

diagnostic symptoms are the spasms are intermittent, not constant, and the pulse and breathing become normal, during the intervals between the spasms.

*Treatment.*—Give an anti-spasmodic, of which there are many highly recommended for this complaint, such as (a) laudanum, 1½ ounce, spirits of nitrous ether, 1 ounce; water, half a pint; (b) chloral hydrate, 1 ounce in half a pint of water; or (c) extract of belladonna, 1 drachm, sulphuric ether, 1 ounce, in half a pint of water. Either of these may be repeated every two hours. But if the first does not give relief, give a pint of raw linseed oil to remove the irritant, or preferably, as the first dose administer laudanum 2 ounces, turpentine 2 ounces, raw linseed oil one pint. In bad cases give repeated injections of warm water and soap, and apply hot fomentations to the abdomen.

#### FLATULENT COLIC, WIND COLIC, OR TYMPANITES.

*Causes.*—Indigestion, new forage, or any sudden change of food, green food very often produces it, and ravenous feeding after a long fast.

*Symptoms.*—A dull, constant abdominal pain accompanied by a fulness of the abdomen, which has a drum like sound on being struck, the horse paws with his fore feet occasionally, and moves about uneasily, but when the swelling of the abdomen increases, the animal becomes greatly distressed, breathing becomes quick and oppressed, perspiration breaks out all over the body, trembling of the muscles of the fore quarters, frequent sighing, and if not relieved, he will manifest great distress and stagger about, until he finally plunges forward and dies suddenly.

*Treatment.*—Give 2 ounces of bicarbonate of soda, or ½ ounce of carbonate of ammonia, in a pint of water. If this does not give relief, give a purgative, one ounce of turpentine in a pint of raw linseed oil. Give repeated injections of turpentine and oil per rectum, and if the pain and distress is great, give either of the anodynes recommended for spasmodic colic, and apply hot fomentations to the abdomen. In severe cases, great relief is obtained by puncturing the abdomen, and allowing the gas to escape, but this should only be attempted by some experienced person.

#### IMPACTION OF THE LARGE INTESTINES.

*Causes.*—Principally over-feeding with dry indigestible food, and want of regular exercise.

*Symptoms.*—There will be slight abdominal pain at intervals for a day or two perhaps; small quantities of faeces will be passed frequently, the abdomen is fuller than natural; the horse paws with his fore feet, looks back at his sides, lies down, and when he does so, he does not roll and kick about as in spasmodic colic; he generally lies flat on his side for a considerable time, occasionally raising up his head and looking round at his side then laying it down again, with a groan. When rising up he will sometimes sit on his haunches, like a dog, with his fore legs stretched out, raising up his head and neck in a straining position. When up, he moves backwards and presses his hind quarters against the wall. Very

little fæces pass from the bowels; in many cases I have seen nothing pass for several days; in one case which I attended, no dung passed for six days; yet the horse recovered.

*Treatment.*—Give a brisk purgative at once, 5 drachms of aloes, and for a large horse 6 drachms. Give repeated injections of turpentine and oil. Do not give a second dose of aloes, even if the first dose does not act for two days, rather give a tablespoonful of Epsom salts in the drinking water, two or three times a day. An excellent enema is 2 ounces of glycerine injected up the rectum with a small syringe. Rub the abdomen well and give walking exercise. If there is much pain, give extract of belladonna in 1 drachm doses every three or four hours.

**VOLVULUS OR TWISTING OF THE BOWELS** is comparatively common in the horse, and is believed to be due to violent rolling, or similar action.

**INVAGINATION OF THE BOWELS.**—A slipping of one portion of the bowel into that of another, this occurs most frequently in the small intestines, the inturned bowel is generally slipped in a backward direction towards the large intestines.

*Cause.*—It is generally believed to be due to violent irregular contractions of the bowels as in spasmodic colic.

There are other forms of mechanical obstruction, such as a portion of the bowel slipping through a rent in the mesentery, hernia through the diaphragm, or into the scrotum, in a stallion, &c.

*Symptoms.*—These are very similar to those of obstruction of the bowels from the impaction of fæces, but the attack is not preceded by constipation or the passage of hardened fæces as in that complaint. No dung is passed after the rectum has been cleared out by injections; the symptoms of acute pain are more manifest, and develop more rapidly than in simple obstruction. The horse strains violently, sits on his haunches, and backs against the wall, until inflammation supervenes, when the pain becomes continuous, and the animal dies in agony; or the strangulated portion of bowel may become gangrenous, when a period of quiet may intervene, during which the horse may attempt to pick up some forage, but the pulse becomes quick and feeble, and the animal generally drops down dead suddenly.

*Treatment.*—There is no cure, unless the parts naturally unfold themselves; in stallions, examine the scrotum, lest any portion of bowel may have got into it, or if there is a rupture in any other part of the body, carefully examine and see if a portion of bowel is not imprisoned in it. If the pain is constant and severe, give large doses of belladonna extract, one drachm every hour, and give repeated injections of warm water and soap. Apply hot fomentations to the abdomen. It is difficult to distinguish between these necessarily fatal forms and obstruction from impacted bowel, hence the treatment should be continued much on the same lines as long as there is any hope.

### ENTERITIS OR INFLAMMATION OF THE BOWELS.

*Causes.*—A chill after being heated, drinking a large quantity of cold water when warm. Any of the varieties of colic, if unrelieved, may terminate in inflammation, as will also severe purging, twist of the bowels, &c.

*Symptoms.*—These, when the disease does not follow any of the other bowel affections, are generally ushered in by a shivering fit, followed by feverishness, increased temperature and dulness.

The pulse and breathing are quickened, and the mucous membrane lining the eyelids is red and injected looking. This is soon followed by abdominal pain, the horse paws, moves about uneasily, lies down, but much more carefully than in spasmodic colic. When down, he rolls, turns on his back, and leans his legs against the wall, as if he obtained some relief in that position. The pain is continuous; there are no periods of relief as in spasmodic colic, although the paroxysms are greater at times. Rubbing the belly in spasmodic colic gives relief, in enteritis, it causes pain, the abdomen being very tender. As the disease advances, the symptoms become aggravated, the horse begins to throw himself down in a reckless manner, or walks round his box in great distress, with trembling of the muscles, his countenance becomes haggard, his eyes have a glazed appearance, his breathing becomes distressed, short, and catching with frequent deep sighs; cold sweats bedew the body, his legs and ears become cold and the abdomen generally swollen. At the close he will stagger, plunge forward, and drop down dead.

In some cases in which the inflammation is confined to a limited portion of the bowels, the violent symptoms will suddenly cease, the horse becomes calm, and the perspiration dries on his body, but his legs and ears remain cold, his pulse almost imperceptible, and he retains the same haggard look; gangrene, or mortification of the inflamed part has taken place. He may remain in this tranquil state for several hours perhaps, when he suddenly sways from side to side, then plunges forward and dies.

*Treatment.*—Apply hot fomentations to the abdomen *continuously*, and give 2 ounces of laudanum every two hours, until the pain ceases. Do not give purgative medicine of any kind; if the horse recovers, give soft laxative food, and an injection to assist in moving the bowels, but the success of the treatment of enteritis depends greatly upon all movement of the bowels being arrested during the acute stage. After the pain is relieved, and the fomentations stopped, dry his body, clothe him well, and bandage the legs. If the bowels begin to act, and the pulse becomes fuller and slower, recovery may be expected. Give soft laxative food for some days afterwards.

### PERITONITIS.—INFLAMMATION OF THE SEROUS MEMBRANE LINING THE ABDOMEN.

*Causes.*—Wounds, or injuries to the abdomen. It may follow castration, or rupture of the stomach &c., &c.

*Symptoms.*—It is generally preceded by a chill, followed by fever; the horse appears stiff and sore, and moves with difficulty. He paws with his fore feet, and moves uneasily with his hind, but rarely lies down; if he does, he lies down very carefully. His pulse is quick, hard and wiry, and his temperature high, and he evinces great tenderness on pressing his abdomen. There is complete loss of appetite, and the bowels are usually constipated. Later, superficial swellings appear on the abdomen, and the breathing becomes deep and distressed.

*Treatment.*—The same as for inflammation of the bowels, hot fomentations continuously applied, and repeated doses of laudanum, followed on recovery, by soft laxative food, and comfort.

### ASCITES OR DROPSY OF THE ABDOMEN.

*Causes.*—Peritonitis, disease of the liver, heart, and lungs, or debility from parasites.

*Symptoms.*—The horse becomes pot-bellied, percussion gives a dead, dull sound; by and bye swellings appear on the surface of the abdomen, and on the legs. The appetite is impaired, and the animal looks dull and unthrifty.

*Treatment.*—Give turpentine 1 ounce, raw linseed oil half a pint daily, for three or four days, followed by iodide of potassium 1 drachm twice a day. If the dropsy disappears, give daily:—

Powdered sulphate of iron, 1 drachm.

„ gentian root, 4 drachm.

mixed in his food, which should be nourishing.

### CHRONIC INDIGESTION;

#### DEPRAVED AND FAILING APPETITE; LOSS OF CONDITION, ETC.

There are no questions more frequently asked by stock owners than the following:—“Such and such an animal does not feel well, its appetite is very irregular, and it is falling off in condition; what can I give it?” Or, “the animal continues in low condition, and will not improve no matter how I feed it, what would you recommend?”

The dominant idea in the minds of most of these people is that no matter what the cause of this loss of appetite or unthrifty condition may be, the treatment required is some good tonic medicine, or condition powders, as these proprietary specifics are generally called, but to the experienced veterinary surgeon the solution is by no means so simple.

With respect to defective appetite, or delicacy of constitution, this may arise from a great variety of causes such as irregularities of the teeth, injuries to, or sores in, the mouth, on the tongue, or on the maxillary bones. It may also arise from chronic disease of any of the internal organs, or from debility due to the effects of previous disease.

Irregularities of the teeth and sores or injuries about the mouth are dealt with in their proper place, as are also all acute diseases of a pronounced character. The cases of *loss of appetite* for which

advice is generally sought are those in which there does not appear to be anything particularly wrong, except that the animal does not feed so well as usual, and is falling off in condition in consequence; or that it feeds all right, but does not thrive.

Chronic indigestion or dyspepsia signifies difficult or imperfect gastric digestion. Any previous disease of a debilitating character may leave the digestive organs in an enfeebled condition, which it may take a considerable time, even with careful feeding, to restore to their normal vigour, more especially when the digestive organs themselves have been the seat of the acute disorder. Every person of experience knows that the principal treatment required for an animal which is recovering from any acute disease is not medicine so much as light, nourishing, easily digested food of a laxative nature, given in small quantities as required. But it is not so generally recognised, at least in practice, that debility of the digestive organs, no matter how induced, should be treated in a similar manner. Medicine, judiciously administered, is of great value, but it is the arranging and regulation of the diet which is the main consideration in the treatment of such cases. Remember that the habitual tendency of all that goes on in the animal body is always in the direction of health. This is the inherent bent of all the vital powers and processes of the animal organism. The object, therefore, of medical treatment is to assist this renewing power of nature, and one of the principal means of doing that is to remove every obstacle to the free action of this restorative force.

In the majority of cases of simple indigestion, or loss of appetite, it is of considerable benefit at the commencement of the treatment to relieve the stomach and bowels, by a dose of opening medicine such as a pint of raw linseed oil for a horse. After having cleared out the contents of the stomach and bowels, a simple vegetable tonic and antacid such as powdered gentian root two drachms, nuxvomica one drachm, bicarbonate of soda one ounce, may be given to full-grown horses or cattle twice a day in their food, to younger animals proportionately smaller doses. When there is great debility, stimulants may be required such as half-a-pint of whisky or brandy in a bottle of water or thin gruel; one drachm of carbonate of ammonia may be added to the spirit. But the best restorative for a weak stomach is nourishing, easily digested food in small quantities, and the best tonic likewise is good substantial food, and plenty of it, when the animal is able to digest it properly. Mineral tonics, such as sulphate of iron, may be given to an animal with benefit to improve his condition after his appetite has returned, but they should rarely be given to restore a delicate appetite, as is so frequently done. It should be clearly understood also that tonic medicine is not food, and cannot be made to act as a substitute for it. There is no use in giving tonics unless they are accompanied with an abundance of good food.

*Loss of condition when the appetite and general health are good.*—When an animal eats well, gets plenty of good, wholesome food, but notwithstanding falls off in condition, and looks unthrifty, it is generally an indication of the presence of internal animal parasites or worms.

## PARASITES OR WORMS IN THE STOMACH AND BOWELS.

*Bots*.—These are the larvæ of the common gad-fly. These flies deposit their eggs on the horse's hair, about the chest, shoulder and forelegs; aided by the heat and moisture, the larvæ are hatched in about three weeks, when they escape from the shells, and are taken in by the horse when he bites himself or his neighbour. They pass into the stomach, as little red grub-looking things, and there they fasten themselves to the white epithelial membrane which lines the cardiac, or gullet end of the stomach, by two hooks which are situated close to their heads. In that position they hang for about seven months, when, having completed that stage of their existence, they let go their hold and pass out with the fæces on to the ground, where they bury themselves for about six weeks, during which the outer shell of the bot becomes converted into a cocoon or shell, out of which a two-winged yellow, hairy-looking fly emerges, which in its turn, very soon begins the round again.

"*Bots*" are credited with killing a great number of horses in Cape Colony, but as a matter of fact they are only very slightly, if at all, harmful to their host. A great deal of misunderstanding with reference to the amount of injury which the bots inflict upon a horse's stomach arises from the fact that so few non-professional men are acquainted with the normal appearance which it presents. When a horse's stomach is opened, one is at once struck by the different appearances presented by its internal membrane, according as it is examined to the right or left. To the left, where the œsophagus or gullet enters, the lining membrane has a pale white appearance, is firm and resisting to the touch. This white resisting lining terminates in the centre of the stomach by a distinct wavy ridge. To the right of this ridge, the lining membrane is of a purplish or reddish brown colour, very vascular, and appears inflamed looking when compared with the white lining membrane of the left side. It is this division of the mucous membrane which lines the stomach of the horse into two distinct portions, that has led amateur anatomists astray; they naturally expect to find it of one uniform colour and character.

On cutting open a horse's stomach, emptying and clearing it, so as to exhibit its general appearance and the position which the bots occupy, it is very rare that someone amongst the bystanders does not call out, "There you are! Don't you see that the bots have eaten off half of the lining of the stomach?" They observe the bots sticking in a close cluster on the white membrane which lines the left or gullet-end of the stomach, and on comparing this part of the stomach to the other part which terminates in the intestines and has a pinkish raw appearance, exactly as if the white lining had been torn off from it, the conclusion arrived at is, that the bots have already eaten off the white lining on the right end of the stomach, and are about to commence operations of a similar character on the left. The portion of the stomach to which the bots are attached is lined by a strong white mucous membrane, which contains no gastric glands,

and is covered by a thick layer of epithelium, an insensitive membrane which contains neither blood-vessels nor nerves, and this protects the vascular membrane underneath from irritation or injury. Bots do not, therefore, interfere directly with the gastric digestion of the horse. It is the other end of the stomach which contains the gastric glands and which performs the whole of the digestive process carried on within a horse's stomach.

