again, is much greater than to turn out the contents from a properly constructed tub. It is not always necessary, however, to remove the head of the firkin to try the butter. A hole may be bored for the insertion of the tryer, but this is never so satisfactory to the buyer as when the whole top surface can be seen. Besides, to permit of trying in this way, the cloth, which is used on the top of the butter in other packages, must be omitted. From all of these considerations it will, we think, be readily seen that if we can find in some other package most of the advantages inherent in the firkin, with none of its disadvantages, the latter will not be the package "of the future."

The next package we shall consider is that one known in New York as the Jamestown pail or tub. It is of comparatively recent introduction, and is not very extensively used. Its dimensions are as follows:—Stave, thirteen inches long and half-inch thick; diameter of head, fifteen and a-half inches; of bottom, inside of the hoops, thirteen inches; chine, half-inch deep, beveled; bottom, about half-inch, tapered to chine; and cover, half-inch thick, chamfered at edge. Three hoops of galvanized iron, one at bottom, one three and a-half inches from the top, one between. The staves, bottom and cover are white oak, smoothly finished, and the staves are varnished. The cover is nailed flat to the top of the staves, without a rim. The cost of this package is about fifty cents, its weight is about eleven pounds, and it holds about fifty-six pounds net weight of butter. Almost the only disadvantage which this package has in comparison with the firkin is that it exposes more of the top surface of the butter, and if long held will lose more in becoming "strong on top." It turns out its contents very easily, and is not too large for convenient handling. It is handsome, but slightly suggests the blacksmith or the cooper shop rather than the dairy. Its varnished staves are not easily stained by brine or grease. Its disadvantages are high cost and greater weight than the Welsh tub of the same capacity.

The half-firkin tub is, as its name implies, like the half of a firkin when the latter is sawed through the bilge, except that the upper hoops are set nearer the head of the tub than they would be in a sawed firkin, and instead of a head set into a chine, the cover is flat and nailed to the top of the staves. The dimensions of this package vary a good deal, but average about as follows:—Stave, eleven and a-half inches long and a half an inch thick; diameter at top, sixteen and a-half inches, and at bottom, thirteen and a-half inches inside of the hoops; chine, one inch deep, beveled; bottom, about half-inch thick, beveled and let into the chine; top, three-eighths to a half-inch thick, chamfered at edge. Hoops, hickory with the bark on, three at the bottom, two within one inch of head. This package weighs about eleven pounds, holds about fifty-six pounds of butter, and costs forty to fifty cents. The staves, bottom and cover are of white oak, smoothly finished and generally without varnish. This package is an old favorite, and having been largely used in the dairies of New York for butter marketed fresh, has become somewhat associated in the public mind with that class of goods. It has the same slight disadvantage as compared with the firkin, inherent in the tub form, just described as belonging to the Jamestown tub, and the same advantages. The contents are easily removed entire. Being larger at the top than at the bottom, the head having been removed and the tub turned upside down, a blow with a mallet on the bottom, when the butter is sufficiently firm, permits the package to be slipped from the contents, leaving the latter standing entire. The tub may then be replaced, and little or no injury to the butter results. In this operation the hoops need not be started, and the labor and time involved are slight. An objection to the half-firkin tub, and the same is true of the Jamestown tub, is that the cover cannot be readily removed without some splitting or breaking of it, or pulling it off the nails, which are left sticking in the staves. When the cover is replaced it shows that it has been once opened, and this advertises the fact to a buyer that the package has been once examined and rejected. The half-firkin tub is also open to the objections made to the Jamestown tub in its cost and weight. It is, when well made, a handsome package, and a good one for general use.

The only remaining package to be considered is the so-called Welsh tub. This varies more in size than any other package used for butter. We have seen sizes ranging in capacity from twenty to one hundred pounds. It differs from the half-firkin tub in being generally made of white ash instead of white oak; in being higher in proportion to its diameter; in having flat hoops finished without the bark, and in having a cover with a rim which passes down over the tops of the staves. The dimensions of a Welsh tub weighing eight pounds, and designed to contain fifty-six pounds net weight of butter, are as follows:—Stave, fourteen and a quarter inches long and three-eighths inch thick; diameter at bottom, inside of hoops, twelve inches; of cover, inside of rim, fourteen and a-half inches; thickness of bottom, half-inch; of cover, three-eighths inch; rim on cover, one and three-eighths inches wide, and about three-sixteenths inch thick; chine, five-eighths inch deep, chamfered. The upper ends of the stave are chamfered to a perpendicular, so that the rim of the cover may fit snugly its entire width. The hoops are one and a-quarter inches wide, by a large one-eighth inch thick; there are five of them, three at bottom, two about two inches from top of stave. Sometimes two hoops are used at bottom, and another as intermediate between lower and upper hoops, but this style is not generally so well liked. When the staves are well fitted they can be held tight by three hoops at the bottom and two at the top. The cover is secured to the staves by four strips of tin tacked to cover and stave, or by four double-pointed tacks or wide staples, one prong of which is driven through the rim, and the other into the stave below. The last mentioned method is best liked. The staves and cover are generally white ash, the hoops ash or white oak, the bottom sometimes of white oak and sometimes of white ash. The inside of the staves of this, as of all other packages, should be finished perfectly smooth, free from lumps, splinters or irregularities of any kind; the flat cover should be of one piece, or, if two pieces are used, they should be joined by a tongue and groove. The cost of the package described, in large quantities, is thirty cents.

