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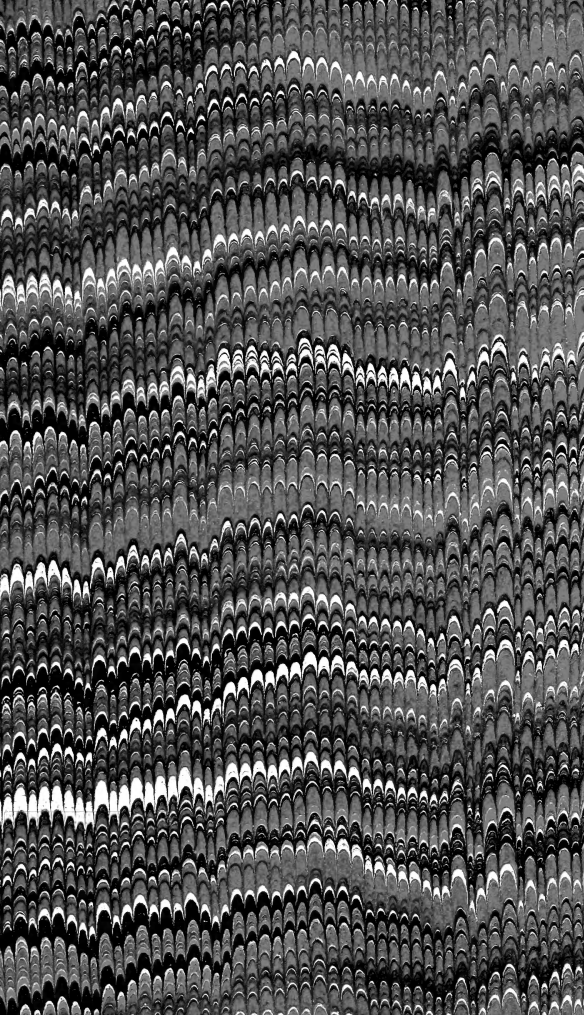
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PHYSICS DEPARTMENT

PHYSICS 101

LECTURE 1

MECHANICS

1950

WILLIS'S
VETERINARY PRACTICE,

BEING

AN ACCURATE AND DETAILED ACCOUNT

OF THE

Various Diseases to which the Horse is Liable,

TOGETHER WITH

THE LATEST MODE OF TREATMENT.

TO WHICH IS ADDED

AN APPENDIX,

CONTAINING VETERINARY PHARMACOPŒIA AND VETERINARY
MATERIA MEDICA.

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—••—
WRITTEN IN PLAIN ENGLISH,

BY

JAMES A. WILLIS, V. S.
—••—

New York:

THOMAS HOLMAN, PRINTER, CORNER OF CENTRE AND WHITE STREETS.

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P R E F A C E.

THE chief and only object of this work is a description of the external and internal diseases of the horse, with their causes, symptoms, treatment and prevention. The author believes that he has omitted no disease of any considerable importance.

In the treatment of disease I have been peculiarly attentive to the causes and prevention. As every changed groom, driver and location disposes the horse to some particular disease more than to others, it is certainly of importance to speak of these facts, in order that people may be upon their guard against them. It is always better to be warned of the approach of an enemy than to be surprised by him, especially where there is a possibility of avoiding the danger.

Though I have endeavored to point out the causes and prevention of diseases, and to put people on their guard against them, yet it must be acknowledged that they are often of such a nature as to admit of being removed only by their own diligence and activity. The domesticated horse is one of the most willing slaves; to serve man is his chiefest joy. He relinquishes all his allurements, and devotes his body and strength to our service the life-long day, yet when night comes how many there are who deny him nourishing food and a comfortable place to rest! Dr. Stewart has truly said, "the stable is his prison, and the harness his chains." Hence, it follows, that the two principal causes of his disease are, his living on dry artificial food in the stable, and the barbarous treatment he receives at the hand of his owner. Nature has it not in her power to remove either. The great power

to heal lies in the organism of the animal itself. All that art can do is to remove the obstacles out of the way of Nature's efforts, and let Nature do the work. It is in our power only to modify the efforts of Nature; the whole requirements of art is to remove certain irritations, brutal treatment, changing the food, etc. The generality of people lay too much stress upon medicine, and trust too little to their own endeavors. Though many reckon it doubtful whether medicine is beneficial or hurtful to the horse, yet they all allow the importance of a proper food in diseases. The very appetite of the sick horse proves it. No man in his senses ever imagined that a horse, in an inflammation, for example, could eat, drink or conduct himself the same as one in perfect health. This part of medicine, therefore, is evidently founded in nature, and is everywhere consistent with reason and common sense. Had men given more attention to this, and hunted less after secret remedies, the Veterinary Profession could have never become such an object of ridicule. No one can imagine, who has not been a witness, how much good a well-disposed person may do by only taking care to have such wants supplied, and by removing the sick horse from a filthy to a warm, clean and well ventilated stable. There certainly cannot be a more necessary, a more noble, or a more God-like action, than to administer kindly to the wants of such a faithful servant. While virtue and religion are known among men this conduct will be approved, and while Heaven is just it must be rewarded.

The veil of mystery which still hangs over the Veterinary practice renders it not only a conjectural but even a suspicious art. This has been long ago removed from the other sciences; which induces many to believe that doctoring horses is a mere trick, and that it will not bear a fair and candid examination. It however, needs only to be better known in order to secure the general esteem of mankind. Disguising the practice not only

hinders its improvement, but exposes the practice to ridicule. I do not mean that all men should become Veterinary Surgeons. This would be just as ridiculous as it is impossible. But if the most of our intelligent farmers had a knowledge of medicine and the diseases of their domestic beasts, they would raise the art to a higher degree of esteem and perfection in one year than the whole faculty could alone in ten; and, at the same time, they would be in a condition to derive from it some of the advantages with which it abounds, and guard themselves against the influences of superstition and ignorance.

In order to render the work more complete, and to be of more benefit to the horse owner, I have added as an Appendix a Veterinary *Materia Medica* and *Pharmacopœia*. If it abounded with splendid prescriptions and promised great cures in consequence of their use, it would have been more acceptable to many. But as medicine can only be administered to assist Nature, I have in general given such caution and direction as will be necessary for its safe administration.

The authors to whom I am most obliged are "Horse Owner's Cyclopedia," Mayhew and Stewart. I have in general adopted their observations where my own were defective or totally wanting.

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CHAPTER I.

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THERE are few subjects of animated nature that have engaged the attention of the most eminent naturalists more than the genus *Equus*, to which the horse and ass, with their hybrid progeny, and zebra are assigned. In the classification adopted by modern natural historians, they belong to the division *Vertebrata*: class *Mammalia*; tribe *Ungulatia*; order *Pachydermatia*; family *Solepedita*; and genus *Equus*. Their dental formula is as follows: incisors $\frac{6}{6}$; canine or dog teeth, (in the males only), $\frac{1}{1}$; molars $\frac{6}{6}$; total, 40 teeth.

Linneus, with a view to establish, by new arguments, his theory of the sexual system of plants, has illustrated their generation by pursuing the chain of nature from the animal to the vegetable kingdom, and has taken a prominent example from the mule and hinny. He says, from the mare and male ass proceeds the mule, which, in its nature, that is, in its medullary substance, nervous system and strength, is latent in, and derived from, the mare. But in its cortical substance and outward form, in its ears, mane and tail, resembles the ass. Between the female ass and the horse the hinny is produced, whose nature or medullary substance, resembles that of the ass, but in outward shape and cortical structure, that of the horse. According

to Pliny, the hinny was not held in much estimation by the Romans, and at the present day, they are of no esteem either among that people or any other, except the Spanish, who occasionally breed a few. They are by no means so valuable for service as mules.

Mules have a disposition to propagate, yet notwithstanding there have been but two or three well authenticated instances recorded of their having bred, Dr. Buffon, in his researches on the subject, admits that "it is possible for both males and females to propagate." He is "confident that their parents are of a species distinct from each other." He says, "the ass is not a horse degenerated, as some suppose. He is neither a stranger, an intruder, nor a bastard ; he has, like other animals, his family, his species, and his rank. His blood is pure and untainted, and although his race is less noble, yet it is equally good, equally ancient as that of the horse.

Of all quadruped animals the horse seems the most beautiful of his noble race. The glossy smoothness of his skin, the graceful ease of his motions, and the exact symmetry of his shape, have taught us to regard him as the first and as the most perfectly formed. To have an idea of this noble animal in his native simplicity, we are not to look for him in the pasture or the stables, to which he has been consigned by man, but in those wild and extensive plains where he ranges without control. It is not, however, in the new, but in the old world, that we are to look for the horse in a true state of nature—in the extensive deserts of Africa, in Arabia, and the wide-spread plains of Tartary ; in Persia, and between the Caspian sea and the sea of Aral. Here is the birthplace of man, and where he still remains the most beautiful in countenance and symmetry. Man and the horse have been companions in all ages, and probably the horse has been an inhabitant in this limit assigned him by nature—Tartary, Persia, Asia Minor and

Arabia—since Noah gave him liberty, when the ark rested on Mount Ararat. But of all countries in the world where the horse runs wild, or is domesticated, Arabia for centuries has produced the most beautiful, and here, unquestionably, is the place where the horse was first domesticated. Stonehenge would have us believe that he was first domesticated in Egypt, for the following reasons : that it was not until after the Israelites arrived in Egypt that the horse is clearly alluded to in the writings of Moses ; that in the thirty-second chapter of Genesis, camels, goats, sheep, cattle, and asses, are all severally alluded to, but no horse. So he considers that it is highly probable that in the time of Jacob, whose departure from Laban is there narrated, horses were unknown to the Israelites. Jacob, on his deathbed, leaves us no room to doubt his knowledge of the horse, and of his being domesticated in Egypt, for he speaks of the horse and his rider in the same sentence. When he was blessing his children, he said unto Dan : “ Dan shall be a serpent by the way ; an adder in the path, that biteth the horse’s heels, so that his rider shall fall backward.”

This eminent writer goes still further to prove his theory, and gives his reasons for so doing ; and I am so far from finding fault with him, that I think his performance does great honor both to his head and to his heart. He however confesses his proof of a negative character. “ Six hundred years later,” he thinks, “ Arabia could not have been remarkable in any way for her horses, for Solomon, while he resorted to her for silver and gold, mounted his cavalry from Egypt.” Yet he says, “ the latter country could scarcely be the native land of the horse, not possessing the extensive plains which are peculiarly suited to his existence in a wild state, and it is considered probable, that he was introduced from the central regions of Africa, which are, undoubtedly, the native plains of the quagga, the zebra,

and some other congeners of the horse, but where he is not now found in a wild state." "Thence he would naturally find his way into Egypt, and through Arabia to Persia, Tartary and Greece, ultimately reaching Great Britain."

But I will presently give my reasons, without conjecture, for believing that the horse was first domesticated in Arabia. To every animal nature has assigned a certain range of the earth's surface, within which its wants are better provided for and its comfort more secure than in any other. Hence, most species, although at liberty to change their abode, seldom wander beyond fixed limits.

For example, the polar bear, which is fitted to endure the cold, and to find subsistence in the midst of snow and ice, rarely crosses the Arctic circle; while the monkey, which is equally fitted to sustain the heat and to procure its food in tropical forests, is scarcely known beyond the limit of the fruit-bearing palms.

But while animals are thus restrained by their necessities, they are also kept in check by substantial barriers. Seas, deserts, mountain chains, etc., often prevent their progress from one country to another. Hence, we not only find different faunas or assemblages of dissimilar species in different climates, but also in separate regions of the same climate. The diversity, however, is generally greater in the former than in the latter.

I have already shown that the birthplace of the horse is in the vicinity of Mount Ararat. Thence he would naturally wander through Persia, Tartary, and Arabia, ultimately reaching Egypt, either in a wild or domesticated state.

In Genesis xxxvi. 24, we have Scriptural proof of the mule being a natural hybrid, existing in the wilderness of Idumea about 1840 years before Christ, and over 100 years before the Israelites arrived in Egypt. And in the book of Job, according to Hitchcock's Analysis of the

Bible, the oldest book in the world, the first written of all the books in the Bible, and the oldest literary production in the world, is the Book of Job. This, according to the best authorities, was composed by Job himself about 1520 years before Christ. This is about 70 years before the book of Genesis ; 550 years earlier than Homer ; a thousand years before Confucius and Solon, and earlier than even the very earliest date assigned to the Hindoo Vedas. The land of Uz, where he lived, was east of Palestine, and either within that sandy and waste part of Arabia, called Arabia Deserta, or in the country of Idumea, not far distant.

Job was not a Jew, but an Arabian Prince ; and in his writings, he makes the horse the theme of the most glowing description and eulogy. His poetic and sublime language will apply to almost any variety that comes up to a fair standard of their species. "Hast thou given the horse strength ? hast thou clothed his neck with thunder ? Canst thou make him afraid as a grasshopper ? the glory of his nostrils is terrible. He paweth in the valley, and rejoiceth in his strength ; he goeth on to meet the armed men. He mocketh at fear, and is not affrighted ; neither turneth he back from the sword. The quiver rattleth against him, the glittering spear and the shield. He swalloweth the ground with fierceness and rage ; neither believeth he that it is the sound of the trumpet. He saith among the trumpets, Ha, ha ! and he smelleth the battle afar off, the thunder of the captains, and the shouting." The horse is nearly always associated in Holy Writ with man, as possessed with the spirit of war, and of great fondness for the murderous and guilty pursuit. Jeremiah describes his speed, his strength and spirit in battle, in language the most expressive : " If thou hast run with the footmen, and they have wearied thee, then how canst thou contend with horses ?" " I hearkened and heard, but they

spake not aright : no man repented him of his wickedness, saying, What have I done ? Every one turned to his course, as the horse rusheth into the battle." "The snorting of his horses was heard from Dan : the whole land trembled at the sound of the neighing of his strong ones ; for they are come, and have devoured the land, and all that is in it ; the city and those that dwell therein."

When God wrought such a remarkable deliverance for his people at the Red Sea, Miriam and all the women of Israel, with timbrels and with dances, in their exultant song to the Lord for his glorious triumph, the horse is not forgotten : "the horse and his rider hath he thrown into the sea." Solomon, in his brilliant reign over Israel, had horses brought to him from Egypt and from all lands until he had four thousand stalls for horses and twelve thousand horsemen.

It appears from sacred history, that the horse was a companion and servant of man in various ways, and that the ancients had in use the saddle, bridle, and harness. The horse was used for riding, for which see 2 Kings ix. 18 ; Est. vi. 8, 9 ; Amos ii. 15. We also read of him in the book of Esther, being used for carrying the mail ; and he wrote in the King Ahasuerus' name, and sealed it with the King's ring, and sent letters by posts on horseback, and riders on mules, camels, and young dromedaries. He was also used for driving in the chariot, and great dependence was placed in the horse in time of war, and as the book of the wars of the Lord, mentioned in Numbers xxi. 14, is lost, we may suppose that a brilliant history of the horse is lost with it.

THE ANCIENT EGYPTIAN HORSE.

The ancient Egyptian horse, we know but little of beyond the comparison of Solomon in his Song of Christ's love unto the Church : "I have compared thee, O my love,

to a company of horses in Pharaoh's chariot ;" and as he is handed down to us in some of the sculptures of Nineveh, the carvings of which are in a high state of preservation. But in all of these bas-reliefs, the horse is represented with a large and coarse head, a high crest, and a heavy and lumbering body.

GRECIAN AND ROMAN HORSES.

Such was the ravages and anarchy of war for a long time in eastern countries, that the whole human race degenerated into a state of barbarism. The use of the horse, with most all the arts and sciences, was forgotten. "Veterinary doctors, however, have been in existence for 3,000 years in China, and they possess a formal literature." "We even hear of statistics of cattle plagues being kept at that early period." The above remark occurs in Dr. Dobell's "Reports on the Progress of Medicine." But the eastern horse we know nothing of until Greece and Rome broke the chains that bound them, stepped in, and with their great voice, commanding silence, and told the nations to come to school and prepare for the real business of life. They knew how to enkindle the nations with their fire ; how to rule them by their spirit, and how to make them partners with themselves in civilization and glory. Thus we see them heading the world's march on to a civilized life ; and God allowing men to invent modes of using the animal, the arts and sciences dawning upon men's minds just as they are made able to receive them. Greece at first aspired to this great office alone, but Greece failed to be what many thought she was destined to be,—the world's educator. Greece had one-half century of intense brilliancy, but after that marvelous outburst of intellectual power, she sank exhausted. She had many of the higher requisites for the office to which she aspired,

but she wanted some of the secondary ones. She was too little practical, too much impelled by passion, and too little guided by principle, to be capable of those long sustained, persevering and pains-taking efforts, which alone could tame the barbarism and enlighten the ignorance of the world. Still she did an immense service. Greece prepared the elements of the world's education. Her schools and academies were the workshops in which were forged the living forces, which in the hands of Rome were to quicken and vitalize the nations.

The Greek horse is very well known to us, as his representation is well preserved in the Elgin marbles, and Xenophon, that noted Greek historian, gives excellent advice on the purchase of a horse. This ingenious people invented the snaffle bridle and established the olympian games. These games were held every four years, and commenced about 774 years B. C., but it was not until the twenty-third olympiad that horse-racing was introduced, and the distance ridden was about four miles. In the twenty-fifth olympiad, the chariot was introduced, and after this time it became the method of testing the power and speed of the Grecian horse.

Rome, in order to become the master, first became the pupil. She sat down at the feet of Greece, and the truths which the Athenian intellect had elaborated, Rome received; and grafting them upon her own more practical genius, she entered into the office which Greece, after a glorious commencement, had been compelled to vacate. Rome's iron hand bent the nations to her yoke, and her master mind moulded them into her image. It was a great and a difficult task,—and truly Italy deserves well of the world for having rendered it. It cost her the thought of her writers, the toil of her legislators, and the blood of her warriors. The Roman horse must have been of rather an inferior grade, for no sooner were the Roman

cavalry brought into warfare with the cavalry of Macedonia and that of Cæsar's, mounted upon French horses, than they were conquered. This defeat could only have been the fault of the horse, for the bravery of the Roman infantry was still a dread to the surrounding nations. The curb-bit was invented by the Romans; they also invented a kind of sandal, sometimes tipped with iron, for the protection of the foot in case of lameness.

THE HORSE OF GREAT BRITAIN.

When the Romans invaded Great Britain, they found the people in possession of horses; but we have no reliable history of the British horse until the reign of the Stuarts, when attention was first paid to the improvement of the breed. The British has since then been in possession of some celebrated horses. Sir Robert Bruce, who so nobly defended the liberties of Scotland, rode in February, 1306, from London to Lochmaben Castle, in Dumfrieshire, in five days. Dick Turpin's Black Bess also performed some wonderful feats. But it is not without great assiduity and repeated trials of all the best horses in all the different parts of the world, that the British horses have attained their present high superiority. A British horse is known to excel the Arabian in size and swiftness; to be more durable than the Barb., and more hardy than the Persian. An ordinary racer is ascertained to go at the rate of a mile in two minutes, and we had one instance in the admirable Childers, of still greater rapidity. He has been frequently known to move eighty-two feet in a second, or almost a mile in a minute. He ran round the course of Newmarket, which is little less than four miles, in six minutes and forty seconds. Few horses have since been found that could equal him, and those of his breed have been remarkably deficient. To William the Conqueror,

history ascribes the introduction of the practice of shoeing and the stirrup into Great Britain, whence they have remained until the present time.

