

than their worth, and used frequently with home-grown feeds already overly rich in the very same elements contained in the purchased articles. We have seen men buy corn meal when oil cake was less than 50 per cent. higher per ton, and bran about three-quarters the price, to feed to milch cows getting a roughage of cornstalks and timothy hay. The most elementary knowledge of the composition of feeds would have told them that corn meal was excessively rich in carbohydrates and fat, the same kind of elements contained in excessive proportion in the roughage, which, therefore, required a supplement such as bran or oil meal to "balance" it up, by furnishing more of the deficient element, protein. Then, later on, these same men would begin feeding their clover hay—carefully saved till spring—bran, and perhaps use up their oats, instead of using some corn meal with the clover and bran, and in the same hit-and-miss fashion would buy both of which are relatively rich in protein, and more or less deficient in the other elements. A working knowledge of chemistry prevents such mistakes as that, and enables a feeder, no matter how situated as to kinds of stock, feeds available and other conditions, to handle them to somewhere near the best advantage, and know pretty nearly what to buy to complete a ration with such purchased feeds as will supply most cheaply what his roughage lacks. If all feeds preserved a constant ratio in their range of values; if every dairyman, every steer-feeder, every hog-feeder, and every shepherd had always the same feedstuffs at his disposal, the same kinds of animals to handle and dependable markets to prepare for, there would be no great need to study feeds. The best rations could be settled by experiment, and every feeder guide himself accordingly. But seeing that conditions are subject to infinite variations; it is necessary that the feeder shall know the composition and utility of all the staple feeds, know the needs of the stock he is working with, and be in a position to bring mathematics to his aid in compounding his rations. Right here, though, great mistakes have been made by many professors and agricultural-college students. In figuring out rations according to formulas laid down, they have become so engrossed in their calculations that they lost sight of the many practical points, such as succulence, digestibility, palatability, individuality and breed of the animals, and availability of feedstuffs (in other words, whether or not the feeds were those grown on the farm, for it is always advisable to strain a point and use what you have, rather than to sell it and buy something else). A story is told of one student who, in figuring out a ration, was a little short of the total weight required by the scientific standard, and so to bring up the weight without disturbing his equilibrium of nutrients, he added a couple of ounces of sawdust. Such ludicrous instances and others a little less extreme have done much to make science a laughing-stock to practical men, and have accounted for the failures of more than one enthusiast who wrongly fancied himself "feeding scientifically." Science never makes mistakes; the misapplication of scientific principles may prove disastrous, but that is no reason why level-headed, practical men should not avail themselves of the help of this handmaid of successful practice.

In the ensuing articles it shall be our aim, while keeping prominently in mind the all-important practical considerations, to discuss in a helpful way the "Mathematics of Feeds."

The Winter Fair.

At the Winter Fair on Friday morning, December 15th, the subjects to be discussed will be of great importance to all farmers interested in live stock. Mr. John Gosling, of Kansas City, U.S.A., one of the leading authorities in America, will deliver an address on "Judging Fat Cattle" and "Judging Mutton Sheep," illustrated by live animals and dressed carcasses. Mr. Gosling is well known to many of this Province, having taken part most acceptably in the live-stock judging course at the Ontario Agricultural College. All who are fortunate enough to be able to attend these lectures will receive the benefit of Mr. Gosling's long experience in the live-stock business. The discussion will be led by Professor G. E. Day, Guelph, and Professor M. Cumming, Truro, N.S. All visitors to the Fair should arrange to stay over for Friday morning, or to make a special trip to Guelph to hear these addresses.

Tommy's Notion.

Dere Sandy Claws: I take mi pen in Hand
To tel you I've bin good to Beat the Band,
And want A lot of presunce. I don't Care
Jest so there Good, But I would like a pare
Of Skates, a sledd, a Pony and a Gun
And Things like that. It won't Be Enny fun
If you do like you did last yere and jest
Give me an overcoat and stockings and a best
Cap and some Mittuns and all such stuff. Say,
I gbt to have them things enneyway.
And Pa can get 'em fur me. But don't you
Bring me such stuf and things that it will do.
Cloes is all rite, of course. But goodness knows
For Christmuss presence A boy don't want Cloes.