The only direct injury, therefore, which the bots can inflict upon a horse, so long as they remain attached to their normal position in the stomach, apart from the little nutriment which they imbibe, is simply one of mechanical irritation; but even this can amount to very little.

After discussing the different opinions expressed by various authors respecting the harm which these bots inflict on their host when confined to their natural attachment on the left half of the stomach, Neumann says: "When we reflect on the extreme frequency of the gastric larvæ, the multitudes of horses which are infested with them, their frequently being present in enormous numbers in a stomach, and the impossibility of even suspecting their presence there during life, owing to the absence of any apparent disturbance, we might be led to consider these parasites as altogether inoffensive. What is more, some authorities have ascribed a stimulating action to them, which is of advantage to the digestive functions; but in this there is manifest exaggeration. We cannot admit that the numerous ulcers (small holes) produced on the surface of the œsophageal and gastric (?) mucous membranes are a matter of absolute indifference." To this opinion I subscribe; but what I want particularly to draw attention to is the fact that there are no definite or diagnostic symptoms to indicate the presence of even a large number of bots in the stomach of a horse, so long as they remain attached to the mucous membrane of the left side of the horse's stomach, and that is the position which they usually occupy. Hence it is evident that the numerous diseases and varying symptoms to which bots are believed to give origin to in this Colony is not founded on accurate observation, but much is manifestly due to the imagination.

With respect to the treatment for bots, the only satisfactory treatment is *preventive*: either to keep the flies off the animals by frequent dressings of acrid and bitter substances, such as decoctions of walnut tree leaves, tobacco, aloes and assafœtida, or to remove the eggs by frequent careful grooming. None of these preventive remedies are capable of being applied to semi-wild horses which graze on the veld, but either of them, especially the latter, may be carried out on horses in daily use.

There are a great many recipes which are highly extolled for the expulsion of bots in this Colony. One of the most popular is the following:—Fast the horse for twenty-four hours, then give him a pound of brown sugar dissolved in a quart of milk. Bots are believed to be very fond of sugar, and there being no food in the stomach the bots let go their hold of the lining membrane, and revel in the saccharine fluid. After giving the bots an hour or two to gorge themselves in this manner, a bottleful of strong tea

is given to the horse; this is supposed to stupefy the bots so that they are unable to re-attach themselves to the mucous membrane. When the tea has had sufficient time to effect its alleged purpose, a bottleful of cocoa-nut oil is given to the horse, and this expels the bots from the stomach. This is a beautiful theory, but unfortunately it does not stand the test of practical experiment. I have tried it, carrying out the instructions carefully, keeping the horses under close observation and killing them from seven hours to fourteen days after the dosing, and the effects, so far as the removal of the bots from their attachment in the stomach was concerned, were nil. A dose of Tansy tea, followed a few hours later by half an ounce of salts has also been recommended as a remedy to expel bots from the stomach.

It must be borne in mind that during the spring and early summer months, when the bots have completed their larval stage and are ready to quit their host, any purgative medicine will invariably bring away a number of them with the fæces, but there is no medicine that I know of that can be relied upon to bring away bots until they are ready to move of their own accord, at least not in the strength that can be given with safety to the horse. Carbohc acid, chloroform, bisulphide of carbon, benzine, and similar remedies have all been tried, but with indifferent success.

#### WORMS IN THE INTESTINES.

Horses are affected with a number of different species of worms, principally what are called round worms, some of which inhabit the stomach, others the small intestines, and others the large intestines. Tape worms are not common in the horse.

*General Symptoms.*—The horse is unthrifty looking, although his appetite is good, and food abundant. Bowels are irregular, sometimes liable to diarrhœa when at work. The diagnostic symptom is, of course, the passage of some of the worms in the fæces. There is in some cases, a tendency to curl up the upper lip, and lick the walls, also to rub the anus against the wall.

*Treatment.*—There are a great number of remedies recommended for worms in the horse, such as turpentine 1 ounce, raw linseed oil half a pint, given on an empty stomach, two days in succession. Santonine 1 drachm, given for three or four mornings, and followed by a dose of physic. But two very simple and very effective remedies are, powdered sulphate of copper (bluestone) 1 drachm, given in a mash every morning for a week, or arsenic 5 grains given daily for eight or ten days. Administered with care and judgment arsenic is a valuable remedy for many kinds of internal parasites. When given to a horse in small repeated doses, not only does it effect the expulsion of worms, but it also acts as a tonic, and exercises an astringent action on the mucous membrane lining the stomach and bowels; hence, in addition to ridding the host of parasites, it induces a healthy condition of the digestive organs which renders the animal less liable to become re-infested with worms.

Arsenic acts with much more certainty and regularity when given in solution, it is better, therefore, to administer the drug in



this way rather than in the form of dry powder. Arsenic is not easily soluble in water, but by boiling it with an equal weight of carbonate of potash a solution of arsenite of potassium is obtained. This is the liquor arsenicalis. But there is one drawback to the use of the liquor arsenicalis as sold by the chemist, it contains tincture of lavender, the flavour of which prevents many horses from taking the liquid in their drinking water. For the use of our equine patients, then, a plain solution of arsenic is preferable, one made entirely without the addition of tincture of lavender; such a solution may be conveniently prepared in the following manner:—

Take: White arsenic ... ..	$\frac{1}{3}$ ounce.
Carbonate of potash ... ..	$\frac{1}{3}$ ounce.
Water ... ..	3 pints.

Boil together until the whole of the arsenic is dissolved, then add sufficient water to make good the loss by evaporation, *i.e.*, the solution *after* boiling must measure exactly 60 ounces (3 pints).

So prepared, the solution is not of the same strength as the liquor arsenicals sold by the chemists, but being both tasteless and odourless, horses will readily take it in their drinking water. One tablespoonful may be given two or even three times a day for a week, when the administration of the drug should be stopped for at any rate the seven or eight days following. Given in this manner, the solution of arsenic also acts beneficially in many cases of chronic diarrhoea, a disease very often induced by worms. It is also an excellent remedy for chronic cough and for some forms of chronic skin diseases.

A horse badly affected with worms is generally in poor condition, it is necessary, therefore, to give a liberal supply of good nourishing food, green food if it can be got, and give a liberal allowance of common salt with it. A good tonic powder is:

Powdered sulphate of iron ... ..	1 drachm.
Powdered gentian root ... ..	2 drachm.

given morning and evening in the food.

#### DIARRHOEA OR PURGING.

The passing of fluid fæces without either pain or straining.

*Causes.*—Indigestible food, sudden changes of diet, noxious ingredients in the food, too much soft, succulent food, giving water immediately after a large feed of grain, the presence of worms in the intestines, a chronic relaxed condition of the bowels, &c.

*Treatment* is *preventive and curative*. *Preventive* treatment consists in regular feeding with sound wholesome food; avoid giving a large feed immediately before starting to do hard or fast work, and never give a horse water immediately after a full feed of grain.

*Curative treatment* consists in removing the irritating substances from the bowels by a gentle laxative, such as a pint of raw linseed oil, and feeding the animal carefully with soft, easily digested food for a few days. If purging occurs while on a

journey, outspan, or off-saddle immediately, give the animal one ounce of laudanum in a little water, allow him to rest for an hour, when you may proceed on your journey. A second dose may be given if necessary, but, if the purging still continues, rest the horse or inflammation of the bowels may supervene. Give green food, or the fine tops of some forage, but do not give him any rough food. A drink of flour or meal water, is very good. Many use alum, tobacco, chalk, clay water and other astringents. If arising from worms, a course of arsenic after the acute attack is over, acts very beneficially.

**SUPERPURATION**, or over excitement of the intestines from excessive action of purgative medicine.

*Causes.*—Giving a purgative dose of medicine, when there is a catarrhal condition of the bowels, as in influenza, or biliary fever; working a horse before the physic is set, continuing to drive a horse when suffering from diarrhoea, &c. Horses are more liable to superpurgation than any other of the domestic animals, due to the great vascularity of the mucous membrane lining the bowels.

*Symptoms.*—Violent purging, the fæces having very often an offensive smell; the horse refuses food, but has great thirst; his pulse and breathing are quickened; he may paw with his fore feet, and appear uneasy, but he does not usually lie down; the abdomen becomes distended in some cases, and the purging ceases, although the contents of the bowels remain fluid. The pulse becomes imperceptible, the eyes glazed looking, the horse sighs frequently, moves uneasily round his box, and drops down dead from exhaustion. Very often inflammation of the feet supervenes.

*Treatment.*—If the purging is violent, give laudanum 1 ounce in a bottle of flour gruel or starch, and repeat every two hours until it ceases. Clothe the body well, and bandage the legs to keep up the surface circulation. If weak, give whisky or brandy, a tumblerful, beaten up with some eggs or milk, every four hours, as may be indicated. Restrict the animal's drinking water and give him chilled water with a little oatmeal stirred into it to drink.

There are many astringent mixtures used. Such as: Powdered chalk, powdered catechu, and powdered ginger, of each 1 ounce, with powdered opium, 1 drachm given in a bottle of thin gruel; or tannic acid 1 drachm; opium 1 drachm, may be given in the same way.

For chronic dysentery, a good remedy is powdered sulphate of copper (bluestone) 30 grains, powdered opium 30 grains, given in gruel, twice a day.

## DISEASES OF THE LIVER.

These occur amongst all domestic animals in this Colony. The great number of horses, which suffer from chronic diseases of the liver, only observed after death, is clear evidence of this. As already stated, chronic enlargement of the liver, with hardening of its substance, and chronic atrophy of the liver, with a tough

leathery condition of its substance, are associated with acute indigestion with all its sequelæ. It is only when the disease assumes an acute form that it is observed. I will, therefore, confine my remarks to

#### ACUTE HEPATITIS, OR INFLAMMATION OF THE LIVER.

*Causes.*—Sudden changes of temperature, chills after being very hot, severe exertion in the hot sun, especially if the horse is in full condition; sudden changes from dry, scanty food, to abundance of rich, succulent food; over-feeding, and want of proper exercise.

*Symptoms.*—The horse is dull, hangs his head, the eyes are lustreless, there is a dull, uneasy abdominal pain, indicated by restlessness and occasionally looking round at his side; he eats a little, but does not appear to reusn his food. The bowels are constipated, and the dung of a dirty clay colour. By and by the mucous membrane lining the eyelids and mouth become slightly yellow the animal may lay down frequently, but does not rest long. The pulse and breathing are increased, the brain disturbance manifests itself, he will swing unsteadily backwards and forwards on his fore-legs, stagger if made to move, and dies in a semi-comatose condition. In some cases, the appetite is very irregular, one day he will hardly eat anything, and the next day eat well; one horse which I attended appeared to be going on favourably, until one day he ate almost ravenously, distended his stomach, and died comatose within 36 hours.

*Treatment.*—Give sulphate of soda (Glauber salts), or Epsom salts one pound in a quart of warm water. Apply hot fomentations to the body continuously during the acute stage. After ceasing the fomentation, apply a mustard plaster to the right side, over the seat of the liver; relieve the bowels by repeated injections of warm water or turpentine and oil; feed on soft succulent food or bran, a little at a time. After the dose of salts give three times a day:—

Powdered chloride of ammonia,  $\frac{1}{2}$  ounce.

Extract of belladonna  $\frac{1}{2}$  drachm.

dissolved in a pint of warm water. Give also, either in his food or water a tablespoonful of Glauber salts twice a day.

After the acute attack is over, feed the animal carefully, and give twice daily in his food, half an ounce each of bicarbonate of potash or soda, and powdered gentian root. Avoid over-loading the stomach.

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#### CHRONIC INTERSTITIAL HEPATITIS.

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##### CIRRHOSIS OF THE LIVER.

This is a prominent and constant lesion in the disease known as "Grass Stagers," or the Molteno Horse and Cattle disease. A full description of this malady will be found on page 47.

## DISEASES OF THE HEART.

Heart disease is comparatively rare in the horse, and often very difficult to diagnose when present.

Diseases of the heart are separated into *Myocarditis*, or inflammation of the muscular structure of the heart; *Endocarditis*, or inflammation of the lining membrane of the heart; *Pericarditis*, or inflammation of the heart-bag; *Valvular disease, growths in the heart, Hypertrophy*, or enlargement of the heart; *Atrophy*, or wasting of the heart; fatty degeneration of the heart, &c., &c.

*Causes of inflammatory disease of the heart.*—It is generally associated with some other disease, such as rheumatism, influenza, pleurisy, pneumonia, etc. It may also arise from wounds or injuries to the chest, such as a broken rib.

*Symptoms.*—Very similar to those of pleurisy; there is manifest pain in the movement of the fore legs, especially when made to run. When the horse is turned short round to the left, he will groan as in pleurisy, but there is no pain on percussing the ribs, as in the last mentioned disease. There is generally great fever, the temperature is high and there is a peculiar hard pulse. The breathing is quick and short, and becomes panting when the animal is made to run. As already stated, it may be associated with pleurisy, rheumatism, &c.

*Treatment.*—When you get a horse with a quick, hard, irritable pulse, high temperature, pain in moving the front limbs, with shortness of breath when made to trot, and you can find nothing else definite to account for these symptoms, you may suspect the heart, more especially if the horse has had influenza, rheumatism, or has received some severe injury to the chest. Aconite and digitalis are generally recommended in inflammatory diseases of the heart. Mr. Trombower of the United States, "recommends 10 to 15 drops each of tincture of aconite and tincture of digitalis, every hour until the pulse and temperature are reduced." Hot fomentations to the chest, bandages to the legs, with nourishing food. If associated with rheumatism give also salicylate of soda in two drachm doses, give also nitrate of potash, a full teaspoonfull in the drinking water three times a day.

In valvular disease of the heart, the most striking symptom is the venous pulse, which can be observed in the jugular vein, the blood being propelled towards the head, accompanied by vertigo or fainting when the animal is trotted. Very little can be done for such cases. Iodide of potassium in one drachm doses twice a day may be tried.

### SYNCOPE OR FAINTING.

This occurs generally from loss of blood. *Treatment.*—Dash cold water about the head, and give half a pint of whisky or brandy neat.

## DISEASES OF THE BLOOD-VESSELS.

*Inflammation of an artery.*—This is generally due to direct injury to the part.

*Symptoms.*—A painful swelling along the course of the artery, if it is a large important vessel, there may be a slight coldness of the parts, supplied by the vessel.

*Treatment.*—Apply hot fomentations to the part, and give an ounce of bicarbonate of potash in the food or water twice a day. Give soft food and keep the bowels open.