THE HORSES OF THE WESTERN HEMISPHERE.

The wild horses of America are of Spanish origin, and entirely of the Andalusian breed. Introduced here, according to Azara, in the year 1535, and in the year 1537, several were shipped to Paraguay. From these have been bred the countless herds which have since spread over the whole southern part of America, and passing the Isthmus of Panama, have wandered into Mexico, California, Texas, and the western plains wherever they are suitable to him.

These wild horses, as I am informed, greatly resemble their Spanish ancestors in make and shape. They are said to be possessed of a fair amount of speed, but not above the average of foreign breeds. From their roving habits, they are in excellent wind, and it is said that one fresh caught, can be ridden nearly a hundred miles without drawing bit.

In Mr. Herbert's cursory allusion to the Mustang, he gives it as his belief, that he is the origin of the Indian pony in common with the Canadian horse. I will not weary my readers with a description of these two breeds,—they are so well known, that a description here is unnecessary. But I shall at once proceed to allude to the modern domesticated horse met with in the United States.

THE MODERN HORSE OF THE UNITED STATES.

The position the United States has attained for celebrated horses they entirely owe to England, the parent country. But from some source, a fountain of disease has sprung that is deluging both England and America with its dreadful virus. Disease and degeneracy are ter-

ribly on the increase, and I strongly suspect, that before long, both will have to procure from some source, sound horses of high breeding for their studs.

In England, the progress of improvement was greatly accelerated by a seasonable infusion of Arabian and Barbaric blood. The bred horse, standing in respect of the equine race as the capital on the Corinthian Pillar, has reached a point of perfection, that if it can be kept up, we can hardly dare hope will ever be excelled.

According to Mr. Herbert, we may show how largely the Americans are indebted to England for thorough-breds. Between the years 1691 and 1840 there were nearly 300 horses imported for stud purposes. Nearly all the great trotting horses of America have come of one blood, that of Messenger, an English horse, imported into New York in 1788.

The pedigree of this horse can be traced directly back to the Darly Arabian, who was the sire of Flying Childers, and to the Cade mare, who was a granddaughter of the Godolphin Arabian. He was therefore of the best English thorough-bred racing stock.

All accounts concur in representing Messenger as a horse of beautiful form and extraordinary endurance. As a proof, a groom, who saw him land, loved to relate, that the three companions of Messenger became so reduced by their long voyage, that they had to be supported down the gang-plank, but when it came Messenger's turn, he, with a loud neigh, charged down the gang-plank, with a colored groom on each side, dashed up the street on a furious trot, dragging the negroes after him, and resisting all their efforts to bring him to a stand-still.

Messenger was a beautiful gray, fifteen hands and three inches high, and stoutly built, with a short straight neck, and a large bony head ; his loins and hind quarters powerfully muscular ; his windpipe and nostrils of unusual

size ; his hocks and knees very large ; limbs of medium size, but flat and clean.

Messenger lived to be twenty-eight years old. For fifteen years he was owned in the neighborhood of New York, and was held in such estimation that he probably left a more illustrious name chiefly for his trotting and running descendants, a more numerous family than any horse that has ever lived. Those best acquainted with the subject do not hesitate to estimate his value to the country at one hundred millions of dollars. The sons of Messenger, to which nearly all the fast trotters of the present day trace their pedigree, were Plato, Engineer, Commander, Why-Not, Mount Holly, Mambrino, and Hambletonian.

There have been several other horses imported from England, which have contributed largely to the improvement of the breed, such as Bellfounder, Diomed, Whip, Trustee, Glencoe, Margrave, and Arabian Grand Bashaw, but not one has produced an illustrious trotter without a cross from Messenger.

It is not our design to give the pedigrees of these famous horses in this brief outline of history. It is with the horse as we find him in America, that we have to do in this work ; not the general history of his races, pedigrees and performances, but the history of his diseases, their causes and cures, rational and generous rules for his treatment and general improvement.

CHAPTER II.

OF THE GENERAL CAUSES OF DISEASE, AND HOW TO PREVENT THEM.

OF DISEASED SIRE AND DAM.—OF IN-AND-IN BREEDING.—OF NOXIOUS VAPORS.—DARK STABLES.—FOOD AND DRINK.—NICKING AND DOCKING.—CRUEL PUNISHMENTS.—OF EXPOSURE.

THE history of the horse affords us no evidence that there has been any improvement in the race since the days of Job, who describes the Eastern horse in language unequalled for poetic beauty and vigor. The Arabs have always had the finest horses in the world, and their great affection for them has been most remarkable. Among no people, says Dr. Stewart, has the art of breeding and training the horse been carried to such perfection as among the wandering tribes of the desert, and nowhere else has there been such freedom from disease, unless it be among the wild horses of America. It is not, then, necessary to have civilization nor education to have good horses and have them enjoy good health. Disease and degeneracy have kept pace with the efforts of civilized man, in trying to improve the breed by in-and-in breeding, management and cruel treatment.

OF DISEASED SIRE AND DAM.

The better to trace diseases from their original causes, we shall take a view of the common method of raising the foal. In this period of their lives, the foundations of a good or bad constitution are generally laid. It is therefore important to the farmer who raises a few colts every year to be well acquainted with the various causes which

may injure their health. The wild horse is an heir to no disease whatever, and it may seem strange that man, notwithstanding his superior reason, should fall so far short of the wild horse in the management of the young animal entrusted to his care. But our surprise will soon cease, if we consider that the wild horse, guided by natural instinct, never errs in this respect, while man, trusting solely to art, is seldom right.

The health and constitution of the foal depends greatly upon that of the sire and dam. It would be as reasonable to expect a rich crop from barren soil, as that strong and healthy foals should be produced of a sire or dam whose constitutions have been worn out with hard labor or disease. We know that the illustrious trotter cannot be bred out of the cat-hamed foundered jade. This is settled upon immutable laws. We know that many of our farmers raise foals from such mares, and even during her pregnancy and the time she is nursing her young, they work her still, and perhaps, not half fed. They do not consider, for a moment, that she has two lives to support instead of one. Is it consistent with natural laws and common sense, that she can bring into the world and raise a strong and healthy foal? The man who raises foals from a limping, sickly constitutioned mare, and doing all in his power, by abusing her, to have this dreadful inheritance transmitted to her offspring, whatever his views may be, it cannot be said that he acts a prudent part. A lame, sickly constitutioned mare may prove fertile; should this be the case, her whole family must become an infirmary. What prospects of profit the stock-raiser can have of raising such colts we shall leave any one to judge.

The question of feeding the mare while with foal is one of the first importance. Here does the adage apply that like produces like. The soil must be rich. The mare must

receive the feed and attention her condition demands, or it is unreasonable to look for a strong and healthy foal.

The same law applies equally well to the stallions, yet in our country the stallions are generally very good. They are usually selected from the best colts, and nearly all of them, when not abused, and turned to good mares, produce very fine foals. The great evil is in the destructive policy of the ignorant knave who adopts the lazy lounging work of traveling the country with a stallion. The majority of these fellows keep the stallion in order to scrape together a few more of the almighty dollars. If it is in their power, they will turn their stallion to three or four mares a day. By these excesses, the seminal fluid of the horse must become weak and watery, and if the mares conceive, their offspring must be loose, flabby jointed, long-legged, worthless animals. But what does he care, so long as he can find two or three fine foals to take to the country fair, there to exhibit as specimens of the excellent foal-getting qualities of his horse. What does he care for the improvement of horses, if he can, by fair or foul means, keep up the reputation of his horse, in order to secure a good patronage the next season, or how much the next generation of horse-flesh suffers by his wickedness. This is a system that causes a blight and mildew upon one of the most important interests of the farmer. This is an evil of a complicated kind and political mischief, and therefore requires a public consideration. Indeed, to this, all wise legislators ought to have a special regard.

The perfect model of the Arabian horse is unquestionably due to their great care of selection, and who, from being unmixed with any variety of the same species, the stallions also have never been disproportioned in size to the mares. It is also said that they allow no stallion to cover a mare unless he has been approved by a public inspector. It is feasible to suppose that the blood of the

Arabian horse is just as pure and untainted as it was in the days of old. Indeed, there can be but little doubt on the subject, if we admit the fact, as Mr. Pomeroy, in his prize essay on the mule, suggests, that "the habits, manners and pursuits of the descendants of Ishmael have continued with scarcely an iota of variation, from the day they took rank among the nations of the earth." "The position," he says, "is greatly strengthened by the information he received from an intelligent traveler of undoubted veracity, who had visited Arabia." Mr. Pomeroy understood from him that the Arabs were as tenacious of preserving the pedigrees of their horses as the most careful breeder for the turf of England. The descent of some of their horses they trace to the numerous studs of that wise and magnificent king, Solomon. In breeding horses we would do well to imitate the example of these half civilized descendants of Ishmael.

OF IN-AND-IN BREEDING.

For the improvement of stock two modes of breeding have been practiced: one, by selecting males and females of the same family-blood relations, called in-and-in breeding; the other, by males and females from different families of the same species, called crossing the breed. The former must be denounced in language the most expressive. This is the true reason why we so rarely see the descendants of imported stock in this country equal the originals. In-and-in breeding tells in man as well as in beast; the same law governs both. When blood relations intermarry, their offspring are generally malformed, scrofulous, idiots, or a host of other ills that they may be heir to, by such an imprudent union.

The continual in-and-in breeding of the descendants of Messenger would probably have resulted in the extinction of the stock, but for the timely cross with the descendants

of Diomed and other imported horses. Messenger himself had a remarkably strong constitution, and it was transmitted to his inbred progeny for a number of generations but very little impaired. Yet the hardest flint will wear away, and so has the constitution of Messenger.

It seems to be in accordance with Nature's law that all the conditions of the wild horse favor continual outcrossings rather than in-and-in breeding. The males and females would be of nearly equal numbers. From their roving habits, they would naturally squander into other herds before they were old enough to breed, and each stallion will contend for and obtain some sexual intercourse.

The good effects of crossing the breed results only in cases where the mare is larger than the stallion. In this way the English raised such excellent draught horses, crossing with the small stallions imported from Arabia and the Barbary States and the large mares from Flanders and Lombardy.

But where they turned small mares to large stallions there was untold mischief done by producing a race of long-legged, flabby-jointed, narrow-chested worthless brutes.

The keeping of animals in a plethoric condition is as highly deleterious to their progeny as stinting them of nutrition. Dr. McClure says, "when the conditions of life depress and retard the development of plants or animals they become more prolific, because their offspring will come into being under circumstances unfavorable to the continuance of their existence, and Nature equalizes the chance by producing more of them." It is in accordance with this law that fat and idle animals are not sure to breed, that families living on the luxuries of life for a few generations have but few or no children. We often see the poor surrounded by a numerous proge-

ny, while the pampered rich pine in sorrow without a single heir to their vast domains.

OF NOXIOUS VAPORS.

It has long been known that fresh air is more immediately necessary to life than food. We may live two or three days without the latter, but not many minutes without the former. The vivifying principle contained in the atmosphere, here so essential to the support of flame as well as animal life, is nothing else but that pure oxygen discovered by that ingenious philosopher, Dr. Priestly. This being exhaled in copious streams from the green leaves of all kinds of vegetation, accounts, in a great measure, why the horse is so much healthier in the country than in some of the vaults assigned him in the city, where they are nothing but a nursery of disease and misery to their inmates, where the air, instead of partaking so largely of this salutary impregnation, is daily contaminated with noxious animal effluvia.

If the reader has visited these places, he knows too well the holes that man compels his willing servant to live in. When we see man begrudging his valuable slave the space in which its useful body rests, we can assign but little credit to his human nature; but some men, with their fancies, are tyrants without mercy, but a heart alive only to villainy and ingratitude. Here is a practical proof of the Proverb of Solomon, that "A righteous man regardeth the life of his beast, but the tender mercies of the wicked are cruel." Many of these stables are undrained stalls, seldom more than four feet wide, and frequently the light and air is admitted only by the doorway, with a pile of heating, steaming manure laying at one side. The volatile gas of ammonia is so strong, that the water will be brought into a man's eyes as soon as he enters, and what must be the effect upon the eyes of the poor horse

compelled to live amid these vapors for days and weeks together.

DARK STABLES.

The deficiency of light is perhaps a still more serious evil to the horse's eyes than the noxious vapors, and one that contributes nearly as large to his general diseases. Light is essential to the health of both body and mind of man, and the physical system of the horse demands it equally as much as he. Light imparts to vegetation the essential qualities which nothing else can. Is it strange, therefore, that the eye suffers from terrible diseases when deprived of light, its natural element. God, the all-wise Creator, saw fit in his infinite wisdom, to furnish light to rule the day, and during that time, all living should be permitted to enjoy it freely. Dr. Buchan cautions people not to venture into subterranean vaults, or coal-pits that have been long shut up, until the air has been sufficiently purified ; but in the name of every consideration of mercy, gratitude, and self-interest, that there were gunpowder enough burned under each and every one of these stables to blow them to atoms, so that nothing remained but the history of their existence in a past barbarous age, is an end that should be devoutly wished for.

FOOD AND DRINK.

Though hay and oats are allowed to be the best calculated for supporting the horse in health while in the stable, yet it can not be doubted but changed food may be safely given occasionally, provided their appetites are restrained within the bounds of temperance. We find that by the wonderful powers of the digestive organs, a variety of vegetable substances, of very discordant principles, are happily assimilated and blend into one chyle. Therefore it seems natural to distrust those cynical fel-

lows who would rigidly confine the horse to one simple dish, hay and oats, from one year's end to the other. It is no wonder that we frequently hear those men complaining that their horse is off his feed. To such, let us say emphatically, change his food to chopped feed, carrots, turnips, potatoes, and the like, which he will eat with decided advantage ; every horse that is kept in the stable should have a green feed once a day.

The horse prior to domestication, might not find in every spot an abundance of excellent fodder ; but then he was at liberty to seek a better fare in another place. His food was the grass of the prairie, and his drink, that mild insipid water of the brook which nature has pointed out to him as his universal beverage. Man has taken away all power of choice. He violently usurps Nature's province, and adopts her obligations. Many times the horse, driven far and fast, is brought home by the master, sweating at every pore. In this condition he is allowed by some a little food and drink, and by others nothing, until he has cooled off. What cruel folly, to tax the powers and stint the body. We never knew a horse injured by eating and drinking moderately of lukewarm water while steaming from a fast drive ; but warming the water is too much trouble for the groom, and the master has so little mercy and interest for his horse's welfare, that he don't see that it is carried out. It is a grievous sin to seize on life, and to neglect the slave you hold in captivity, by trusting the fulfillment of the responsibilities to a careless groom. Where we claim the horse's existence as property, and force him to wear it out in our labor, truly the very least obligation we could owe him, should be the provision of comfortable stables and nourishing food. We believe that the usual way of preparing cut feed, cut hay, corn, and oat-meal, mixed with warm water, is the most economical and healthy food that can be given ; this, with an

occasional change of green food, comes nearer the moist grass which kind nature furnishes, and it don't task the salivary glands as much as when eating dry food. If this course was pursued, our stables would be visited with fewer diseases.

NICKING AND DOCKING.

We are thankful that the abuses of nicking and docking, cutting and slitting the ears, is, by men of feeling, being so disgusted with these barbarities, very much on the wane. These tortures would be willingly not remarked upon, but to the shame of our race, there still lingers a few with such wicked tastes, in our country, that the most perfect specimens of the Creator's handiwork don't please them ; however, they are nothing daunted, but set to work to make improvements, by resorting to the horrible practice of nicking and docking. In nicking and docking the horse which is the subject of such shocking cruelties, not only is he deprived of part of his tail, but several deep cross cuts is made in the remainder of the under side, that the muscles by which it is erected and depressed are forever destroyed, and then a cord is fastened to the hair, and being carried over a pully attached to the ceiling, the tail is kept drawn up over the back by a weight at its end, stretching the sore and inflamed tail as much as the bones will bear without breaking ; in this state of suffering, he must remain for two or three weeks without any change, or until the wounds heal, when the nicking is completed. Dr. Youatt remarks, that in England, when cutting the ears was so fashionable, horses would eventually be born with short ears, but it would be as feasible to expect, that if Mr. Bergh, the President of the Society for the Prevention of Cruelty to Animals, would extend his authority over the length and breadth of our land and prevent these barbarous cruelties, a similar

event would occur as happened in Balaam's time, the horse's mouth would be opened to bless him.

CRUEL PUNISHMENTS.

It is amazing how much purposed wickedness and cruelty there is exhibited in the maltreatment of the horse by some men. They are continually torturing the poor animal which is so unfortunate as to fall into their hands. Many appear to find one of their dearest delights in pulling the reins up tight, standing up in their wagon, and for minutes continue lashing the poor creature that is hitched to the load, and comparatively at his mercy. Surely, the reader, if not utterly lost to the feelings of humanity, must have seen such lashings inflicted upon the horse as would make the blood run cold in his veins. Such tyrants as those referred to above, imagine they have found some reason for their outrages, and it is impossible to tell the mischief they may do by the cruelties of which their vicious natures are full. In dealing out their curses, kicks and blows, they feel happy when they discover a tender place. The lash curls about the face; now it cuts the lips, where the sense of touch resides; the pain is severe. The horse shakes his head, striving to avoid a repetition, but all to no purpose; the lash is applied again, and truly it lights upon the eye. "It is as sport to a fool to do mischief; but a man of understanding hath wisdom." But what a severe retribution they are provoking! So sure as Heaven is just, such sins will be punished. "Blessings are upon the head of the just, but violence covereth the mouth of the wicked." When God, in His sovereign wisdom, created us with dominion over the beasts, He enjoined on us a corresponding obligation: that of protector and provider. In showing kindness to them, is in obedience and gratitude to Him; and while these considerations teach us to be merciful, do they not impress the ad-

monition, "Ye, therefore, who love mercy, teach your sons to love it too?"

OF EXPOSURE.

No one can look upon a horse suffering from cold, without feeling that in sensibilities, at all events, the two creatures are alike. Dr. Mayhew remarks, "that sympathy has been interpreted to mean no more than a conscious similarity of emotions," and we must agree with him in saying that such a definition is erroneous, or more sympathy would actuate man towards his slave. There are many men, and it is something for which we are very thankful that their number is constantly increasing, who are very careful of, and kind to their horses, who know the advantages of comfortable stables and of warm blankets, at the proper time. Such give a striking example of the Scriptural proverb, that "a righteous man regardeth the life of his beast." But this class does not embrace all horse-owners. "The tender mercies of the wicked are cruel."

Surely, the reader must have seen the horse taken out of the stable on a wintry day, to stand for an uncertain period before his master's door, there to remain, shivering in the storm, until it suits his owner's convenience. Next, he is driven along till foaming with perspiration; then, perhaps, drawn up in front of a hotel, tied to the post, there to remain, generally unprotected, in the cold, until some business is transacted or while another glass is drained to good friendship. During all this time, the horse, his faithful servant, stands at the door, facing the pelting storm, awaiting his arrival; and when he does leave the blazing fire and his jovial companions, need it be wondered that the horse should look around with a piteous look, imploring the tyrant for better treatment?

