

them. In collecting small plants, dig them up root and all. Carry into the field a press, of which each side is made of four slats of zinc or basswood, 18 in. long, by 1 in. wide, by  $\frac{1}{4}$  in. thick, held together by two hardwood slats 13 in. long, by 1 in. wide, by  $\frac{1}{4}$  in. thick. Fasten two straps (with buckles on) to the hardwood slats of one side and run the straps through leather loops on the hardwood slats of the other side. Cut pieces of the gray felt-paper which is used under carpets to fit the press. Place these in the press with a folded sheet of newspaper between each two pieces of felt. Lay the plants as they are collected in the newspaper and arrange each plant so as to show to the best advantage. After having identified the plant, write a label bearing its name, the date, the locality in which it was collected, and your name in with the plant. Then place the newspaper in another press similar to the one described above, only with a sheet of black tailor's batting between each two sheets of felt-paper. Thus, the order in the press will be felt-paper, tailor's batting, felt-paper, newspaper with plant, felt-paper, tailor's batting, felt-paper, and so on. Then pull the straps very tight, and hang the press in a dry place. The use of the tailor's batting between the felt-paper does away with the necessity of changing the sheets of felt-paper every day, as must be done if not used, for it allows the air to get in and prevents moulding. In such a press I have dried plants perfectly even under such adverse conditions as in a tent without a stove in it during continual wet weather. When perfectly dry, the plants should be mounted by gluing them to sheets of ledger paper, 16 $\frac{1}{2}$  in. by 11 $\frac{1}{2}$  in. (which may be obtained from dealers in botanical supplies) and the label pasted on the lower right-hand corner.

## HORSES.

### Parasitic Mange.

Parasitic Mange is defined by a writer in the Journal of the Board of Agriculture of Great Britain as a condition of the skin caused by parasites, which are known as mites or acari. They belong to the family of Acaridae. Mange assumes the character of a contagious disease, since the parasites may be conveyed to other equine animals.

The writer goes on to describe the mites as exceedingly small, round or oval in shape, and usually only visible when magnified by the use of a hand lens or microscope. There are several distinct stages in their development; the newly-hatched mites (larvae) have three pairs of legs, but after further development they acquire a fourth pair. The legs are furnished with bristles, claws, and sometimes with suckers. From the head project the feeding organs, and the jaws resemble saws. The body is furnished with scales, spines, and bristles. The adult females lay eggs, which hatch out into larvae in from four to seven days. These larvae, after successive moultings, develop into adults. The mites can exist on moist dung for several weeks, but live for a shorter time on a dry surface. The eggs are said to retain their vitality for several weeks if moisture is present, but in a dry atmosphere only for from three to six days. The mites are killed in a short period if exposed to a temperature of 104° F. or over, but moderate warmth stimulates them and renders them more active. This occurs, for instance, in warm stables and at summer temperatures.

#### FORMS OF MANGE.

Three varieties of parasitic mange affect horses, asses, and mules, viz.:—(1) Sarcopic, (2) Psoropic, (3) Symbiotic. Each is caused by a special mite which has a somewhat different mode of life.

The Sarcopic form spreads slowly, but is the most serious on account of its being the most difficult to cure. The mites, known as the Sarcopites, bore their way through the outer skin, burrow underneath it, and cause irritation to the animal, setting up inflammation of the skin. In the small galleries or tunnels thus formed the mites lay their eggs. It is on account of this burrowing habit that it is difficult to reach the parasites with destructive agents. The mites may attack any part of the body, but they usually settle first about those parts which come in contact with the saddle or other harness, from which they may spread to other parts. The Sarcopic form of mange is analogous to the itch or scabies of man.

