

creaking or cracking noise. Fractures and bulgings of the joints may be found as the disease progresses. Finally the animal lies persistently, becomes exhausted, and dies.

The above very briefly describes a typical case of osteo-malacia. Frequently, however, a condition is met with of a less serious nature but showing one or more of the characteristic symptoms. As all such cases likely rise from the same source, the causes are worthy of particular mention.

Causes.—Outbreaks of this nature have led to exhaustive studies of the food of the animals, the soil upon which it grew, the source and nature of the water supply, and of all questions pertaining to the nutrition of the animal. Knowing that unaffected areas supply the necessary quantities of mineral salts (lime, potash, and phosphoric acid) for the maintenance of health, through the medium of the foods grown on the soil and consumed by the cow, the following facts may be enumerated:—

(1) Soils from affected areas contain less nitrogen, potash, and phosphoric acid than do those from the non-affected areas.

(2) The ash of fodders grown on areas so affected contains less of the ingredients mentioned than would be found normally.

(3) The total amount of mineral matter fed in a full ration grown in an affected area is considerably less than that required by the normal animal.

(4) Bones of animals raised on affected areas contain less lime and less phosphoric acid than do those raised where the condition is unknown.

(5) A series of dry summers may prevent the rendering available of the necessary constituents to the growing plant even if present in the soil.

Treatment: Preventative.—The prophylactic or preventative measures, it will be seen, are involved, making necessary the systematic manuring of pastures and all land used in the production of food, with a view to supplying the lacking constituents. Not infrequently, liming of the soil is highly beneficial; the use of phosphorus in the form of phosphates may also supply the deficiency, although the action of phosphorus and lime in the soil is not altogether understood in this connection. Certainly, it is known that animals in a limestone region have particularly hard osseous tissues. That some method of fertilization is necessary other than the use of locally produced barn-yard manure, will be readily seen; but before any definite action is taken a thorough analysis of the soil and water should be made.

Treatment of Affected Animals.—Animals showing any of the tendencies or symptoms described may be benefited, as would be expected by supplying in the proper form the lacking constituents. The following mixture may be added to the daily ration:—

Bonedust, 2 ozs.
Slaked Lime, $\frac{1}{2}$ oz.
Sulphate of Potash, 2 $\frac{1}{2}$ ozs.

A mixture made up as follows and placed where the animals may have free access is recommended:—

Bone Ash, 100 lbs.
Salt, 10 lbs.
Iron Sulphate, Fe₂SO₄, 4 lbs.
Molasses sufficient to make the whole into a mass.

With these remedies the use of fodders of other than local growth would be indicated, seeing that in most cases it is impossible to move the affected animals. Advanced cases, where the bones have become weakened, and the joints affected are difficult to deal with, and recovery doubtful. The suggestion might be made where a district shows signs of affection along the lines briefly described, that owners of cattle communicate with the Veterinary-Director-General, Department of Agriculture, Ottawa.

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A Method of Saving Sires.

While visiting a few stock breeders recently, we came across two who have inaugurated something which should prove very valuable in the herds, and which should induce others to make use of this means of conserving good sires. These two breeders each had a particularly good Short-horn bull which had done several year's service in their herds, and which they did not like to see go to the butcher. Both bulls were still active, sure, and good stock-getters, but their heifers, in the herds in which they had been used, had reached breeding age and either these heifers or the old sire had to go. Of course, as is always the case, the axe fell on the bulls. The two owners came to the conclusion that the bulls were too valuable to go to the block, and they made a deal which simply changed stables for the old sires, and at the present time each is doing good service and proving valuable in his new surroundings. Far too many of the country's best breeding sires go to the butcher prematurely, in fact just when they have reached their prime.

Many a stockman will tell you that he would rather have calves from an old bull than by a young, undeveloped sire. Why could not more "exchanging" be done? It need not be "trading" if this practice is objected to. Stockmen could often buy each others old bulls. It seems a pity to see so many good old sires replaced by mere calves which may never grow into a sire worth keeping. It would pay to save more of the old sires, and the method these two breeders followed seems quite practicable.

Hog Culture.

What I don't know about hogs would fill several columns of this great family journal. I am going to tell you something of what I do know—not to the end that you might make more dollars. I am away beyond dollars and write solely for the public's amusement that it may forget dollars if possible and get feeling good again, as it once did—before dollars were. I am confident that if dollars were forgotten—or even partially forgotten—the nations would not make war any more and would content themselves with oratory and an occasional international law suit without heat.

Hog culture has an interest apart from dollars which is seldom touched in this great family journal which seems to think that getting dollars is the sole interests of its clientele, an opinion not altogether justified but too true. I am writing and will continue to write for that non-commercial element that sees a dignity in the game apart from the profits—an ever growing element, let the able editors take notice, the increase of which, the present deplorable blood-letting in Europe will accelerate.

Interesting—you bet! If people who add up silly figures in banks and counting-houses—to say