Let the reader reflect upon this, and say who would be

the guilty party were the horse taken with some violent disease. Surely, it is work of the master's doing. But he will not for a moment, try to connect the effect with a cause where he is to blame. But come with me, and let us counsel together. "Without counsel purposes are disappointed; but in the multitude of counselors, they are established." A common cold is a disease of too mild a type to be begot by so harsh a parent. The same exposure would have been a sufficient cause for a death-bed in your own case; and, as the horse's physical being is governed by the same natural laws as your's, is it strange, therefore, that Nature will oppose such arrogance, and, relieving the life by death, takes the abused horse from the tyranny of your oppression?

There cannot be a more noble or a more God-like action than to obey the Divine injunction, "Thou shalt not muzzle the mouth of the ox that treadeth out the corn." Lev. xxii. 28. "And whether it be cow or ewe, ye shall not kill it and her young both in one day." Deut. xxii. 7. "But thou shalt, in any wise, let the dam go, and take the young to thee, that it may be well with thee, and that thou mayest prolong thy days." The rebelling against these commands must be a grievous sin against God, who made man to have dominion over the work of His hands, while the obeying of them will be esteemed as long as virtue and religion are known among men, and a just God will reward them at last.

CHAPTER III.

DISEASES OF THE HORSE.—INFLAMMATIONS IN GENERAL.

CAUSES OF CONSTITUTIONAL INFLAMMATION.—OF LOCAL INFLAMMATION.—PROGRESS AND TERMINATION.—VARIETIES OF.—ACUTE INFLAMMATION.—HOW TO REMOVE CAUSE.—TO PURIFY THE BLOOD.—TO ALLAY PAIN.—BLEEDING.—PLACE AND MANNER OF BLEEDING.—INDICATIONS OF PULSE.—SUBACUTE AND CHRONIC INFLAMMATION.

IN the majority of diseases to which horses are liable, inflammation, local or constitutional, of different parts of the body, either internal or external, is the prominent symptom, and is the foundation of most, often constituting the disease itself, and sometimes being the beginning or the ending of other diseases. The frequent occurrence, and also the dangerous and often deadly consequences of inflammation, require the greatest possible knowledge of the most important events by which they are indicated, and for this reason the same shall be here amply and fully described.

CAUSES AND VARIETIES OF INFLAMMATIONS.

The causes are of two kinds—Constitutional and Local—of which the former deserves the precedence, inasmuch as without appropriate blood material no inflammation can be perpetuated.

The constitutional causes may be of the most opposite kind, although they all have the common property of rendering the blood impure. Excess of stimulating food, deficiency of food, inactivity and respiration of close air in dark, filthy stables, or over-driving and fatigue; imperfect action of the kidneys and skin, besides the poisons of decaying animal

matter ; glanders or other diseases which are epidemic, endemic, contagious or sporadic, which are produced by some morbid principle acting on the organism similar to a ferment. Continued exposure may disorder the whole blood and bring on general inflammation of the part chiefly subjected to it, or local inflammation.

The local causes are injuries and abuses of all kinds, whether from over-driving and excessive wear and tear, or from mechanical injuries of all sorts. For instance, a blow upon any part, if sufficiently severe, will cause inflammation of that part. Yet injury of is not of necessity followed by inflammation ; on the contrary, nature may go on quietly and make the repair, unless the blood of the injured horse be in a state inadequate to furnish healthy reparative material, or unless the injury be such as to destroy the life of certain tissues, (as poisoned wounds), or if nature be hindered by an open jagged wound that cannot be closed, or by the ill-treatment of wounds such as interfere with the exuded matter or hinders its development.

PROGRESS AND TERMINATION.

Inflammation once established may destroy life, either by obstructing the functions of some organ necessary to life, as the heart, lungs or brain, or by quick exhaustion, as in inflammation of the abdominal and thoracic organs, or by slower exhaustion from suppuration.

Inflammations terminate by resolution, effusion, suppuration, callosity, mortification or gangrene. By resolution is meant that the parts return to their natural condition. By effusion, that blood may be thrown out from the soft parts, as from mucus membranes ; that serum or colorless part of the blood may be thrown out by serous membranes, which often form adhesions. By suppuration, when abscesses are formed containing matter ; this may take

place upon the surface, such as boils, fistula, poll-evil and quittor. By callosity, whenever a part remains in a hardened, enlarged and stiffened state after an inflammation of the same has subsided; such a callosity is nearly always the consequence of exudation of fibrous matter remaining as a deposit in the previously inflamed part. By mortification, when death of the parts takes place; in this case, if the parts are sufficiently extensive or if it is an internal part, death of the whole body, if not relieved, is the result.

VARIETIES OF INFLAMMATION.

Of the varieties of inflammation, we shall confine ourselves to three, namely: Acute, Subacute, and Chronic. Such varieties depend on the cause and on the kind of constitution.

Acute inflammation is that which runs through its course quickly, sudden in its origin, violent in its action, and rapid in producing some one of the so-called effects of inflammation.

Treatment: Generally speaking, we should say, that the indications are, 1. To remove the cause. 2. To purify the blood from the source of morbid effusion. 3. To allay and soothe the pain in the injured part. 4. To moderate the afflux of blood. 5. To hinder degeneration of the fluids exuded and procure their absorption.

We shall proceed to speak in this order of the means by which each indication may be fulfilled:

1. *To Remove Causes.*—The taking away of any irritating substances, such as nails, slivers, stones and dirt, and placing the injured part under such conditions that nature in repairing the damage shall not be disturbed.

2. *To Purify the Blood.*—In most cases, and more especially, if the bowels are costive, the urine scanty, or of a milky appearance, a dose of six drachms Barbadoes aloes,

one-half drachm carbonate of soda ; dissolve in one pint boiling water ; when cool enough to administer, add twelve drops oil caraway, and give as a drench.

3. *To Allay the Pain of the Affected Part.*—This is the most important part in the prevention and treatment of inflammation. All pain and sense of injury should be soothed, if possible. For this purpose warm fomentations are particularly advisable. Take warm water one quart, and add extract belladonna four drachms, or foment with strong warm decoction of poppies. Should the horse be nervous and uneasy, rest in any position should be sought for, and for this purpose anodynes are of the greatest value. Take chloroform one ounce, tinct. opium one-half ounce, mix in half pint water, and give as a drench. This will save the horse from the exhaustion of pain and spasm, and prevent local congestion.

4. *To Moderate the Afflux of Blood.*—Since the increased flow of blood to the affected part and its stagnation therein are leading phenomena in acute inflammation, hence it is not strange that means for controlling this flow are of the very highest importance, and for this purpose bleeding is the only guarantee to the practitioner's success.

Bleeding is a measure life-giving in its proper use, and deadly if abused. But because our forefathers abused the practice is no reason why it should not be sometimes useful. Because it is not fashionable to bleed is no reason why it should not be valuable. This point is very clearly stated by Dr. Tilt : " No pathologist denies that hydraulic effects are produced by bleeding, and that by diminishing the quantity of blood we slacken the energy with which it flows to some particular organ, and thereby diminish the liability to congestion." It lessens the labor of the heart and lungs, and allows the remaining blood to be oxygenated and purified by natural influences ; it also promotes the action of the skin and bowels.

Place and Manner of Bleeding.—The proper place to bleed is in the jugular vein, about two inches down the neck, from where the two branches of the vein unite. In local inflammation, blood-letting from a vein near the injured part may be done with decided advantage.

The Manner of Bleeding.—This operation is so simple that none need have any fears about undertaking it. A small cord should be drawn tightly around the neck, about six inches below the place where the orifice is to be made ; as the vein fills cut smooth the hair so it may lie close and straight with the vein. Then blindfold the horse on the side the blood is to be drawn. Now lay a broad-shouldered fleam lengthwise and in the centre of the vein, holding it in the left hand, and, with a hard piece of wood in the right hand, strike the fleam with sufficient force to cut into the vein. The orifice should be large, so that the blood may be drawn as quickly as possible. Always bleed to attack the disease by causing a sudden reaction, for if the blood runs slowly so that the vessels have time to adapt themselves to their diminished contents, the bleeding may be continued almost to death without deriving any benefit. Permit the blood to flow till lividity about the eyes, fluttering pulse, and relief of pain indicate faintness, but never bleed the horse till he is ready to fall. This should always be avoided.

The Place to feel the Pulse, and how it should beat to indicate Bleeding.—The pulse is easily found upon the under side of the lower jawbone. Here the submaxillary artery crosses over the edge of the bone and feels like a small cord under the skin. In health the pulsations are slow and soft, beating from thirty-five to forty beats in the minute ; muscular or nervous excitement from fast driving, fear or other causes, will quicken the pulse from ten to fifteen beats in the minute. The horse should be perfectly quiet when feeling the pulse.

A quick throbbing pulse indicates inflammation ; bleed freely. Hard pulse, feverish excitement ; bleed freely. Full corded pulse : skin, hair and eyes showing a deranged condition. Chronic disease of long standing : bleed moderately two or three times, ten or twelve days apart. Small wiry pulse, beating from sixty to seventy per minute : usually inflammation of the bowels ; bleed freely. Oppressed wiry pulse, beating about seventy in the minute : usually inflammation of the respiratory organs ; bleed freely. Weak pulse : debility ; here bleeding means murder ; rather give stimulants to arouse the drooping energies to proper action.

Subacute Inflammation—Is a mitigated acute inflammation.

Chronic Inflammation—Is slow in its progress, less violent, and tends to last indefinitely.

Causes.—Its causes may be local or constitutional ; continued irritation ; or it may be the remains of acute inflammation, or the local manifestation of some constitutional disorder, such as general debility, stimulating food, disordered stomach or kidney ; consequently impurity of the blood.

Treatment.—Remove all constitutional disorder, by giving some useful alteratives. (See Alteratives, Pharmacopœiæ.)

CHAPTER IV.

DISEASES OF THE FEET.

PUMICE FOOT.—CRACKED HOOF.—FALSE QUARTER.—SEEDY TOE.—TREAD AND OVER-REACH.—QUITTOR.—THRUSH.—CORNS.—ACUTE LAMINITIS, OR FEVER IN THE FEET.—NAVICULAR DISEASE.

PUMICE FOOT.

Cause.—The horse pastured on swampy land having high-knee action, batters the feet on hard roads.

Symptoms.—A long slanting pastern, the hoof marked by rings, the crust broken where nails have been driven, bulging and weak sole, good bars and frogs.

Treatment.—The only possible relief is by shoeing with a bar shoe, the webb beaten out to form a dish, and a leather or rubber sole. The nightly application of equal parts oil tar, organum oil and glycerine will have a tendency to toughen the hoof.

CRACKED HOOFS.

Causes.—The hoof of the horse is epidermic tissue, composed of matted hair in fibres running parallel to each other in a direction from the coronet to the ground surface. These fibres are glued together firmly in a round and strong hoof; but in a weak one it sometimes happens that the gelatinous matter is deficient, by treading a long time upon hard and dry ground, or it may be caused by treading, cutting the coronet in two with the heel-corks.

Cracked hoofs are of two sorts, quarter-crack and toe-crack.

Quarter-crack is oftenest seen upon the inner quarter of the hoof; toe-crack in front.

Treatment.—The only possible remedy is to confine the hoof so it cannot spring open while the horse is in motion, and for this purpose, for toe-crack, shoe with a bar shoe with equal bearing, weld clamps of nail-rod to each heel of the shoe of sufficient length to be brought over the hoof, within an inch of the hair; punch a hole through each end large enough to admit a small carriage bolt, turn the ends up each side of the crack, and with knife and rasp cut the sides of the crack down to the sensitive flesh; when this is done, let the foot down, and with a sharp knife make an incision about an inch long lengthways the coronet, and through the same; then wash with water and chloride of zinc, six ounces of the former to one drachm of the latter. When all dirt is removed, apply the following: Take yellow wax, white resin, and Burgundy pitch, of each two ounces: melt together over a gentle fire; then add of hog's lard one-half pound; when melted remove from the fire, and while yet warm, add one ounce of spirits turpentine with a small quantity of corrosive sublimate previously dissolved in it. Spread a plaster of this upon cotton or linen cloth; apply warm over the crack; then draw the clamps over the plaster; put bolt through holes in the ends; turn a nut on tight enough to draw the clamps, in order to prevent the crack from opening when the horse leans his weight upon that foot, but not tight enough to cause pain. If you observe to keep a plaster on in order to keep dirt out of the crack, it will be nearly healed in six weeks, or before the shoe wants setting.

Treatment.—For quarter-crack, shoe with a bar shoe with equal bearing all around the foot from toe to heel. Some recommend relieving the cracked quarter and putting the bearing upon the frog. But as the frog is an

elastic body and springs with pressure, the crack will open every time the horse strikes that foot to the ground. I prefer keeping the bearing off the frog, and have it the same on the cracked quarter as upon the sound part of the foot. After the shoe is properly put on treat the crack with knife, rasp and plaster, the same as recommended for toe-crack, and it will heal with as little difficulty, but instead of working the horse with either toe or quarter-crack, a better way will be, and one that will show more mercy, is to turn the horse into a clean box-stall and there let him remain until well.

FALSE QUARTER.

This is a deficiency of the outer wall ; a portion of the coronary substance has been lost, and it is beyond the art or medication of man to restore. All that can be done is to put on a bar shoe, chambered out in order to have no bearing at the seat of false quarter. Dr. Mayhew recommends that the crust near to the weakened part should be beveled off so as to join the soft horn with an insensible edge. Apply a plaster over false quarter as that recommended for cracked hoof. This treatment will, perhaps, mitigate the suffering, which is all that can be done.

SEEDY TOE.

This is a division of the outer wall and the sole ; it invariably begins at the toe, caused by overwork and exhausted frame. The only treatment consists in absolute rest, the cutting away of detached horn, and keeping the foot soft with tar and glycerine, or poulticing with linseed meal ; do not work the horse until the hoof has become perfect ; if worked the division will extend from the toe to the heels,—in consequence the horse is ruined for life.

TREAD AND OVER-REACH.

Causes.—The cause of tread is, the horse being kept standing on a slanting floor in the stable, and he places one hind foot on top of the other in order to rest the back tendons. Over-reach is caused by the horse becoming tired and striking the outer side of the fore coronet with the inner part of the hind foot. A wound, and sometimes a severe one, is the consequence. False quarter, or quitter, is likely to be the result.

Treatment.—First wipe away the dirt and remove with a knife any loose edges that cannot unite; apply a plaster as recommended for cracked hoof; put over a light bandage and so protect the wound from dirt and atmospheric effects.

QUITTOR.

This is a chronic abscess of the foot; and, from the difficulty which nature has to overcome in finding a way for the matter to reach the surface, it is always forming sinuses, or pipes. Quittor may be caused by over-reach, bruise of the sole or prick of a nail. The treatment must be the same as for fistula or pollevil; an opening must be formed so that no matter shall be confined, but allowed to come away as fast as it forms, and inject daily a part of the following solution: chloride of zinc two drachms, water one pint. Dr. Stewart gives us a prescription, in his "American Farmer's Horse Book," which I think answers still better. It is: Take half-pint turpentine, and add one ounce powdered corrosive sublimate and one ounce gum camphor. I have seen some very bad quitters cured by the daily use of this liniment.

THRUSH.

This is an offensive discharge from the frog, caused by standing in filthy stables, cow-dung-stopping, and ex-

hausted body. The only treatment to be adopted is, the removal of the horse to a clean, well ventilated stable, liberal feeding, and the washing of the frog with a quart of water, to which has been added an ounce of bromo-chloralum ; then take a half-pint alcohol, add powdered corrosive sublimate one ounce ; mix a part of this with slaked lime, and spread it over the frog to harden it and stop the discharge.

CORNS.

Corns are of two kinds, the new, and old or suppurating ; both are caused by bruises to the sensitive sole. The unequal bearing of the shoe is the prolific agent in their production.

Treatment.—The treatment of corns is seldom difficult at their first appearance, but for the suppurating it can be only palliative. The diseased part must be carefully pared out at each shoeing. Having done this, take glycerine one ounce, and add carbolic acid two drachms ; introduce some of this into the opening, and place over it some tow or cotton, and shoe with a bar shoe chambered at the seat of corn, with a leather sole.

ACUTE LAMINITIS, OR FEVER IN THE FEET.

This disease has been known for many years under the terms founder and fever in the feet. It is an inflammation (which may be acute or chronic) of the parts between the wall and the coffin bone, including the laminae, whence the name by which it is now known.

Causes.—The causes are either long confinement in a standing position, traveling upon hard roads, not accustomed to them, or by the over-heated horse getting a sudden chill by standing in snow or cold water. With such abuse it is not uncommon for the horse to be seized with acute laminitis.

Symptoms.—The feet will be found intensely hot, and the arteries to beat with great violence. The pain is unusually great, owing to the want of space for the swelling which accompanies all inflammations. The horse stands all in a heap, the back roached, and head erect; the hind feet are drawn under him to take the weight from the front ones as much as possible, while the sore and inflamed front feet are pushed out to receive the least possible weight, and that upon the heels.

Treatment.—In the first place everything must be avoided that will irritate or excite the horse; work gently, and with the least possible noise; place the horse in a sling and put his front feet in a bucket of warm water, and let them remain until softened, when the shoe should be removed easily, by drawing one nail at a time. This done, bleed in the toe, and give the following dose of physic: Take castor oil six ounces, Barbadoes aloes three drachms, carbonate of soda two drachms, oil of caraway fifteen drops; dissolve the aloes and soda in a pint of warm water, and then add the other ingredients, and give as a drench. Should the symptoms indicate extreme suffering and inflammation, give fifteen drops tinct. of aconite and one-half ounce tinct. opium; repeat three times a day, if necessary.

SUBACUTE LAMINITIS.

This is a variety of the former disease. It may be the remains of the former disease or be caused by thrush, navicular disease, or standing idle in the stable for a long time.

Symptoms.—Shambling gait, contracted feet, or falling of the coffin bone.

Treatment.—The treatment must be by shoeing with a bar shoe and leather sole, to deaden the concussion.

NAVICULAR DISEASE.

Cause.—Stepping upon stones, points of frozen dirt and the like, injuring the fleshy frog, perforans tendon and navicular bone.

Symptoms.—The symptoms will be, when in motion, acute lameness, bringing the sore foot sparingly to the ground, and throwing most of the weight upon the sound one; when standing, the sore foot will be pointed out, resting upon the toe to relieve it.

This disease, if not relieved, will terminate in ulceration or contraction of the foot and a shrunken or degenerate state of the muscles of the shoulder. Nature has provided certain parts for certain purposes, and when these purposes are avoided, those parts diminish in size; so with the horse's foot and shoulder, in navicular disease, the mechanical action is impaired, the foot is spared in progression, and pointed while standing, which obviously changes its shape from the round healthy hoof, to the narrow heels and hardened frog. The shoulder sympathizes with the foot; thus the degenerate or withered muscle as a consequence. This is termed by some horsemen as sweeney of the shoulder. Sweeney, or the withered muscle of the shoulder, and contraction of the feet are not disease, but take place as the consequence of disease.