Lameness of one or both hind legs very frequently arises from disease, or part closure of the large iliac arteries, which branch out at the end of the posterior aorta in front of the pelvis. These vessels supply the blood to the hind limbs. When one of these large vessels becomes contracted from any cause, the supply of blood to the limb is correspondingly diminished. Such a horse will appear all right in the stable, and when only walked; but as soon as he is cantered, or galloped, he becomes suddenly very lame, and holds up the leg, as if it were cramped, and is unable to proceed. After a rest, he will be able to walk back to the stable. Little can be done for such cases; give bicarbonate of potash in one ounce doses twice daily and keep on soft food, with rest.

*Aneurism*, or dilatation of the coats of an artery, is a result of inflammation, or degeneration of the structures.

*Symptoms.*—A round soft pulsating tumour, easily compressed on the course of the vessel.

*Treatment.*—But very little can be done for such swellings, except by an expert, who might cut out the tumour, and ligature the two ends of the vessel.

Aneurism of the mesenteric artery, due to worms, (the *strongylus armatus*), is comparatively common in this Colony, giving rise to repeated attacks of colic, but the cause is only discovered post mortem.

### RUPTURE OF AN ARTERY.

When a large artery becomes ruptured internally, death follows, as a rule, soon afterwards.

*Symptoms of internal bleeding.*—The horse becomes weak, the mucous membranes become pale, the breathing is hurried, the animal begins to stagger, and soon drops down dead.

If the vessel is comparatively small, the above symptoms will be much modified; there will be weakness, paleness of the mucous membranes and fainting.

*Treatment.*—Give strong stimulants, such as half a pint of whisky, and two ounces of turpentine, the latter mixed in a little milk to cover the turpentine. Give as much water as the animal requires to drink. Repeat the whisky every half hour. One ounce of the solution of the perchloride of iron may also be given in half a pint of water.

When an artery becomes ruptured near the surface of the body, either from a severe injury or any other cause, a large swelling will suddenly form at the part. The pressure of the surrounding tissues generally stops the bleeding.

If bleeding occurs from any open wound, try first to get a hold of the end of the artery and tie it. If that cannot be done,

apply pressure to the part by a bandage, or plug the wound with a soft cloth, cotton wool, or similar substance, or try the continuous application of cold water.

#### PHLEBITIS, OR INFLAMMATION OF A VEIN.

This frequently occurs after bleeding from the jugular vein.

*Symptoms.*—The vein is swollen and hard, and is very tender to the touch.

*Treatment.*—Apply a small cantharides blister along the course of the swelling, and give internally a teaspoonful of saltpetre in the drinking water three times a day. If an abscess forms, it must be opened at once and the matter allowed to escape. The only practical cure consists in obliterating the vessel, and the blister hastens that process.

### DISEASES OF THE EYES.

Good eyesight is of the greatest importance to a horse, impaired vision is not only a serious defect, but it is highly dangerous to the rider or driver, hence every care should be taken of a horse's eyes.

#### TURNING IN OF THE EYELASHES.

This is a common cause of irritation and inflammation of the eye.

*Treatment.*—Cut off the offending hairs with small scissors, and reduce the inflammation by the application of a little eye lotion.

#### TORN EYELIDS.

*Treatment.*—Bring the torn edges together as accurately as possible, and stitch them up carefully with a fine needle and silk thread. It is necessary to fasten the horse's head in such a way as to prevent him rubbing his eye and disturbing the stitches until union is complete. If the wound has been inflicted some time before treatment has been attempted, do not cut off the torn pieces as useless, until you have tried to get them to unite, scrape the healed and dried edges of the torn lids carefully with a knife, and then bring the raw edges together, as already directed, and dress over with a little collodion or friars balsam.

#### WARTS OR TUMOURS ON THE EYELIDS.

*Treatment.*—If these are small, snip them off with scissors. If too large for that, tie a strong silk thread around their roots, and slough them off. Dress the roots with a little powdered bluestone.

#### SIMPLE OPHTHALMIA INFLAMMATION OF THE SUPERFICIAL STRUCTURES OF THE EYE.

*Causes.*—Blows, cuts with a whip, or similar injury. Any irritant body such as chaff, dust, thorns, strong irritant gases, or smoke. It may arise also from the presence of small worms under the eyelids, or within the eye.

*Symptoms.*—A watery discharge from the eyes, which appear red and painful. If from an external injury, there will be more or less swelling of the surrounding structures, depending on the nature and force of the injury. The inflammation is soon followed by a bluish, white film which spreads over the eyeball, its depth and opacity depending on the severity of the inflammation.

*Treatment.*—Examine carefully for any foreign body, and remove it, if present. When the eye is very painful, it is difficult to examine it, in such cases drop into the eye, as well as apply externally, a 4 per cent solution of cocaine, this will allay the sensibility, and enable you to examine the eye and remove any irritant. After removing the cause apply warm fomentations to the eye and the following lotion: sulphate of zinc 2 drachms in a quart bottle of rain water; or acetate of lead of the same strength. To remove the white film, after the inflammation has subsided, apply nitrate of silver 4 grains, dissolved in an ounce of distilled water. Pull out the lower lid gently, and drop over it a little of the lotion three times a day.

#### ULCERS OF THE CORNEA OR EYEBALL.

These ulcers appear on the cornea either from the severity of the inflammation, or on account of the patient being very weak and debilitated.

*Treatment.*—Touch the ulcer with the nitrate of silver lotion frequently, and give good nourishing food, with tonics such as sulphate of iron and gentian root, 2 drachms of each daily.

*Internal Ophthalmia,* or inflammation of the deeper structures of the eye.

*Causes.*—These are similar to those of inflammation of the superficial structures, only more severe. It is sometimes associated with constitutional disease, or derangement of the digestive organs.

*Symptoms.*—If from an external cause, the inflammation and swelling of the surrounding structures will correspond to the character and force of the injury, but if the inflammation arises from some constitutional cause, there may be little external swelling or superficial inflammation, but there is evidence of acute pain and tenderness in the eye, and an intolerance to the light. The eyelids are kept partially closed, and the horse jerks his head suddenly to one side when anything approaches his eye, and the "haw" will be projected over the surface of the cornea. There is fever and loss of appetite. It is impossible to examine the eye under such circumstances without the application of cocaine, but a cloudiness will be seen behind the cornea, which frequently ends in a cataract, if the inflammation is severe.

*Treatment.*—Give the horse a laxative, such as a bottle of raw linseed oil, place him in a clean, cool, dark stable, paint all round the eyelids a mixture of equal parts of extract of belladonna and glycerine, cover up the eyes with a soft cloth, and keep them constantly moist with the sulphate of zinc or sugar of lead lotion.

## RECURRING OPHTHALMIA, PERIODIC OPHTHALMIA OR MOON BLINDNESS.

This is a form of inflammation of the eyes peculiar to the horse. Its characteristic is that it occurs at intervals of a month, more or less.

*Causes.*—It is generally believed to be due to keeping horses in dirty, damp, ill-ventilated stables; at any rate it is not so common in England as it used to be, since greater attention has been given to sanitary matters. It may arise from derangement of the digestive organs, or hereditary predisposition.

*Treatment.*—The same as given for deep or internal inflammation of the eyes. After several attacks the horse generally becomes blind from cataract.

## AMAUROSIS, PARALYSIS OF THE OPTIC NERVE, CALLED GLASS-EYE.

*Causes.*—Any injury or pressure upon the nerve of sight, congestion, or dropsy of the brain, a tumour, or inflammation. It sometimes occurs, temporary, in connection with certain diseases, especially of the digestive organs.

*Symptoms.*—The eyes are unnaturally clear. The pupil is widely dilated and rounder in shape than natural and does not contract when the horse is brought from a dark place into the clear light. Generally, both eyes are affected, and the horse is totally blind. When trotted out, such an animal steps very high and holds up its head in a somewhat strained manner. The ears are unusually active and constantly on the move.

*Treatment.*—This is very rarely successful, unless the pressure is due to some temporary local inflammation, or constitutional disease. If there is any local injury or pressure, attend to that. It is well to give a dose of physic. If there has been any previous disease or injury, give iodide of potassium, one drachm twice a day for some time. If no benefit arises from that, a nerve stimulant should be tried, such as powdered nuxvomica, 30 grains, twice a day. A blister may also be applied, behind the ears and upper portion of the cheeks. The condition is generally incurable.

## FUNGUS HÆMATODES OR BLOODY-FUNGUS TUMOUR.

This growth is also known by the names "medulary sarcoma," &c. I have seen a number of these cases in the Colony; in one case the vascular tumour was larger than a man's fist.

*Symptoms.*—I have not had an opportunity of watching one of these tumours grow, but the following description is given—"slight irritation of the eye is noticed, there is a flow of tears, the cornea enlarges and bursts, as it were, and a small fungoid tumour makes its appearance, passes through the opening, grows rapidly, until it hangs down over the cheek, collecting dirt, &c."

In these cases which I have seen, the tumour did not hang, but stuck out like a large multiple mulberry, bleeding on the slightest touch.



*Treatment.*—I cut them out with the *ecraseur*, or chain instrument, which crushes through the root, instead of cutting it. There is much less bleeding, but the tumour may be cut out with a knife; see that you remove the whole of it, even if you require to cut out the eyeball with it. To stop the bleeding make up a pledget of tow, cotton wool, or old linen, saturate it with solution of the perchloride of iron and fix it into the socket of the eye by a bandage. If the surrounding structures of the eye are not affected, the tumour may not grow again, but if they are, it will most likely re-appear.

Tumours very frequently grow out from under the *conjunctiva* (mucous membrane lining the eyelids). Most frequently they are found within the lower lids, and extending from the inner to the outer angle of the eye.

*Symptoms.*—There is a fulness, and bulging of the lower eyelid, which gradually increases, until it makes its appearance above the edge of the lid, while the inner angle is considerably enlarged and bulging outwards. In some instances, the mucous membrane remains unbroken, even after the growth has attained a considerable size, and there is comparatively little irritation of the eye or pain of the part. In other cases, the mucous membrane becomes destroyed, and the fungoid, mulberry looking growth, becomes very vascular and tender, bleeding at the slightest touch.

*Treatment.*—If observed in time, before the eyelid has become involved, the best plan is to dissect the growth clean out. Cast the horse, apply cocaine and carefully cut out the whole of the diseased portion. Do not apply strong styptics to the parts to stop the bleeding, as they are certain to induce inflammation of the eye. The bleeding will soon cease. Reduce inflammation as directed under "Ophthalmia." In the early stages, when growing from the "haw" I have cut these growths off with fine scissors.

If the eyelid is involved, and it is impossible to get the whole of the tumour out without seriously mutilating the eyelid, or endangering the eye, apply a little caustic to the parts (such as the lunar caustic), until the tumour increases so much as to cause constant pain and impairment of sight, when the tumour and as much of the eye as is necessary should be cut out, and treated as directed for *Fungus haematodes*.

#### PUNCTURE OR LACERATION OF THE CORNEA.

The cornea or eyeball may be cut or punctured in various ways, allowing the aqueous humour to escape. If the wound is inflicted with a sharp instrument and little damage done to the eyeball, the wound may heal, and the aqueous humour be reproduced. But if the eyeball is much injured and torn, intense inflammation supervenes. The aqueous humour is not reformed, and the sight is destroyed. Such a case must not be too readily given up, however, it is surprising sometimes to see how the eye recovers, leaving only a cicatrix or white mark, where the wound healed.

*Treatment.*—Cover up the eye with a soft cloth, and keep it constantly wet with the sulphate of zinc, or sugar of lead lotion, 2 drachms of either in a large bottle of water. Apply a mixture of extract of belladonna and glycerine, equal parts, around the eyelids, &c., as directed for internal inflammation of the eye. If a little bulging remains at the seat of the wound, touch it very lightly, occasionally, with the point of a piece of lunar caustic (silver nitrate).

### WORMS IN THE EYES.

This is comparatively rare in horses, although very common amongst cattle, the *Filaria lachrymalia* is found under the "haw" and lachrymal duct, at the inner angle of the eye. The *Filaria papillosa*, is found behind the cornea, in the aqueous humour, but I have seen them embedded in the substance of the cornea.

*Treatment.*—For those under the "haw" and lower eyelid, wash them out with a small syringe; for those inside the eyeball a puncture requires to be made in the cornea, to allow them to escape; but this operation should not be attempted by an inexperienced person.

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## DISEASES OF THE NERVOUS SYSTEM.

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### VERTIGO, MEGRIMS, OR CONGESTION OF THE BRAIN.

This affection is generally due to some impediment to the free circulation of the blood through the brain and the cranial cavity.

*Causes.*—A tight fitting collar, by impeding the flow of blood from the brain, will often cause a horse to stagger and fall when pulling hard. This is only temporary, however. The most common cause of megrims, when it becomes confirmed, is the presence of a tumour situated somewhere about the brain, which produces pressure under conditions which increase the circulation, such as fast or hard work.

*Symptoms.*—The horse stops suddenly, shakes his head, and trembles. If he is steadied by his attendant, he will stand with his legs apart as if propping himself up, until the fit is over, when he will proceed as if nothing had happened. At other times he will stagger, reel, and tumble down with slight convulsive movements, or remain comatose for a few minutes, after which he recovers. The attack generally occurs when the animal is at work on a hot day, but I have seen it come on when the horse was being led out of the stable.

*Treatment.*—Stop the horse as soon as you observe the fit coming on, loosen all the harness or girths of the saddle, steady him, and if water is near, pour cold water over his head.

*Prevention.*—Avoid working the horse on a full stomach, Careful feeding or laxative diet is necessary, and wearing a shade over his bridle on a hot day is likely to be beneficial. Avoid a

tight-fitting collar, or having the breastband too high up. One authority recommends working the horse in an open bridle without blinkers.

### EPILEPSY.

Is described as a "non-febrile, nervous affection, characterised by attacks, or fits, of sudden and temporary loss of consciousness or disturbance of the mind, and tonic or clonic convulsions lasting for a more or less short period, and occurring at irregular intervals." It is comparatively rare in horses, more frequently seen in cattle, and common in the dog.

*Symptoms.*—The attack is sudden, the animal stares, trembles, staggers and falls to the ground (generally in a backward direction), the muscles become cramped, the jaws clenched with a champing motion and frothing at the mouth, followed by more or less convulsive movements of the muscles generally may be noticed. The urine is very often passed involuntarily during the fit. The fit passes off in two or three minutes, when the muscles relax, and the animal regains consciousness but remains dull for a short time afterwards. I had a cow under observation for eighteen months, which was subject to these fits, and very curiously, they always occurred about five minutes after she was brought into the house. In order to prevent choking, or strangulation, she was fastened with a light rope to the manger, which she could easily break by the weight of her body, as she fell backward, when the fit came on. In every other respect, she appeared in perfect health, and was ultimately fattened for slaughter.

The cause of the complaint is not known.

*Treatment.*—Free the animal from all harness, saddle, &c., and leave it alone until the fit is over. The preventive treatment is similar to that for megrims.

### SUNSTROKE.

*Causes.*—Generally arises from exhausting work in a very hot, moist atmosphere, not very common in this Colony.

