Values of Bran and Oats.

A correspondent asks the question: "Which is the more profitable to buy to feed with barley for cows and pigs, bran at eighteen dollars per ton or oats at forty cents per bushel?"

On its face this question looks quite simple. One would naturally suppose that by ascertaining by reference to chemical analysis the amounts of digestible nutrients furnished by each food, their comparative values could be ascertained; and this is true to a certain extent. It is true if the only consideration is the production of milk or the increase of weight. But these are not the only questions to be considered if we are to determine which food is the more profitable. There is the question of the fertilizing value of the manure made from animals fed upon the food purchased, and every feeder before deciding whether oats or bran is the more profitable must consider the relative amounts each food contributes to the fertilizing ingredients of the manure heap.

Suppose we estimate the relative values of these two foods simply upon their uses for feeding alone. A ton of oats has of digestible nutrients ninety-two pounds of protein (flesh former, and one of the principle ingredients of milk) and the equivalent of two hundred and fifty-two pounds of fat, which goes to the production of heat, energy and fat in the carcass. A ton of bran contains one hundred and twenty-two pounds of protein, and the equivalent of two hundred and one pounds of fat. Protein is by all odds the more valuable of the two ingredients under consideration, and the ton of bran contains thirty pounds more of protein than does the same weight of oats: the oats, however, have fifty-one pounds more of fat equivalent. Unfortunately, it is impossible to attach actual values to either protein or fat in foods, but their ratios appearing in these two foods about represents their average relative value, namely, two to one. On this basis then bran would be the better food to buy. But the purchased food is to be mixed with barley, and barley is a food rich in heat and force producing ingredients; oats are less so, and higher in protein, but bran is still higher in protein and poor where barley is rich. Bran, therefore, would naturally be the better food to mix with barley, especially for milk cows, as it makes a ration light and suitable to their tastes. For other reasons not explainable on chemical grounds, a mixture of the three would be better than of any two of the grains. Hogs, however, are not so well suited to utilize light grain rations, which contain a large amount of filler, as does bran, consequently the latter is somewhat at a disadvantage for hog feed, and little is left to choose from between oats and bran for feeding pigs.

So far in our investigation we have left the consideration of cost out of the question, but have found for the purposes mentioned that bran would be the more desirable. Looking at the cost we find that the ninety-two pounds of protein and two hundred and fifty-two pounds of fat equivalent in the ton of oats costs twenty-three dollars and fifty-five cents, and the one hundred and twenty-two pounds of protein and two hundred and one pounds of fat equivalent in the bran costs only eighteen dollars. From this standpoint, also, bran has the advantage.

We have still to consider the question in another light, namely, the value of each food as a fertilizer. In both foods there are three chemical substances that are valuable for this purpose, namely, nitrogen, phosphoric acid, and potash. The ton of oats contains two hundred and six, eighty two, and sixty-two pounds, respectively, of the substances mentioned. In a ton of bran there is two hundred and sixty-seven pounds of nitrogen, two hundred and eighty-nine of phosphoric acid, and one hundred and sixty-one pounds of potash. These are all valuable substances in manures. If bought in the form of commercial fertilizers, or as ordinary manure, the amount contained in a ton of bran would cost in many cases nearly as much as bran for feeding, and all of this fertility is voided by the animals. It is not required for sustenance of life. The fertilizing value of bran, therefore, is very considerable.

These are some of the questions to be considered in deciding what class of concentrated feeding stuff to buy. And the amount of fertility contributed by different foods is one of the questions of modern farming that more and more demands attention, as our soil becomes depleted from year to year. One of the most difficult features in this connection is to realize that so much fertility really exists in bran. The higher price of oats and their beneficent effect upon the animals to which they are fed seems to discredit the contention that they are less valuable as a fertilizer or food than bran, but the enhanced value of oats at this particular time is not on account of their higher content of digestible nutrients or fertilizing substances, but because of their peculiar suitability for feeding horses; the relation of the supply to the demand, and the fact that feeders do not attach the value to bran that its fertilizing power warrants.

Lengthening the Veterinary Course Assured.

(A paper presented to the Manitoba Veterinary Association, by A. G. Hopkins, B. Agr., D. V. M., in February.)