Treatment.—We can recommend no better treatment for navicular disease than to shoe with a bar shoe, equal bearing, heels slightly raised with a leather sole, filling in under the leather with tar and glycerine, and blistering around the heels with the liniment recommended by Dr. Stewart: half-pint turpentine, one ounce powdered corrosive sublimate, one ounce gum camphor; mix and apply daily, and bathe in two or three times with a hot iron.

CHAPTER V.

DISEASES AND INJURIES OF THE LIMBS.

GENERAL REMARKS.—BONE SPAVIN.—SPLINT.—RINGBONE.—STRAIN OF THE FLEXOR TENDON.—SPRAIN OF THE BACK SINEWS.—CURE.—OCCULT SPAVIN.—WINDGALLS.—BOG SPAVIN.—THOROUGH-PIN.—CAPPED KNEE.—CAPPED HOCK.—CAPPED ELBOW.

GENERAL REMARKS.

THE diseases of bone may be included under these four heads, namely: 1. Exostosis or increased growth of bone, the consequence of increased action in the nutrition of the parts. 2. Caries, or ulceration, the result of inflammation. 3. Ankylosis is the result of caries in the two joining surfaces of a joint, producing bony union between them, and thus preventing the after motion of that part. 4. Fracture or dislocation by external force.

BONE SPAVIN.

This disease consists in exostosis from the external surface of the tarsal or small bones of the hock, showing itself on the inner side of the hock joint, caused most generally by a blow or strain. The symptoms of spavin are in recent cases, whenever the horse is taken from the stable will limp in his action, the lameness soon goes off by driving, and may not return until the joint has become stiff by rest. In motion the foot is raised with a quick jerk, dragging of the limb, indicating pain and want of action in the joint.

With regard to the different modes of treatment that have been recommended and adopted for spavin, I must

say that most of them have been born in wickedness—the heaping of cruelties upon suffering misery. Firing, firing with blistering, setons, with or without subcutaneous scarification and division of the nerve, all have been tried, and all require the horse to have absolute rest for a definite period. And we may inquire at the eleventh hour, if nature (in the same time left unobstructed in her efforts) would not have done more good than the appliance of all the above arts and medications that the wicked imaginations of man has devised.

Now we encounter the important question, what can be done for a spavined horse. If the animal be not lame, let it alone. However large and unsightly the deposit may be, do not run the risk of exciting a new action in a part where disease exists in a quiescent form. If the animal be lame, give good food and absolute rest. Do not consent to have it tortured for a chance. Do not sell it to have it live out the remainder of its days in misery and torment. But while inflammation exists try to abate it, and allay the pain by well rubbing the part with a mixture of aqua ammonia, chloroform, sulphuric ether, of each one ounce, spirits turpentine one-half ounce, and olive oil three ounces. The pain having subsided, apply with friction some of the following ointment. It may reduce the disease by provoking resolency. It will also enable nature to rectify man's abuse, will do more good in the same time, cost less money than the devilries usually adopted without success: beniodide of mercury one drachm, lard one ounce. Mix, and apply once daily for three or four days. To be followed by the daily use of arnica, to be painted on with a brush. Tinct. of arnica lotion one ounce, water twelve ounces. After applying the above for two or three days, continue the treatment by fomenting with warm water, two or three times daily.

SPLINT.

This disease is an exostosis, generally making its appearance on the inner side of the limbs below the knee, connecting the splint bone by bony union with the large metacarpal or cannon bone, causing severe lameness. When its situation is such as to interfere with the back sinews or suspensory ligament, give treatment the same as recommended for spavin.

RING-BONE.

Ring-bone is an osseous deposit or exostosis, resembling spavin and splint. It is caused by the violent efforts the animal makes in drawing a heavy load up some steep hill. Could the horse only speak he would have sufficient cause to overwhelm man with its injuries. The disease may involve one or more joints. It may exist as a slight enlargement in front, above the hoof, or it may quite encircle the coronet. Treatment the same as recommended for spavin.

STRAIN OF THE FLEXOR TENDON.

The main cause of this disease is the horse drove down a steep hill with a heavy load behind it. Here the stress is all thrown upon the back tendons. The strain seldom occasions much lameness. But the horse being worked constantly, the injured part is daily excited. The limping may disappear with exercise, but the horse is always sure to be stiff the next morning. Thus, a low chronic inflammation is kept up, and in consequence the sinews gradually contract.

Treatment.—Keep the horse in the stable on suitable food, bandage, and keep constantly wet with cold water. Do not work the horse until sound. If this treatment fail, then nothing will be of any benefit but division of the tendons.

SPRAIN OF THE BACK SINEWS.

Sprain of the back sinews of the hind legs is a similar disease, originated from similar causes as sprain of the flexor tendons.

Treatment.—Cold fomentations ; shoe with a high-heeled shoe to prevent over-shooting at the fetlock joint. If, however, the tendons should continue enlarged, blister with beniodide of mercury, as recommended for spavin.

CURB.

Curb is an inflammation of the perforan tendon sheath, causing an enlargement at the back of the hock, and is usually caused by a blow or strain. The treatment should be directed to abate the inflammation with the following lotion : borax 2 ounces, water 4 quarts. Apply a cloth doubled two or three times to the back of the hock by means of India rubber webbing tied above and below the joint ; keep constantly wet with the above lotion until inflammation is banished, when blister with beniodide of mercury as recommended for bone spavin.

OCCULT SPAVIN.

Occult spavin is an ulceration between the tarsal bones composing the hock. At every step two ulcerated surfaces grate upon each other, causing the acutest suffering. The causes and symptoms are similar to bone spavin. No enlargement may be seen for a long time, and when it does appear it will be in the centre of the hock, which will be enlarged both in front and inner side ; in consequence, ankylosis is established, and the bones are no longer capable of the slightest movement one upon the other. The treatment will be precisely on the same plan as for bone spavin.

WIND GALLS.

Wind galls are caused by an inflammation of the bursa mucosa sacs situate above the fetlock joint. These sacs are for the most part lying under the tendons. They are naturally filled with an oily kind of fluid, the use of which is to lubricate surfaces over which the tendons play. In consequence of bruises or sprains this fluid collects sometimes to a great extent. The treatment consists in pressure by means of bandages and cold lotions. Blistering with beniodide of mercury and rest will remove them entirely. But very often the horse is no sooner put to work again than they return as bad as ever.

BOG SPAVIN AND THOROUGH-PIN.

Bog spavin and thorough-pin are all of them originally of the nature of wind galls. Bog spavin is nothing more than a wind gall on the hock joint. Thorough-pin pierces through the thinnest part of the hock. It may appear single, but rarely present without bog spavin. These diseases must be treated in the same way as recommended for wind galls.

CAPPED KNEE AND CAPPED HOCK.

Capped knee in the fore limb answers to capped hock in the hind leg. Both may have like causes and produce like effects in most respects. They must be reduced like wind galls, with absolute rest, pressure, cold lotions, and blistering. Yet capped knee will sometimes expose the horse to open joint, when it must be treated daily, by applying with a feather, Dr. Stewart's liniment: turpentine one-half pint, powdered corrosive sublimate one ounce, gum camphor one ounce; mix.

CAPPED ELBOW.

Capped elbow is precisely similar in its nature to cap-

ped hock and must be treated in the same way. It is usually caused by the horse lying on the heel corks of the shoe on the fore foot.

CHAPTER VI.

INJURIES—THEIR NATURE AND TREATMENT.

FISTULA.—POLL-EVIL.—INFLAMMATION OF THE VEIN.—OPEN SYNOVIAL JOINTS.—WOUNDS.—SHOULDER SPRAIN.—STRAINS OF THE HIP-JOINT AND STIFLE.—DISLOCATION FRACTURES.

FISTULA.

FISTULA consists of a deep abscess on the shoulder, ending in an ulcerous sore with numerous pipes or sinuses, usually caused by a blow or bruise. The treatment before abscess is formed should consist in keeping the skin irritated by the daily application of alcohol one pint, powdered corrosive sublimate one ounce, gum camphor one ounce, tincture iodine two ounces. But when abscesses are formed the only chance of a cure must be reposed in the free use of the knife. Direct the knife in order to separate the greatest number of pipes at one opening, which should be made as low down as possible, in order to allow all the matter to run out as fast as it forms. This done wash out the part with water four quarts, bromo chloralum one ounce ; wash with this lotion as necessity requires, and apply once daily the above liniment with a feather or small glass syringe. It will then heal by granulations the same as ordinary wounds.

POLL-EVIL.

Poll-Evil is exactly similar in its nature to fistula, being provoked by the like causes. The treatment must be

the same as that described for fistula. Caution is necessary with regard to the direction of the knife; never permit it to be applied to the root of the mane. Here an important ligament lies. Always direct the knife from the mane, slanting down the neck.

INFLAMMATION OF THE VEIN.

Inflammation of the vein sometimes occurs after bleeding, by the horse being turned out to pasture or his eating food from the level of his feet. When swelling is seen in the immediate vicinity of the orifice withdraw the pin and foment with warm water; give rest, as the origin of this is probably to be found in some impurity of the blood. If the inflammation should not be reduced by this treatment then apply blisters over the part.

OPEN SYNOVIAL JOINTS.

Acute inflammation of the synovial-membrane is produced by local causes, such as blows, strains, and especially by penetrating wounds. The joint most frequently affected is the knee.

A penetrating wound usually punctures some of the bursa mucosa sacs. Rarely does it occur that the joint itself is punctured so that synovia from between the bones escapes. Open synovial cavities or open synovial joints may be known by the escape of synovia in the form of small oily globules, severe lameness, indicating a terrible aching pain in the joint, aggravated by the slightest motion, great swelling occurring soon after the pain. In the treatment adopted every local and constitutional measure to avert or subdue inflammation of the synovial membrane, which might prove fatal. Bestow as much kindness and patience upon the poor suffering horse as you would upon a sick child. Let everything be done without

noise or violence. A harsh word or a blow may now, when the whole system is shaking with pain, do more harm than all the medicine in the world can repair. The wound should be carefully cleaned with a lotion composed of tincture of arnica two ounces, water one quart. This done, close the wound and cover with a piece of lint dipped in water one pint, chloride of zinc one drachm ; bind loosely to keep in its place with a thin piece of cloth. Dress the wound in this way twice daily, and keep the horse as motionless as possible. Allow plenty of green feed. If the bowels are costive give a mild dose of physic ; then from one half to an ounce of tincture of opium mixed in a little cold water, at night to relieve pain, and fifteen drops tincture of aconite mixed in a little water three times daily, to avert or subdue inflammation.

WOUNDS.

Wounds may be defined to be separations by external violence of parts which ought to be united. The chief varieties are : the incised wound, or those made by clean-cutting instruments, produced by the least violence, and generally admit most easily of repair ; the punctured, or those made by something whose length greatly exceeds its breadth, such as slivers, and pricks by nails of all sorts ; the lacerated, in which parts are torn ; the contused are those produced by bruising. The lacerated and contused wounds are produced with great violence, difficult to heal, and more likely to slough or suppurate.

We find that the repair of wounds may be accomplished, as Dr. Paget describes, by five different modes, namely : 1. By immediate union. 2. By primary adhesion. 3. By granulations. 4. By secondary adhesion, or the union of granulations. 5. By healing under a scab.

The Process of Healing by Immediate Union.—Dr. Paget holds that two conditions appear essential to it : first, ex-

actness of the coaptation of the wounded surfaces ; and secondly, the absence of all inflammatory process : hence, it appears that inflammation is not necessary to promote the healing process.

There are many examples of wounds healing by immediate union in man, where the wound heals perfectly in four or five hours, without the individual having any pain in the part after the moment of the infliction of the wound. But it rarely occurs in the horse. I do not recollect of seeing but one case, although we may presume it would occur oftener if man did not so violently usurp nature's efforts. But most men no sooner attempt the treatment of a wound than all the stimulating liniments (which will provoke inflammation), balsams and salves must be applied to heal it. These nostrums alone, in their opinion, contain the material for repair ; they do not think for a moment, of nature having anything to do. They take all the responsibilities : and, again, if the wound is healing by granulations, some men must be washing it daily with soap and water, and by one single wipe with the sponge the granulations may all be rubbed off, which it had taken nature perhaps twenty-four hours to place there ; or, if the wound be healing under a scab which nature has thrown out, as a covering to protect it from the air, this, by some men must, be picked off every day. When there are so many obstacles in the way of nature's efforts, let the reader reflect, and say, if it be strange that it should take wounds so long to heal, and that they should so often suppurate or proud flesh grow in them.

Now, we encounter the important question, what can be done for a wound ? The treatment of all wounds comprise four indications : 1. To stop bleeding. 2. To remove foreign and irritating bodies. 3. To bring the divided parts into their natural position and keep them in union. 4. To promote adhesions.

1. *To Stop Bleeding.*—Moderate pressure, a raised position and blowing into the wound will be sufficient in most cases, but if the bleeding prove obstinate, take matico leaves one-half ounce, boiling water one pint; infuse, and when cold apply to the wound, or by pressing a puff-ball on the wound is as sure a styptic as we know of. If an artery be wounded, which may be known by the spurting of blood, it must be taken up and tied.

2. *To Remove Foreign and Irritating Bodies.*—The removal of foreign bodies, if any are in the wound, should be effected as soon as possible, by the fingers or by forceps. The best way to get rid of dirt or gravel is with water and sponge.

3. *To Bring the Divided Parts into their Natural Position.*—In bringing the divided parts into their natural position the edges must be made to meet as nicely as possible, because the more that the parts are adapted the less chance will there be of suppuration, and the more speedy and free from deformity will the cure be. The edges of the wound may then be kept in their place by cross strips of adhesive plaster. If a large lacerated wound, stitches should be used. Direct the needle so that one-half inch or more of the skin will be enclosed by the stitch on each side of the wound, run all the stitches through necessary, then bring the edges together and tie the stitches.

4. *To Promote Adhesions.*—Parts that unite by adhesions is by the effusion and organization of coagulable lymph, and every circumstance that will disturb the lymph exuded or that will cause it to decompose must be avoided. The wounded part should be kept as motionless as possible. The horse may be placed in a sling if necessary. Punctured wounds should be incised so that no matter can accumulate. The healing process may be excited by applying carbolic acid one drachm, water four ounces; or,

chloride of zinc, one drachm, water one pint. This will probably prevent any tendency to unhealthy action.

SHOULDER SPRAIN.

Shoulder Sprain, or what is termed in horsemen's language, sweeney, is most always chosen as the seat of injury in case of lameness of the fore extremity, and those fellows who pretend to have a profound knowledge of horse ailments will always exhibit the withered muscle of the shoulder as a proof of their correctness, but if the limb be thrown out of use, as in navicular disease, this degenerate state of the muscles will always occur. Shoulder sprain may be caused by a fall or by a slip, causing the legs to be widely separated. The symptoms will be, instead of the withered muscle, a round plump shoulder, caused by inflammation and swelling. The horse in progression will drag the limb and rarely if ever lift the toe from the ground, and it will cause great pain if the foot be lifted and drawn forward.

The treatment will consist in bleeding, followed by warm fomentations until the inflammation is subdued, when seton. This is done by taking a piece of tape about a foot long, smeared with blister ointment, and passing it through beneath the skin, leaving the ends hanging out with a knot tied upon each. The ends of the tape should be sponged daily, to remove any accumulated matter, smeared with the ointment, and drawn in until a profuse discharge takes place.

STRAINS OF THE HIP-JOINT AND STIFLE.

Strain of the hip-joint may be caused by the hind feet slipping. It may be known by a dropping of the affected hip, but a still better test, as Mayhew describes, is to hold some soft substance over the joint, then to strike it with a mallet; the shock will be communicated to the seat of

lameness and elicit an energetic response ; here the disease is so deep seated that fomentations and blisters will be of no use. The only chance of a cure must be reposed in rest, and a seton inserted in the skin adjacent. Strains of the stifle may be the result of a blow or strain, which may be known by tenderness and swelling of the joint. The treatment must be rest and warm fomentations, followed by blistering.

DISLOCATIONS.

Dislocations may be caused by muscular action or external violence, and may be known by deformity of the joint or unnatural prominence at one part and a depression at another, with the loss of motion of the joint.

Treatment.—The reduction of dislocations should be effected by getting the head of the displaced bone into such a position that the muscles may draw it into its socket. The joint usually affected by dislocation is the stifle, and the reduction of the same may be done by tying a rope, (round the pastern of the affected limb), of sufficient length to be passed over a pulley ahead of the horse and brought back ; this should be laid hold of by an assistant, in order to pull the leg forward and upward, while the operator stands by the hips, with both hands pushing the head of the displaced bone inward until drawn into its place. Dr. Spooner gives an excellent advice : after the bone has been returned, to place an assistant by the horse's side, with strict orders to hold the joint in its place for some hours. Such advice should be always carried out ; if not, the cure will be rendered extremely difficult by the uneasiness of the horse, which was created for action, and the tying him in any way to keep him still will only make matters worse.

FRACTURES.

Fractures may be divided into two varieties, namely : simple and compound.

When compound fracture occurs, that is, when the broken edges of bone penetrate through the tendons and skin, no treatment should be adopted. Better destroy the horse at once, and so put an end to his misery and your own labor.

Simple fracture may be complete or partial, (greenstick fracture), part only breaking and the rest bending. With regard to treatment, the horse must be placed comfortably in slings ; the broken parts must be adjusted in their natural position by means of holding the upper part of the limb while the lower part is stretched in a direction to restore the limb to its natural length and shape. This done, a bandage must be smoothly applied, one four inches wide and about fifteen feet long, saturated with starch ; wrap the bandage five or six times around the limb so that it lays smooth, then apply splints of wood to each side, carved to shape the limb, when wrap around over the splints the remainder of the bandage.

CHAPTER VII.

DISEASES OF THE EYE AND SKIN.

SIMPLE OPHTHALMIA.—SPECIFIC OPHTHALMIA.—CATARACT.—OBSTRUCTION IN THE LACHRYMAL DUCT.—MANGE.—WARTS.—TUMORS.—SWELLED LEGS.—SIT-TART.—MALLENDERS AND SALLENDERS.—CRACKED HEELS, OR SCRATCHES.

SIMPLE OPHTHALMIA.

SIMPLE ophthalmia, or inflammation, is the most common disease to which the horse's eye is subject. It may be

caused by foreign bodies getting into the eye, such as hay-seed or chaff, but the worst remains to be told; the violence of man contributes largely to this disease, by whipping over the head or by exposure. The symptoms will be the eye half closed, with eyelids slightly swollen; the cheek bedewed with tears, and conjunctive membrane of a milky appearance; the white of the eye will be covered with a fine net-work of red vessels; and the haw, that delicate membrane which is situated at the lower corner of the eye, is usually so inflamed and enlarged as to partially cover the eye. In the treatment do not attempt to cure disease of one organ at the expense of another, by extracting wolf teeth (these have no connection with the eye, and impossible to be the cause of inflammation), or by cutting the haw. In the name of mercy, spare this organ, which God, in his sovereign wisdom, bestowed to the eye as a washer, to remove any offending substance. Please resort to milder measures, and when the inflammation is subdued the haw will be reduced to its natural size and position. Carefully remove any foreign substance from the eye, if any; bleed moderately, if the horse will bear it; feed plenty of green food, and foment the eye four or five times a day with borax one-half ounce, water one quart.