*Symptoms.*—These are generally sudden in their onset; the horse stops, hangs his head, begins to pant for breath; staggers, falls down, and after some convulsive movements, dies unconscious. In some cases the attack is slower, the horse is felt to flag, hang on the bit, and become unsteady in his gait, the breathing becomes quick and laboured, the nostrils fully distended, the eyes full and anxious looking; the mucous membranes become of a purple colour, the pulse is quick and feeble, but the heart's action is loud and struggling. The large majority of these cases become unconscious and die.

*Treatment.*—Do not bleed, but apply cold water continuously to the head. It is generally unsafe to pour medicines down the throat when the animal is in a semi-unconscious state, but injections of oil of turpentine, three or four ounces, should be given mixed in half a pint to a pint of oil. If the animal is capable of swallowing properly give stimulants, such as whisky or brandy, half a pint, repeated at short intervals; or carbonate of am-

monia half an ounce in a pint of water. A mustard plaster applied to the abdomen does good. The body should be clothed and the legs bandaged to increase the surface circulation. Give a dose of purgative medicine to move the bowels.

#### APOPLEXY OR CEREBRAL HÆMORRHAGE.

Coma or complete paralysis has already been described in connection with disease and serious derangement of the digestive organs. These, however, generally come on gradually, but when there is rupture of a blood-vessel and hæmorrhage into the brain, the onset of the symptoms is sudden. The animal passes suddenly into a state of complete coma, with the loss of all voluntary motion, the breathing is stertorous, and the animal appears unconscious.

*Treatment.*—Very little can be done in such cases, but cold water should be applied to the head, and injections of turpentine and oil given as recommended for sunstroke.

#### INFLAMMATION OF THE BRAIN AND ITS COVERINGS.

Inflammation of the brain in the horse is very rare as an independent affection, in fact, I am doubtful if I ever saw a clear case; but acute congestion of the brain and inflammation of its covering are very common in connection with other diseases; or from eating certain poisonous plants which exercise a special action on the brain and nervous system. These are described under the different headings of stomach staggers, grass staggers, &c. Inflammation of the brain may arise from blood poisoning, as in the cases of disease of the liver, or of the kidneys, due to the retention of certain products, which these organs withdraw from the blood in a state of health, such as urea, &c. It may also arise from tumours in the brain, or from an abscess as a sequel to strangles.

Inflammation of the coverings of the brain generally arises from direct injury such as blows, &c.

*Symptoms.*—When the brain alone is affected either from tumours, an abscess, or from effusion into its cavities or sinuses, the horse very soon becomes comatose, with a loss of control over his voluntary movements, as described under staggers, &c. But when the coverings or membranes of the brain are inflamed, the animal becomes "mad"; he paws and stamps with his feet, champs his jaws, with occasional violent convulsive struggles in which he knocks everything near him to pieces, stands up with his fore feet in the manger, knocks his head against the wall and is quite uncontrollable until exhaustion or coma supervenes, and ends the painful scene.

*Treatment.*—Bleed from the jugular vein, give a strong dose of purgative medicine, and repeated injections to get the bowels to move freely, and apply cold water to the head continuously. To allay the irritation, bromide of potassium, in half ounce doses, every four hours is recommended. Clothe the body and bandage the legs to promote surface circulation. Should the

animal recover, give one drachm of iodide of potassium twice a day, to promote the absorption of any inflammatory exudate.

#### CEREBRO-SPINAL MENINGITIS OR INFLAMMATION OF THE MEMBRANES COVERING THE BRAIN AND SPINAL CORD.

This is not the disease of the horse which is described by American and other authors, although it closely resembles it. The disease which I refer to is one which is common in our rugged Karoo districts, and is known locally by the names "Nenta," and "krimp ziekte." It affects goats more particularly, but it attacks other animals also, including horses.

*Causes.*—"Nenta" is caused by eating a poisonous plant—the *Cotyledon ventricosa*.

*Symptoms.*—Nothing amiss will be observed while the animal is feeding, in the early stages, until it is driven, when cramp of the muscles gradually comes on; the back becomes arched, the tail is elevated with a quivering motion, the head is slightly bent and shakes with a tremulous motion. If the animal is driven on, it becomes greatly distressed and tumbles down unable to proceed any further. The acute symptoms are relieved by a rest, to be renewed with greater intensity when again made to get up and walk. As the disease advances, the animal moves about very little, but lies almost constantly if undisturbed. In fatal cases they become semi-comatose about twenty-four hours before they die. In many of the cases which recover, the neck remains twisted in various directions from pressure on the spinal cord.

*Treatment.*—Give a dose of physic, either 5 drachms of aloes, or one pound of Epsom salts, followed by one ounce of hydrate of chloral three times a day. Give soft food and keep the animal perfectly quiet. Unfortunately green food can rarely be got in the districts where it is most prevalent. The mortality amongst horses and cattle is very small, but thousands of goats have died from "nenta."

#### PARAPLEGIA, OR PARALYSIS OF THE HIND QUARTERS.

*Causes.*—In the horse, this arises generally from an injury to the spine—broken back—but it may arise from disease of the bone, tumours, &c.

*Symptoms.*—When due to fracture of any part of the back or loins, the symptoms develop suddenly; the horse loses control of the hind legs, and is unable to move his tail, although he may walk a considerable distance if steadied. If he falls down, he is unable to get up again or to move his hind legs when down. The dung is passed bit by bit, he being unable to expel it in quantity through paralysis of the muscles. In some cases, fracture of the spine takes place without displacement. I saw one case in which a mare fractured her spine in a race, and it was only when she was being saddled up for the next race that I was asked to examine her. She was trembling and perspiring, her pulse and breathing were quickened, and she looked dis-

tressed. I ordered her home. Some two or three days after she was saddled up and ridden a considerable distance, when all at once she stopped, staggered, and would have fallen down if she had not been supported. She was with difficulty got to a place of shelter, where she fell down and never rose again—her back was broken.

*Sprain of the Psoæ muscles.*—Those large muscles which are situated under the loins, and whose action is to bend forward the hind quarters, produce, when sprained, somewhat similar symptoms to fracture of the spine, but in sprain of these muscles, the animal, when walking can move the hind legs straight forward although with difficulty, he does not cross his legs and sway from side to side as when there is fracture, and when he is down, he can move his hind legs into any position, which a horse with a fractured spine cannot do. Further he can stand firm on his legs when raised up although he may be unable to rise without assistance.

If fracture of the spine be detected, the best thing is to kill the animal at once. But if the semi-paralysis of the hind quarters is due to a severe sprain of the psoæ muscles, put the horse into a comfortable set of slings, and let him rest until able to use his hind quarters properly.

#### FACIAL PARALYSIS.

Horses are frequently seen with paralysis of the muscles of the lips and cheeks.

*Causes.*—Injuries to the head, heavy, ill-fitting bridles, pressure on the nerve which supplies motor force to the muscles of the cheek and lips.

*Symptoms.*—The lips hang flaccid, especially the lower one, the horse has a difficulty in collecting and masticating his food. He has to dig his mouth deep into the manger and collect the food with his teeth; the same in drinking, he drives his muzzle deep into the water.

Sometimes the paralysis is only on one side, when the lips are drawn to the sound side.

*Treatment.*—Remove all pressure from about the head, such as head-collars, &c. If there is any swelling or apparent injury, foment the part with hot water, and rub a little embrocation all along the side of the head from the ears to the lips. Internally, give iodide of potassium, one drachm twice a day, dissolve it in a little water, and mix it with his food. Feed on soft, nourishing food.

#### CROOKED OR "WRY" NECK.

These cases generally arise from some injury to the bones of the neck, from the animal being cast in the stall, or from a similar accident. The muscles may be severely bruised, and an abscess may form, or a portion of a vertebra may be broken off, or there may be local inflammation of the membrane covering the cord.

In some cases the neck looks as if dislocation had taken place between two of the vertebrae.

*Treatment.*—If the injury is recent, apply hot fomentations; if the swelling fluctuates, indicating that matter has formed, it must be let out, and the wound kept clean. Do not attempt forcibly to re-set the neck, lest you injure the spinal cord, and produce complete paralysis.

### STRINGHALT.

This is a peculiar affection of one or both hind legs of the horse, in which the leg is suddenly raised up from the ground with a convulsive jerk or catch, and the foot is brought to the ground again with unnatural force. In some cases this spasmodic catching up of the hind leg may be so slight that it can only be observed when the animal is turned suddenly and shortly round, or during the first few steps at starting; while in others the spasmodic contractions of the muscles of the limb are so violent that the fetlock joint strikes the belly, and the foot is brought down to the ground with great force. In some cases the leg is only jerked up at every few paces, while in more severe cases the leg is jerked up at every step.

*Causes.*—This is not definitely known, but it is evidently a reflex nervous act, and quite involuntary. Professor Williams is of opinion that, when not associated with rheumatism, it arises from a congested condition of the nerves and their sheaths, and that there is always a tendency to the occurrence of neuritis—inflammation of the nerves—from cause that otherwise would have no effect upon the nervous system. There is evidently some irritability of the nerves of the limb, for any slight wound to the leg, or a prick in shoeing, intensifies the spasmodic action so much that the animal can scarcely bear the limb to be touched, and if roughly handled the convulsive contractions of the limb become uncontrollable.

*Treatment.*—There is no known cure, and the complaint has a tendency to get worse as the animal grows older. Any slight injury to the limb should receive proper treatment at once, and if it is associated with rheumatism, the treatment recommended for that disease should be adopted.

### SHIVERING.

This is another peculiar nervous disorder, very similar to stringhalt, affecting the hind extremities generally, but occasionally observed in both fore and hind extremities.

*Symptoms.*—These are manifested more particularly when the animal is made to back or turn suddenly round, when the muscles of the hind quarters will be observed to tremble and shiver, and the tail to move rapidly up and down with a quivering motion. In one case which I had under observation for four years, both fore and hind extremities were affected; the horse while in the stable stood with his fore and hind legs wide apart

from each other, in an apparent painful crouching position, but as soon as any one entered his box, and excited him in any way, the muscles of the whole body became affected with a sort of clonic spasm, his legs were spread out and moved up and down in a cramped spasmodic manner, his tail quivered, and the whole spasmodic movements closely resembled a paroxysm of the muscular spasms of tetanus, except that the head and neck were moved rapidly from side to side, the horse being in a state of great nervous irritability. His movements outside, both in walking and trotting were perfectly free and natural; he fed well; maintained his condition unimpaired, and performed his duties, as a stallion, satisfactorily. But as soon as he was allowed to stand still, the symptoms manifested themselves, by the uneasy position and movement of his legs, and the trembling, clonic spasms of the muscles. He lay down regularly, and rose up without any apparent difficulty.

*Treatment.*—Such a horse should have a roomy, loose box to move about in with freedom, and to stand in the position which gives him most ease and comfort, and should be worried as little as possible. There is no known remedy, but guard against any wounds or sores which intensify the nervous irritation.

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## DISEASES OF THE URINARY AND GENERATIVE ORGANS.

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### DIURESIS, DIABETES INSIPIDUS, POLYURIA, OR AN EXCESSIVE DISCHARGE OF CLEAR, WATERY URINE.

*Causes.*—Musty food, more especially musty, badly saved forage, or other grain food. An excessive use of diuretic medicine may temporarily induce such a condition, but that is extremely rare in this Colony. Acrid plants which have a special action on the kidneys, are a frequent cause. There are some horses, however, which are very liable to this complaint, even when no fault can be found with the food.

*Symptoms.*—The frequent discharge of a large quantity of clear, watery urine, accompanied with great thirst, a rapid loss of condition, and a dull and sluggish appearance. The pulse is generally slower than natural, about 26 per minute. If the disease remains unchecked the animal may eventually die of exhaustion.

*Treatment.*—Examine the food, and change it if at all defective, in fact a change of food is advisable under any circumstances. Give bran mashes daily, and add half a pound of linseed to them. See that the food is sound and wholesome, and give a drachm of iodine, either made into a ball, or mixed in a little gruel, twice a day until the excessive thirst and discharge of urine ceases, which it generally does in a few days. In mild cases a complete change of food may be all that is required.

It is customary also to give the horse pot clay in his drinking water, Williams prefers daily doses of bicarbonate of soda.



### NEPHRITIS OR INFLAMMATION OF THE KIDNEYS.

This is an extremely rare affection of the horse, so rare that I have only met with one case in the Colony.

A great many cases of colic and obstruction of the bowels are mistaken for kidney disease, simply because the horse, when suffering from these painful complaints frequently stretches himself and attempts to urinate. Another symptom which is very often mistaken, is an apparent tenderness in the loins. Now it is a well known fact that the majority of horses will flinch a little, when roughly pinched on the loins.

*Causes.*—Cold to the loins, especially after being heated, severe strains or blows to the loins, acrid irritant plants, and the abuse of diuretic medicines, such as turpentine, &c., are said to produce nephritis.

*Symptoms.*—High fever, extreme tenderness of the loins when pressed, the animal walks with a stiff, straddling gait with the hind legs, attended with manifest pain and difficulty. The animal makes frequent attempts to urinate, but very little passes, and that of a very high colour. In the stallion the testicles are said to be constantly moved up and down, the horse looks round at his flank, as in colic, and manifests the general symptoms of colicky pains, by lying down but it will be observed that he rises up with difficulty. The pulse is quick and hard, the temperature high, and the breathing short and rapid. Williams says that "the true nature of the disease may be arrived at from the fact that, when fever, with colicky pains is present, in addition to emptiness of the urinary bladder, frequent attempts to urinate, but no urine is discharged, the non-secretion is due to inflammation of the kidneys, which are unable to perform their functions in consequence of the inflammatory process." The full bladder can easily be felt, by passing the oiled hand into the rectum, after clearing out the latter by an injection; it will be felt under the hand on the floor of the pelvis at its opening, as a large, oval-shaped elastic body; if it is empty no such object will be felt. Suppression or non-secretion of urine is, then, the most characteristic symptom of inflammation of the kidneys, and this, when continued, leads to *Uraemic poisoning*, from the accumulation of urea in the blood, which is followed by swelling of the legs, a strong smell of urine in the breath and secretion from the skin, constipation of the bowels, ending in coma and death.

*Treatment.*—Open the bowels freely by a bottle of raw linseed oil, to which add 2 drachms of the extract of belladonna, or two ounces of laudanum to allay the acute pain. Apply hot fomentations to the loins by means of several folds of rugs, wrung out of boiling water, or place a newly flayed sheep skin on the loins the fleshy side next the horse. After twenty-four hours of this, a mustard poultice should be applied to the loins, a piece of paper being placed over it. Clear out the rectum by frequent injections of warm water, give green food, bran and linseed mashes, and, if the pain continues, repeat the extract of belladonna in one drachm doses every four hours.

When the suppression of urine continues for several days, Professor Williams confidently recommends "a poultice made of digitalis and applied to the loins, to be discontinued as soon as the kidneys recommence to act." Afterwards give half an ounce each of bicarbonate of potash and powdered gentian root daily in the food.

