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after which the wasp lays an egg upon the body of the locust which subsequently becomes food for the newly hatched wasp grub.

The investigations of the United States Biological Survey have shown that birds play a great part in the control of locusts. These feathered friends of man are always present where locusts abound and work continuously in aiding the farmer. The statement that all birds feed upon locusts is so near the absolute truth that it needs only insignificant modifications. From the largest hawks to the smallest birds there are no exceptions other than the strictly vegetarian doves and such strictly aquatic birds as the loons and grebes. Although birds of nearly all families prey upon locusts the following may be selected as the most important species in this work: Bobwhite, Prairie Chicken, Red-tailed Hawk, Red-shouldered Hawk, Broad-winged Hawk, Sparrow Hawk, Screech Owl, Yellow-billed Cuckoo, Red-headed Woodpecker, Kingbird, Horned Lark, Red-winged Blackbird, Bronzed Grackle, Meadowlark, Shrike, House Wren, and Robin.

Domestic fowls are also very fond of locusts, and feed greedily upon them whenever possible. Turkeys are sometimes killed by feeding too freely on locusts, the strong, rough legs of which cause severe lacerations, or even puncturing of the crops of these birds.

Locusts are most troublesome in parts of the country in which there is much "wild pasture", that is land which has been cleared and allowed for many years to run to grass, and this is just what we should expect from what we know of their egg-laying habits, since tillage breaks up the egg-cases and thus destroys the eggs. In such regions they sometimes become so tremendously abundant as to constitute a plague, eating up all field and garden crops, the leaves of bushes, the lower leaves of the trees, even the bark of bushes and young trees, and biting into the wood of fences, the sides of houses, and handles of forks, rakes and other implements. I have even known them to eat into the grains of corn before it could be harrowed in when this crop was being sown in an effort to provide some fodder for the stock in a region in which they had already destroyed all other crops.

The best remedy for locusts is the use of poisoned bait prepared as follows: Wheat bran, 25 pounds; Arsenic, 1 pound; 6 finely-chopped oranges or lemons; molasses ("Black strap"), 2 quarts. This should be distributed broadcast over the fields in the early morning in dry weather. It takes from one to five days for the full effect of the bait to become apparent.

THE HORSE.

Bone Diseases in Horses.

Ostitis.

Ostitis, inflammation of a bone, is usually accompanied by periostitis (inflammation of the immediate covering of the bone which is called the periosteum). It may be acute or chronic. It may involve the whole substance and extent of the bone, or be confined to a portion of it (circumscribed inflammation.) The causes are external injury, as a bruise caused by a kick, or blow from any blunt substance which usually does not cause an open wound, concussion or hereditary tendency.

Acute inflammation of bone, involving the shaft, is frequently seen in young race horses in a disease known as "sore shins" and may appear in any young horse as a result of concussion caused by fast driving on hard roads, or from galloping on hard ground while at play. This disease usually involves the periosteum and external layer of the bone only, and usually terminates in a deposit of lymph being thrown out between the periosteum and the bone, which, becoming organized, forms a permanent thickening, depending more or less upon the degree of the diseased action, but in rare cases the whole of the bone is affected and the inflammation is of such an acute nature that the vitality of the bone is destroyed. The exudate thrown out as the result of the inflammation may, if the case be treated promptly, become absorbed and the bone regain its normal condition, but in most cases a greater or less portion of it becomes converted into bone, leaving the parts permanently enlarged and altered in appearance. The bones of young animals, being in a state of development and growth, are more vascular, (more plentifully supplied with blood) and contain a greater quantity of animal matter than the bones of those of mature age; they are consequently unable to stand with impunity the same shocks of concussion or direct injuries.

Symptoms.—If one of the bones of a limb be the seat of injury, there will usually be more or less lameness, probably slight at first, but gradually becoming more acute. The patient shows restlessness if both legs be involved, as will probably be the case when the trouble is caused by concussion; he will shift his weight from one foot to the other and probably seek ease by lying a great part of the time. If but one limb be involved he will usually stand with the foot of the affected limb pointed and sustaining little or no weight. If the inflammation be acute there will be well-marked increase of temperature, with acceleration of the pulse and heavy, frequent respiration, and the parts involved will be hot and sore to the touch. Swelling is an early symptom and is usually quite well-marked. At first it is somewhat elastic, tense and doughy to the touch. This is due to a thickening of the periosteum and the presence of an exudate between the periosteum and the bone. Afterwards the swelling may become oedematous and hard, but unless ossification (a conversion of the

exudate into bone) occurs, it will retain its elastic feel underneath the oedema.

If the exudation underneath the periosteum is very great and the swelling involves a large extent of the surface of the bone, the most active treatment must be employed to prevent death or decay of the bone. In rare cases the exudate becomes converted into a thin, somewhat fluid material which corrodes the surrounding tissues, causing great febrile disturbance, and may cause the death of the patient from its absorption into the general circulation. In the less acute cases, where the cause has been less severe, the symptoms are correspondingly less acute; the disease is more circumscribed and more limited in its extent, or the limbs of the animal have been more able to bear it; it becomes ultimately quite hard, by the conversion of the exudate into bony matter and when this is effected the lameness and pain usually disappear.