The Psoropic form generally spreads more rapidly over the body. It is more prevalent than the Sarcopic form. At first it is usually confined to those parts situated near the long hair of the body, such as the neck, withers, rump, and base of tail, but in advanced or neglected cases the parasites may spread all over the body, and be found on the buttocks and inside of the thigh. The mites, which are known

as Psoropites, live on the outer surface of the skin, and cling to it by means of their mouths and limbs. They bite the skin to obtain food, causing irritation and inflammation. Over the injured parts scabs are formed and scurf accumulates, amongst which the mites shelter, feed, and breed. The scab increases in size as the mites increase in number, and each new generation of young parasites selects fresh feeding ground, usually around the edge of the older scab, or the mites may, through the grooming, be distributed, setting up additional centres of disease on other parts of the skin.

The Symbiotic form is probably the most prevalent, but it is not so serious as the two former. This form is usually confined to the extremities of the legs, but may also affect the tail. It develops slowly, and only exceptionally invades other parts of the body.

An animal may harbor more than one form of mange at the same time.

#### SYMPTOMS.

Mange may not always be detected until it has made considerable progress, or the early symptoms may not have been regarded with importance by the owner or the attendants.

The first indication is that the animal is restless, appears to be itchy, is incessantly rubbing against any objects within reach, including the pole or shafts of the cart, or against other horses, as is frequently seen at grass. Affected animals will even bite and gnaw the parts attacked by the parasites, scratch the parts with the hind limbs if accessible, and stand rubbing one leg against the other. They may be seen or heard scraping, pawing, kicking, or stamping the feet a good deal, especially during the night in a warm stable. There may also be switching and rubbing of the tail. When the scabby parts are touched with the hand or passed over with the grooming tools, the animal will lean towards the attendant and manifest a sense of pleasure, which is frequently accompanied by a pleasurable movement of the lips. The hair over the affected parts bristles or stands erect, and in more advanced cases is twisted or broken off short. Bare patches of skin are seen, due to the hair falling out or having been pulled or rubbed out. The skin may show an inflamed, pimply surface, with some long or broken hairs still in place, or the part may be quite bare and scurfy. The parasites cause pimples to appear on the skin wherever they bite. Yellow lymph exudes from the pimple, and helps to form small scabs. This lymph may mat the scabs and hairs together into a hard mass, which may be partly or entirely rubbed off, leaving an excoriated surface. On the hairless parts red, scabby spots may be seen, which readily bleed, and there may be patches of scab containing blood adhering to the skin. In advanced, neglected, and bad cases the skin loses its elasticity, becomes dry and hard, and is wrinkled or corrugated into folds. Finally, the scabby skin may crack, forming deep fissures. These may bleed and leave nasty, unhealthy-looking sores which in turn may fester or suppurate. There is also an offensively smelling discharge in many cases. If the disease is allowed to proceed unchecked the animal speedily loses condition, and becomes emaciated. The animal gets no rest from the incessant irritation, the appetite fails, the animal has a very dejected and repulsive appearance, becomes weaker and weaker, and may even die in a state of exhaustion.

In the Symbiotic form of mange a horse may do serious injury to its limbs, particularly to the coronet, by bruising it with the opposite foot in making attempts to relieve the itchiness.

#### METHODS OF SPREAD.

Parasitic Mange can only be produced by one or other of the previously mentioned mites breeding and multiplying on the animal's skin. A single fertilized egg-bearing female is sufficient to start a case of mange in an animal, and, in turn, a serious outbreak of mange in a stable containing a large number of horses. All cases of mange can be traced to contagion from an existing or pre-existing case, either near at hand or perhaps miles away. The parasites can be spread directly from one animal to another, or indirectly through the medium of litter, rugs, bandages, grooming tools, saddles, harness, manures, stable stalls, loose boxes, stablemen and their clothing, and stable utensils. The parasites may be picked up by an animal at an hostelry, on board ship, at sales and fairs, in horse-boxes or railway trucks, at grass, by loan or exchange of harness or by the use of second-hand harness, and from shafts of carts. In fact anything that has been in contact with a mangy animal, and which has not been subsequently disinfected, may be a vehicle of infection. Given infection, there are certain conditions which, in some animals, at least, appear to be more favorable to the development and spread of the disease; such are low condition and want of grooming. The parasites may live off the animal for some weeks in harness, clothing, litter etc., and may therefore be capable of infecting another animal, or even re-infecting the same animal at a future date.

