ing out the comparative yields of different cows, or for testing the quality of bought-in milk.

The processes with ether, alcohol, &c., have hitherto been too troublesome for ordinary people, necessitating a certain amount of knowledge of chemical manipulation. Analysis has thus been pretty much left to professional chemists, and has, therefore, not been carried out for the ordinary run of dairy farmers as it otherwise might have been. Realising this fact, the officials of the University of Wisconsin bethought themselves of trying to evolve a simpler method which would suit ordinary, commercial, and farming purposes, and the Report now before us* is a statement of how well they have succeeded. Mr. Short, one of the university staff, has been investigating the matter for the last nine months, and method he has devised is now given to the world in this paper. The theory of the process may be given in Mr. Short's own words :—

THEORY OF THE PROCESS.

The process depends on the following facts: That when a mixture of milk and a strong alkali is heated to the temperature of boiling water for a sufficient time, the fat of the milk unites with the alkali and forms a soap, which is dissolved in the hot liquid; at the same time the casein and albumen are disintegrated and become much more easily soluble. After the heating has continued for about two hours, the mixture of milk and alkali becomes homogeneous and of a dark brown colour. On the addition of an acid the soap is decomposed, the fatty acids are set free, and rise to the surface, while the albumen, casein, etc., are first precipitated and then dissolved.

Like all important discoveries, it is very simple when one knows it. Anybody can go to America nowadays, but it required a man of the calibre of Columbus to show the way. Everyone who understands chemistry will wonder how the thing was not hit upon long ago. For the benefit of those whose chemistry is hazy, and in explanation of the principles of the process, we may explain that all fats and oils are compounds of the "fatty acids" with glycerine. The best known of those fatty acids are the palmitic, oleic, and stearic. In butter there are nine different kinds known to be present, while in saponification, or ordinary soap-making, the glycerine is removed and an alkali (soda or potash) put in its place. This is done in the process under discussion by continuous boiling of the milk with these alkalies; the longer it is boiled the more exact will the results be. The next thing is to displace the fatty acid in the soap so formed by a stronger one, and a mixture of sulphuric and acetic is used for this purpose. The fatty matter so displaced floats to the top, and may be estimated by measurement of the height of the column formed in the tube. It is not claimed that the results are so exact as ordinary "gravimetric" method, but they are perfect enough for all ordinary commercial and farming purposes, while no previous training is necessary to enable anyone to carry it out correctly from the printed instructions. A further point in its favour is the cheapness of the apparatus. No special sets are manufactured yet, as the process is only now made public, but it cannot cost more than a few shillings for the graduated tubes, acid, &c. The paper quoted from is too long for reprinting in full, but in the above we have called the attention of our readers to a process which promises good results with little trouble, and we commend it to all those who have occasion to test milk.

MILKING TRIALS.

Our readers would notice a statement in our columns a week or two ago to the effect that the American Ayrshire Cattle Society had drawn up a new scale of points for testing the milk yield of cows, giving details of the same scheme, there appeared also a list of points to be awarded for the cost of production, and it is to this that we wish particularly to direct attention. So far as we are aware, this is the first time that a proper and sensible scheme for testing the milk-yielding capacity of cows has been adopted in practice by any society, and we shall look forward with the greatest interest for the results of the same. We have more than once pointed out within the last few years that this was the only way to conduct trials so as to get reliable facts, and that trials conducted as they have hitherto been in this country were quite misleading, especially when different breeds of cattle were competing. To put it another way, a cow which gave the largest quantity of the richest milk in proportion to period of lactation has hitherto been awarded the prize, irrespective of value of animal (capital invested) or expense of keep, so that there was nothing to prevent an animal which was kept at a loss, and would be ruinous to an ordinary farmer, from being decorated as champion if she only yielded well. As a matter of fact, the smaller breeds never have hitherto had a chance, notwithstanding that many of us believe, and are prepared to prove, that they are the more profitable animals for a dairyman to keep. A Kerry yielding 400 gallons per annum may be paying better than a Shorthorn yielding 600 gallons, but in a milking trial in which the milk yield only is reckoned, the latter would come out the better. In the scheme now put out, as mentioned above, this will be rectified, and we shall get facts worthy of being relied upon; and if the principle is introduced in competitions with different breeds, we shall get at the dairy value of each.

We believe the difficulties likely to be encountered in this new departure are by no means light, and that this is the chief reason why the system has not been adopted long ago. The actual daily amount of food consumed by animals must be ascertained and a money value assessed, and this will be very difficult to do in many cases unless the trial can be carried on for a sufficient length of time to allow of the effects of food being weighed and measured under inspection becoming fully apparent. The American society proposes to put competitors on oath as to the kinds and quantities of food and general treatment given for ten days before the animal comes under its jurisdiction, while each is allowed as much of everything as he desires during the trial, when a note of all will be kept. This will, no doubt, be sufficient with the majority of competitors who have honest intentions, while the inevitable "black sheep" may be deterred from malpractices by penalties or a prohibition from again competing in the future. It is proposed to give the marks in this department according as the cost of producing a pound of butter and cheese from each cow rises of falls from a certain standard. This, of course, is a matter or detail, which might be afterwards modified, but it seems the fairest way of apportioning marks, as it is obvious that to simply value cost at per gallon of milk would not give value for that of rich quality.

Another way, perhaps quite as good, and involving far less trouble, would be to simply get at the cost of keeping up an animal for the one or two days during which the trial is conducted, and award marks according as she rises above or falls below a certain standard—say, one shilling per day—the smaller the cost, the higher the marks. The other part of the trial would, of course, be conducted as at present, where quantity of quality of milk and other matters are taken into consideration. The only point to which to take exception in the scheme put out by the American Ayrshire breeders is that in which it is stated that the cows are to be milked by men selected by the association, and approved of by the owners of the animals. It is pretty certain that, if this is adhered to, it will not do the animals justice, because there is nothing