Purulent ophthalmia, or the second stage of simple ophthalmia, may be known by mucus purulent secretions from the eye. Then use as a wash thirty grains tannate of zinc in six ounces of water and one-half ounce of mucilage.

SPECIFIC OPHTHALMIA.

Specific or periodic ophthalmia, is the effect of a disease, known by horsemen, as moon eyes. This disease is, undoubtedly, often brought on by the darkness and foul noxious vapors which are emitted in the low vaults which the horse is so often consigned to by man. The symptoms appear very suddenly, and often there is a great and sudden

improvement for a time, but the same causes that brought on the first attack frequently provokes another. The white of the eye looks of a deep red color (the iris). The colored part of the eye often exhibits one or more white specks upon it, with intolerance of light and unusual flow of tears. In the treatment, constitutional as well as local measures must be adopted. Remove the horse into a clean well ventilated stable. His whole system has become poisoned by the noxious vapors of the one he has been standing in, and the aqueous humor of the eye in consequence is undergoing a fearful deterioration. The origin of this is, undoubtedly, to be found in some impurity of the blood. For constitutional treatment bleed moderately and give some powerful alterative, such as sulphur resin and glauber salts, mixed in equal parts. Give a table-spoonful of this mixture every night in a feed of scalded oats or bran mash. The local treatment will consist in guarding the eye from the effects of light until it is able to bear it. For this purpose tie a piece of cloth to each end of the halter, above the eyes; keep this wet with the tannate of zinc lotion, and foment the eye four or five times a day with the same.

CATARACT.

Cataract consists in opacity of the crystalline lens or its capsule, which prevents the passage of the rays of light and precludes vision. The causes are obscure.

Symptoms.—The horse shying by viewing objects imperfectly. The pupil seems closed by an opaque body of a whitish color, the pupil dilating and contracting. The opacity goes on increasing until the horse is blind.

This disease in the horse must be considered as a hopeless case. If inflammation exists foment with the borax lotion, which will afford temporary relief.

AMAUROSIS, OR PALSY OF THE OPTIC NERVE.

Amaurosis consists in loss of power of the optic nerve, or retina, causing partial or complete blindness, without any alteration in the organization of the eyes. Setons or blisters below the eyes are the most successful remedies.

OBSTRUCTIONS IN THE LACHRYMAL DUCT.

The lachrymal duct is a small opening leading from the eye to the nostril. Any foreign substance getting into it will prevent the escape of tears. The obstruction may be removed by injecting water up the nasal termination of the duct.

MANGE.

Mange is generally produced by contact with horses affected with the disease. It corresponds with the itch of the human subject, caused by an insect which, in the horse, is visible to the naked eye. The symptoms will be an excessive itching of the skin, with the hair falling off in patches. The treatment must be directed to the destruction of the insect, which may be done in the following manner: brush the horse until the scabs are removed, (when the acari may be seen moving about like mites in a cheese), when apply the following from head to foot with a brush: Take of sulphur six ounces, sperm oil one pint, spirits of turpentine three ounces, corrosive sublimate two drachms. Dissolve the corrosive sublimate with the turpentine by rubbing in a mortar; then mix with the other ingredients. Apply this, and allow it to remain for two days, when wash with soap and water, rub dry, and dress the sore parts with glycerine four ounces, carbolic acid four drachms, turpentine one ounce. After a cure has been effected carefully clean all the apartments by washing and fumigating with sulphur.

WARTS.

Warts may be divided into two varieties, namely, the seed, and blood wart.

Seed warts are generally small, and usually make their appearance on the eyelids and nose. They have little hard points, and grow in patches connected with the cuticle and cellular membrane, from which they derive their growth. They indicate a morbid condition of the skin, but do very little harm, and often disappear without treatment.

Blood warts, like seed warts, have been known to grow on all parts of the body. They are a fungous growth from the cellular membrane, of a spongy texture, and bleed upon the slightest irritation.

In the treatment, nitric acid will be found to be the best remedy for eating down the growth and destroying the seed. But this must be handled with the utmost possible caution. To prevent the acid from destroying the healthy skin, surround the wart on all sides with a coating of lard ; then pick the scab from the wart, and apply the acid daily, until properly reduced, when apply carbolic acid one drachm, mixed in one ounce of glycerine, once daily until a cure is effected.

TUMORS.

These are so various that it is impossible to particularize them. In every case a surgeon should be consulted before they are meddled with.

SITFAST.

This affection consists in an ulcerated sore with hard or bony edges, resembling an ulcerated corn on the human foot, caused by the chafing of the saddle or the back-pad. Like fistula and pollevil, sitfast unquestionably has its origin in some impurity of the blood, and the chafing of the

saddle or the back-pad prepares the soil while the morbid principle of the blood gives it growth.

Treatment.—Remove the excrescence with a knife, and treat the wound with the chloride of zinc lotion, one grain of the chloride of zinc to an ounce of water. During the local treatment keep the bowels laxative, with bran mashes. Mix and give in the night and morning mash, a tablespoonful of the sulphur resin and glauber salt, mixed in equal parts, which may carry off the morbid effusion of the blood.

SWELLED LEGS, OR ŒDEMA.

The cellular membrane of the skin of the legs are liable to two varieties of swelling, namely: inflammatory swelled leg, called by horsemen weed; and ordinary swelling or filling of the legs.

Inflammatory swelled leg comes on suddenly, accompanied with fever, almost always showing itself on the inside of the hind leg above the hock, which is very hot and tender. In the treatment, bleed if necessary, followed by a dose of physic. If the swelling is not reduced in three or four days, give the diuretic powder as recommended for sitfast.

Ordinary swelling, or simple œdema, may be caused by any circumstance which hinders the return of venous blood, for instance, when horses are first brought in from grass their legs almost always swell more or less, owing to their nonperformance from want of space to exercise, or, secondly, it may be caused by a depraved state of the blood, arising from disease of the kidneys, renal dropsy, diuretic medicines, such as sweet spirits of nitre, and nitre, known better by the name of saltpetre, are often the sole cause of the legs swelling. Some men use diuretics continually, whether they are wanted or not, so that the kidneys become diseased and refuse to act; in consequence,

a depressed state of the blood, effusion of serum, and œdema in the limbs. In the diagnosis navicular disease, or injuries of the feet must not be overlooked. The treatment must depend upon the exact cause. If the swelling is caused by the change from exercise to confinement, turn the horse loose into a box-stall when in the stable. Remove the cause, and the effects will follow. If weakness or depressed state of the blood is the cause, give tonics, diuretics or physic, such as tend to drain the blood of its impure materials and give vigor to the circulation, and by means of local stimulation, such as hand-rubbing, and by bandages. If diuretics are adopted let them be of the mildest kind, such as powder recommended for sitfast. If the fibrin should separate from the serum and cause an indolent thickening of the cellular tissue, the treatment should then be blisters. Blister with biniodide of mercury, as recommended for bone spavin.

MALLENDERS AND SALLENDERS.

These diseases consist in the appearance of a foul scabby eruption, with skin underneath hard and stiff, (a species of lepra in the human subject). They are of the same nature, differing only in location, mallenders showing itself at the back of the knee, and sallenders at the bend of the hock, caused by filth and getting the legs wet and leaving them undried.

The treatment required is keep the parts dry and clean, and apply daily the following lotion: one drachm of carbolic acid to one ounce of glycerine.

SCRATCHES, OR GREASE.

This eruption consists in swelling of the legs and heels, which soon cracks and exudes an offensive watery serous fluid, which inflames and spreads the eruption to every part that it touches. The causes may be either constitu-

tional, as swelling of the legs, œdema and general debility, or local, as filth and chilblains, by the legs getting wet and never dried. In the treatment constitutional measures will have to be adopted sometimes, as well as local. For constitutional treatment give every night in a bran mash a tablespoonful of that mild diuretic and powerful alterative powder, sulphur resin and glauber salts, mixed in equal parts; and for local treatment, we can recommend nothing better than to keep the parts dry and clean, and applying twice daily the carbolic acid and glycerine, one drachm of the former to an ounce of the latter.

CHAPTER VIII.

DISEASES OF THE BRAIN AND NERVOUS SYSTEM.

PHRENITIS, OR INFLAMMATION OF THE BRAIN.—MEGRIMS, OR EPILEPSY.—BLIND STAGGERS.—SLEEPY STAGGERS AND MAD STAGGERS.—TETANUS, OR LOCKJAW.—PARALYSIS.—STRINGHALT.—SUN-STROKE.

PHRENITIS, OR INFLAMMATION OF THE BRAIN.

THIS is a disease characterized by the horse suffering the greatest agony by a violent pain in the head, redness of the eyes, intolerance of light and sound, watchfulness and furious delirium. Its causes are the same as other inflammations. A practice in which some men indulge their ugly passions by striking the horse over the head with the butt-end of a whip may induce it or by over-feeding and light work, and by sun-stroke. Before the horse becomes infuriated the most active treatment must be pursued. Repeated bleeding, relieving the bowels by physic, back-raking and injections and pouring ice-water upon the head. In the violent stage, no treatment, however well-directed, will be of any use. In the name of mercy, shoot the horse

at once, and put an end to his mighty anguish before he has done more injury to himself and demolished everything within his reach.

MEGRIMS, OR EPILEPSY.

This is a cerebro-spinal disease, which may be idiopathic or symptomatic, spontaneous, or accidental, which occurs in paroxysms with uncertain intervals between. Dissection has thrown no light on its pathology, therefore the causes are unknown. These paroxysms are characterized by insensibility and by convulsive motion of the muscles. Frequently the fit attacks suddenly, at other times it is preceded by stubbornness and stupor. The reins are pulled and the whip plied to no purpose. One horse may stop suddenly, stare about, and then go on as though nothing had happened, while a second may be seized with an irrepressible desire to kick the dash-board to pieces, thus endangering the driver's shins, and a third may persist in running into shop-doors and smash them down with tremendous violence. Then comes a loss of sensation, sudden falling down, distortion of the eyes, grinding of the teeth, foaming at the mouth, convulsions of the limbs, difficult breathing, with sometimes involuntary discharge of dung and urine. When these symptoms occur the majority of men are for bleeding in the mouth. This is of no use, and nature never intended the blood to be either food or drink for the horse. Loosen the harness at once, and let the person in charge seat himself upon the horse's head and remain there until the animal is perfectly recovered, then speak kindly to him, and permit him to rise. The ordinary duration of a fit is from five to ten minutes; sometimes it goes off in a few seconds.

In the treatment the cause must be sought after, and if possible removed. If the disease is symptomatic of irritation in the stomach or bowels, by worms, spasms of the

diaphragm, indigested food, gastritis, etc., remove the irritation if possible. Ultimate recovery will be very unfavorable. One grain nitrate of silver mixed in a ball with molasses and oil meal, may be given daily. But generally all that can be done is to keep the horse in a well ventilated stable, with liberal feed and kind treatment, and always use him where he can do no harm. Do not attempt to sell him, as such a sale is illegal. The law demands that everything sold shall be fit for its uses.

BLIND STAGGERS.

This is a name vaguely applied to megrims, the disease which we have just described. The term staggers is applied by some men to every disease that causes a staggering gait. Hence we have stomach staggers, brain staggers, sleepy staggers, and mad staggers, each applied from effect rather than cause. Blind staggers is properly applied to the disease in question, for it indicates two effects of the disease, namely: blindness and staggering gait, and points to its true pathology. As this disease is not known in Europe or anywhere else except in the Southern States of America, we are compelled to draw from the pages of Stewart, in describing it, a gentleman who, in our opinion, was the first to discover its true pathology. He describes the corn grown upon new land in the Southern States to be badly eaten by a species of greenish yellow worm, which leaves upon it a dust, or excrement of a very poisonous nature. As an evidence of the poisonous qualities of this worm dust, if a plaster, made by mixing it with vinegar, be placed upon the back of the hand, it will raise a blister in a short time. Nature supplies to the eyes of all animals of the higher types of organism a watery secretion to wash the eyes and keep them moist, and when this fluid has performed its office it passes off through the lachrymal duct into the nose. And, as Stew-

art describes, "when the horse eats the worm-eaten corn, he snuffs the excrementary dust upon it up his nose, and it sometimes lodges in the lachrymal duct. Its poisonous qualities cause them to inflame, swell and fester, from which they shortly become closed, so that the water from the eyes cannot be discharged. These ducts communicate with the nasal cavities of the head, which, in like manner, become filled with the retained poisonous secretion. They remain not long in this condition before disease and inflammation set in. The surrounding parts are next involved. Finally, the optic nerve—the nerve of the eye—becomes affected, and at once blindness and staggering begin. The brain and the whole head partake of the rapidly-spreading derangement, and presently, the stomach, also, with the entire line of the intestinal canal. The dreadful virus affects every vital organ, and nearly every part of the body. It is a strange and peculiar poison, equally so, in its nature and effects." The horse sometimes becomes so delirious, as a result from the mighty anguish raging within his skull, that it is impossible to approach him. But when the horse can be approached, Dr. Stewart recommends the following treatment: Bleed the horse as long as he can bear it, then give a drench, as follows: a half pound of epsom salts in a pint of warm water, to which add a gill of moderately strong tobacco juice. The effects of this drench is to make the patient quiet, so that you may handle him as you please. But we think if one ounce of chloroform and one ounce tincture of opium, mixed in a little water, was given as a substitute, it would be more effectual and more safe.

He also recommends swabbing the nostrils with tobacco juice, quite warm, to open the ducts, and let the matter collected in them run out. As the disease consists in an obstruction of the lachrymal duct, a cure must depend upon the opening of them. In addition to the swabbing,

we would recommend forcing a jet of lukewarm water up the duct with a syringe, the same as recommended for obstruction in the lachrymal. Keeping the horse quiet, feeding him green food, and raising a blister over the region of the brain, constitute the treatment.

SLEEPY STAGGERS AND MAD STAGGERS.

This disease is evidently a form of apoplexy. The most frequent causes are high feeding and limited exercise. But a horse over-gorged will undoubtedly be a proper subject for the mad stage of this disease, or mad staggers. The horse may get loose in the stable and reach the grain-box, and from there he eats until he becomes comatose. But from this state he soon arouses with a burning thirst, and when water is reached he drinks until the stomach is stretched to the uttermost, which causes inflammation. The brain sympathizes, and speedily an increased flow of blood to that organ occurs, and the horse becomes delirious. Sleepy staggers is characterized by loss of sensation. The horse is unconscious of surrounding objects; he sleeps, or seems to do so; he is in a comatose state. The circulation and breathing alone testifies that life remains. He now begins to foam at the mouth. His breathing is laborious and loud, and speedily he is in a mad phrensy.

The disease generally consists in pressure upon the brain, either from turgescence of blood vessels or from increased flow of blood: hence, the treatment indicated is very plain. Bleeding must be speedily carried to its full extent. Next give chloroform and tincture of opium, of each an ounce, mixed in a little water, as a sedative. If caused by over-gorging, bleed, and give one pint castor oil with ten drops croton oil. The stomach may also be relieved through sympathy, by unloading the bowels, which may be done by back-raking and giving injections.

But, as Dr. Youatt remarks, "if the golden hour is permitted to pass, or if remedial measures have become ineffectual, the scene all at once changes, and the most violent reaction succeeds. It may be said to change to ferocity; but the animal has no aim, no object in what he does. He darts furiously at everything within his reach, but no mind, no design, seems to mingle with or govern his fury. Another, and another remission, and a return of the exacerbation follow, and then wearied out, he becomes quiet; but it is not the quietness of returning reason—it is mere stupor. This continues for an uncertain period, and then he begins to struggle again; but he is probably unable to rise. He pants, he foams; at length, completely exhausted, he dies."

TETANUS, OR LOCKJAW.

Tetanus is a disease which consists in a rigidity of all the muscles or merely of some, without alternations of relaxation. There are two forms of this malady, differing more in their mode of causation than in the symptoms by which they are characterized. They have been named idiopathic and traumatic. Idiopathic tetanus arises from constitutional causes, from some disorder of the blood or nervous system, without wound; and the traumatic tetanus, or that which originates directly from a wound. The causes of traumatic tetanus are predisposing and exciting. The predisposing causes are a rapid change from hot to cold and damp weather, exposure, an irritable disposition, physical exhaustion, and disorder of the stomach or bowels. Traumatic tetanus may be prevented, in a great measure, by graduating the clothing of the horse according to the temperature of the air.

The exciting causes are where nerves are exposed, or where they are pressed, stretched or torn, or by punctured wounds of the feet, or the operations of nicking and dock-

ing. Sometimes it is provoked by the great pain of a wound during its inflammatory state. But the most common period is where the wound is nearly healed.

The symptoms which characterize its actual accession, are, rigidity and stiffness about the muscles of the lower jaw and neck, observed first, in most cases, upon the side corresponding to the wound ; the patient is unable to open the mouth, the nostrils are dilated, the eyes retracted, with the haw thrust forward over them on raising the head, the ears erect and still, and the countenance a picture of misery. When the disease has progressed no farther than this it is called lock-jaw, and in mild cases, or if the malady be of an idiopathic type, the prognosis is favorable for arresting the disease at this stage.

More often, however, the disease steadily advances until the patient is scarcely able to stand and plants his feet widely apart to prop himself up, the tail becomes a fixture, the bowels are costive, and, sooner or later, all the muscles of the body become rigid, constituting true tetanus.

All kinds of treatment have been tried for tetanus, and it is said that each has resulted in success ; but it does seem that whatever remedy we employ we cannot hope for recovery, except by sustaining the system until the local irritation (which we assume to be the cause of the spasms) has been subdued. Remove all offending substances from the wound if there be any ; make incisions if necessary, for the free discharge of matter ; and if nerve or tendon happens to be on the stretch divide it. This done, everything after depends upon keeping the horse quiet and upon getting the bowels open. Every nerve is alive to excitement, and the horse cannot endure the slightest sound. Pulling and hauling him about to administer medicine will do more harm than all the remedies that can be employed (no matter how well directed) can counteract Mix one pint castor oil and ten drops

croton oil, and give without exciting the horse, if possible; then remove him to a solitary stable, bedded with saw-dust; place within his reach a pail of linseed or some other nourishing gruel; allow no noise, and permit no operation. Bleeding must not be used unless there is satisfactory evidence that the disease is dependent on inflammation of the spinal cord.

PARALYSIS.

Paralysis in the horse is generally never more than partial. It locates itself in the hind extremities, and may be characterized by an unsteady rolling gait, one hind foot always getting in the way of the other. But as the disease advances it becomes one of nervous debility, and the horse is unable to rise. The immediate cause is generally pressure, either by blood effused or by serum, or by vascular turgescence of the spinal cord.

In the treatment, at its outset, bleeding may be advisable, but as the malady generally becomes one of nervous debility, it requires stimulants to the paralyzed parts or to the mucous membranes, friction by hand-rubbing over the loins or blisters may be applied to stimulate an absorption of the effused blood, or serum, and thirty drops tincture *nux vomica* may be given, mixed in a little water, three times daily. This drug has the property of exciting movements where the will has no longer power, but it must be handled with the utmost possible caution. It is a powerful irritating poison, and will cause stringhalt and tetanus in all their severest forms. As soon as the dose given as recommended above takes effect upon the system, which may be characterized by sudden spasmodic jerking of the muscles, the dose ought to be diminished or suspended. The disease generally admits only of palliation, and is extremely apt to recur, and undoubtedly the most humane plan is to put the horse out of his misery by a well directed rifle ball.

