

tia; let our farmers arouse themselves and find tangible reasons for their prejudices, or else throw them aside.

Of several breeds of cattle, *colour* is a distinctive mark,—as much so as in the races of men. We expect a Devon bull or cow to be uniformly red, a Galloway or Angus one to be wholly black; if they are not of these respective colours, we are entitled to assume that the breed is not pure.

What of Durham or "short horn" cattle, as they are more correctly called?—No cattle exhibit such a beautiful admixture of colours, red and white, as these.—One of the finest Durham bulls brought down from Canada, and sold at the recent sale at Richmond, was pure white. He was objected to on this score; his fine proportions and beautiful silky coat were ignored because he was white, some even enquired, Can he be pure Durham, and quite white?

We have taken considerable pains to ascertain whether there is really any ground for this prejudice against white short horns; and the result of our enquiries has tended to show, that white colour is more prevalent in the short horn breed than in any other breed of cattle. A very large number of pure short horns have a large proportion of white. The first prize ox at the Smithfield show last month (December) was a *white* ox, and the greater number of the prize short horns at the various agricultural exhibitions in England this season have been *white* animals. In last number of the *Canada Farmer* a first prize *white* heifer is figured. And were we to go back over the prize lists of English and American exhibitions for the last ten or twenty years, the same fact would become more and more obvious,—that white is the prevailing colour of high bred short horns; it is in fact a mark of high breeding.

It is perhaps not generally known that the largest *wild* cattle that have ever been known are the *white* cattle of the European forests, and our own opinion is that the white colour of itself indicates a high development, that the difference between the *white* Durham bull of soft skin and smooth fur and the *black* Galloway enveloped in a curly "Astracan" robe, is very much the same as the difference between a white Anglo-Saxon man and a coloured African one. Each has his merits; for prowess and symmetry, power to eat and fatten, we prefer John Bull to Sambo or Micmac or any other man or gorilla;—the white Durham (so called) we likewise prefer to the black Galloway, the red Devon, or any other ox. It is well known that the Durhams are the largest and most perfectly developed cattle in existence in the world at the present time; it is likewise equally well known that a larger proportion of Durham cattle are *white in colour*

than any other breed; these two facts are highly significant, as indicating a coincidence between high breeding and white colour, which would lead any reasonable man to prefer a white Durham bull to a Durham bull of any other colour; but men are misled by fancy as women are misled by fashion.

Whilst offering these statements, we do not wish our opinion to be taken in the matter for more than it is worth. Let us have a full expression of the opinions of our farmers on the subject; let all be said on both sides that can be said, and then those who are seeking for the truth will have some chance of finding it.

#### MILK, BUTTER AND CHEESE;

THEIR PHYSIOLOGICAL AND CHEMICAL HISTORIES; THE INFLUENCES OF FEEDING PLANTS UPON THEM; PRACTICAL DIRECTIONS FOR THE MANAGEMENT OF THE DAIRY.

It is a great mistake to suppose that the business of farming begins with the sowing of seed in the spring, and ends with the reaping of corn in autumn. If that were all the business of farming, if it consisted merely in the routine of ploughing, sowing, harrowing and reaping, there would be very limited scope indeed for the exercise either of knowledge or judgment; farm operations would come round in a regular mechanical manner as the teeth of a cog-wheel, and the apparent influence of mind over matter would all but disappear.

Those who take an enlightened view of farming arrive at a very different conclusion. They see in it an art that requires much practical experience and personal observation, while it is also dependent upon a wide field of scientific knowledge. The operations of draining and deepening the soil require a knowledge both of the principles of natural philosophy, and of geological science; and in like manner the application of manures calls for an intimate acquaintance with the results, and some of the details, of chemistry. And even after all the departments of knowledge are exhausted which become available in the culture of the plant, after we have exercised our geological and chemical and mechanical knowledge in improving the soil, our botanical knowledge in selecting suitable crops, and our practical experience and acquaintance with meteorology, and it may be entomology and mycology, in their after culture and protection from those numerous blights which plant-flesh is heir to; even after the exhaustion of all our energies in the application of mechanics to the reaping of the crop, which one might fancy was the *finale* of field operations,—even then the work of industrial war seems but to begin; new lines of operations open up,

requiring the application of new branches of knowledge, and the working out of new systems of tactics. For the object of farming is not merely the annual production of a certain amount of grain and fodder; that grain and that fodder involve the keeping of live stock, the production of flesh, and other animal products.—Here, then, a knowledge of the principles of animal physiology comes into play. Experience may teach us in a general manner that the way to get plenty of flesh and plenty of milk is to afford plenty of food; but then animal food is of money value, and it becomes a question of the greatest practical importance, one upon which the farmer's success in business often depends more than on any other, to ascertain in detail how the largest amount of produce can be obtained from the smallest expenditure of feeding materials. This is a question whose detailed results appear to differ in the hands of almost every farmer, so that there is often the greatest possible difficulty in arriving at accurate general conclusions; but it may be safely said that a knowledge of those general principles which have been ascertained respecting the physiological phenomena of animal life form the surest foundation for all practical experience and experimental investigations on the subject. The question of the economical production of milk, and the manufacture of that article into butter and cheese, will afford scope for illustrating some interesting points in animal physiology, as well as of indicating the value of such knowledge, and of physiological chemistry, to the practical farmer. The subject will be most advantageously pursued, however, if regarded as much as possible from a practical and economical (or commercial) point of view.

The subject of milk, cream, butter and cheese, is one so vast and diversified in its chemical and physiological relations that in the brief space here allotted, we can only hope to "skim the surface."

Milk is a secretion of the mammary glands possessed by all animals belonging to the class *Mammalia*, its purpose being the nourishment of the infant animal while its masticatory and digestive organs are not prepared for the proper food of the species. In many *mammalia* it forms the sole food for a long period, and must therefore contain all the elements necessary for nutrition. On this account, Prout has proposed to take milk as a standard of food, and to classify all food according to the constituents of that secretion:—

1. Aqueous foods, represented by the water of milk.
2. Albuminous foods, represented by the caseine of milk.
3. Oleaginous foods, represented by the butter of milk.