Treatment.—In very severe cases it is necessary to cut through the skin and periosteum to allow escape of the exudate in order to prevent a separation of the periosteum from the bone. This operation, of course, should be attempted only by a veterinarian. In a very large percentage of the cases less heroic treatment will suffice. The patient should be given complete rest in a comfortable box stall. It is good practice to give a laxative of one to one and one-half pints raw linseed oil and feed on laxative food. Hot poultices, or long-continued bathing with hot water with the frequent application of an anodyne liniment, as one made of one ounce acetate of lead, two fluid ounces of laudanum and six fluid ounces of water to the parts, will, in most cases, relieve the acute pain and soreness in a few days, after which the application two or three times daily of a stimulant liniment, as one made of two fluid ounces each of alcohol, oil of turpentine, and liquor ammonia, and one pint of water, will tend to reduce swelling and remove lameness. The enlargement that usually remains after all tenderness and lameness have disappeared can be reduced to some extent by the use of absorbents, as a liniment made of four drams of iodine and iodide of potassium and four ounces each of alcohol and glycerine, well rubbed in once daily.

WHIP.

What Records Show.

In 1916, twenty-one States of the United States had stallion enrollment laws. We present the stallion enrollment data for twenty.

The detailed figures, all of which are taken from records made in 1916, except for Nebraska, where 1914 statistics were the last available, show 55,806 stallions all told; 41.86 per cent. of these were grade or mongrel stallions, 9.23 per cent. were pure-bred stallions of light horse breeds, and 48.88 per cent. were pure-bred draft stallions. There are in these twenty States approximately 90 mares of breeding age to every stallion licensed for service. It is acknowledged that grade and mongrel stallions ought not to be relied on. They are not used where good pure-bred sires are sufficiently numerous to convince farmers that it pays to avoid grade or mongrel stallions regardless of the difference in service fee.

A comparison of this data with that compiled in preceding years shows that there has been a steady decrease of grade stallions, and in no State has there been an increase in these undesirables. Pure-bred stallions of light horse breeds have also decreased in proportion to the total. Pure-bred draft stallions, alone have increased.

There are, in these twenty States, 69 Suffolk, 1,275 Clydesdale, 2,006 Shire, 2,114 French Draft, 4,212 Belgian, and 19,199 Percheron stallions. Percherons, in every State, outnumber all the other draft breeds combined. In Iowa and Illinois, the two greatest

draft horse producing States, Percherons constitute 60.68 per cent. and 69.32 per cent. of all pure-bred draft sires. In the entire twenty States, 66.49 per cent. of the pure-bred draft sires are Percherons.—WAYNE DINSMORE, Sec., Percheron Society of America.

LIVE STOCK.

Give Young Sows Time to Develop Before Breeding Them.

Not everyone can breed and feed hogs successfully. There is a science about it that some stockmen find it impossible to acquire. They breed, feed, and house according to the most approved methods, and yet they do not get size in their pigs, nor are they able to make economical gains. Is it possible that the fault is in the management? One man has marked success while his neighbor goes out of hogs because there is no money in the business. A good deal depends on the feeder. He must not overfeed nor yet underfeed. He must pay attention to details and cater to the wants of the herd. Throwing a quantity of feed into the trough is not feeding in the true sense of the term, and failing to pay attention to minor points is the cause of many failures. Some have hogs weighing two hundred pounds at six months of age, while with others it takes seven or eight months. A difference in the breed may have something to do with it, but feed and management also play an important part. It is quite easy to overfeed young pigs. We have known it to be done on skim-milk alone. Then, too, it is necessary to feed a ration which tends to promote development of bone and muscle. It is growth that is wanted the first four or five months of a pig's life, and this cannot be secured on grains which are rich in carbohydrates but low in protein. These two nutrients along with ash must bear a definite relationship to each other in order to secure desired results. It is oftentimes necessary and profitable to purchase certain feeds to combine with home-grown grains. Skim-milk is one of the best feeds to give young pigs a start, but on many farms it is not available and some substitute must be sought for. Tankage has been found to take the place of milk to a certain extent. Whey is a substitute in cheese-factory districts, and if pasteurized and properly fed gives excellent returns.

Too many breeders are so anxious to get returns that they breed young sows before they are developed. The result is that the sow never turns out to be what she would have had she attained her growth before farrowing. The value of not breeding too young is clearly in evidence at Macdonald College where Prof. Barton has met with exceptional success in hog raising. Two breeds are specialized in and breeding is confined to two families in each breed, in an endeavor to bring the herd to as near perfection as possible. By careful selection and mating of breeding stock Prof. Barton has developed a strain of Yorkshires and Berkshires that develop quickly, have the desired lines and conformation and meet the demands of the bacon industry. This success has not been achieved in a day, nor a year, but is the result of continued careful work in selecting the stock and in feeding. It is quite easy to keep in the same breeding channel on the dam's side, as young sows can be saved from the best litters, but to keep boars from these litters would be in-breeding, which is not advisable except in isolated cases. Therefore, while it is necessary to secure boars from other herds Prof. Barton prefers to have them from the same blood channel. At any rate there must be a resemblance in character. A young boar is always secured before the herd sire is past his usefulness. This affords an opportunity to look around in order to pick the individual



A Neat Fence and a Good Windbreak Improve Farm Appearances.