be found of practical advantage when having a list of sows in a note book either with name, mark or number; or for convenience put a ring in the right or left ear, the upper or under side, to note the time they come in heat, say in October; any farmer knows that this will occur each three weeks. In this way he will not waste time in watching when to breed the sows or be disappointed in missing her, but one who never practised it will find to his astonishment that he is becoming master of the situation.

With the boar in the enclosure, able to regulate the service, and knowing that the gestation period takes place within 110 to 112 days, he will know that by March or April first, as the case may be, he must be ready to accommodate ten or twelve sows with breeding-pens and play midwife day and night. As a compensation for labor and system he has a lot of pigs of nearly the same age and size to feed and care for, a uniform lot to put upon the market, not to mention the advantage of being weaned at one and the same time. This is not a fine-spun theory, but has been the practice of the writer for a long series of years. The sows can then be turned out to pasture and receive a liberal allowance of feed once or twice a day, at stated time, according to their condition, in order to have them fully recover from the strain of nursing and breeding. All that have proved deficient are weeded out for fattening, and young sows are put in their place as heretofore stated. But sows having their first litter should not be condemned for having a litter of but five pigs, if they are otherwise satisfactory and are uniform breeders. A twelve or fourteen teated sow, of roomy build, generally responds with sufficient numbers at her second litter, unless heredity on her dam's side is wanting in this quality But should there be small and uneven litters with the larger number of sows, the sire may be at fault.

Tuberculosis

The Slaughter of the Innocents

By T. C. Wallace

As it has been frequently demonstrated that most if not all of the diseases of our plants can be prevented by proper manuring, by which I mean nourishment, protection and cultivation, and that in fact they can in some cases even be eradicated by a similar attention, it naturally occurs that the diseases may largely result from improper manuring or at least neglect. Unfortunately experiments which might go far to solving this question often prove valueless because the means adopted fall short through attempts at exactness, or, in other words, trying to feed in perhaps unnatural forms just what is considered the quantity of ration which analysis of ordinary plants suggests as possibly necessary, and going it blind on soil action. Also experimenters seem prone to dwell upon and work out minutely little matters of detail instead of studying the experiment in its bearing towards principles.

As the domestic animal's food is entirely composed of vegetation it becomes worth while, considering to what extent the condition or make-up of the food may control, the development of animal diseases. Often we think we are feeding an ideal ration when in fact the very materials from which it is compounded are themselves wanting in proportions of the various elements to produce the best results. It has been contended against this, that the proportions of alimentary substances taken by plants are fixed. In answer it may be said that in vegetable as in animal life there are monstrosities and mal-formations showing extraordinary development and want of development of parts and functions, and that with such maldevelopment there is a greater secretion of this, or a lesser secretion of that, necessary ingredient. Besides, it has been demonstrated by actual experiment and analysis that the per centage content, for instance, of phosphoric acid can be considerably increased. We frequently see large, bulky whole crops of grain which carry but little grain seeds and even are scarcely able to stand before ordinary wind and rain storms. It was once contended by some that these bulky crops, including corn, were quite as valuable fodder as the crops producing plenty of grain, but that bubble was soon burst by analysis.

Turning to our animals which are intended to be the real subject under discussion, it has been demonstrated with at least fair precision that abortion among cows is mainly caused by the lack of phosphatic food, and that usually the trouble is readily corrected by feeding finely-ground bone meal or bone ash with a little salt mixed with it to make it more easily digested. Abortion is not prevalent on farms where plenty of phosphate is obtainable to the crops grown for feeding unless there is the grossest neglect in selection of feeding materials. Many cases diagnosed as rheumatism originate from the same cause. The savage sow actually devouring her young may clearly be traced to a deficiency in the make-up of her food during the trying stage of pregnancy. The curious theory of ascribing it merely to feverishness and giving medicines to deplete rather than build up will hardly recommend itself to thoughtful farmers. It seems something like the plan of starving a growing tree because it is growing wood too fast, instead of balancing up the soil to supply the necessary food to meet the wants of reproduction.

I have previously raised the question as to the possibility that even the spread of tuberculosis may not have an original cause in this same inattention to the maintaining of proper balance in the food.

It is generally admitted that the decaying of teeth in the human race is due to the want of sufficient phosphate in their food. The want of toothbrush and toothpick will not account for the loss at an early age, neither does it meet the matter of the failing of teeth so often during pregnancy. I have had great satisfaction from feeding cows on foods which were well supplied with phosphates and neither abortion nor tuberculosis developed with Jerseys under such feeding. The recent researches of Dr. Somerville point strongly to the increased value of both turnips and grasses enriched in phosphoric acid. I believe I have seen a whole herd of valuable animals slaughtered, nearly every one of which could have been cured and saved.

I have had some practical knowledge in feeding dairy stock at least, and what I know of treating cow diseases I had to learn in self-defence, as the local veterinaries seemed to have almost entirely neglected to study the cow and could not be trusted with valuable animals with much more safety than the baneful "cow doctor" or village quack. Nowadays I think the veterinaries are giving more attention to the "farmers' banker." I think the development of tuberculosis and the denudation of fertility are more closely allied than is generally recognized. The whole history of our farming, whether for grain or for stock growing, has surely and steadily denuded the soil of its available strength, until in many parts of the world we find what has been aptly termed "chronic deterioration of fertility." As a result we find a greater prevalence of disease among our crops, our animals and, indeed, even the human race. But man, always imperious over the lower animals, has discovered a menace to his existence in the development of bovine tuberculosis, and, instead of looking for the prime cause, attacks the result in sight, and decrees "a slaughter of the innocents." He confines cattle in poorly ventilated barns tied up with chains or stocked in stanchions, and he feeds them on fodder and grain grown without the necessary "phosphatic heart."

Or he imprisons them in fields from which the "phosphatic heart" has been practically removed by the growth and ripening of animals, grain and other crops, and drained away in the milk. Unable to free themselves and by the exercise of natural instinct and craving seek the food they require they easily fall a prey to the various microbes of disease which are on hand to gobble up their weaker brethren. They have been thrust into the arena against their will in an enfeebled state and weak at heart they put up but a poor fight and as they weaken and succumb to the tyranny of the unequal struggle, the onlooking public fran-