

both necessary and economical, while during the second half moderate, though not scant, feeding is called for.

As above indicated, research also reveals the fact that the quality of the milk cannot be influenced to any appreciable extent by enriching the food fed, for the mammary gland on secreting can only yield fluid whose variation in composition from time to time, under normal conditions of animal maintenance, is slight.

The feeding of a scanty diet immediately after a liberal one does not, as a rule, at once affect the mammary gland, a portion of the milk being formed from body substance (flesh and fat); and the cow may lose weight appreciably without the yield of milk undergoing any noticeable reduction. As a rule, states Kellner, there is, however, a rapid fall in quantity. In like manner, if a pregnant cow is insufficiently fed, we are informed she has to draw upon the body fat and flesh to meet the demands of the developing foetus. This undue strain is bound to affect the productiveness of the cow during her next lactation period, and is also bound to unfavourably affect the capacity of the mammary gland—hence productiveness—of the heifer ultimately resulting from the ill-nourished dam. Here, truly, is the reason for the statement “the basis of dairying is the maternity of the cow.” A disregard of this principle alone in some parts of New Zealand means a loss annually to the dairying industry of New Zealand. During the period of pregnancy, and for some time after, the dairy cow requires a fairly liberal allowance of food well supplied with protein (a nitrogenous compound). This should be supplied in the form of lucerne or clover hay or ensilage stored for winter (the usual pregnant period), or provided either in exceptionally good winter pasture or in winter soiling-crops that embody legumes, which are rich in protein.

Protein is most essential to the system of the milch-cow, not only for maintaining the tissues of the body but also for maintaining the yield of milk, for if the allowance of protein is diminished, although there may be a sufficiency of sugars, starches, and fat in the food, the quantity of milk produced decreases rapidly. The reduction of protein does not, however, appreciably affect the quality of the milk, says Kellner, except when the reduction is so far carried that the animal is forced to draw upon its body supply of milk-constituents. It is only when the body is much reduced in protein that the milk becomes poorer in fat and more watery. It is further stated that the amount of digestible protein which is essential for the production of a given quantity of milk depends to a certain degree upon the