

Veterinary Department.

Structure and Diseases of the Horse's Eye.

The eye is the immediate organ of vision, and is situated within the orbit and surrounded by its appendages.

The globe or eyeball is of a spherical shape, and is composed of a membranous sack in which is contained transparent humors of unequal density. The outer tunic is formed of the cornea and sclerotic, the former investing the anterior portion of the eye, and is the only covering of that portion. The middle tunic consists of the choroid, iris and ciliary processes, and the inner or nervous coat is designated the retina.

The refracting media are the aqueous humor, crystalline lens, and vitreous humor. The sclerotic is a dense, fibrous membrane, and gives the form to the eyeball, forming about four-fifths of the globe. It is attached to the nervous tissues which move the eye. The cornea is a transparent membrane, and is composed of several layers.

The choroid or middle tunic is made up of three layers, two vascular and one pigmentary, and supplies the nutritive matter necessary for the internal parts. The retina is the nervous coat, and is formed principally of the expansion of the optic nerve.

The iris is a movable curtain, suspended in the aqueous humor, and serving to regulate the rays of light. It is generally of a brown color in the horse, and is composed of fibrous stroma, pigmentary cells and muscular fibres; the opening in it is known as the pupil of the eye, or pupillary opening, which is elliptical in the horse and ox; the muscular fibres of the iris have the power of dilating or contracting the pupil. The ciliary processes are prolongations of the choroid coat, and are arranged in a circle round the crystalline lens.

The aqueous humor, which is composed principally of water, occupies the compartments between the cornea and iris, and between the iris and crystalline lens; the compartments are designated the anterior and posterior chambers of the eye.

The vitreous humor occupies nearly four-fifths of the whole interior of the eye ball. This membrane is denser than the preceding, and is of the consistency of thin jelly. The crystalline lens is placed in front of the vitreous humor; it is very dense in structure, and enclosed in its own capsula. Attached to the posterior lining of the iris are several little black globular bodies called the *corpora nigra*, their apparent use is to modify the rays of light entering the eye.

The appendages of the eye are the eyelids, eyelids, *membrana nictitans*, conjunctiva and lachrymal apparatus.

The eyelids serve to cover and protect the eyeball, and the upper one is much the larger and more movable; they are formed of skin, muscles, and cartilage.

Situated in the nasal angle or inner corner of the eye, between the globe and the side of the orbit, is the *membrana nictitans* or haw, forming a marked peculiarity in the horse. This body is formed of fibro-cartilage of an irregular form, and is for the purpose of protecting the eye from injury, and also tends to wipe off any foreign substance from the surface of the eyeball when the eye is irritated. The action and structure of this membrane show the beautiful arrangement of nature for the protection of such a delicate part. The haw is sometimes cruelly removed by people ignorant of its use and purpose.

The lachrymal apparatus is formed of the lachrymal glands, which secrete the tears, the lachrymal sack, and the duct which conveys the tears from the eye to the nasal opening. This canal or duct is long and tortuous, and passes through the superior maxillary bone, terminating in a small opening on the inner surface of the nasal opening.

The conjunctiva is the name applied to the thin mucous membrane lining the eyelids and eyeball.

The muscles in connection with the eyeball are very numerous and complete, and allow it to move in every direction, the posterior muscle being exceedingly powerful.

Fomentations.

It is not an unfrequent occurrence to hear horse-men and others speak of having fomented a certain part or limb with cold water, and another will use the same expression in reference to hot water. Such is decidedly wrong, although it may be, and we believe is, generally accepted and understood. To foment a part is to produce excitement in it—to increase or quicken the circulation of blood, and thus relieve those parts suffering from congestion or inflammation, or, after such a stage as inflammation, to promote the formation of matter—pus—and ensure relief by its discharge by abscess.

The most simple remedy is heat, and we have already seen that one method of applying it is by means of certain substances forming what is known as simple, medicated, or disinfectant poultices. Another kind of remedy very much in effective use is hot water, and we term its application "a fomentation." We do not need to qualify the term by the degrees hot or cold; a fomentation is always hot, for hot water excites and produces the action we want, but cold water depresses, producing an effect the very reverse of heat, and is, therefore, not a fomentation. Whenever we write in future articles of fomentations our read-ers will, we trust, understand we refer to hot water only unless otherwise specified, and when cold water is used a totally distinctive term will be made use of, by which mistake cannot possibly arise.

Fomentations, like poultices, are both simple and medicated. We notice first.

Simple Fomentations.

Hot water, varying from 110 deg. to 115 deg. Fah., or about 70 deg. Cent., is the simplest and most accessible fluid for a simple fomentation, and as the temperature is of the greatest importance, a thermometer should, if possible, be employed to ensure the prevention of not going beyond the degree named. Where numbers of animals are kept and hot water is much called for, a thermometer is a useful instrument for various purposes, and as the cost is now so trivial, it is easy to obtain one equally suitable for testing either the temperature of air or fluids, so that no one need make the matter a subject of much difficulty.

The water should not be too hot, because it may produce serious injury, and it should not be too cold, as all the time and trouble may be thrown away, with no good results; but when proper attention is observed, we may assert without fear of contradiction, that the use of simple remedies will bear comparison with fomentations for their rapid and powerful effects; and conversely, when hastily, improperly, and defectively applied, none prove so very injurious. In order to understand these propositions we must make use of a little repetition.