The campaign for a higher standard of veterinary education in Canada has probably been pushed home more forcibly within the last twelve months than at any other time, yet a great deal remains to be done. A short time ago, the attention of the President of Toronto University was drawn to the low standard of education demanded for entrance to the veterinary profession, and his sympathy enlisted to remove the stigma under which all members of the profession in Canada will remain until those standards are raised.

The Senate of the Toronto University has taken cognizance of the needs, and the committee on agriculture and veterinary science has drafted a curriculum, calling for an entrance examination in English and Canadian history, arithmetic, chemistry, geometry (Book I.), or its equivalent in elementary geometry and algebra through simple equations, the standard for the examinations to be the same as in junior matriculation, and, in addition, the course to be one of three years. Such is an undoubted step in advance, and the benefits the profession and stockmen in Canada will reap are immense.

Royal Princess and Royal Belle.

First and second prize fillies in the under-three-year-old class, Spring Stallion Show, Toronto, 1904. Owned by A. Aitchison, Guelph, Ont.

Bogside.

Winner of third prize in the three-year-old Clydesdale stallion class, Spring Stallion Show, Toronto. Imported by T. H. Hassard, Millbrook. Owing to the numbers being changed, this horse was called Gallant Barrie in our report.

The course outlined by the Senate of the University is hardly as practical as the present-day demands call for. The practitioner knows by experience that, while the possession of a scientific education is a nice thing to have, he must have a thorough clinical knowledge, without which he will be a disappointment to his clients and himself.

The Senate regulations call for examinations for the first year in the following subjects: elementary physics, elementary chemistry with laboratory work, elementary biology (including elementary mammalian anatomy) with laboratory work. By the latter, we assume dissection is meant. We would suggest, in addition, that the subjects of dentistry and horseshoeing be taken up, by so doing rendering the course more practical, and, therefore, more attractive to the average student. Pharmacy and materia medica should also be looked into, the major studies being, however, biology and its subdivisions, anatomy and microscopic anatomy (histology), backed up by plenty of work in the dissecting-room; the minor subjects being dentistry, pharmacy, chemistry, physics and horseshoeing.

The second year's examinations are to be in animal physiology, anatomy, histology and embryology, pharmacy and pharmacology, parasitology, including bacteriology—a course of work with which little fault can be found, as it is quite comprehensive. Here again the practical must be brought out prominently by lectures and clinical work in veterinary medicine and surgery. Pathology (general), including laboratory, should be introduced during the second year's work. The instruction in dentistry and horseshoeing should be completed, and the introduction to veterinary obstetrics should take place.

The major subjects in the second year should be anatomy of the domesticated animals, physiology, veterinary medicine, veterinary surgery, general therapeutics and general pathology; minor subjects being histology and embryology, pharmacy and pharmacology.

The insistence on practice with a qualified practitioner during the vacation between the second and third years is to be commended. It might be well to go a step further, and indicate who may be considered as qualified practitioners, which would be of much benefit to the student. The possession of a veterinary surgeon's diploma is not sufficient evidence that a man is fit or qualified to do tutorial work during the vacation. This matter might well be left to the Associations.

The third and final year's work is an important one, the subjects to be examined upon by the Senate statute being as follows: pathology, zootechnics, veterinary surgery and medicine, sanitary science, veterinary jurisprudence, toxicology. In addition, there should be examination in meat and milk inspection, and clinical medicine and surgery. The following subjects we would class, therefore, as majors: veterinary surgery, veterinary medicine, special pathology, special thereapeutics, clinical medicine and surgery; under the classification of minors coming meat and milk inspection, veterinary jurisprudence, sanitary science, toxicology, and zootechnics. Three exceedingly busy years will have been filled in by the student, but the college product will be of a higher standard.

Under the university statute, the successful conclusion of the work will entitle the student to the V. S. diploma of the University. It is intended to admit the V. S. to the degree of D. V. S. one year thereafter, provided he presents an approved thesis or the result of special work in a research laboratory in one of the subjects in the curriculum. This regulation, we think, should be amended or there will be few doctors in veterinary science. Research laboratories open to veterinarians in Canada are few, to all intents and purposes as yet non-existent. It would be well to