#### TREATMENT.

Mange is not primarily a disease, but a condition of the skin resulting from the presence and action of the parasites or mites, which obtain their nourishment by piercing the skin. The treatment must be directed to the destruction of the parasites and their eggs, and it is possible to use effective local remedies in the form of skin dressings, which will not only destroy the mites without causing further injury to the inflamed and irritated areas, but will act beneficially by allaying the irritation. The treatment is essentially an external one, but plenty of good food should be given, and if the animal's condition has been reduced or the health materially impaired, tonic medicine given internally may be indicated. Usually, however, recovery is effected without internal treatment.

#### PREVENTION.

All newly-purchased animals should be carefully examined for suspicious areas on the skin, and if such are present the animals should be isolated and kept under observation until expert advice can be obtained. Care should be taken not to use second-hand or borrowed harness, clothing, grooming and stable utensils which have not been thoroughly cleansed and disinfected. Owners should be particular about the livery stables which their horses frequent, and litter which has been used for other animals should be regarded with suspicion.

In addition to the isolation and treatment of an animal actually affected with mange, particular attention must be paid to cleansing and disinfecting the stable, litter, harness, and all articles that have been used about the patient. The premises and articles to be included in the disinfection must be reckoned from a time prior to the recognition of the disease.

### Buying a Stallion.

The purchase of a stallion requires more good judgment than the buying of any other animal. The purchaser must not only satisfy himself, but he must also cater somewhat to the desires of the community in which he lives. If the stallion owner is to realize any profit, he must stand a good horse, one just a little better than any other in the neighborhood.

In some sections, cheap horses are found and they probably always will be to some extent. For the most part, however, people are beginning to realize more and more the value of superior sires, and the natural result will be the weeding out of the inferior ones.

A prospective buyer must study the needs of his locality. He must choose a breed which is popular in his vicinity, and also one for which there is a growing demand. If the mares are of the heavy draft type, it would be wise to select the heavier and more rugged stallion. If the mares are small, ranging in weight between 1200 and 1400 pounds, a lighter stallion would be more desirable.

Unless a man is a good judge himself, he had better take with him a competent and trustworthy judge when he seeks a stallion. Two men can size up a horse better than one, and by balancing opinions will probably get a better horse than if just one man went. Again, the average man hardly knows what he does want when he goes to buy a horse, and, sometimes the dealer or importer influences him to buy an animal which will not prove at all popular.

Sometimes associations are formed among farmers and what is known as a "company" horse is bought. I know of at least a half dozen of such associations which have been formed, and in every case they have proved a failure. Usually the farmers pay an outrageous price for a mediocre horse that no one outside of the company cares to use. In a few years, the \$3000 horse is sold to some member of the firm for a small amount, and the company dissolves. In most cases failure was due to poor judgment in selecting the horse.

Unsoundnesses are to be guarded against. If the buyer is not sure of his own judgment, he had better have the horse examined by a competent veterinarian before the purchase is made. Some of the more common unsoundnesses and diseases which should disqualify a horse are ophthalmia, roaring, heaves, chorea, bone-spavin, ring-bone, side-bone, bog-spavin, curby hocks, glanders, farcy, mange, urethral gleet and melanosia, any one of which depreciates very greatly the value of the horse as a breeder.

Young horses very rarely prove to be poor breeders, but horses no older than six or seven years often prove sterile. To guard against this, a test if the semen should be made for spermatozoa. Oftentimes the breeder or seller furnishes a guarantee, stating that he will take the horse back if he does not prove a sure breeder. There is little satisfaction in that, for with a sire that is impotent a man may waste one whole season and disappoint many mare owners.

I know of a case where a man paid a fabulous