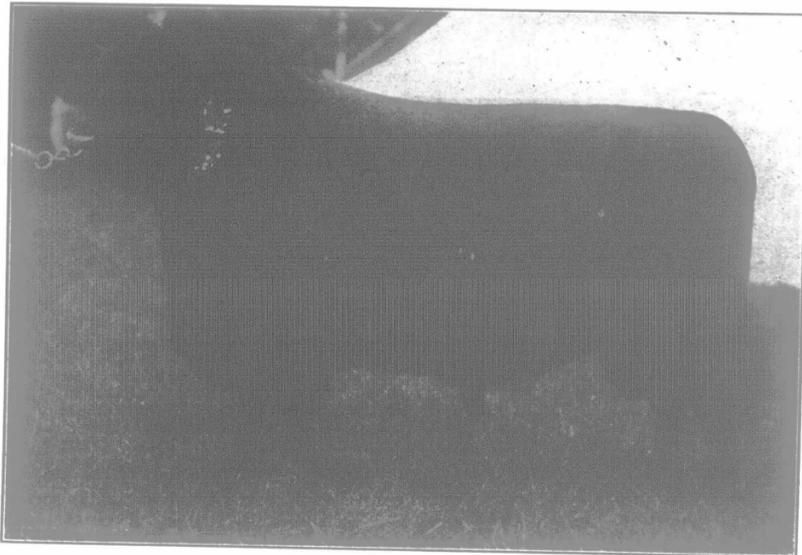
alternately, a moment at each, and his eye resting on the unused one with an anxious, "grafter" gleam in it, and he also seems to be concerned lest his appetite fail to hold out, but this may be imagination. There is very little of the sense of justice in pigs at any age. Might, in the pig-pen, is right and as the double inheritance of "dinner" tends to produce might there is little hope of social justice. All controversies settled, there comes a purring sound from the nest that reminds you of Dan'l eating soup, punctuated every second or two by a grunt of satisfaction from mother. "Ugh," she says "Ugh, ugh!" "Ugh, ugh, ugh." Pigs seldom count more than three, when they grunt and they grunt only on two occasions—when they are satisfied and when they are not. When they are enjoying themselves they grunt in the above ratio "one" "one, two"; "one, two, three." I have heard Oscar, the cat, count ninety-six in one breath and have hopes that he will soon reach the hundred mark. Cats are farther advanced in mathematics than pigs but the pigs have compensating advantages. Pigs excel in grafting and studies of that sort and while cats have an advantage in cleanliness and spend much time at the toilet, primping and perking themselves, there is a great deal more human interest attached to the pig.

Pigs complete their babyhood at about four weeks. About that time mother gets peppery, and resents piggish importunity. She reaches a sort of disillusionment, and light breaks into dark places in her mind. It seems to dawn upon her that she has been very foolish to waste her sweetness and affection on these selfish beings whose interest upon closer examination is merely the exploitation of her affections. She stands for whole minutes at a stretch—considering—new disillusionment and painful light constantly breaking in. "Grafters they sure are" she meditates,—like an awakened electorate reflecting on its home

market, "grafters who tease me to distraction to gain their ends." No wonder she is irascible, poor old swinette—so shrunken that the light of disillusionment and other light goes clear through her like an X-ray in some thin places, her spare ribs showing numerous on the outside of her bacon-hams painfully convex, barely bone, sinew and hamstring with rind and an occasional hair—nothing conspicuous except the udder with what little pap for grafters it contains—nerves all shocked with new light—irascible, did I say? Poor old, mental wreck, could she but see herself as others see her, what then? Irascibility is, after

all, but a form of nervous weakness due to bad nutrition, not to clearness of vision, and grafting is still occasionally tolerated, while the pap lasts so imperative is habit. Nature, on her own account finally puts an end to grafting. Pap in time gives out completely and the grafter piglets are rooted away angrily in sheaves of three or four at a time, regardless of protesting squeals, till they tumble to the fact that mother means what she grunts, and can be pumped no longer. Piglets learn to digest corn and whey and in a sense become self supporting.

But she is not heroine altogether. She is a composite character. When not engaged in nursing babies a mother pig ("Old sow," she is usually called, though she seldom attains an age that would warrant the name, her flesh, properly cured, being relished by hired men and other nuisances) engages in many shady things. She is noted for a certain dark intelligence of a burglarious order directed toward opening gates and doors. She holds her secrets tenaciously. When she finds a hole in the cornfield fence she uses it for both entrance and exit when no one is about. If she is driven out she assumes an air of meek ignorance, apparently looking intently for the place, everywhere where she knows it is not and when she passes it she does so in an abstracted, absent-minded way as though continual seeking had tired her brain. She has many ruses to divert your attention from the fence when passing the hole. Sometimes she will stand in a stupid attitude a rail's length from the place until you arrive with your cornstalk gad. She knows the exact affect this will have on your harassed temper, having been engaged in analyzing your character since her first acquaintance with you. A rap over the ham with the cornstalk and a wrathful "g'wan, gosh blast yeh!"



Everard II. of Maisemore.

Champion Aberdeen-Angus bull at the Bath and West.

nothing about discounting houses and multiplying, subtracting- and dividing-houses, could know this interest they would beat their fool ledgers into hog pens. I admit there is an interest of a dry, drab-colored sort in counting-houses as also in doing up sugar, and factory cotton etc., but to watch a family of a dozen chubby pigs grow into robust hoghood, has these forms of amusement beaten several ways. To lean over the edge of the pen and watch that dozen at nursing time for instance, is for people with understanding better than a circus. The time is announced from the bed corner by a chorus of "oigh! oigh! oigh! oigh! oigh! oigh! oigh!"—a medley of words and music full of meaning, well understood by mother who rests complacently on her stomach, thinking stolidly while her bacon is rooted comfortably by a dozen baby snouts—a massaging for which she is grateful. She awaits the psychological moment when the proper side has an overwhelming majority and the danger of overlaying a piglet is at the minimum, then stretches out carefully on one side. A mother pig does this very adroitly so as not to injure the babies—giving a sort of brushing kick with her spine to clear away any absent-minded from the danger zone. If one is caught beneath a maternal ham he makes no secret of it and mother comes to an upright position with a protesting grunt, which, in English, means "keep out of there, then." When she hears the note of relief from the piglet she resumes the broadside position again.

Then ensues a struggle for place. When the family is small, certain of the babies appropriate what nature intended to nourish two and the privilege once enjoyed, a sort of divine right is assumed, and strenuously defended. A piglet thus favored does very interesting things to hold his privileges. He sucks his double inheritance