Hot and cold applications are equally opposed to each other. The first opens, relaxes, enlarges, and softens the parts to which they are applied, but cold water contracts, constricts, makes smaller and harder; therefore, when we use hot applications, we must be careful that the proper heat is maintained, not only during the use of the remedy but also afterwards, for the parts are then very sensitive, and, being moist, any cooling by exposure to the air brings on the very state we wish to avoid, viz., a *backening*, so called, of the inflammation. To excite first and immediately depress is very injurious, and delays the cure and progress towards health very much indeed.

Foot fomentations to be of use must be applied long and continuous. We often hear groom and others say, "I fomented for twenty minutes," and we seldom omit to add, "then you have probably done more harm than good." It is impossible in so short a space of time to impart to the substance of a limb, or mass of muscle, sufficient heat as will prove of any ultimate service. The parts are but just wetted, and often are left quite unprotected, by which serious harm follows. Fomentations should be persisted in for hours, and every arrangement and precaution made and taken before the application is begun. The efficacy of hot water may be usefully illustrated by the following case. Some time ago a valuable horse had become fast in the collar chain which secured him to the manger, and he, struggling, fell in an awkward position. Shortly afterwards, by his efforts to free himself, he hooked one of the hind shoes into the throat strap of the head collar, and he

was thus tighter than ever. This took place in the night, and the noise he made failed for several hours to call any one to the spot, but when he was found, he was growing very weak, and partly from strangulation and heavy bruises, his head and neck were as large as two. Besides, the breathing was much impeded, and it was at first a question whether the windpipe should be opened, and from the same cause it was absolutely impossible to expect him to swallow medicine. Our only course was to rely upon incessant fomentations, which were kept up for upwards of five hours, at the end of which time the swelling had considerably abated, medicine had been swallowed, and the patient took a small feed of oats. The plan of procedure was this:—A large copper being at hand, it was filled and the fire lighted; in the meantime, hot water was supplied from a distance. The horse was turned round in the stall and the head covered with two thicknesses of woollen cloth, and held over a large pail standing on a tub. Hot water was being constantly brought by one person who poured it in to make up the required heat as shown by a thermometer, and another was occupied in pouring the water from a large jug over the top of the head on the woollen cloth. By this means continuous heat was applied and no evaporation took place, which resulted, as we have already said, in the greatest good, after which a dry hood was put over the head and neck, the parts being previously rubbed briskly with soft dry towels.

For the legs we find a proper tub, known as a leg tub of the greatest value. In this the limb may be immersed for hours with ease, and to make it more effective the hot water should be passed to the bottom by means of a large funnel and pipe, or the cold will settle at the bottom. The ordinary plan is to simply stir it frequently as hot water is added. In the absence of a leg tub, woollen bandages may be bound over the limb, and hot water poured on the top will maintain a proper heat. Pieces of old horse rug, woollen cloth, several towels, &c., may also be used in emergencies, and a most effective action may be further induced by covering these with a piece of oiled silk or gutta-percha sheeting. Spongio-piline is the article which at once fulfils all these offices. The soft side being placed towards the affected part, the outer as waterproof effectually prevents any passing away of heat, and thus the proper excitation is set up and continued.

It should always be understood that when fomentations have been applied, the parts require to be dried as soon as possible by suitable friction and soft dry cloths, and a thick warm covering applied at once; for the legs bandages answer quite well, and for the body two or three ordinary rugs. To foment a part and leave it to dry afterwards is a bad proceeding and does great harm.—*Farmer (Eng.)*

A REMEDY FOR A HORSE THAT HAS EATEN TOO MUCH CORN.—Give two tablespoonfuls of salaratus dissolved in one pint of warm water, being sure to see that it is all dissolved. In severe cases give a halfcupful of salaratus and repeat the dose if the horse is not relieved in thirty minutes.

LINIMENT.—The best liniment for cuts, galls, spavin, poll evil, fistula, or any other of the external diseases that animals are liable to, is made by dissolving one ounce of pulverized corrosive sublimate and one ounce of gum camphor in one pint of spirits of turpentine, put in a strong bottle. Apply with a swab.

PULSATIONS PER MINUTE.—Watch's *Veterinary Pathology* gives the following as the number of pulsations in a minute, in a state of health, in the under-mentioned animals:—

Horse.....	32 to 38	Deg.....	90 to 100
Ox or Cow.....	25 to 32	Grav.....	1-4
Sheep.....	20 to 26	Druck.....	100
Goat.....	22 to 29	Hem.....	140
Cat.....	110 to 120	Heron.....	200
Hare.....	120		

REMEDY FOR SPITBACK OF URINE IN HORSES
In a bag one foot square put enough fine salt to form a thin layer over the side. Wet it with alcohol, or if not at hand use warm water. Place it over the kidneys, then wring out a blanket in very hot water and place it over the bag, covering these with several thicknesses of dry blankets to retain the steam. On all place the usual horse blanket. If relief is obtained in fifteen or twenty minutes, repeat the operation. Leave the outside blanket on after the others have been removed, till the horse is perfectly dry.—*Massachusetts Ploughman.*