This tub has all the good qualities of the half-firkin, and advantages over it in lightness, cheapness, and the facility with which the cover can be removed and replaced without injury. It is whiter in color, and may become soiled easier, but grease stains do not show so plainly upon it. The Welsh tub is now the most extensively used in this country of all the packages. Nearly all of the western producers use it; it is almost exclusively used in the northern counties of New York, and its use in other sections of that State is increasing. Canada, also, uses far more Welsh tubs than any other package. They are used for all kinds and qualities of packed butter, from the finest creamery to the most inferior "milled." The home trade makes little or no objection to them, and many prefer them. The package is a favorite with the export trade, and is well known and liked in England and the continent of Europe.

Now, we think that each succeeding package described has shown us increasing advantage, until the last one leaves little or nothing to be desired. It is not a theoretically perfect package, but experience proves that it is as nearly so as the arts and the wit and the ingenuity of man enable us at present to construct. It is gradually but surely and steadily supplanting all other styles in the general trade, and it is only a question of obtaining the consent of dairymen, especially those of New York, to have it become the universal style, the desirability of which we tried to make plain at the beginning of our essay.

As we have asserted the necessity of one standard butter package of uniform size, style and capacity, we have a few words more to add to complete our paper. The size and style of package, given in detail in describing the Welsh tub above, are those which we recommend. Our reasons, besides those already given, are as follows:—The package of this size is easily handled; its weight packed is under (but not much under) 70 pounds, so that the advantage is with the seller in allowance for soakage—the custom being to allow one pound soakage on a package of butter less than 70 pounds in gross weight, and two pounds on a package of 70 pounds and over. Again, the net weight to be charged would be 56 pounds, just half an English hundred weight of 112 pounds. As we in this country sell by the pound, both wholesale and retail, an exact weight, excepting on the score of uniformity, is not of special importance; but as in England wholesale prices are fixed by the 112 pounds, it is convenient to have the net weight of butter in our package an even fraction of that weight. The package, when soaked in brine at the dairy, creamery or factory, is calculated to have absorbed one pound of water; if it does, then the gross weight of our package filled would be, say, 65 pounds; the tare would be 8 pounds for package and 1 pound soakage, say 9 pounds, leaving net 56 pounds. It may be objected that the weight cannot be figured down so closely as this in practice. To this we reply that it can be and is done by some packers. There is a small space allowed for between the top of the butter and cover, which gives the packer a margin of a pound, more or less, in filling, by which he can make his net weight uniform if he "gives his mind to it." Some slight drying out of wood in packages of butter long held may work slightly against our calculation, but if the package has been properly soaked, and 56 pounds net weight of butter put into it, without salt and extras, it would have to be held a long time before, upon being "stripped," it would be found not to contain exactly that weight of butter.

Butter from Traveled Milk.

In a previous issue some experiments were described showing that milk which had been carried some distance in a wagon, as to a creamery, before being set for the cream to rise, yielded less butter because of the slow cooling on the way, in the place of the rapid cooling which would take place if it were set at once, while still warm from the cow, on ice or in cold water. Further researches on this point are given in recent numbers of *The Milk Zeitung*. It is there shown that the diminution in the yield of butter is the same whether the milk is carried by rail or by road-wagon, notwithstanding that the kind of motion is so different in the two cases. This result is in accordance with the opinion expressed by Cordes in the article above noticed, that the agitation of the milk while travelling has nothing to do with the smaller yield of butter. It was further shown in these last experiments that the loss of butter is greater the more milk has cooled down before being set to cream at the end of its journey; the loss of butter is much greater if the milk is allowed to stand but ten hours than if set for thirty-six hours, while, if the milk is put in ice water at once, it will throw uy nearly all its cream in ten hours; therefore the change which the milk suffers is of such a character as simply to retard the rising of the cream. The conclusion of this last investigator, Fjord, is, like that reached by Cordes, that it is the partial cooling of the milk before being set for the cream to rise which causes the loss. The possible extent of this loss in some cases is shown in one of his experiments.

A quantity of fresh milk was divided into three portions, one of which was set in ice-water at once; the other two were allowed to cool an hour by standing at ordinary temperatures, and one of these was then set in ice water; the third portion was carried in a wagon for three hours before being set in ice water; all the samples were allowed to stand ten hours. Calling the quantity of butter yielded of the first portion of milk 100 parts, the other two gave 70.6 and 73 parts respectively; or in other words, there was a loss of 27 and 29.4 per cent. of butter in the two cases, as compared with what should have been obtained if these two portions of milk had, like the first, been put in ice water at once. The loss was not in all cases so great as this; but the fact that it may occur, and may under certain conditions be so serious, is well worthy the attention of managers of creameries; and no less worthy of their consideration is the simple method discovered by Fjord, of almost entirely avoiding this loss, which consists in heating the milk, so soon as received at its destination, up to about 104 degrees. In the warm season the milk may be cooled as soon as drawn, so as to be delivered in a fresher condition at the creamery, where it may then be warmed as above.—[N. Y. Tribune.

FIRM BUTTER WITHOUT ICE.—In families where the dairy is small a good plan to have the butter cool and firm without ice is by the process of evaporation, as practised in India and other warm countries. A cheap plan is to get a very large-sized, porous earthen flower-pot, with a large saucer. Half fill the saucer with water, set it in a trivet or light stand—such as is used for holding hot irons will do; upon this set your butter; over the whole invert the flower pot, letting the top rim of it rest in and be covered by the water; then close the whole in the bottom of the flower pot with a cork; then dash water over the flower pot, and repeat the process several times a day, or whenever it looks dry.—[Ex.