STRINGHALT.

Stringhalt is characterized by a peculiar snatching up of the hind limbs in succession, which movement is entirely involuntary. The causes supposed are two-fold: first, Messrs. Percivall, Goodwin, and Mayhew, suppose the cause to exist upon injury to the posterior portion of the spinal column. Dissection has revealed to them that "the injured part throws out a spicula of bone no larger than a needle-point perhaps, but it presses upon the spinal marrow, and lasting stringhalt is the result." Secondly, McClure and others think the "balance of power is not equal, the articular ligaments of the hock-joint are stronger than the muscles of the thigh. Hence, the moment the horse lifts his foot from the ground the leg is instantaneously snatched up by the power of the ligaments." The writer's idea of the causes are in accordance with both of these observations: the first, of stringhalt in its severest form, where it is perceptible at every step; the second, in cases where stringhalt is seen only for a few steps after the animal has started, or when he is forced to back up. Many colts before breaking, or before they are three years old, show these symptoms, especially in cold weather, and never become much worse during their lives, unless horribly abused—a disease with their nervous temperament, which they have inherited from their sire or dam.

There is no known treatment of the slightest avail.

SUN-STROKE—COUP DE SOLIEL.

This disease consists in sudden prostration and stupidity, caused by the action of the sun's rays and excessive heat. The prognosis is very unfavorable, except in a mild case. Remove the horse into a cool shady place, take off the harness and give carbonate of ammonia one drachm, tincture of ginger four drachms, and a quart of ale, as a

drench, to act as a powerful stimulant to excite the action of the whole nervous and vascular system ; keep the head wet with ice-water, by placing a sponge full of the liquid between the ears. The temperature of the body should be carefully watched, and everything possible should be done for the comfort of the patient.

CHAPTER IX.

DISEASES OF THE NOSE AND THROAT.

BLEEDING AT THE NOSE.—NASAL GLEET.—CATARRH.—EPIDEMIC CATARRH.—
SORE THROAT, OR LARYNGITIS.—COUGH.—REARING.—HIGH BLOWING AND
WHEEZING.—BRONCHOCELE.

BLEEDING AT THE NOSE (EPISTAXIS).

THE causes of bleeding at the nose, or epistaxis, are two-fold, namely : the rupture of blood vessels in the membrane of the nose, or hemorrhage from the lungs. The organization of the membrane of the nose is very favorable to it, as the blood vessels are but slightly supported. It generally flows drop by drop perfectly fluid from but one nostril. Its exciting causes are anything that will induce local congestions, as running, coughing, blowing the nose, etc., especially in fat over-fed horses. A common case of epistaxis requires but little treatment. Astringent washes of alum, sulphate of zinc, tannin, or an infusion of matico leaves may be syringed up the nostril. If it should recur give a light diet and a dose of physic.

Hemorrhage from the lungs may be characterized by frothy blood flowing from both nostrils. The treatment can seldom do more than palliate. Bleeding from the neck vein, and giving sixty to seventy drops fluid extract of

digitalis will arrest the flow of blood, but at best the life will only be prolonged for a short time.

NASAL GLEET.

This is a disease which consists in a distortion of the face and an irregular discharge of foetid matter from one nostril, caused by an ulcerated molar tooth in the upper jaw, injuries to the frontal bones, or by catarrh.

In the treatment, remove the irritating cause, if any, swab out the nostril with water and carbolic acid—a pint of the former to four drachms of the latter. Feed green food. Give a dose of physic or alterative medicine to purify the blood.

CATARRH.

Catarrh may occur in three varieties which, however, are merely manifestations of the same disease with different or severer symptoms. When it occurs as an inflammation of the mucous membrane of the nasal cavities accompanied by slight general fever, it is called catarrh, or cold; when the discharge becomes chronic and tends to last long or even indefinitely, chronic catarrh, or ozena; and when it occurs as an epidemic, attacking a number of horses at the same time, and which is referred to some particular condition of the atmosphere, with which we are utterly ignorant. It differs from indemic, the latter being owing to locality, but it is obvious that should a particular constitution of the air exist, along with a favoring endemic condition, these combined influences may act in the causation of this disease, called epidemic catarrh, catarrhal fever, influenza, distemper, morfoundering, etc. These names apply to one common disease, which we will call epidemic catarrh.

Catarrh, or cold, is caused in most instances by exposure. The first thing observed is slight shivering, ac-

accompanied by a staring coat. But as the disease advances the membrane of the nose becomes red, dry and swollen, then wet with a discharge which soon becomes yellow, thick and purulent. The eyes are generally inflamed, the horse is dull and drowsy, with no appetite, owing partly to the impaired state of his health. The treatment will depend upon the severity of the case. In mild cases, usually, by not exposing the horse for a few days, and giving every night a bran mash with five or six drachms of powdered nitre in it will suffice, together with drinks of slippery elm or linseed tea. In more severe cases, however, where the bowels are costive, and a severe cough accompanied with fever, green food and bran mashes may be given until the bowels become laxative. Fifteen drops tincture of aconite mixed in a little water should be given thrice daily until the fever abates, when it should be suspended and a tablespoonful of the following may be given every night to relieve the cough: take of powdered gum myrrh one ounce, oil tar one ounce, tincture of ipecac and squills, of each one ounce, honey two ounces, alcohol one pint; mix, and shake the bottle well before using. Dose, one tablespoonful every night. If the throat is sore a liniment of equal parts hartshorn, oils spike and origanum may be rubbed in night and morning.

Should the discharge become chronic, foetid and purulent from the nasal passages, injections of rhatany and bromo-chloralum will be found useful. The following is the ordinary plan of treatment adopted: take of bromo-chloralum one-half ounce, and mix with thirteen ounces of decoction of rhatany root; shake well, and inject a quantity up the nostril daily.

EPIDEMIC CATARRH.

This disease is observed to be particularly prevalent in the spring of the year or in a wet and unhealthy autumn. It is not contagious, but is brought on as an epidemic by the same causes being applied to nearly all subjects alike, which is the particular condition of the atmosphere with alterations of heat and cold moisture and dryness. The symptoms are at first similar to those already described as pertaining to common catarrh, but as the disease advances the fever is more severe and does not abate at the customary period. The appearance of the horse is characteristic of severe disease. The disease almost in every instance begins with a shivering fit, pulse weak and slightly accelerated; the eyes and membrane of the nose are redder than usual, and sometimes his glands, submaxillary and parotid, are tumefied; there is no appetite, and the belly is tucked up. On the second or third day excessive weakness comes on, the cough becomes more painful, and there is generally a heaving of the flanks. The treatment may in most cases be cut very short. As soon as the shivering is observed, give one ounce sweet spirits of nitre, and clothe him warmly with hood and blankets, hand-rub and bandage his limbs, and it is more than probable that the disease will be cut short. But should the disease have gone on unobserved, to the appearance of the symptoms detailed, the treatment then should be conducted on the principle of husbanding the strength. Bleeding and physicking here means murder. Diminish the vital action, by giving fifteen drops tincture of aconite in a little water three times daily, and if the throat is sore, blister as recommended for common catarrh. Should the disease put on the typhoid type or run on to bronchitis or inflammation of the lungs, the case must be treated according to the directions hereafter laid down for those diseases.

SORE THROAT, OR LARYNGITIS.

Sore throat (as we have already shown,) may originate from other causes, however, laryngitis is by far the most common disease which provokes it. Laryngitis is a disease which consists in an inflammation of the larynx, caused by exposure, the breathing of noxious vapors, and the cruelty of the bearing-rein. When it is present the symptoms are short and quick breathing, attended by a gurgling noise, which may be heard at a little distance from the horse, or by placing the ear against the trachea; want of appetite; accompanied by an inability to swallow. In the act of drinking, the greatest part of the water returns by the nostrils, and what does enter the gullet is forced down by a series of audible gulps. The horse exhibits great pain. When the larynx is pressed upon, violent paroxysms of coughing becomes frequent, and the animal at times is almost suffocated. The neck is stiff, and as the inflammation increases, considerable swelling of the throat ensues. The pulse is quick and throbbing, and the membrane of the nose is of a scarlet hue.

In the treatment, the pulse requires our first attention. The pulsations should be reduced to the standard 35 to 40 beats a minute, by a dose of tincture of aconite, fifteen drops in a little water, which should be repeated every fifteen minutes until vital action is diminished. After this, prepare the following drench: chlorate of potash two drachms, water one gill; mix, and give three times daily; blister the throat as recommended for common catarrh, and clothe him with hood and blanket. Always keep within his reach a pail of gruel and a drink of slippery elm or linseed tea. In severe cases, where the animal is almost suffocated, he should be steamed as described by Mayhew, four or five times a day, which may be done in the following manner: "procure a large bag and put into it a pail of saw-dust, over which pour one ounce spirits

turpentine ; fasten the bag to the horse's head, then pour boiling water upon the saw-dust, through an opening at the side of the bag ; renew the boiling water every twenty minutes, and retain the bag upon the head an hour each time."

COUGH.

Cough consists in an effort to disgorge morbid secretions which are thrown out by the glands of the mouth and throat, and sometimes by the lungs ; also to force secretions from the glands necessary to the comfort of the mucous membranes. Every disease that affects the respiratory organs, whether the larynx, trachea, bronchi, lungs or pleura, will give rise to a cough ; and if the disease becomes chronic so will the cough. Also, indigestion and the irritation caused by worms are apt to cause more or less coughing, by sympathetically affecting the lungs and throat. The only plan of treatment likely to be successful is to ascertain the cause of irritation and remove it. Yet cough sometimes remains after an acute attack of disease has been thoroughly subdued.

Cough attends more frequently as a symptom than as a disease ; however, the hot and contaminated atmosphere of the stables, coarse and dusty hay and irregular work will give rise to cough, as a distinct affection of the larynx. For the cure of chronic cough, keep the horse in a stable where the air is pure and entirely free from the noxious vapors of ammonia ; feed scalded oats or bran mashes, clean bright hay, and wet the same, and give linseed or slippery elm tea for drink. Clothe comfortable, and give half a pint of the following, as a drench : spirits turpentine two ounces, mucilage slippery elm six ounces, gum ammoniacum half an ounce, balsam tolu one drachm, licorice one drachm, tincture opium three ounces, water two quarts. Should no improvement result, some of the other

expectorants laid down in the Pharmacopœia may be substituted.

ROARING.

Roaring in all its varieties may be caused by the abuse of the bearing-rein. The horse checked up tight, has a continued pressure upon the larynx; or chronic cough may continue till the membrane covering the larynx becomes thickened and sensitive; then cough and roaring are companions through life.

There is no treatment of the slightest avail. Mr. Reeve discovered a way to prevent the noise generally made by roarers, which consists in passing a strap around the nose of the horse just over the region of the false nostrils, with pads upon the inner surface to press upon said false nostrils and diminish the channel of the true ones. This principle, according to Reeve's idea, "is to modify the atmospheric supply to the lungs, that during exercise the volume of air, when it arrives at the glottis, should not exceed that which passed through its opening, when the horse was tranquil, and which (from the fact of the sound being absent,) does not at that time produce roaring."

High-blowing and wheezing are perfectly healthy and natural habits, which admit of no remedy.

BRONCHOCELE.

This disease signifies an hypertrophy, or morbid enlargement of the thyroid gland. This body resides upon the larynx, immediately under the jaw. It is a projecting tumor, occasionally as large as a hen's egg, in the situation and of the shape of the thyroid gland.

Bronchocele is what is termed an endemic disease, that is, one extremely prevalent in certain localities, amongst which may be mentioned the chalky parts of England and the mountainous mining districts of the United States,

especially in the neighborhood of the Lake Superior iron mines. The drinking of water impregnated with calcareous particles is perhaps the most probable cause that can be assigned. It rarely causes any inconvenience, except occasionally, difficulty of breathing, especially when the horse is drove with a tight bearing-rein. It however, generally yields to treatment without the animal having any extraordinary care or attention. Let the following drink be given every night: iodide of ammonia ten grains, chloroform one drachm, camphor water eight ounces. At the time stated for giving the drink rub into the enlargement thoroughly a portion of the annexed ointment: iodide of ammonia four drachms, glycerine four drachms, lard three drachms.

CHAPTER X.

DISEASES OF THE CHEST AND ITS CONTENTS.

BRONCHITIS, OR INFLAMMATION OF THE AIR PASSAGES.—PNEUMONIA, OR INFLAMMATION OF THE LUNGS.—PLEURISY.—HYDROTHORIX.—HEAVES.—SPASMS OF THE DIAPHRAGM.—DISEASES OF THE HEART.

BRONCHITIS, OR INFLAMMATION OF THE AIR PASSAGES.

BRONCHITIS is an inflammation of the lining membrane of the bronchial tubes, and may be caused by whatever obstructs the perspiration—generally the legitimate fruits of the master's cruelty. He drives far and fast till the horse's sides are bedewed with perspiration. He stops at the front of some pleasant mansion, and remains for an uncertain period under the roof, making himself comfortable beside the blazing fire, or enjoying a social glass

with his friends. During that time the horse stands outside, shivering and freezing in the mud or pelted by the storm. Mayhew remarks: "Let the horse be rendered comfortable, and the man be stationed outside. The result would be the same; the man would in that case possibly suffer from bronchitis. Does intelligence require a more startling evidence of the link which binds master and servant while sojourners upon this earth?"

As a consequence of that treatment, a cold, perhaps, was first observed; next inflammation of the larynx. But as the inflammation extends downward from the larynx through the trachea, into the bronchi and air passages of the lungs, it has an aptitude to involve the entire contents of the thorax. The membrane of the bronchial is sensibly diminished by becoming filled with blood so that great difficulty and an increased rapidity of breathing is the consequence. The appetite is gone, and the horse is averse to move; he remains standing and motionless, from an evident dread of suffocation. There is a hard dry cough, evidently suppressed and painful; the breathing quick and audible; the nasal membrane of a deep florid red; the temperature of the legs and body is very uneven—here cold as ice—there of a blood heat; danger cannot be mistaken. When the ear is placed to the throat and chest there is heard a dry rattling sound. Upon the formation of mucous, this is succeeded by gurgling soap-bubble sounds; this frothy mucous poured from the membrane still further interferes with breathing, and provokes a constant cough to get rid of it.

Treatment.—Philosophy teaches that by exposure, if cold has driven the blood from the surface, heat will draw it back, and thus relieve the internal engorgements, and if held there sufficiently long, or until Nature is again capable of carrying on the circulation in her own way, a cure will be effected. The first thing to be done is to place the

horse in a large loose box-stall, where there is a pure atmosphere ; then clothe him warmly with hood and blankets ; next administer an alcohol sweat, by placing an iron kettle on the floor under the horse ; into this pour some alcohol and set it on fire ; mind the blankets hang well down, so that he will have the whole benefit of the heat. Keep the alcohol burning until the patient is in a profuse sweat, at the same time steep a teaspoonful of cayenne pepper in two gills of alcohol, and rub the limbs with it long and well, and apply woolen bandages ; maintain the perspiration produced with the burning alcohol until the disease yields to the treatment, by giving every three hours a pint of tea as a drench, made of equal parts of pleurisy root and catnip ; or, in absence of this, give at night liquor acetate of ammonia three ounces, sweet spirits of nitre one ounce. Give every half hour tincture of aconite fifteen drops, tinct. belladonna one drachm, mixed in a wine-glass of water. Keep the patient well covered all the time and avoid drafts of cold air. If the perspiration is hard to maintain, and the breathing continues difficult, rub the whole surface with the alcohol and cayenne pepper, especially the region of the thoracic organs. Let the food consist entirely of thick gruel, and his drink tepid slippery elm or linseed tea. Grass may be allowed upon recovery being assured, and when hay is given, mind it is thoroughly damped. Nothing more retards recovery or provokes a cough after bronchitis than the inhalation of dust with which hay is so often covered.

As the symptoms begin to subside the doses of medicine may be lessened, and the time between doses lengthened until the disease is fairly under control. This course may be repeated, or modified to meet returning or changing symptoms.

PNEUMONIA, OR INFLAMMATION OF THE LUNGS.

As this disease affects an organ which is absolutely necessary to life, it must be always attended with danger. An inflammation of the lungs is sometimes a primary disease ; but generally, it is the consequences of other diseases, as epidemic catarrh, bronchitis, pleurisy, etc. It arises from the same causes as bronchitis or pleurisy, namely, an obstructed perspiration from exposure ; or from over exertion, accompanied by a consequent absence of nervous energy, called congestion of the lungs.

Pneumonia generally begins with a chill, the horse shivering all over ; the extremities are deathly cold ; the breathing is quick and distressed ; the pulse, though oppressed, is quick, beating from 65 to 70 per minute ; there is a short cough, evidently causing violent pain ; the mouth and breath are very hot, and the legs are separated outward to the farthest limit. On placing your ear to the side, if a sucking or crackling noise is heard or like a pair of bellows to work, make up your mind to a case of pneumonia. No time must be lost. Remove the sufferer to a box-stall, and bleed ; let the blood flow from a large orifice till the patient is relieved, which may be known by the animal raising the head and the lividity of the eye denoting a sense of life. Bleed only once, and if a little blood abstracted accomplishes the object in view, that little is sufficient. Be guided neither by the quantity drawn or by the pulse. Bleed only to attack the disease and relieve the heart and lungs ; but never attack the horse, by bleeding him until he is ready to fall. After bleeding give the same treatment as directed for bronchitis : the alcohol sweat, rubbing and bandaging the legs, medicine, food, drink, etc. An expectorant in confirmed cases will be needed. Let it be the same as recommended for catarrh : powdered gum myrrh one ounce, oil

of tar one ounce, tincture of ipecac one ounce, tincture of squills one ounce, honey two ounces, alcohol one pint. Mix, and give as a dose one tablespoonful three times a day.

PLEURISY.

Pleurisy is an inflammation of that membrane called the pleura, which covers the lungs, and which is also folded upon the sides or walls of the chest. Pleurisy, like the other diseases of the respiratory organs, usually begins with a chill. It is attended with a sharp violent pain in the side, difficult breathing, with a quick, full and hard pulse. The ear placed against the side detects a grating sound, and the respiratory murmur is dull. As the disease advances, the pain in the side becomes so violent and lancinating that pressure made on the interspaces between the ribs will almost deprive the animal of consciousness.

The timid animal shrinks and tries to avoid the tormentor ; full breathing cannot be indulged, from its increasing the difficulty. Before the breath is half drawn the flanks fly backward ; the cough also aggravates the pain ; the fore foot is scarcely ever quiet ; the head is frequently turned toward the side with a look expressing anxiety and suffering.

The condition of the system clearly indicates the treatment. The temperature of the surface and extremities is much diminished, showing that the blood has gone to the internal organs which are the least able to bear it.

The first indication is to relieve the pleura from the increased flow of blood to it. For this purpose bleed but once until relieved. This done, restore and maintain the circulation by sweating with burning alcohol, and adopt the same treatment as directed for bronchitis. Mind and give the drinks of pleurisy root and catnip.

The first marked sign of improvement during diseases of the lungs is the animal lying down. Permit him to lie

quietly, respect his repose, and be grateful your horse has so far recovered from such dangerous diseases.