Fortunately, as I have already remarked, inflammation of the kidneys is very rare in the horse, although comparatively common in some other of our domestic animals, more especially the angora goat. The same remarks apply to another disease of the horse described in the text books, viz.:—*Albuminuria* or *Bright's Disease of the kidneys*. "This consists in inflammation of the kidneys, acute or chronic, with degeneration and shedding of the epithelium from the kidney tubes." (Law.)

*Symptoms*.—"These resemble those of inflammation of the kidneys already described, only that there is a thick gelatinous,ropy urine, with microscopic casts of the kidney tubes." The general health suffers, and the patient dies sooner or later of uræmia with dropsy, &c." (*Ibid.*)

*Treatment*.—This consists in keeping the bowels acting freely by nourishing, laxative diet, combined with vegetable and mineral tonics. Avoid cold and exposure.

#### CYSTITIS OR INFLAMMATION OF THE BLADDER.

This complaint is also very rare in the horse, although comparatively common in cattle, from irritating plants, prolonged retention of urine, and the presence of calculi. The principal causes, in the horse, are the abuse of irritating drugs such as cantharides, turpentine or croton oil, either given internally or applied as a blister over a large surface.

*Symptoms*.—The urine is passed frequently in small quantities, and with pain and difficulty. There is great tenderness on pressure on the bladder with the hand introduced into the rectum. Williams says "there is first excitement, followed by prostration of strength, the animal appearing to suffer much pain and distress." These symptoms are very marked in cattle. There is a stiff, straddling gait in the hind legs, and uneasy movements of the hind feet.

*Treatment*.—Remove the cause; if it arises from blisters, wash them off, and apply oil to the parts; if from the administration of certain medicines, stop them, and change the food if it contains irritating plants. Give a dose of raw linseed oil, and drachm doses of the extract of belladonna every four hours; feed on soft, laxative food, and give repeated injections of warm water. An ounce of bicarbonate of soda or potash may be given in the food daily.

#### HÆMATURIA OR BLOODY URINE.

*Causes*.—An injury to the loins, disease of the kidneys, bladder or urethra, or the passage of gravel stones.

*Symptoms*.—When the blood comes from the kidneys, it is more or less diffused through the urine, and the microscope will

show the casts or moulds of the tubes of the kidneys. If it comes from the bladder or the urethra, it will appear in small clots in the urine.

*Treatment.*—Open the bowels by a dose of raw linseed oil, and cold water injections may be thrown up the rectum at short intervals. If it arises from the passage of gravel stones, earthy matter may be observed in the urine discharged, and the horse will manifest symptoms of colicky pains, whisking his tail, moving his hind legs uneasily, etc., when urinating. For this give two drachm doses of the extract of belladonna, every six hours or so, and rub a little down the whole course of the urethra. It may arise from renal calculi—gravel in the kidney—if so, “colicky pains may occur, after severe exercise, more especially. Give the belladonna to allay the pain, and give one ounce of bicarbonate of potash daily in the food. Williams recommends, dilute hydrochloric acid, a drachm in the drinking water daily.

#### SPASM OF THE NECK OF THE BLADDER OR INABILITY TO URINATE.

*Causes.*—Prolonged retention of urine, very common during long journeys in this Colony, the horse being “driven over his water,” as it is commonly called. Many horses do not readily urinate in harness; these should always be outspanned at intervals of not longer than two hours. In some cases of prolonged retention of urine, when the bladder is much distended, it becomes semi-paralysed and unable to contract to expel the urine.

*Symptoms.*—The horse makes frequent attempts to urinate, he stands and stretches himself out, strains, and even groans, but very little or no urine may be passed. He looks anxiously round at his flanks, and appears uneasy.

*Treatment.*—The general plan adopted in this Colony is to turn the horse into a sheep or goat kraal, or if in a stable, to shake some fresh bedding under him. Another plan is to place a cloth over his croup and pour cold water over it. When due to spasm only, these remedies generally succeed, but if they fail, a good plan is to rub a paste of extract of belladonna all round the anus, inserting some in the rectum also. If the bladder is paralysed, these may fail, and if there is no one near to pass a catheter, oil the hand, clean out the rectum, and insert the arm so that the hand extends over the distended bladder; then with the open hand apply pressure to the bladder; by this means the urine may be expelled.

As already remarked spasm of the neck of the bladder is a common complication of colic; in consequence of this the primary disease is often neglected, and attention directed to the kidneys. When the horse urinates, it is looked upon as the means of giving him relief, mistaking the effect for the cause; it is the spasm being relaxed which has enabled him to urinate. In such case an ordinary colic drink is the proper treatment, such as a dose of landanum or belladonna (see colic).

## PARALYSIS OF THE BLADDER. INCONTINENCE OF URINE.

This, as already remarked, may arise from prolonged retention of urine, causing distension and paralysis of the muscular coat of the bladder. It may occur in connection with certain diseases, such as tetanus, azoturia, or an injury to the back and loins, the horse not being able to place himself in a position to urinate. Many horses appear unable to urinate properly when lying down, hence the bladder becomes distended and paralysed and even ruptured, unless relieved.

*Symptoms.*—If the neck of the bladder is also paralysed as in an injury to the spine, the urine will dribble away constantly, but if it is merely the muscular walls of the bladder which are paralysed, a quantity of urine will occasionally be discharged with great force from violent contraction of the abdominal muscles, accompanied with great straining and groaning. Law says “that when the neck is unaffected the urine accumulates in the bladder, causing over distension, irritation, and rupture.” I have only seen rupture take place in cases of complete stoppage of urine, from some obstruction, such as gravel stones, &c.

*Treatment.*—The only treatment promising any hope of success is to withdraw the urine at short intervals by means of a catheter. If the paralysis arises from over distention, the bladder may be emptied by pressure with the hand over the bladder, but if there is any severe injury to the spine, there is very little hope of being able to do any good in the absence of professional skill.

## URINARY CALCULI OR GRAVEL STONES.

These are comparatively rare in the horse, although they are very common in some districts, in cattle, sheep and goats. They may be formed in the kidneys, and sometimes pass into the ureters (the urinary passages leading from the kidneys to the bladder), causing acute pain, similar to colic. They are most commonly formed in the bladder, however, and frequently pass into the urethra and cause obstruction to the flow of the urine from the bladder.

*Causes.*—The general causes of urinary calculi are certain peculiarities in the food and water. They are most common in our Karoo districts, where there is an excess of saline ingredients, associated with certain plants. Their principal mineral constituent is carbonate of lime. It is quite possible, and very probable, that one cause is the absence of a plentiful supply of good, fresh drinking water.

*Symptoms of Urethral Calculi* are violent, continuous straining to urinate, with the escape of only a few drops of urine, or perhaps none. In cattle, the animal stands with the tail slightly elevated, as if attempting to urinate, but very soon the poor beast lies down, and has a most dejected appearance, and maintains the recumbent position until he dies from uræmic poisoning, the bladder being ruptured and quite gangrenous, and the hind quarter saturated with urine.

*Treatment.*—Examine the point of the penis carefully and see if the obstruction is there, then draw out the penis, and carefully examine the whole course of the urethra, if there is a calculus present it may be detected as a hard nodule like a finger joint in the tube. If near the point of the urethra, it may be forced out, but if it is further back the expert would cut down upon the calculus and extract it, making the wound longitudinally, afterwards stitching up the wound neatly with fine close stitches. Fortunately such an operation is rarely required in the horse.

#### SAND-LIKE DEPOSIT, OR SOFT SEDIMENT IN THE BLADDER.

This is more commonly observed in the horse, and is indicated by a white-like sediment being passed with the last urine discharged each time he urinates. Cases are described, and I have seen one, in which the bladder contained a great quantity of this semi-muddy deposit, quantities of which came away each time the animal urinated.

*Treatment.*—The treatment recommended by Professor Law is to wash out the bladder, by pumping in water with a Reid's stomach-pump or syringe, through a catheter, then shaking up the bladder with the hand introduced through the rectum, and allowing the muddy fluid to flow out through the catheter. The medicinal treatment consists in giving one drachm of dilute hydrochloric acid daily in the drinking water. In the Colony considerable benefit has been experienced by giving large doses of vinegar.

#### ORCHITIS, INFLAMMATION OF THE TESTICLES.

*Causes.*—Arises generally from an external injury. It may result from inflammation extending from the urinary organs, and is also occasionally seen in the course of certain specific diseases, pyaemia, glanders, tuberculosis,—these last mentioned causes, however, are rare.

*Symptoms.*—One or both testicles may be enlarged and tender to the touch, the swelling considerable and generally tense.

*Treatment.*—Apply hot fomentations, by means of a flannel bandage wrung out of boiling water, and fastened carefully round the testicles. It requires a little art to do this nicely, and secure its remaining on. Rub the testicle daily with a mixture of equal parts of glycerine and extract of belladonna, and give the patient a dose of purgative medicine. If matter forms it becomes necessary to let it out; very often it is serum only which forms in the lower part of the bag, which can be drained off by making a few punctures through the skin with a lancet. Press up the testicle, and the puncture can be made with freedom, without injuring the testicle. Should hardening of the testicle remain, apply a weak iodine ointment. Needless to say the animal must receive complete rest whilst suffering from this condition.

#### HYDROCELE, OR DROPSY OF THE SCROTUM.

*Causes.*—This may follow inflammation, or it may be due to dropsy of the abdomen; if from the latter, the fluid generally gravitates towards the sheath and forward on the belly.

*Treatment.*—If confined to the scrotum, puncture, as above directed. If the swelling affects the sheath, puncture freely at the point of the sheath, and apply hot fomentations. Give the animal half an ounce of saltpetre daily in his food or water, and keep the bowels acting with laxative, nourishing food.

#### ULCERS AND SORES ON THE POINT OF THE PENIS.

These generally arise from accumulations of dirt and sebaceous matter in the sheath and on the point of the penis.

*Treatment.*—Clean out the sheath and penis well with warm water and soap; the sores or ulcers should then be dressed with a strong solution of bluestone, or it may first be necessary to cauterise them with lunar caustic.

A horse's sheath should be properly cleaned and oiled at short intervals regularly; this is just as necessary as cleaning and grooming any other part of the body.

It is sometimes a little difficult to draw out a horse's penis. The usual method is to take a small soft dry cloth open in your hand, to grasp hold of the point of the penis with; having got a firm hold of it within the sheath, steadily draw it out—do not attempt hurriedly to pull it out. As soon as you have got it out beyond the sheath with the one hand, slip the other hand round behind it. When you have the penis once firmly grasped, it is easily held as long as required.

In some geldings the sheath is very large, loose, and flabby, and the penis very small; as a consequence, it is not extended beyond the sheath in the act of urinating, hence the urine and sebaceous matter are very liable to cause irritation of the inside of the sheath, which, if not attended to, may lead to inflammation and swelling of the sheath to such an extent that the urine is passed with difficulty. In one gelding which I frequently attended, I was of opinion that swelling of his sheath was sometimes caused by self-inflicted injury, in lying down or getting up, as his sheath was loose and pendulous.

*Treatment* consists in hot fomentations, cleaning out the inside of the sheath and point of penis well with warm water and soap. Scarifying the point of the sheath may be necessary. If the animal be in good condition, give a dose of physic, but keep up the hot fomentations as continuously as possible, and lubricate the sheath with oil or vaseline.

#### ENLARGEMENT OR SWELLING OF THE PENIS FROM EFFUSION OF SERUM OR EXTRAVASATION OF BLOOD.

*Causes.*—Kicks, blows, or severe injuries of any kind. Debility and paralysis are also causes.

*Symptoms.*—The penis swells up sometimes to an enormous size, and cannot be retracted or returned into the sheath.

*Treatment.*—Get a long flannel bandage, and apply it firmly and evenly round the whole of the organ, then support it close to the belly by means of a long, broad bandage fixed over the loins, and apply hot fomentations continuously.

Many authorities recommend cold fomentations as being more likely to contract the vessels of the swollen organ, and if these

are applied immediately after the injury has occurred, that may be so, but if there is any appearance of matter forming, hot fomentations must be resorted to at once, in order to hasten the process as much as possible. The most important consideration is the bandaging, which should be carefully re-adjusted morning and evening, and kept firm with uniform pressure over the whole organ.

If an abscess forms or a serous swelling, it should be lanced, and all matter carefully cleaned out. After the swelling has subsided, apply frequent douches of cold water to the parts. Give laxative food, and a teaspoonful of saltpetre in the drinking water three times a day.

In some cases the penis becomes paralysed, and Professor Williams refers to cases "which arise originally from debility or a paralysis *sui generis*. I have not seen these, but in one case which arose from an injury, and was a considerable time under treatment, the organ became paralysed, and I had to amputate it. This is a serious operation, however, and should not be attempted by the inexperienced.

### EPITHELIOMATOUS TUMOURS.

Or cancer on the point of the penis. These cancerous-looking growths frequently occur on the point of the penis of the horse, sometimes involving a considerable portion of the substance of the organ. They are mainly due to irritation, caused by neglect of cleanliness. The only treatment is to cut them off, and as much of the penis as is involved in the diseased process—an operation, again, for which the services of an expert surgeon are necessary.

### THE GENERATIVE ORGANS.

It is not my intention, in the present hurriedly produced handbook to describe the diseases, abnormalities, and functional defects, of the organs of generation in either the male or female; or to enter upon a description of parturition, and the diseases and accidents connected with it. These, and kindred subjects can be better studied, in such standard works as Dr. George Fleming's Text Book of Veterinary Obstetrics, published by Bailliere, Tindall and Cox, London, a work which contains a perfect mine of information of the greatest value to breeders, especially in a country where veterinary advice and assistance cannot always be obtained when wanted.

### DISEASES OF FOALS.

A few remarks may be made respecting a very common complaint of foals immediately after birth, viz., *Constipation, or retention of the meconium* (the contents of the intestines before birth). These are generally passed shortly after the little animal is born, but in weakly foals, they may be retained for a day or two, when they become hard and firmly impacted in the rectum.

*Symptoms.*—About two days after birth the foal appears uneasy, strains, and makes repeated attempts to pass its fæces, shows symptoms of colic by rolling and looking round at its abdomen. Unless relief is obtained, inflammation of the bowels supervenes, and the little animal dies in great pain, manifested by violent convulsive struggles.

*Treatment.*—An attempt should be made to remove the hard fæces by the finger, well oiled, and then give an enema of oil and soap suds. In some cases of severe impaction I have had to repeat the enema several times before giving relief. It may be necessary, also, to give a dose of castor oil, about an ounce, and if the pain is acute, add about a fluid drachm of laudanum. Foals, and all young animals, should have their mother's first milk if possible, and if that cannot be given from any cause, a dose of opening medicine should be substituted.

### DIARRHŒA IN FOALS.

In this Colony diarrhœa is not so common in foals, as in calves, the latter being generally confined in a dirty kraal, while the former, as a rule, run on the veld with their mothers night and day; under such circumstances the latter do not readily suffer from change of diet, and their milk supply is not liable to undergo marked changes, and so become unsuitable as a food supply for the foal.