The Four Great Beef Breeds.

While, perhaps, to most readers of the "Farmer's Advocate" the distinctive characteristics of the four principal beef breeds of cattle in America, namely, the Aberdeen-Angus, Galloway, Hereford and Shorthorn, are fairly well known, there are probably a considerable number who have given comparatively little attention to the matter, and will be pleased to know that we purpose publishing a series of brief articles on the origin, history and characteristics of these four great breeds, accompanied by pictorial illustrations of the most approved modern type of each, as has recently been done in these columns respecting the four principal special dairy breeds, and earlier in the year of the British breeds of sheep. To avoid any appearance of favoritism, we will, as in the case of the dairy varieties, take up the beef breeds in alphabetical order, and will say in the outset that at present, in conformation and the useful qualities for which they are principally bred—the economical production of high-class beef

originated in Norfolk County, England. A polled Durham or Shorthorn breed has been originated in the United States, and a pedigree record for them established. These have come from two different sources of ancestry, one branch having been established through the crossing of pure Shorthorn males upon selected common muley cows; the other is pure Shorthorn, but hornless, said to have been originated by mating animals of the breed accidentally born without horns, and thus fixing and perpetuating this peculiarity. A polled Jersey breed is also being originated in the States, a class having been provided for them at the Pan American and Louisiana Purchase Exhibitions.

ABERDEEN-ANGUS.

This breed originated in the north-eastern counties of Scotland, with Forfar and Aberdeen as their chief centers, as there is much evidence to show that early in the seventeenth century polled cattle were numerous in these counties. The common impression, owing to their similarity, that the Aberdeen-Angus, or Polled Angus breed, as

it was formerly called, owes its origin to a greater or less infusion of Galloway blood is stoutly denied by historians of the former breed, and there appears to be no authentic record of their being derived from that source.

Hugh Watson, of Keilor, Meigle, Forfarshire, was the most noted of the early breeders of the Aberdeen Polls. Both his father and grandfather owned good herds of the same kind of cattle, the latter as early as 1785. As distinguished from horned cattle in those early days, they were often described as "doddied"—wanting horns—which accounts for the nickname, "Dod-dies," sometimes applied to them in these days. Hugh Watson established the Keilor herd in 1808, and prosecuted the work with much vigor and success until 1865, when it was dispersed. He bred from those animals only which came nearest to his ideal, and did not seem to care whether they were closely related or not. After Hugh Watson, the most noted improver was William McCombie, of Tillyfour, who was born in 1805, and died in 1880. His herd was founded in 1830 and dispersed in 1880. His success in the show-yards has few parallels in the history of farm stock. In 1878 he won highest honors at the International Exposition in Paris, France, competing against all breeds. It has been said that what the Collings did for Shorthorns, Hugh Watson did for the polled breed. It might be said with equal truth that what the Booths have been to the "red, white and roan," William McCombie was to the "glossy Blacks."

IMPORTATION TO AMERICA.

The importation of Aberdeen-Angus cattle to Canada dates from the early sixties of last century, and it is on record that a class was provided for them at the Upper Canada Provincial Fair in London, Ontario, in 1865, and that a herd of this breed was there shown by Mr. James Nimmo, of Camden East, in Addington County. In 1887, Professor Brown, of the Ontario Agricultural College, at Guelph, secured some good specimens for that institution. The first impor-



Knight of Danesfield. Champion Royal Show, 1904.



Quines. Champion A. A. Cow, Highland S. S., Perth, 1904.

—there is really very little difference between the four breeds named, the distinction being mainly in color, the presence or absence of horns, and the ability to reproduce those peculiarities uniformly.

The black, polled breeds, Aberdeen-Angus and Galloway, originated in Scotland, and derived their titles from the districts in which their improvement was principally effected. The question of how or when polled varieties were originated and established cannot be definitely settled. There exists indisputable evidence that the original wild cattle of Europe were horned, and it is supposed that the polled breeds originated in sports or accidental variations in the case of individual animals born polled, which being mated and their polled progeny only retained for breeding purposes, the hornless characteristic was fixed and established. There are three British breeds of polled cattle, namely, the Aberdeen-Angus, the Galloway, and the Red Polls, the latter having