HYDROTHORIX.

Hydrothorix, or water in the cavity of the chest, is one of the unfavorable terminations of pleurisy. The inflammation of the pleura has terminated in effusion, and serum is thrown out—the means by which the serous membrane relieves itself, or the inflammation may terminate in suppuration of the pleura, empyema—abscess of the chest. In either case, the matter floats in the thoracic cavity and can only be discharged by an incision betwixt the ribs. Hydrothorix may be indicated by great difficulty of breathing, especially when the front quarters are the lowest. Place the ear to the side while an assistant strikes the horse a sharp slap on the opposite one; if a dull sound is heard—splashing noise, audible, with entire absence of respiratory murmur, all is confirmed. The horse has dropsy of the chest.

The treatment consists in drawing the skin forward, and passing a trocar between the eighth and ninth ribs, upward and onward until resistance ceases; the trocar is then within the cavity. Withdraw the stilet and the water usually flows forth; when the trocar is withdrawn, let the skin fly back to form a valve over the wound.

HEAVES.

Heaves, broken wind, thick wind, and wheezing, are all terms vaguely applied to one disease, namely, emphysema of the lungs. Injuries or diseases of the larynx, trachea, bronchi, or lungs, are the most frequent causes of this affection. It consists in the infiltration of air into the areolar texture, or dilatation and rupture of the air-cells. The air is inhaled into the lungs quickly; but in exhalation, the lungs are too weak to expel all the air; there-

fore, a quantity of unchanged air is left in the lungs. This unchanged air being carbonized, is a constant source of irritation. To get rid of this the horse makes two acts of exhalation. But the lungs have not power to expel it, and immediately after this second act the muscles relax and the flanks fall in. This confirms the case as soon as observed.

The treatment can only mitigate the symptoms, a cure is impossible. By no means can the art or science of man build up the ruptured walls of the pulmonary tissue. The disease may be concealed in a great measure by feeding cut food, damped hay, carrots, potatoes, etc., attention to feeding and exercise, and by giving a dose every night of the second expectorant for chronic cough laid down in the Pharmacopœia, especially when the cough is severe and breathing difficult, is all undoubtedly that can be done.

SPASMS OF THE DIAPHRAGM.

The diaphragm is a muscle stretched transversely between the thoracic and abdominal cavities, which it separates from each other. When it contracts the chest is enlarged, and the abdomen diminished. It is then an inspiratory muscle. It is also an expiratory muscle by diminishing the capacity of the chest. When this muscle is overstrained by a severe drive, it acts spasmodically in drawing in the air, which places the horse at once in danger of suffocation. It may be characterized by the internal organ giving a sudden flap. There is no cure for this malady. Relief may be afforded by giving the following drench: Take of chloroform and tincture of opium, of each one ounce. Mix in one gill of water, and give every three hours until relieved, and afterwards use the horse affected with it only at slow work.

DISEASES OF THE HEART.

The diseases of the heart which the horse is subject to are characterized by the following names : pericarditis, dropsy of the heart, heart clot, and hypertrophy. The causes of heart disease are unknown. Yet pericarditis probably arises from constitutional causes, as without appropriate blood material no inflammation can be perpetuated.

Pericarditis consists in an inflammation of the pericardium, which is a membranous sac which envelops the heart and the arterial and venous trunks that pass from or into it.

The symptoms which point out that the pericardium is the seat of disease, are the following : The pulse is jarring and jerking ; the breathing is by catches ; the skin is often bathed with sweat, as in acute rheumatism, which is often found in connection with it, forming one of the most dangerous occurrences ; the action of the heart is evident to the eye, and pain will be occasioned by pressure over the region of the heart ; on auscultation, the movements are found jerking and tumultuous, and a sound of a sawing or rasping character will be heard. As the local symptoms resemble those of pneumonia, adopt no treatment until the case is confirmed, when bleed freely, and follow with a drench of chloroform and tincture of opium, one ounce of each, mixed in one-half pint water. All the means required in the most violent internal inflammations may be used. This is generally an incurable disease ; therefore a sudden and unexpected death is usually the issue.

Dropsy of the heart depends on diseases of that organ.

Heart clot consists in collections of blood in the heart. The presence of this disorder may be suspected during the course of pericarditis, and especially at the close of diseases

of the lungs, the heart's action becomes suddenly tumultuous, accompanied with a murmuring sound.

Hypertrophy, or fatty degeneration of the heart, is often met with among well conditioned animals. The pulse is strong, full and jarring ; and, on the least excitement, the shock of the heart's action will shake the whole body.

There is no remedy of the slightest avail.

CHAPTER XI.

DISEASES OF THE STOMACH AND BOWELS.

DYSPEPSIA.—BOTS.—WORMS.—INFLAMMATION OF THE BOWELS.—SPASMODIC COLIC.—FLATULENT COLIC.—DYSENTERY.—PROLAPSIS OF THE RECTUM.—PARALYSIS OF THE SPHINCTER MUSCLE.—DROPSY OF THE ABDOMEN.

DYSPEPSIA.

DYSPEPSIA, or cribbing, is a very common disease among horses which have been long inhabitants of the stable, especially when they are constantly fed on the same articles. The horse is surrounded by ignorance and neglect on every side. Man requires a change of diet, yet he expects the horse, exposed to the noxious vapors of a confined stable, to go on eating hay and oats for years together, without injury to health. The perpetual feeding on the same articles disarrange the digestion and cause the generation of acid gasses in the stomach. When we observe the human dyspeptic subject expelling wind, and at the same time consider the horse's inability to vomit, we cannot, therefore, wonder, to see the horse resort to some such act as cribbing or the licking of cold substances to relieve his stomach of the burning acid gasses.

Cribbing consists in placing the upper incisor teeth against any solid substance, and from this fixed point the

animal strains backward, curbs and excites the muscles of the neck, and a portion of wind, accompanied by a grunt, is forced up.

Dyspepsia, like many other diseases is more easily acquired than cured. To relieve cribbing, first render the air of the stable pure. Give a daily allowance of salt, and the alterative laid down in the Pharmacopœia for debility of stomach, with a moderate change of food, may be tried with great probability of success.

BOTS.

According to the investigation of Bracy Clark, "the two principal kinds of fly of the same species whence the bot is derived are the *æstrus equi* and *æstrus hæmorrhoidalis*.

"The *æstrus equi*, or stomach bot, deposits her eggs on the hair of the horse inside of the knee and next to this on the side and back part of the shoulder, and less frequently on the extreme end of the hairs of the mane. But it is a fact worthy of attention that the fly does not place them promiscuously about the body, but constantly on those parts which are most liable to be licked with the tongue, and the ova, therefore, are always scrupulously placed within its reach.

"The part chosen by the *æstrus hæmorrhoidalis* for the purpose of depositing her eggs, is the lips of the horse. These flies appear sometimes to hide themselves in the grass, and as the horse stoops to graze, they dart on the mouth or lips, and are always observed to poise themselves during a few seconds in the air, while the egg is preparing on the extended point of the abdomen.

"The eggs thus deposited, when they remain on the hairs four or five days, become ripe, after which time the slightest application of warmth and moisture is sufficient to bring forth in an instant the latent larva. At this time, if the tongue of the horse touches the egg, its oper-

culum is thrown open, and a small active worm is produced, which readily adheres to the moist surface of the tongue, and is from thence conveyed with the food to the stomach.

“At its first hatching, it is, as we have observed, a small active worm, long in proportion to its thickness, but as its growth advances, it becomes proportionably thicker and broader, and beset with bristles.

“They are very frequent in horses that have been at grass, and are in general, found adhering to the white insensible tissue, or coat of the stomach.

“They usually hang in dense clusters to this white cuticular lining of the stomach, and maintain their hold by means of two dark brown hooks, between which a longitudinal slit, or fissure, is seen, which is the mouth of the larva. When removed from the stomach by the finger, by a sudden jerk, so as not to injure them, they will, if fresh and healthy, attach themselves to any loose membrane, and even to the skin of the hand. For this purpose, they sheath, or draw back the hooks almost entirely within the skin, till the two points come close to each other; they then present them to the membrane, and, keeping them parallel till it is pierced through, they expand them in a lateral direction, and afterwards, by bringing the points downward towards themselves, they include a sufficient piece of the membrane to remain firmly fixed for any length of time as at anchor, without requiring any further exertion,

“These bots, as is also the case with two or three other species, pass the autumn, winter and spring months in the stomach, and arrive about the commencement or middle of the summer at their full growth, requiring a twelve-month fully to complete their structure.”

For the above the writer is indebted to the talented essay, written by Bracy Clark, on “Bots in the Horse and

other Animals," and for ample particulars, we will refer the reader to that work.

According to the above authority, bots once within the stomach must remain there till the following year, when being matured, their hold of the membrane of the stomach will relax, and they are expelled from the system in the form of a chrysalis. Bots are known to be injurious. Healthy animals are seldom troubled with parasites. When the bots are ejected from the system their sticking more or less within the opening of the anus and adhering to its soft lining produces considerable irritation and uneasiness, and, as the bot is an unnatural inhabitant of the stomach, it must produce considerable uneasiness in the stomach and bowels.

In the sheep, as soon as the larvæ are hatched from the eggs they crawl up through the nose to the sinus of the frontal, or of the maxillary bone into the cells of the ethmoid bone, or into the cavities of the uvula, and here they frequently accumulate in such numbers that they prove fatal. To cure the malady in the sheep the parasite may be removed by introducing snuff or lime into the nose to produce violent sneezing.

We have, however, no evidence that the bot ever destroys the horse. The evident dread of the horse at the approach of the fly, or the stomach being found after death riddled with the parasite, is no proof that they killed him. At that season of the year the horse is continually teased with flies, till, at length, every muscle of the skin appears to act involuntarily and with regard to the perforated stomach. God, in his infinite wisdom, created every insect with a natural instinct; and as soon as the horse dies, the bot, with the teaching of that natural instinct eats through, in order to leave a dead carcass, and seek escape from certain death. He finds that his old habitation is no longer a safe one, and hence his desperate endeavors to get away.

The bot once within the stomach of the horse remains secure in spite of all the art or medication of man, until matured. Past experience proves it more easy to kill the horse than to make the bot let go his hold, and in no case does he let go his hold before matured, unless the animal dies. And in every case that the horse is doctored for bots, he is, in our opinion, suffering from some other disease. Therefore the treatment we recommend for bots is a severe letting alone, and the milk and molasses, the sage tea and fresh meat can be thrown to the pigs.

WORMS.

The worms which afflict the horse may be divided into four varieties, namely: the tænia, or tape-worm, lumbrici, ascarides and stronguli.

The continued intestinal irritation which worms cause, when really present, may provoke several disorders. However, the only certain proof of their existence is visible evidence when they are expelled from the system in the excrement.

The tænia, or tape-worm, preys chiefly upon the debilitated, starved colt, and is mostly perpetuated, according to the authority of Mayhew, "by the farmer's prejudice, which procures foals from dams that are done up for work, which starves the mother till her produce runs by her side, and which attempts to rear young stock upon the sour grass of a public common." The symptoms of tape-worm, as described by the above-named talented gentleman, are as follows: "The developments are checked. The foal grows up with a large head, low crest, tumefied abdomen, and long legs. If it be a male it cannot be operated upon before the fourth year. Even then it is cast only because there is no hope of future improvement. The appetite during the long time of rearing is more than good. The ribs, nevertheless are not covered with flesh;

the dung is not well comminuted, it is friable and sometimes partially coated with slime ; the anus projects ; occasionally it is soiled by adherent strips of tenacious mucous, almost like to membrane ; the coat is unhealthy ; the breath fœtid ; the animal may rub its nose violently against a wall or remain straining it upward for a considerable time ; the eye becomes unnaturally bright ; the colt begins to pick and bite its body, often pulling off hair by the mouthful." When the case is clearly made out the plan of treatment is as follows : give the first anthelmintic prescription laid down in the Pharmacopœia at night, and follow by a purge next morning, or take fifty drops of the oil of the male fern, mix with molasses and linseed meal enough to form a ball, give at night, and follow by a purge next morning, and allow nothing but slippery elm tea for drink. Either of the above prescriptions can be repeated within a week, if necessary.

The lumbrici is a species resembling the common earth worm in all respects but color, which is a pinkish white. This worm inhabits the small intestines, and afflicts the weakly, be they old or young. The symptoms are a rough, staring coat, a craving appetite, and the passage of mucous with the excrement. To expel them, give the same treatment as recommended for tape-worm.

The ascarides and stronguli, the smaller species of intestinal worms, chiefly inhabit the rectum, but are occasionally found in the colon and cæcum. The term pin-worm and thread worm is more commonly applied to this species. The only symptom by which their presence can be made out is the horse rubbing his tail, and visible evidence. As most medicines are rendered inoperative before they reach the large intestines, the best remedies for these worms is by the injecting every morning, for a week or more, a quart of slippery elm tea containing two drachms spirits turpentine.

INFLAMMATION OF THE BOWELS---ENTERITIS.

Inflammation of the bowels is a very distinct disease from the colic, with which it is, however, very apt to be confounded, to the destruction of many horses. The causes are various, and, unfortunately, are in a great measure, purely conjectural, such as a sudden translation of cold after great heat, or from the removal of a horse from grass at once into heated stables, clothing and dry food; neglected colic or long continued costiveness, excessive driving, and the immediate drinking of cold water, etc. These, however, are but the exciting causes. The principal thing, therefore, is the constitutional or predisposing cause, where the animal inclines towards a particular disease, and any irritation may provoke it. These causes we are at present too ignorant to recognize, yet we know that without appropriate blood material no inflammation can be perpetuated.

Enteritis may affect both the peritoneal and the mucous coat of the intestines; and in violent cases all the coats may be implicated. The structure of the mucous and peritoneal coats is different; so are their functions in health and in diseases. The inflammation of the serous coat resembles that of the cellular membrane: the inflammation of the mucous coat that of the skin. Therefore, the former is usually of a more active character. Inflammation of the mucous coat is generally attended with diarrhœa, and its pathology is identical with that of dysentery. Inflammation of the peritoneal coat is, on the other hand, generally attended with costiveness.

The essential symptoms of enteritis are violent abdominal pain, increased on pressure, with inflammatory fever; the pulse is quick, hard and wiry before the disease is fully established. The disease is usually ushered in by repeated shivering fits; the horse is dull and stupid, and

may be frequently observed to turn his nose forcibly upward. As the disease advances, the symptoms become more violent; the shivering subsides, and the horse at once suffers a mighty anguish, which he makes manifest by plunging, rolling and pawing, as he does in colic. In colic, the horse has violent fits of pain, but they remit, and he has intervals of rest. The pain in enteritis is more uniform, and one continued struggle. In colic the pulse is disturbed: in enteritis, it is quick and hard. In colic, pressure on the abdomen seems to relieve the pain: in enteritis it increases it; in colic there are no marks of inflammation, as red eyelids, inflamed nasal membrane, etc., but in enteritis they are always present. In enteritis the agony accompanies all the movements of the diaphragm, thus the labor of respiration is thrown upon the walls of the thorix, the lungs can only partially dilate, which renders the breathing short and quick, and the mouth is always hot and dry, while in colic the breathing is deep and full, and only excited by the exertion.

By attending to these distinguishing symptoms, enteritis may be easily characterized from colic. In the treatment bleed copiously from a large orifice, and give the following drench: tincture of aconite fifteen drops, tincture of opium one ounce, chloroform one ounce, water half a pint. This drink should be administered every half hour if the pain, pulse and general appearance demand it. Should the symptoms denote a lingering pain in the bowels after the third drink is given, the belly should be fomented with hot water, the bowels back racked, and the following drench should be given: castor oil one pint, tincture of opium one ounce. This drench should be repeated every six hours till it operates, which should be hastened by injections of epsom salts two ounces, warm soap suds one quart. This course may be repeated or modified to meet returning or changing symptoms. The

food should be confined to thin gruel. Always keep a pail of gruel and one of slippery elm tea within his reach. No bran mashes or hay should be permitted to irritate the inflamed surfaces until the severity of the attack has abated.

COLIC.

Colic signifies an affection or pain in the colon. But it is employed in a more extensive signification. It includes every acute pain of the abdomen, aggravated at intervals. Therefore the varieties of colic depend on the cause. Thus we have spasmodic and flatulent colic.

Spasmodic colic consists in a partial contraction of the muscular coat of the intestines, similar in its features to cramp in the muscles of the leg. It is usually very sudden in its attack, and always appears prepared for mischief, frequently destroying life quickly either by its irritation or by its degenerating into incurable enteritis. The part of the intestines it attacks becomes much diminished by the presence of the spasmodic contraction, but presently it vanishes, and an interval of ease is afforded the sufferer. Soon, however, it reappears on some other portion of the bowels, and thus, as Mayhew remarks, colic "dodges about, its attacks becoming more numerous and the intermissions shorter as the period of its commencement grows more distant."

The causes of spasmodic colic are not always apparent. Any cause may provoke it. Cold in its various forms is a parent of colic; but under the form of cold water given when a horse is hot at the tail end of a hard drive, it is most common.

The symptoms of colic are as follows: acute pain, followed by intervals of ease; a few minutes elapse, and the anguish is renewed. During the spasm the horse is pawing, and the nose points to the flank; he switches his tail,

and the hind foot is lifted to strike the belly ; he lies down and rolls upon his back, but no sooner done than he is upon his feet ; all his movements are quick ; in no position can he find relief ; he sweats profusely about the head, neck and shoulders ; the spasm ceases, and he appears apparently well, but it is soon renewed; add he goes through the same performance.

In the treatment, as soon as a case is clearly made out, mix and give the following drench : chloroform one ounce, tincture of opium one ounce, water one-half pint ; mix, and give every half hour until relief is afforded.

In absence of the above give one pint strong salt and water containing one ounce of ginger, every half hour. If the disease should prove obstinate, foment the belly with hot water, back-rake, and inject large quantities of warm water into the bowels.

In flatulent colic the abdomen is enormously distended. It may be caused by the horse gorging upon green moist food ; but in the majority of cases, it springs from disordered digestion ; the stomach has lost its tone. The food ferments ; carbonic acid or sulphurated hydrogen gas is generated, and flatulent colic is the result.

During this fermentation in the stomach, the gas is generated sometimes with such rapidity, that stricture of the pyloric orifice takes place. Meanwhile the gas continues to generate and greatly rarify from the heat of the organ, and unless relief is afforded, there is imminent danger of rupture of the stomach, which is certain death. However, the gas generated in the stomach usually passes through the pylorus and small intestines into the cæcum and colon, and these large intestines sometimes becomes so suddenly distended that stricture of the rectum takes place ; or the fermentation of the contents of the cæcum and colon may produce the same results. It is evident that if such a stricture did not occur somewhere there could be no flatu-

lent colic, since all the gas generated would very readily escape in the natural way. These gases distend the colon, and, as Stewart remarks, "when one part of the tube is drawn out the other part draws in; or, in other words, when the colon is greatly distended there is a corresponding contraction of the rectum, and there the hard masses of excrement becomes so firmly impacted that it often requires a considerable manual exertion to dislodge them."

In flatulent colic, the horse is very uneasy; the breathing is laborious and loud; he is frequently pawing, and rests first on one leg, then on the other; great swelling of the belly, accompanied with a rumbling sound in the bowels.