It will be understood that influences acting injuriously on the dam are followed in many cases by deleterious effect on the suckling. Especially does this apply to any influence causing marked alteration in the milk secreted for the nourishment of the foal. Occasionally, however, when milk is swallowed greedily or in excess by the hungry foal, the mass of food material so ingested is liable to over-distend the stomach, with the result that the function of that organ may be seriously impaired. Under such conditions the milk may undergo rapid decomposition, with the production of toxic substances which have an irritant effect on the membrane lining the intestinal tract; moreover such conditions are eminently suitable to the propagation of injurious micro-organisms present in the intestines. Occasionally severe diarrhœa occurs amongst foals during the first few days of life in an enzootic form. This, however, is much more frequent amongst calves, and is due to infection by definite micro-organisms, which gain entrance to the system either by the mouth or by absorption through the raw, unhealed umbilical cord (navel) soon after birth, in the manner already described on page 29 in the disease "Joint Ill" or "Navel Ill."

*Symptoms.*—In the case of the sucking colt, with the first fluid evacuations there will probably be no general signs of illness, but with its continuation he loses his appetite for play, and then for milk, stretches himself at full length on the ground and remains prone for a long time, and at intervals looks round at his flank, raising his head from the ground and allowing it to fall back again with an appearance of extreme languor. Abdominal pain of an acute kind may supervene, and he will then get up, strike at his abdomen with the hind feet, or stand with all four feet close together. Yellowish or yellowish white offensive fæces are evacuated, which after a time may escape almost involuntarily, staining the thighs, and if he is confined to a building, the atmosphere is soon rendered sour and unwholesome.

"If the mare and foal are at grass, the character of evacuation may escape notice, and not until the foal becomes tucked up in



the flank or dull and listless is anything noticed amiss." "Foals have not so great a power of resistance to diarrhoea as calves, but succumb often in a very few days, with or without inflammation supervening" (Axe).

*Treatment.*—It is advisable in the majority of cases to commence treatment by the administration of a mild laxative, in order to eliminate from the intestinal tract any irritant or offensive matter which may be present.

With this object castor oil (about 2 ounces) should be given, or in place of this, rhubarb root (1 drachm), or calomel, (2 or 3 grains) may be substituted.

This may be followed by astringents and carminatives—the following is a useful diarrhoea mixture for foals or calves:—

Powdered bicarbonate of soda	...	...	1 ounce.
„ chalk	...	...	1 ounce.
„ catechu	...	...	1 ounce.
„ ginger	...	...	$\frac{1}{2}$ ounce.
Tincture of opium (laudanum)	...	...	1 ounce.
Water	...	...	1 pint.

*Dose.*—Give two to four tablespoonfuls once or twice daily until the diarrhoea has ceased.

Doses of tannin (15 to 20 grains) have also been recommended, combined with an equal quantity of salicylic acid.

Mucilaginous demulcents such as linseed tea or oatmeal gruel, and raw eggs with lime water, may be given, either separately or combined with the tincture of opium (laudanum), the dose of the latter for foals being about 1 drachm.

### KNUCKLING OVER OF THE FETLOCKS.

This is frequently seen in newly born foals, and is said to be "due to the legs being flexed in the uterus, and time is required for the muscles, ligaments, and tendons to adapt themselves to sustain the weight of the body." If the little animal is otherwise healthy, very little treatment is required.

### NAVEL HERNIA OR RUPTURE.

Is comparatively common in foals in this Colony, but except when the hernia is unusually large, it is seldom that it causes any inconvenience to the animal, or interferes with its usefulness; its presence, however, depreciates the value of a good animal very much.

Many cases of hernia in young foals completely disappear as the animals grow up, especially under good care and nourishment.

*Treatment.*—There are various methods of treating navel hernia recommended, such as (a) pressure, by placing a pad on the hernial sac, and applying pressure by means of a bandage fixed over the back; (b) the application of strong caustics to induce acute inflammation, and the closing up of the opening by the inflammatory exudate; (c) tying a strong cord firmly round the base of the sac, after returning the portion of bowel or

omentum which it contained; this causes the skin to slough off, and closes the opening behind; and (*d*) the application of a clamp or clam as it is called. This is made by taking a piece of sound, hard wood, about six inches long (depending on the size of the hernia), and about  $1\frac{1}{2}$  inch thick; this is sawn through the centre longitudinally and smoothed by a plane so that the two halves are exactly equal and fit against each other perfectly. A shoulder should be left all round at the ends, to retain the cord by which they are fastened, so that it cannot slip off.

Having got the clams made, you require some good whip cord and an ordinary blacksmith's tongs, bent round at the points, to fit them for grasping the clams, and holding them together when they are being fastened by the cord. All being ready, cast the animal, fix him properly, and then lay him on his back; take up the skin over the hernia and *carefully examine the sac, lest any portion of bowel or omentum still remains in it.* Having satisfied yourself that no portion of bowel is present, "draw up the skin over the hernia with your fingers in a flat fold, in a line with the central line of the abdomen." Your assistant, who has loosely fastened the clams together at one end, now passes the two open ends of the clams—one on each side of the flat fold of skin—under your fingers, and as close to the abdomen as possible. You now adjust the clams, fixing the skin flat between them, when your assistant grasps the free ends of the clams with the blacksmith's tongs, and brings them together as close as possible, while you make them fast with the cord. Having fastened the one end, your assistant now grasps the other ends of the clams with the tongs, and brings them together as close as possible, while you untie the loose fastening which held them together before, and re-tie it securely.

The animal requires to be tied up so that it can neither lie down, nor get its head round to interfere with the clams to disturb them. The clams and fold of skin embraced will fall off in from five to six days, as a rule, leaving a clean raw surface, but with the opening closed. All that is required then is a simple dressing of carbolic lotion or similar application.

"Navel Ill" and Joint Ill see page 29.

## THE CASTRATION OF STALLIONS.

There are various methods of performing this operation, each operator having his own favourite plan. In this Colony the operation is seldom attended with serious results, if ordinary skill and care are exercised.

There are certain precautions, however, which require to be observed before operating, viz.: (*a*) to see that there is no hernia or rupture of the bowel in the scrotum, and that both testicles are down; (*b*) not to operate on a weakly or diseased animal; (*c*) avoid very cold weather, or extremely hot, when flies are numerous; (*d*) see that your hands and knives are perfectly clean, and that you have not been handling any dead carcases or decomposing skins previous to operating. In this Colony a good plan is to have a bucket with a mixture of carbolic acid and water, one in forty, or a mixture of Jeyes' fluid (or

some of the carbolic sheep dips answer equally well), and a rough cloth or towel. After casting the colt, and before operating, clean his sheath and scrotum well with this mixture, and pick off all the ticks, then wring out your cloth and dry the parts. By attending to these simple precautions, swellings and blood poisoning are less likely to follow, as the climate generally, is very favourable to healing, especially as the animals operated on are left in the open air. I disapprove entirely of the common practice of putting salt or similar irritants into the wounds to make them discharge, as it is called. A little of the carbolic lotion may be dropped into the wounds; this will keep away flies and promote healing.

The common method of castration in this Colony is by twisting and scraping the cord. There are a few who use the clamp and hot iron, and a limited number use the torsion instruments, but the farmers generally castrate by scraping the cord and blood vessels with a common knife; the principal risk is, therefore, bleeding after the operation.

This may be avoided by tying the cord and bloodvessels with a strong silk thread about half an inch above where the cord is cut off. A number of veterinary authorities condemn this practice, but it is rarely followed with fatal results in this Colony, and it is certainly much safer than scraping the cord, for a colt struggles very often just at the moment when the operator is trying to scrape through the bloodvessel, when his knife slips and the vessel is cut clean through, instead of being left with a jagged open end, and profuse bleeding follows. The operation is very simple, and requires no instruments. The scrotum or bag is opened in the ordinary way—I make an opening for each testicle; the farmers generally cut off the end of the bag, as is done in castrating bulls and lambs, and draw both testicles out at the same opening. I do not know that the difference is essential. Well, having opened the scrotum and drawn out the testicle the required distance, the white fibrous portion of the attachments of the testicles are cut through with the knife, leaving nothing but the cord and bloodvessels; an assistant then passes the silk thread (which has been previously soaked for some hours in carbolic lotion 1 in 20), round the cord and vessels and ties it firm; the cord is then cut through about half an inch below the ligature, and the operation is done. In due course the end of the cord below the ligature will slough off, leaving the bloodvessels closed and the cord healed. Care must be exercised not to leave the cord too long. If it hangs down to the outer edge of the scrotum it is very liable to become inflamed, from the irritation of the edges of the scrotum and especially from contamination with certain microbes, when a hard granular tumour is formed on the end of the cord, called *scirrhous cord*. Should this occur, the colt must be re-cast at once and a strong ligature tied firmly round the cord immediately above the swelling. Of course a professional man would cut it off at once, either with the ecraseur or a torsion forceps, but I am writing for farmers only, who do not, as a rule, possess such instruments.

Should bleeding occur after the operation, when done by scraping (it can hardly occur after ligature), and the constant application of cold water does not arrest it, the colt should be re-cast and search made for the end of the bloodvessel, around which, when found, a thread should be firmly tied. If the end of the artery cannot be found, take a quantity of teased tow, old linen, or similar substance, soak it in a solution of carbolic acid, one in forty, and stuff it firm into the canal or passage and leave it for twenty-four hours, then remove it carefully. See that your hands are always disinfected and clean when handling the wound.

#### SWELLING AFTER CASTRATION.

A little swelling of the scrotum and sheath generally occurs, after the operation; this is of no importance, but if the swelling is unusually large, and the animal is very stiff, foment the parts with warm water, and dress them over with carbolic lotion (carbolic acid one part, water twenty to forty). If a few punctures with a lancet are made at the point of the sheath, the serous fluid will soon drain out.

#### CASTRATION BY THE COVERED OPERATION.

That is the removal of the testicles without opening the sac in which they are contained. This operation is only required when a portion of the bowel or the omentum has slipped through the inguinal canal into the scrotum. The presence of the hernia, or rupture, as it is called, into the scrotum may be detected by the undue enlargement of the sac on one side and the soft movable character of the swelling which may be pressed up into the canal or passage containing the cord.

If it is decided to operate, the simplest plan is to cast the colt in the usual way, make him fast, lay him on his back, and by careful manipulation return the portion of bowel back through the abdomen, this is generally easy of accomplishment when the colt is laid on his back, in fact it very often slips back of its own accord. *When you are satisfied that there is nothing in the sac but the two testicles*, draw them up into the sac, and pull the testicles and sac as far away from the abdomen as possible, and then fix on a wooden clamp firm, embracing both testicles, skin and all, as directed for the removal of umbilical hernia. The testicles and clamp drop off in about six days, during which the inguinal canal has been closed up by means of inflammatory exudate. Fix the clamp on in a direction longitudinal with the line in the centre of the abdomen, so that it does not interfere with the movement of the hind legs.

### DISEASES OF THE SKIN.

#### ERYTHEMA, OR REDNESS OF THE SKIN.

This is a congested or superficially inflamed condition of the skin. The part may be slightly swollen and tender, or it may be itchy and dry, and if the animal is of a white colour the skin will appear red.

*Causes.*—Anything that will produce congestion of the skin, such as the reaction which follows the application of large quantities of cold water to the skin, any irritating substances applied to the skin direct, friction, such as chafing between the thighs, accumulations of dirt, either on the skin, or on the harness, when the animal is warm; splashing from muddy roads causing the so called "mud fever." It may arise also from a heating diet, such as too much grain food, when the animal is doing little work.

*Treatment.*—The first consideration is to ascertain the cause and remove it. If from washing the legs with cold water, without drying them, that must be stopped. If from accumulations of dirt and sweat on the animal's skin or on the harness, clean them; and if from an over-heating diet, alter it, and give a dose of laxative medicine, followed by one ounce doses daily of bicarbonate of soda or potash.

As local applications, bathe the inflamed parts with warm water, and dress with a cooling lotion, such as half an ounce each of sulphate of zinc and sugar of lead, in a quart bottle of water. If the skin is not raw, a strong solution of common salt or alum will dry and harden it. If on the legs, after bathing with warm water and applying the lotion put on comfortable flannel bandages.

#### PIMPLES OR PAPULES.

Often appear where the harness rests, especially about the roots of the mane, under the collar, or neck strap, and in other situations, from similar causes to the above.

*Treatment.*—Bathe the parts well with warm water; if at the roots of the mane, clip the hair close to the skin, and apply a cooling lotion, such as a solution of carbonate of soda, one ounce to the quart, or the white lotion half an ounce each of sugar of lead and sulphate of zinc in a bottle of water. Give a laxative and cooling diet, &c.

#### ECZEMA OR VESICLES, HEATSPOTS.

A catarrhal inflammation of the skin, generally connected with derangement of the digestive organs, especially in hot weather, associated with bad grooming, bad stabling, and errors in diet.

*Treatment.*—Give a laxative, such as a pint of raw linseed oil, cooling diet, with doses of bicarbonate of soda or potash. Bathe the parts with warm water, and apply cooling lotions. If crusts form, apply oil or vaseline to soften them. If they should remain chronic, give a course of arsenic five grains daily for ten days.

#### PRURIGO, PRURITIS, PRURIGINOUS RASH.

This is an affection of the skin characterised by thickening and discoloration, attended by excessive pruritis or itching, and generally followed by an eruption of pimples. The pimples, vesicles, and abrasions, arise chiefly from constant rubbing. I have seen the sides of a horse's neck and shoulders almost raw from the constant rubbing, the itching is so intense.

*Treatment.*—Give a good dose of physic if the horse is in full health, followed by cooling diet and medicine. Bathe the affected parts with warm water frequently, apply cooling lotions, and fasten up the horse so that he cannot rub himself. Give a tablespoonful of sulphate of soda (Glauber salts) in his food or water twice a day.

#### URTICARIA, NETTLE-RASH OR SURFEIT.

This is a transient disorder of the skin characterised by the formation of small, round or oval elevations, which sometimes coalesce and form large wheals, or wales, as if the animal had been beaten with a whip or sjambok. They appear suddenly, sometimes all over the body. The nostrils and lips may appear lumpy and swollen, giving the animal a peculiar appearance. The swellings generally disappear as rapidly as they arose.

*Treatment.*—A dose of physic, followed by cooling food and medicine, especially the bicarbonates of soda or potash, with cooling lotions to the body.

#### PITYRIASIS OR DANDRUFF.

This is an affection of the skin characterised by an excessive production, and shedding of dry scales. Generally found about the head and neck, in old, weak, or badly nourished horses; seen also behind the knees and in front of the hocks, in which position it is called mallenders and sallenders respectively. It is generally accompanied with itching.

*Treatment.*—If the horse is in good condition, give a laxative, but if not give a nourishing, cooling diet, and give five grains of arsenic daily along with an ounce of the bicarbonate of potash. Dress the affected parts with the white precipitate ointment (ammoniated mercury ointment) after cleaning them well with warm water and soap. One or two applications, properly applied, are generally effective.

