilling winds are gone, and the fruit bloom has commenced, but should any of them show signs of diarrhoea, they should be carried out and given a chance for a flight and then carried in again and left till settled warm weather. Bees very often swarm out in spring when they have not been transferred to a clean hive; they do detest a dirty house.

Stimulative feeding is not advisable to the inexperienced, as they are very likely to do more harm than good, and I would not advise opening the hives in cool weather, as the brood might be chilled. Such a proceeding might also prove fatal to the queen, as the bees sometimes ball the queen when they are disturbed in cool weather.

A problem that has not been solved yet is, Why do not bees that have gone into winter quarters in the same condition, and have received the same treatment, come out the same in the spring? Some will come out very strong, and others very weak. I presume the queen in one hive is not as prolific as the one in the other. How will we treat them in a case of this kind? I would not advise building a very weak one from a strong one, but would rather advise uniting two weak ones, and in that way perhaps save a valuable queen, and be able to bring the colony to a fair size by the honey flow. It is far more profitable to have an extra heavy colony by the time when the honey flow commences, than to have two weak ones. Weak colonies can be placed in the cellar should they show signs of dwindling all away; they could then be kept warm, and by placing a wet sponge or cloth under a corner of the quilt, they could start breeding. When settled warm weather came they could then be set out with a better chance of success.

Bee Farming Notes.

In handling bees do so without jarring the hives, and avoid all quick motions.

Should a bee alight on your nose or other part of your face, allow it to walk off again, which it will usually do, unless you disturb it, as bees are, as a rule, very good natured when there is an abundance of honey coming in. On the other hand, they are exceedingly cross when there is no nectar in the flowers, or on a rainy day. It is the instinct of the bees to fill themselves with honey when disturbed. So bee-keepers usually blow some smoke into the hive, which causes them to fill themselves with honey, when they can be handled much easier. The smoke has no other effect than to cause them to fill themselves with honey. This is the only object for which it is used, except it be to drive them out of the way during manipulation.

Prof. Morrow, of the Illinois University, has made the following deductions from experiment:

1. Increase of weight in cattle is most cheaply secured by pasturage without any grain during the best part of the season.
2. Feeding whole corn in the autumn months to cattle on pasture is the most economical method of fattening cattle. The feeding is done with least labor. When hogs follow the cattle there is very little waste. The manure is all saved and distributed without cost. While comparatively low prices are to be expected for cattle marketed in the autumn or early winter, a fair profit has been made annually. Even with the prevailing exceptionally low prices, sales have been made (for November delivery) of most of the cattle purchased last spring at a price which gives fully satisfactory profit.
3. After three or four months of full grain feeding a considerable decrease in rate of gain may be expected.
4. Apparently from thirty to thirty-six months are the most profitable ages at which to sell cattle fattened on this system—unless those of a little greater age can be bought at a price which gives no profit to the grower.
5. It is not profitable to feed grain to yearling steers on good pasture, if it is designed to keep them another year and fatten for the general market.
6. Calves reared on skim milk, with addition of some meal, may make entirely satisfactory growth and beef animals of good quality. A high-grade Shorthorn steer now on the farms weighs 1,470 pounds at a few days over twenty-nine months, and with less than two months fall grain feeding. He has gained 185 pounds in the last forty-five days.