

HOME SEPARATION.

THE SEPARATOR.

G. M. VALENTINE.

THE PRINCIPLE OF SEPARATION.

To get the best results from machinery of any description it is essential that the operator should understand the principle upon which it is worked. In the case of the cream-separator it is the law of gravity as applied by centrifugal force—in other words, the law which compels any weight to fly to the extreme limits of the circle within which it is confined when rapidly revolved. The inflowing stream of whole milk first strikes the bottom of the bowl, which is running at high speed. It is immediately thrown to the outer wall and is then forced upwards to the skim-milk and cream outlets near the top of the bowl. The skim-milk, being the heavier, is thrown to the outside, while the lighter cream collects nearer the centre. In the old type of hollow-bowl separator this action could be clearly seen. After a long run the bowl would often have a pyramid of very rich cream suspended in the centre. Generally speaking, however, there is no clearly defined line between the cream and skim-milk—rather a gradual shading from very rich cream in the centre to practically pure skim-milk on the outside. First the skim-milk escapes through the outlets provided to the skim-milk covers, while the cream rises to an outlet on or near the top of the bowl, where it escapes to the cream-covers. The higher the speed of any bowl of a given diameter the cleaner the skimming, due to the increased centrifugal force exerted on the milk, and the smaller the diameter of the bowl the higher must be the speed. Speed is perhaps the most important point, and is, I believe, the most neglected. The richness of the cream delivered is regulated by a screw, which acts either on the cream or skim-milk outlets. In the former case the further the screw is turned *in* the nearer it is to the centre of the bowl, the amount of skim-milk which escapes with the cream being thereby less and the cream richer. According to the same rule, if we turn the screw *out* we get a thinner cream. In the latter case, the further the screw is turned *in* the smaller does it make the skim-milk outlet, thereby forcing more skim-milk out with the cream and causing later the cream to be thinner. To turn the screw *out* in this case will give us a thicker cream.