#### BOILS. FURUNCLES.

These are small superficial, hard swellings which suppurate imperfectly, and contain a central core or slough. These boils appear on any part of the body, but more particularly on the back, shoulders, and limbs.

*Treatment.*—Consists in hastening the formation of matter, and the separation of the core; an excellent remedy for accomplishing that is to take the white of an egg, mix it into a paste with a little flour, spread this paste on a piece of calico or linen, and fix it on the boils. It adheres firmly and does not loosen, until the core comes away with it. Clean the sore then, and dress with *white lotion* (a lotion of sulphate of zinc and acetate of lead). See that the animal is well groomed, and the sweat and dirt cleaned off the harness. Give nourishing, cooling food.

#### WARTS OR VERRUCAE.

These are described as hard protuberances, consisting of hypertrophy of the papillæ of the skin and cuticle.

*Treatment.*—When small, they are best removed by scissors, and the root touched with a little powdered bluestone, or with a stick of silver nitrate. If too large for that, tie a silk or other strong thread firmly around their necks, tightening it as required, and slough them off. When they are large, and spread out, without any distinct neck, they may be sloughed out by the application of arsenic. Take a sharp knife and pare off the rough crust of the wart, until the vascular tissue appears; do not make it bleed, then moisten the point of your finger, and lay on as much white arsenic as will stick to the surface of the wart. This kills the wart, and it soon separates, and sloughs off. It is necessary to be careful of this treatment when the wart is near any vital part such as the eye. Warts may also be cut off with a knife, and the bleeding stopped by the application of a hot iron, or a strong styptic, such as powdered alum, or solution of perchloride of iron.

#### CALLOSITIES OR HARD, THICKENED SKIN.

This is simply a thickening and hardening of the skin from friction or pressure, seen on poor horses, which are hard worked, poorly fed, get no bedding, little grooming, and defective harness.

*Treatment.*—Consists in removing the causes. Locally a dressing of one part of paraffin oil to three parts of olive oil, may be rubbed on to the hard, hairless parts with much benefit.

#### “SIT-FASTS” OR HORNY SLOUGHS.

These are seen most frequently on the back, or under the saddle, but they may occur under the collar or other parts where the harness presses.

A sitfast is a circumscribed portion of the skin which has become thickened and hardened by the pressure of badly fitting saddles or harness, combined with the irritation produced by accumulations of dirt and sweat. It really becomes dead, and is separated from the healthy skin on the surface, and would be sloughed out, but that it has a firm root, or connection with the fibrous layer beneath.

*Treatment.*—Its complete separation must be hastened by poulticing, application of a paste of white of egg and flour, and if these fail to remove it, it must be cut out with a knife, and the wound attended to by carbolic lotion, iodoform powder, or white lotion.

The saddle or harness must be so adjusted that the part is completely free from either pressure or friction, or the horse must be rested, until the sore is completely healed.

#### SADDLE-GALLS, OR COLLAR GALLS.

Causes, the same as above, irregular pressure and friction. Irritation is produced, resulting in a serous swelling or severe abrasions of the skin.

*Treatment.*—Reduce the swelling by hot fomentations, best done by applying several folds of woollen rugs wrung out of boiling water. If the swelling subsides, follow up with cooling astringent

lotion, such as solution of alum, but if a serous swelling forms, it must be opened at the lowest point, and all the fluid pressed out; continue the fomentations for another day to secure the complete discharge of all the serous fluid, then apply the white lotion, and give rest until well.

#### CHRONIC CIRCUMSCRIBED SWELLINGS ON THE BACKBONE.

These are very common in this Colony from badly fitting saddles. Some are soft and fluctuate under pressure, while others are quite hard and feel like a piece of solid bone.

*Treatment.*—If the contents of the swelling are fluid, open it well with a lancet, and dress with healing lotion. If on the contrary, if the round lump feels quite hard, and unyielding to pressure, it will be very difficult to remove. Try the following tincture:—

Perchloride of mercury, 40 grains.
Spirits of wine <span style="float: right;">1 ounce.</span>

Mix and apply this daily to the hard lump; until a very thick scurf forms, then cease its application until that scab comes off, when you should repeat it again, in the same manner. With care and perseverance very large lumps on the spine may be reduced. The mixture is a poison, as well as being a strong caustic, it must, therefore, be used with care, and applied to the lump only, rubbed in gently daily.

No horseman should ever have a horse with a *bad* sore back. A rider may sometimes, either when jumping his horse or when requiring to pull him suddenly up with a long rein, lean suddenly and forcibly back in the saddle, and thereby injure the top of the spine; but if the injury is attended to at once, and the saddle altered so as to remove the pressure, sore backs are as easily cured as any other injuries. Many ladies and even some gentlemen have a peculiar seat, and sometimes wring the withers of horses, even with moderately well fitting saddles; with such, extreme care must be taken to see that the saddles fit well, and that the pannels are dried, beaten, and brushed each time they are used. Another precaution is, do not take off the saddle immediately when your horse comes in hot; loosen the girths, and allow the horse's back to cool gradually. The sudden exposure of the perspiring skin to cold air renders the skin tender. It is gross cruelty to ride a horse with a sore back unless the pressure is carefully removed from the sore.

#### MELANOSIS OR TUMOURS CONTAINING BLACK PIGMENT.

These tumours are found principally in white or grey horses, —animals which are gradually becoming whiter in colour. They are found in any part of the body. I once saw a very large one in the pelvic cavity. Their most common situations are around the roots of the tail, about the sheath, udder, &c. Very frequently they are found about the neck, near the head. They vary in size. If the tumour is separate from the surrounding tissues, that is, if it can be moved about under the skin, cut down freely



upon it and cut it out. Or, if it is growing up semi-detached from the tissues, remove it also, *but if it is deeply imbedded, and not interfering with the animal's life or usefulness, leave it alone.*

### BURNS AND SCALDS.

The treatment of these depends on their severity. For scalding, a weak solution of sugar of lead, carbonate of soda, or a dressing of flour or starch, dusted on the part, may be all that is required. The object aimed at is to exclude the atmosphere. Carron-oil, which is a mixture of equal parts of linseed oil and lime water, has a high reputation, so has carbolic oil, (one of acid to nineteen of oil). Where there is an abundance of oil, I know from personal experience of nothing better than to allow a constant stream of cold oil to pass over the part; arrangements could be made to catch the oil and prevent its waste. In very severe burns, the tissues are destroyed, and slough out, it then becomes a matter of humanity and economy to kill the horse.

In cases of burns by mineral acids, such as sulphuric, nitric or hydrochloric acids, Prof. Law, recommends dry whiting or chalk, and to avoid the application of water until effervescence has ceased. The same author recommends the free application of vinegar, when strong alkaline caustics have been applied to the skin, such as caustic potash, soda, or ammonia. Generally, however, unless these antidotes are close at hand they are of comparatively little value, and soothing emollients have to be resorted to.

### SNAKE-BITE.

I have had very little experience of the treatment of snake-bite in animals, but in the early part of 1892, I had an opportunity of trying the treatment of snake-bite by strychnine, discovered and successfully used by Dr. A. Mueller, of Tachandandah, Victoria, Australia. The Doctor writes—*vide Agricultural Journal*, March 24th, 1892,—as follows:—“(a) I am using a solution of nitrate of strychnine of 1 in 240 of water with a little glycerine. (b) 20 minims of this are injected in the usual manner by an hypodermic injection. (c) The frequency of repetition depends on the symptoms being more or less threatening, say from ten to twenty minutes. When all have disappeared and the strychnine shows its first independent action by slight muscular spasms, the injections must, as a matter of course, be discontinued, unless after a while the poison again reasserts itself. The quantity of strychnine required in some cases has amounted to a grain or more within a few hours. Both poisons are thoroughly antagonistic, and no hesitation need be felt in pushing on the use of the drug to quantities that would be fatal in the absence of snake-poison. Out of about 100 cases treated after my method, some of them at the point of death, there has been but one failure, and this arose from the injections being discontinued after  $1\frac{1}{4}$  grains had been injected. (d) Any part of the body will of course do for the injection, though I am in the habit of making them in the neighbourhood of the bitten part, or on it.

The case which I refer to was a horse which was bitten on the muscular portion of the right cheek, the whole of that side of his face and lips were intensely swollen and the swelling very soon extended to the throat, seriously affecting his breathing. I had no solution of strychnine and was, therefore, unable to inject it under the skin, but I administered doses of six grains of strychnine by the mouth, simply placing it well back on his tongue; the nervous prostration and the local swelling made it impossible to pour anything down his throat. I repeated the six grains of strychnine at intervals of half an hour, until I had given him sixty grains, after which slight muscular twitchings appeared and he gradually recovered. In addition to the administration of the strychnine, I cut an incision in the large cheek muscle, and locally injected a solution of carbonate of ammonia in spirit, being the only thing that I had. I am decidedly of opinion that the recovery was due to the strychnine. The dose is about five times as much as the horse would have tolerated under any other circumstances. I can, therefore, recommend Dr. Mueller's treatment as being worthy of a trial.

Permanganate of potash in the form of crystals, or a saturated solution, is now recommended as a local application to snake bite wounds.

#### INFLAMMATION OF THE HEELS, CRACKED HEELS, GREASE OR MOP.

The heels of horses are so constantly exposed to cold, wet, mud, dirt, and other irritants, that they are very liable to become inflamed, and very tender; the skin cracks and becomes chronically diseased. Some horses are much more subject to this complaint than others.

*Causes.*—Washing the heels with cold water and not drying them; standing in a cold, draughty stable; standing in wet manure or other filth, washing with irritating soft soap, and not cleaning it completely off.

*Symptoms.*—These are very clearly described by Professor Law as follows :—“ We find all grades of inflammation in the heel: 1st, Simple swelling with dry heat, tenderness, and great lameness from inability to stretch the skin, and bring the heel to the ground; 2nd, Transverse cracks or chaps more or less extensive; 3rd, A pinkish white, fœtish discharge from the surface, with oftentimes more moderation of the lameness; 4th, The eruption of pustules of various size; 5th, The formation of fungous growths (grapes), over the affected surface, of a size from a pea to a cherry, red, angry, and covered with a fœtid discharge. This last form often invades the frog, constituting canker; 6th, This form consists in minute excoriations, which become covered with thin scabs, and may remain troublesome for a long time, due principally to irritating mud in continuous wet weather.”

*Treatment.*—The first consideration is to remove the cause, whether washing with cold water, cold draughts, or irritating soaps. Bathe the inflamed heels with hot water, or put on a flannel bandage, wrung out of boiling water, and a dry one

over it, and renew it frequently. When the inflammation is severe, and the pain acute, a bran, or linseed meal poultice should be put on. Take the leg of a gentleman's stocking, cut away the foot, draw it over the horse's hoof, fasten the bottom end of it with a strong string round immediately above the shoe; then put in the warm moist bran evenly, drawing up the stocking until it is nearly full; then fasten it and support it by a strong bandage wound round the poultice from the bottom to the top, just as you would place a bandage on a horse's leg. This not only supports the poultice, but it retains the heat and moisture. Hot water can be poured in at the top of the poultice frequently. The small end of the leg of a gentleman's pants answers equally well.

After reducing the inflammation, if there is no broken skin, any simple emollient ointment will answer to soften the skin, such as glycerine, vaseline, or zinc ointment applied daily, after cleaning out the heels with warm water, and drying them.

If there is a foetid discharge, and a pustular eruption in the heel, apply the white precipitate ointment daily, after washing well with warm water and soap. This ointment answers very well also in that scabby or scaly condition of the skin of the heels and pasterns. A horse subject to greasy heels should never have his heels washed in cold water, except when they can be dried.

#### GREASE, OR "MOP."

This fungoid, grapy form of inflammation of the heels, which may be due to a parasitic organism, requires both patience and skill in its successful treatment.

The following plan answers, if intelligently carried out. If there are only a few grapes, these may be removed with a hot iron; two irons are used for this operation, one small, thin one, like a child's spade is used cold to protect the skin, it is applied close to the grapes, and moved forward as the hot iron sears off the grapes. But if the whole heel is covered with these grapes, this operation is apt to destroy the skin, unless skilfully applied. The general plan which I adopt is first to dress the whole heel well with tar, leave this dressing on for a few days, then clean it off with oil, and soap and hot water. This cleans and softens the grapes, which should then be dressed with powdered sulphate of copper. As soon as the scales loosen, clean them off, and re-apply the dressing. It is of advantage, sometimes, to change the caustic, using powdered burned alum, perchloride of iron, butter of antimony, or powdered quick lime alternately. As soon as the grapes are removed, an excellent dressing is calomel dusted all round the parts freely, until the skin dries and heals, after which the white precipitate ointment should be applied, to restore healthy action in the skin. The foot must be kept dry during the treatment, and vigilant attention must be given to it by the dresser.

#### RING-WORM.

This is a vegetable parasitic disease of the skin. There are two varieties described; the one is called *Microsporon*, the other *Tricho-*

plyton. The disease is characterised by the appearance of circular patches denuded of hair and covered over by white scabs or crusts; these extend in a circular manner. The disease is contagious from horse to horse, from horse to other animals, and from horse to man.

*Treatment.*—The treatment consists in the destruction of the vegetable parasite, this is best accomplished by the iodine and mercury preparations, such as iodine ointment, strong tincture of iodine, or a solution of corrosive sublimate one drachm to 2 fluid ounces of water applied carefully.

An excellent remedy is:—

Biniodide of mercury,	one drachm,
Prepared lard	four ounces.

Mix and make into an ointment. Scrape off the crusts carefully with a knife, and then rub in a little of the ointment. One or two applications are generally sufficient. Sulphate of copper ointment made of the strength of a drachm of the copper salt, to the ounce of lard acts satisfactorily. Tar is also a good dressing.

## ANIMAL PARASITIC SKIN DISEASES.

### MANGE, SCAB, BRANDZIEKTE, OR ACARIASIS.

This is a disease of the skin which is due to the irritation produced by certain little mites, called acari. There are three species of these acari which infest the horse, (a) the *Sarcoptes equi*, which burrow under the epidermis, and affect the horse principally about the head, neck, and fore-quarters, but may spread all over the body. The form of scab produced by this species of acarus is characterised by a more or less wrinkled condition of the skin, in addition to the ordinary scurfy appearance, and constant itching. It is of some importance to know that this species of scab insect is readily conveyed from diseased to other animals, and even to man. (b) The second species of scab insect is called the *Dermatodectes equi*, or *Psoroptes equi*. This acarus pricks the skin, but does not burrow, it lives amongst the scabs, and about the roots of the hair, and being much larger than the other species it is easily discovered. It causes more itching than the sarcoptic species, but the scab produced is drier, has not such a deep crust, and there is not such a wrinkled condition of the skin, as in that other variety. (c) The third species of scab acarus which infects the horse is called the *Symbiotes equi*, or *Dermatophagus equi*. This acarus affects the heels and legs of horses more particularly; it bites the skin but does not burrow, it congregates in large numbers in the epidermis, however, but does not wander about so much as does the second species.

*Symptoms.*—The common symptoms of mange are incessant itching and scratching; the skin becomes scurfy and partially denuded of hair, and may present in addition eruptions of small pimples, or abrasions of the skin from the constant scratching. In the sarcoptic variety, as already stated, there is generally a

wrinkled condition of the skin, especially about the neck, and a moist, serous exudation in the grooves of the wrinkles. In the symbiotic variety, which affects the legs, the horse is repeatedly stamping with his feet, and rubbing one leg with the opposite foot, until the legs become quite raw. If you scratch a mangy horse on the affected parts he will lean towards you, and move his lips and teeth very much as if he was doing the scratching himself.

*Treatment.*—This consists in destroying the acari, and restoring the skin to its original healthy condition. This is easily enough accomplished, providing that the dressing is thoroughly done. Partial dressing is rarely effective; a mangy animal should be dressed all over, if you wish to avoid disappointment. Care must be exercised, however, in dressing a horse all over with any of the carbolic dips, not to use them too strong, as it is a curious fact that a five per cent. solution of carbolic acid, which may be used with perfect safety on a horse, over the half of his body, may produce fatal results when applied over the whole body. A dressing of carbolic acid and oil, which is a most efficient remedy for mange in the horse, should not be used stronger than one of carbolic acid to thirty of oil, when it is applied freely over the body.

In treating scab or mange, whether it be in horses, cattle, sheep, goats, or dogs, the primary consideration is thoroughness and the repetition of the dressing within a week or ten days, as none of the dressings, that I am acquainted with, kill the eggs. It is generally advisable to clip or remove the hair before commencing treatment. An oily dressing acts best on the horse, because it sticks on better than a watery solution, and it lubricates the skin, which is much wanted. Crude castor oil, or whale oil, mixed with sulphur, carbolic acid, Jeyes' fluid, or similar well-known parasitocides, acts very well. Paraffin and oil, one of paraffin to two of oil, acts very well also. Tobacco decoction, one pound in five gallons of water, and freely applied, or the principal sheep dips, used as directed. The horse should, however, get a thorough good washing with soft soap and a little bicarbonate of potash between each dressing, and all harness, cloths, brushes, &c., must be thoroughly cleansed. Mange being a contagious disease, affected subjects must be isolated away from other animals.

Horses often suffer from great irritation of the skin, when they are kept close to fowl-houses or poultry yards, from the *chicken acari*—*Dermanyssus gallinae*—passing on to them.

*Treatment.*—Remove the cause, limewash the stable, and thoroughly clean the floor and surrounding yard with some strong mixture such as carbolic acid and hot water, one in twenty. If there is much irritation of the skin of the horse, wash him with warm water and soap, and apply a little weak, white lotion all over, or a weak solution of carbonate of soda.

#### TICKS.

These pests are a terrible scourge to horses in this Colony, especially on the coast districts, and it is very difficult to keep

them off with a simple non-irritant and non-offensive dressing. It is generally supposed that small-doses of sulphur given continuously, have a very beneficial effect, and that good results have followed the dusting of finely-powdered flowers of sulphur all along the backs of horses, but experiments have not borne out this supposition. In the case of horses which are grazed, and only partly kept in the stable, a good plan is to wipe the following parts well with a cloth saturated with a mixture of paraffin and oil, viz.: from the anus to the sheath, between the thighs and around the hind legs, then along the belly and chest and around the fore legs, before letting them out to graze. It is difficult to find a cheap preventive which is both harmless, and cleanly. To moisten these parts with a weak, watery solution of any of the tar or carbolic dips would also assist

#### LICE AND FLEAS.

*Treatment.*—Get some carbolic soft soap, add one ounce of bicarbonate of potash to each pound of soap, make it into a creamy mixture with hot water; rub it into the horse's coat, lathering it well; leave it on for an hour, then wash off with plenty of warm water. Repeat this two or three times at intervals of a few days, and clean the stables, clothing, &c., as directed for mange.

### WOUNDS AND THEIR TREATMENT.

A wound is described as a solution of continuity of parts naturally united.

Wounds are termed *incised*, when made with a clean cutting instrument; *punctured* when made by pointed instruments; *lacerated*, when the parts are torn; *contused* when inflicted by a bruise or concussion; *gun-shot wounds*, these are termed *penetrating* when the shot is lodged in the body or limb, and *perforating* when the shot passes through either of them.

*Poisoned wounds.* When wounds are inoculated or poisoned with foreign matter, such as bites, stings, or any septic or poisonous matter, producing general constitutional disturbance, or propagating inflammation to other parts of the body.

*Treatment.*—*Incised*, or clean cut wounds, very frequently bleed a great deal, and the first consideration is to stop the hæmorrhage. This may be done in various ways. If the bleeding is from one or two large vessels, try and get a hold of their ends with forceps, draw them out a little, carefully, and get an assistant to fasten a thread round them. If this is not practicable, stop the bleeding by pressure, either by a bandage, (if in a situation where one can be applied), or by plugging,—that is filling up the wound firmly with tow, cotton wool, or a piece of soft cloth, and retaining it in the wound for twelve hours, either by a strap or bandage of any kind, or by fixing it in by two or more strong stitches. Bleeding may be arrested by the application of strong styptics, such as the constant application of cold water, a strong solution of the perchloride of iron, a strong solution of alum, or by finely powdered alum itself. A red-hot iron is

sometimes applied, and may be resorted to in an emergency. Apply it only to the parts where the principal flow of blood comes from.

After the bleeding is stopped, clean out the wound by allowing the water to flow through it; do not clean out the coagulated blood and dirt roughly, lest you re-open the bloodvessels. After removing all foreign matter, dress the wound with some antiseptic, such as a solution of pure carbolic acid 1 in 40 to 1 in 20 of water, and bring the edges of the wound together. If the wound is on a limb, this is often best done by a bandage. Take a piece of cloth of sufficient size to cover the wound, soak it in the antiseptic lotion and lay it on to the cut; after pressing its edges together then fasten the bandage evenly and firmly over it. Remove the bandage daily, dress the wound with the antiseptic lotion, afterwards applying a clean bandage. If the wound has been carefully cleaned and disinfected it may heal at once and leave very little scar. When an incised wound occurs on any part of the body, if the cut is made parallel with the muscular fibres, it may be stitched up readily, as it has little tendency to gape; but if the cut be across the fibres of the muscles, the edges of the wound are very difficult to hold together by stitches, the least movement of the animal is apt to draw them asunder, leaving the wound worse-looking than it was before. The edges of such a wound may sometimes be held together by taking strips of calico and dipping them in melted pitch and applying them to the wound, as follows: melt the pitch, cut some strips of calico about a foot long and two inches broad, take a hold of each end of the calico strip with your two hands respectively, dip it into the hot melted pitch, leaving two inches at each end untouched with the pitch to hold on by; fasten one end of the calico on one side of the wound, then press the edges of the wound together, and bring your pitched calico firmly over, it will thus have a good hold on both sides. Fasten several strips over the wound in this manner, then cut off the free ends with scissors and fasten the horse up so that he does not lie down and moves about as little as possible.

In many of these gaping wounds, especially when deep, there is a great tendency for matter to form, and gravitate down through the muscles, breaking out in abscesses lower down, complicating the case and protracting the recovery. If there is any such danger, it is better to leave the wound *open*, and keep it clean and dry by antiseptic dressings; iodoform well dusted over such a wound answers very well. If there is a deep pocket it is necessary to make a hole through at the bottom to allow the matter to drain out. In stitching up a wound, unless in tender and delicate parts like the eye, it is always of advantage to take a good hold of each of the edges, and put the stitches in about an inch apart so that if one comes out, there is room for another. Use the interrupted suture, that is tie each stitch separately, so that if one gives way, the others may remain; always fasten the animal up, so as to

prevent movement. When a wound is left open to heal by granulations, a quantity of proud flesh may grow up at the edges as the wound closes, this may be kept down by applying a good dressing of powdered bluestone.

*Lacerated wounds.*—In these the tissues are torn and bruised, but there is rarely dangerous bleeding. Clean out the wound thoroughly, search carefully for any splinter or foreign body of any kind, extract it, and dress with an antiseptic. Try and bring the edges of the wound together by stitches, bandages, or plaster, but do not be too ready to cut away torn and ragged pieces of skin or flesh if they have any attachment; it is surprising how such pieces will re-unite if brought into position early.

*Bruised or Contused Wounds.*—These, when severe, are very dangerous, as the tissues may be so severely injured that they may die, mortify and slough out, endangering the life of the animal from blood poisoning. In such cases hot fomentations should be applied continuously for hours, to keep up the circulation of the blood in the part, after which, dry the part and dress it with an antiseptic such as carbolic lotion, and cover it over with a bandage or woollen cloths.

If, in spite of all efforts the part become cold and dies, the process of separation and sloughing of the dead tissue must be assisted by hot fomentations, poultices, etc., using antiseptics in the hot water or poultices. After the slough comes away, clean the wound and dress with an antiseptic lotion. Give good nourishing food and tonics, such as sulphate of iron and gentian root 2 drachms of each daily. If the injury is very severe and the slough large, it becomes a matter of consideration whether the horse is worth keeping alive.

*Punctured Wounds.*—These are generally very serious if they are of any depth, and near any important or vital organs. The most important punctured wounds in the horse are those which penetrate the foot, any joint, or into the chest, abdomen, or about the head.

Punctured wounds about the feet are generally caused by careless shoeing, picking up nails, or kicking against any sharp pointed object. If the lameness is from pricking in shoeing, it will occur a few days after the shoe has been put on; if from picking up a nail, if the nail remains in, the animal will become lame at once, but if the nail is immediately pulled out, the pain may not be very great for a day or two, that is until the inflammation becomes established. Serious injury may supervene upon a prick, or a picked up nail, even although the lameness may not be very great at the time, hence it is of the utmost importance that all such cases should be attended to properly *at once*. In pricks, or punctured wounds of the foot, therefore, clean out the puncture by thinning the sole at the part, and scooping out the nail hole like a funnel down to the bottom, taking care not to injure the sensitive laminae; a little oil of turpentine or pure carbolic acid may then be applied to the part, and the foot placed in hot water for some hours and poulticed until the inflammation



is reduced, after which it may be necessary to put a leather sole with tar dressing on for one shoeing. When the nail has penetrated into the joint immediately above the frog, (called the coffin-joint), the pain is excessive, the horse is unable to rest any weight on the limb, but will be observed to stand drawing it up from the ground, not knowing how to place it for ease, and there will be a discharge of a clear, oily looking fluid from the opening. These cases are very serious, and require skilful treatment. One of the best plans is to get a strong tub with a flat bottom, fill it with cold water containing some anti-septic such as Cyllin or Jeyes' fluid, and keep the lame foot in that continuously, renewing the cold water at short intervals to keep the temperature as low as possible. Unless the water is cold, however, this plan of treatment is useless. The next course to adopt is to take some teased tow, cotton wool, or piece of flannel, saturate it with pure carbolic acid and press this on to the wound, do not distend or open the wound, but pour a little pure acid into the passage leading to the joint, then apply the dressing saturated with the pure acid, over that place a roll of tow, or old cloths, to fill up the sole of the foot, and fasten it down as firm as possible with a strong bandage. Repeat this dressing morning and evening. After the discharge has ceased put the shoe on lightly with two or three nails, and dress the part with tar, fastening up with tow and small slips of wood fixed across the foot under the inner edges of the shoe. The pain and lameness often remain for some time after the discharge has ceased and the wound healed. In such cases it is advisable to rub a blister round the coronet, and turn the horse out to graze for a month after.

#### PUNCTURE OF OTHER JOINTS.

When a joint is penetrated, the pain and lameness are always great in comparison to the apparent size of the wound, and there is an *oily* discharge, easily distinguished from pus. This may not appear for the first day or two, but when a wound has penetrated deep in the region of a joint, it is well to act as if the joint had been penetrated, if there is severe pain and lameness. The most essential consideration in the treatment of such cases is to exclude the atmosphere, allay inflammation, and destroy any germs which may have gained an entrance to the wound. Cold water continuously applied accomplishes all these better than any thing I know.

I have seen horses suffering such acute pain and distress from open joint, that they were ready to drop from exhaustion, but after twenty-four hours' application of cold water continuously, the pain had subsided, the fever abated, and the animal was eating his food and resting on the injured limb. Remember that this was not accomplished by the application of a bucketful of cold water now and again, as is generally done in this Colony, the horse's limb was kept *constantly* immersed in the cold water, which was frequently renewed to keep the temperature low. Another equally efficient plan, is to fasten an india-rubber pipe, leading

from a water-tap on to the limb in such a way that the water will run over the wound continuously.

It is very seldom that either of these plans is practicable in this Colony, except in towns, but where it is, it should always be adopted in the treatment of open joints. Failing that, clean the wound carefully, then take a small piece of flannel, roll it round the end of a small piece of stick, such as a pencil or pen holder, soak this in pure carbolic acid, and dress the wound carefully, without either distending the opening or injuring the tissues; soak another piece of flannel in a mixture of carbolic acid and water, one in twenty, apply it over the wound and fasten it there with a bandage, if a bandage can be applied. Repeat this dressing twice a day. If possible, fix the joint by applying splints, so that there may be as little movement of the parts as possible. If the joint is in one of the hind limbs, it may be necessary to sling the horse, if the case is a severe and protracted one, as the sound leg will give way under the constant weight. If in a fore limb, he will support himself longer on one leg.

If you cannot carry out the above treatment, then the next best thing is to apply a smart cantharides blister to the part at once, after cleaning and dressing the wound. Rub the blister well in all over the joint, including the edges of the wound, this causes swelling, which tends to close the wound, and stiffen the joint so that it is not so liable to be moved.

Punctured wounds into the sheaths of tendons, must be treated in a similar manner. Punctured wounds into the chest or abdomen should be closed as soon as possible, after seeing that no foreign body is left in the wound, and should inflammation supervene, hot fomentations should be continuously applied by rugs wrung out of boiling water, as recommended for peritonitis.

### POLL EVIL.

Is a suppurating wound at the top of the head, or immediately behind it, between the poll and the spine of the dentata (second bone of the neck).

*Causes.*—Direct injuries such as blows, or from the animal striking his head against some hard object, such as a beam, the top of a door, or from falling back on his head against the floor or wall.

*Symptoms.*—Following the injury there is generally a diffused swelling, with great tenderness; this may subside, more or less, leaving a fluctuating, swelling, bulging out on either side of the centre line, under the round elastic ligament, just like a thoroughpin. But in severe cases an abscess forms, bursts, or is opened, and the matter allowed to escape. If it is a simple abscess, the ordinary treatment of cleaning out the wound, or sac and dressing it with an antiseptic lotion such as a weak solution of Jeyes' fluid, or carbolic acid, is all that is required. But in all severe bruises to this part, followed by the formation of matter, there is a great tendency for the matter to burrow down between the muscles and tendons, forming pipes or