To allay the pain and neutralize the gases, give the chloroform and opium drench every half hour until relief is afforded.

To relieve the bowels, back-rake; remove the hard masses of excrement from the rectum with the hand, as to admit of a passage. When this point is reached the danger is passed.

DYSENTERY.

Dysentery consists in an inflammation of the mucous membrane of the intestines. The seat of disease is generally in the colon and rectum. The chief symptoms of which are fever, more or less inflammatory, with frequent mucous or bloody evacuations, with violent pain in the bowels. The mucous of the intestines separates from them in large quantities, and comes away with the excrement surrounding it; or it sometimes appears in stringy evacuations like fat floating in water, and was termed by our ancestors molten grease,—they mistaking the morbid secretions from the bowels for the fat of the body melted down and passing off thus. Dysentery is very different from diarrhea, which is a mere increase of the peristaltic motion of the bowels, with an increase of their watery secretions.

Certain lank-sided, small carcassed animals will scour during work or upon the smallest change of food ; but such peculiarities, however, mostly check themselves ; and thus we will banish diarrhea from the list of diseases to which the horse is liable.

Dysentery in the horse is not contagious nor epidemic, but is peculiarly confined to a diseased increase in the mucous secretions, always appearing in a sporadic form. The causes are impure air, imperfect nourishment, cold, overdriving, acrid substances within the intestines, large doses of aloes or croton oil, or the injudicious use of mineral poisons, such as corrosive sublimate, arsenic, tartar emetic, etc., is a common parent.

In the treatment the indications are : 1. To allay the pain. 2. Husband the strength. 3. By some measure supply the mucous lost to the bowels.

1. To allay the pain, mix and give the following drench every half hour until the pain is subdued : chloroform one ounce, tincture of opium one ounce, tincture of catechu one ounce, slippery elm tea one pint.

2. To husband the strength, the food should be of the best ; boiled linseed, boiled roots, boiled oats, barley, etc. No hay. Also, a good bed, and keep the body clothed.

3. To supply the mucous lost to the bowels, give for drink linseed or slippery elm tea, and throw up into the bowels copious injections of the same.

PROLAPSUS OF THE RECTUM.

This is an affection most common in the old weak horse. It consists in the protrusion of the lower portion of the rectum through the anus, and may depend on a natural laxity of the structure or be caused by violent straining in consequence of costiveness. Whenever the protrusion occurs, the parts should be carefully washed, and then be replaced by pressure with the hand.

Oil the hand and arm, and push the hand up into the anus, and it will carry the protruded part with it. Give nourishing food, and that of such a kind as to regulate the bowels and prevent costiveness.

PARALYSIS OF THE SPHINCTER MUSCLE.

This disease may be the result of previous inflammation, and although not painful, it is very annoying. The symptoms exhibited are as follows: the bowels seldom if ever act of themselves; purgatives bring the excrement to the rectum, but it has not contractile power enough to expel them, and there they would remain if their exit were not obtained by an injection or by back-raking; the horse is all the while uneasy, often stands with one hind foot advanced, and looking around to the seat of disease; he is unable to move the tail, and the urine is voided in small quantities.

The plan of treatment should be as follows: Take tincture prickly ash berries four ounces, tincture nuxvomica three drachms. Mix, and inject one tablespoonful into the rectum three times a day.

DROPSY OF THE ABDOMEN---ASCITES.

Ascites consists in a collection of serous fluid in the abdomen. Ascites proper is dropsy of the peritoneum, the serous membrane lining the abdomen and enveloping its organs. It is rarely a primary disease; but is always dangerous, and but little susceptible of cure. It is caused most generally by obstructed circulation in some of the viscera, or to excitement of the vessels of the abdominal organs. Dropsy, according to Dunglison, may be active or passive. "The former consists in an increased action of the exhalants so that those vessels pour out much more fluid than is absorbed. The latter arises from a state of

atomy of the absorbent vessels, which allow of an accumulation of fluid.”

The symptoms which characterize dropsy are, an increased size of the abdomen ; the animal appears dull and stupid ; remains in one position for a long time ; fever more or less inflammatory ; thirst ; loss of appetite ; weakness ; fluctuation ; constipation, and hide-bound.

In the treatment, the various secretions must be acted upon, so that the demand being increased, the supply will have to be increased accordingly, and in this manner some of the collected fluids may be taken up by the absorbents. If the dropsy be very active, bleed. Give a dose of physic, and as soon as that is inoperative, give daily one ounce fluid extract of the trailing arbutus, mixed in one-half pint water ; or, instead, give one-half teaspoonful fluid extract of Indian hemp or the same quantity of fluid extract blue flag. These drugs, from their sudorific, diophoretic, diuretic, and alterative properties, are regarded as very valuable in dropsy.

Anasarca, or moor-ill, is another variety of dropsy to which horse flesh is liable. It occurs chiefly among horses turned out in marshes in cold rainy weather, and may be characterized by the areolar texture of the whole body becoming more or less filled with fluid ; a general swelling of the whole body, increasing by gravitation in the legs during the standing posture. The disease, happily, is now a very rare one, but it occasionally appears under the circumstances above described.

The treatment must be by acting on the various secretions, as described in the last section.

CHAPTER XII.

THE DISEASES OF THE URINARY ORGANS AND ORGANS OF GENERATION—BOTH MALE AND FEMALE.

NEPHRITIS, OR INFLAMMATION OF THE KIDNEYS.—HYDROPHOBIA.—INFLAMMATION OF THE BLADDER.—CALCULI.—HEMATURIA, OR BLOODY URINE.—DIABETES, OR PROFUSE STALLING.—ALBUMINOUS URINE.—BALANITIS.—PROLAPSIS OF THE UTERUS.

NEPHRITIS, OR INFLAMMATION OF THE KIDNEYS.

THIS disease is generally produced by over-driving, violent muscular exertion in drawing heavy loads, the abuse of diuretics, such as an overdose of saltpetre or sweet nitre, drugs which are considered by some horsemen as a charm against every ill. These drugs are given with impunity; the kidneys when subject to their action becomes excited bordering upon inflammation. The excess of secretion proves the excited condition of these organs, and the animal in such a state is not fit for work. He needs rest when under the operation of a diuretic just as much as when subject to a powerful dose of physic. But the condition of the animal is not for a moment considered. So long as the poor slave is able to toil in the employ of his master the same amount of labor is demanded. But truly the life and health of the horse is not at the command of man. And when man so violently transgresses the laws of nature in the keeping of the animal committed to his charge by the abuses above described, in combination with the exposure of the horse to wet and cold, the feeding of poisoned food, such as mow burned hay, musty oats, etc., which is alone sufficient to engender any disease, it is not strange that Nature, whose laws are everywhere consistent, should exact the penalty of suffering if

not of death. And surely, nephritis is a disease of too mild a type to be beget by so harsh a parent.

The symptoms of nephritis are those of inflammatory fever generally ; breathing quick and short, a hard pulse, and decidedly quickened. The animal looks anxiously toward the seat of pain ; shrinks when the loins are pressed, and some degree of heat is felt there ; the urine scanty, frequently high colored, and sometimes bloody ; constipation, more or less obstinate. The animal seldom lies down, but stands with back arched and hind legs straddled. He is unwilling to come round in his stall, and he walks with a straddling and numb gait. These symptoms clearly indicate an affection of the urinary organs. But they do not distinguish inflammation of the kidneys from that of the bladder ; but by attending to the state of the urine, which is very high colored in the former case, and nearly of a natural color in the latter, the one may be distinguished from the other. To make matters still more clear, in nephritis, the horse shrinks when the loins are pressed, while in inflammation of the bladder resistance will be provoked by pressure on the abdomen between the hind legs.

In the treatment, bleeding should be resorted to at once, in order to abate the inflammation. Fifteen drops of the tincture of aconite, and one drachm tincture belladonna mixed in a gill of water, may be given every half hour until the fever is abated. Next take a quantity of mustard, and mix in lukewarm vinegar ; rub this mixture in well over the loins, and place a fresh sheep-skin over it. Clothe the horse warmly, and give an alcohol sweat (as recommended for pleurisy), in order to bring the blood to the surface. A mild purge may be given in the form of a pint of linseed oil. Assist its action by injecting linseed tea every hour. The latter will also act as a fomentation to the diseased organ. Allow for food scalded linseed and bran mashes ; linseed or slippery elm tea for drink. If

the causes still exist, remove them at once. Give your poor slave a more merciful and humane treatment. If produced by giving harsh diuretic medicines, make up your mind never to be caught in the like folly again ; or if produced by musty, moldy fodder, pause and consider whether you are not losing more in horseflesh than it would cost for food of the best quality. If disease follows the use of such treatment, you have produced it, and if the horse dies, you are the destroyer.

HYDROPHOBIA, OR RABIES.

This is a disease, the cause of which is at present wholly beyond the reach of art, and we have but one reason for describing it, which is, that as the horse attacked by it is most dangerous, the sooner he is destroyed the better ; and for this reason every person who has charge of horses should be aware of the symptoms. As far as it is known at present, rabies in the horse is always the fruit of contagion, a bite received from some stable pet, in the shape of a dog or cat.

The earliest symptoms of the disease, as described by Mr. Youatt, "consists in a spasmodic movement of the upper lip, particularly of the angles of the lip. Close following on this or contemporaneous with it, are the depressed and anxious countenance and inquiring gaze ; suddenly, however, lighted up, and becoming fierce and menacing from some unknown cause, or at the approach of a stranger. From time to time different parts of the frame, the eyes, the jaws, particular limbs, will be convulsed. The eyes will occasionally wander after some imaginary object, and the horse will snap again and again at that which has no real existence. Then will come the irrepressible desire to bite the attendants or the animals within its reach. To this will succeed the demolition of the rack, the manger,

and the whole furniture of the stable, accompanied by the peculiar dread of water." However, Mayhew describes the longing for fluids to be "sometimes morbidly increased, and that the animal's likings may be morbidly changed. It will occasionally devour its own excrement, and lick up its emissions." But most frequently water will cause spasms.

According to the authority of Youatt, "towards the close of the disease there is generally paralysis, usually confined to the loins and the hinder extremities, or involving those organs which derive their nervous influence from this portion of the spinal cord ; hence the distressing tenseness which is occasionally seen." These symptoms prove in a great measure the discovery of M. M. Rudnow, of Russia, to be correct. To his investigations the public owe all their knowledge of the main cause of rabies. According to the above authority, "the main cause of rabies is the anatomical alteration of the kidneys through their parenchymatous inflammation. This differs from other forms of inflammation in that the whole epithelium of the kidneys is diseased at the same time, and that it easily degenerates, while the lobes of the kidneys fill at the same time with a fatty substance, by which the uniformly fatal issue of hydrophobia is brought about."

Supposing the cause of the disease to be thus ascertained, let us hope that as little time as possible will be lost in discovering a cure for it. Until then a well placed bullet is the only remedy we know which can stay this fearful malady.

INFLAMMATION OF THE BLADDER.

This disease is generally produced by the diseased kidneys secreting a highly irritating urine. The bladder suffers in its passage, and thus the two organs are inflamed at the same time ; or it may be

produced by the injudicious use of cantharides, given with a view to stimulate exhausted nature, or it may be absorbed from the surface of the skin, as sometimes happens in blistering. The symptoms are constant straining to pass the urine, which is thick, and mixed with mucus; quick pulse, and the animal looking around to the seat of disease. Give the same treatment as recommended for nephritis; and here the injecting of warm linseed tea is peculiarly advisable. Retention of urine may be caused either by inflammation of the neck of the bladder, or by spasms unattended by inflammation. It is characterized by constant straining to pass the urine, and the squeezing out of a few drops as the bladder becomes filled. In the treatment, bleed, if attended with inflammation, and if not, the disease usually yields to a dose of chloroform and tincture of opium; give one ounce of each, mixed in a half pint of water.

CALCULI.

Calculous concretions are not uncommon in the large intestines of horses, where they grow sometimes to an enormous size. In the Museum of the Royal College of Surgeons, London, there is one taken from the intestines of a horse, which weighs no less than 17 pounds. In the intestines they occasion but little inconvenience, except a displacement occurs, when serious evils, as colic, inflammation or stricture follow. Calculi in the bladder is of considerable annoyance. They may proceed from the kidneys, but most commonly they are formed in the bladder itself. Sometimes, when of a small size, they are expelled. Most commonly they remain in the bladder.

The chief symptoms that induce a suspicion of their existence are a frequent desire to pass the urine; the urine passed by jerks, and a sudden stoppage to its flow. The treatment may be either palliative or curative. The former consists in the adoption of the means employed for

subduing retention of urine. The latter can only be effected by removing the stone, which is a difficult and dangerous operation.

HÆMATUREA, OR BLOODY URINE.

This disease consists in a hemorrhage from the mucous membrane of the urinary passages. Like other hemorrhages, it may be active or passive. It may proceed from the kidneys. Sometimes a parasitic worm has been discovered after death, in the kidneys, and was apparently the cause of the mischief. At others the kidneys have been found disorganized by cancer or melanosis; or it may be produced by the irritation of a sharp calculi in the bladder or urethra. Whencesoever it proceeds, hæmaturia is usually ascribed to rupture of vessels not being thought common in the mucous membranes. The essential symptoms are, the existence of bloody urine, evacuated of a dark brown color, preceded by slight pain in the region of the bladder or kidneys, unaccompanied by inflammation, marking the absence of nephritis.

In the treatment, active hæmaturia may require blood-letting. Take of extract of rhatany three drachms, water one half pint; mix, and give three times a day; and, if very excessive, cold injections may be thrown into the rectum or into the vagina of the mare. For the chronic kind give absolute rest; the same drench as recommended above, and tonics in general.

DIABETES, OR PROFUSE STALLING.

This disease is characterized by an excessive flow, and often manifest alteration in the secretion of urine. We are unable to fix on the seat of this distressing malady, however, as a part of the urine must be formed at the expense of the system, the whole system of nutrition must be morbidly implicated. The causes are also very ob-

scure. The injudicious use of diuretics, musty and moldy fodder will often provoke it. In the treatment, ascertain the cause, if possible, and remove it. Make a total change in the food, to green food, if possible. Green food, such as grass, potatoes, carrots, etc., with astringents and tonics in general, will usually effect a cure, but if the urine contains large amounts of sugar, the urine of a sweetish taste, all the remedies that have been tried have usually been found insufficient. However, in either case, the following drench may be tried with expectations of beneficial results: take fluid extract bugleweed four ounces, fluid extract bethroot four ounces; mix, and give one tablespoonful in a cupful of warm water three times a day.

ALBUMINOUS URINE.

This disease was first described by Dr. Bright, of London, and is usually termed Bright's disease. The disease consists in a granular disease of the cortical part of the kidneys, or congestion of the same, characterized by a straddling gait, weakness of the loins, stretching and straining to pass the urine, which contains albumen, and of a white, milky, or thick appearance.

In the treatment, bleed moderately. Give, as a purge, a pint of linseed oil; apply mustard blisters to the loins; and, for diet, allow green food, bran mashes, scalded linseed, etc., and linseed or slippery elm tea for drink. Should it persist in spite of the adoption of the measures already recommended, the following drench may be tried: take fluid extract of trailing arbutus one-half ounce, water four ounces; mix, and give three times a day.

DISEASES OF THE ORGANS OF GENERATION.

Balanitis, or inflammation of the penis, is a disease which speaks worlds of low-voiced commentaries on the stupidity of the horse's keeper. The causes are the de-

composition of the natural secretions when they have been allowed to collect for any length of time.

The symptoms are a straddling gait; swelling of the sheath; foul sores, with fungous growths springing from them upon the penis.

In the treatment, wash the parts clean with soap and water daily, and apply the following: glycerine one ounce, carbolic acid, two drachms. Mix.

PROLAPSUS OF THE UTERUS.

This disease sometimes follows parturition, but it is of very rare occurrence. The principal cause of prolapsus is the enormous distention of the vagina by parturition. The vaginal column is thus not only weakened, but the perinæum is often much weakened by over distention if not by laceration. Having thus lost its tone, the perinæum no longer sufficiently antagonizes the diaphragm, and the womb is steadily pushed down the vagina.

In the treatment, the uterus should be at once replaced by the hand, using as little force as possible, and before the hand is withdrawn be sure that the uterus is really turned back again from its inverted position, and inject one pint cold water, containing two drachms glycerine, two drachms tincture of opium, and one drachm tannin.

CHAPTER XIII.

CONSTITUTIONAL DISEASES, DISEASES OF THE MOUTH, AND MARKS OF AGE.

FEVERS.—GLANDERS.—FARCY.—LAMPASS.—MARKS OF AGE.

FEVERS.

FEVER, as a disease of itself, without any inflammatory complication, is happily one of rare occurrence, but one of

the most dangerous affections to which the horse is liable. The horse has fever more or less when he is affected with catarrh, as we have already described under that head, both in the common and epidemic catarrh;—indeed, all the important inflammations of the horse are attended with more or less fever. Therefore, fever is not characterized by any one, but depends upon the co-existence of many symptoms. However, the general character of fever is clearly shown by examination of the blood. The alteration of the blood in fevers consists generally in a diminution of the fibrinous element, the blood becomes thinner, which is the reverse of what occurs in inflammation. Fevers have been usually divided into the simple and typhoid fever.

Simple fever is characterized by a starring coat; appetite lost; cold legs and feet, with increased warmth of body; the pulse quick and variable; breathing quickened; bowels costive, and urine scanty. These symptoms may continue for two or three days, and then be complicated by inflammation in some organ of the body, or put on the typhoid type. In the treatment, allow plenty of pure air and cold water, and give fifteen drops tincture of aconite three times a day.

Typhoid fever, as we have already shown, sometimes appears as an epidemic, occurring as a sequel to catarrh, but among horses in different parts of this country, typhoid fever is of yearly occurrence in its pure form, without any inflammatory complication. The greatest diversity of opinion has prevailed regarding its theory: hence, the multiplicity of names given to the disease, which can do no possible harm: they only serve to point out to us the chief symptoms which may be grouped together as a whole, under the head of typhoid fever. In the West and Northern States, its primary seat has been placed in the mouth, and there it is called black tongue, because that

organ changes in color, varying from a deep purple to black. In other parts of the country, its primary seat has been placed in the throat, and termed chocking distemper. Others have called it putrid fever, from the offensive smell emanated from the animal. In New York it is termed cerebro-spinal-meningitis, because it is thought by Prof. Liautard to present similar symptoms to those when man is the subject. It would seem, however, that although in typhoid fever the whole of the functions are morbidly impressed, the argument in favor of the impression being most on the nervous system and the system of nutrition is the strongest.

The causes of typhoid fever in the horse are specific, similar to those that give rise to the same disease in his master—man—namely, miasma, arising from excrementary decomposition in and around the stable or from decaying vegetable matter and stagnant water.

It is not contagious, but is brought on almost always epidemic in a sporadic form, attacking every horse in the stable and even neighborhood, by the same causes being applied to nearly all subjects alike.

The symptoms in its early stage can scarcely be distinguished from simple fever, but as the disease advances, a difficulty in swallowing will be observed, with the strength much reduced; the breath is very offensive, and the mouth is full of a black discharge from the tongue and gums; the pulse is very low; strength entirely gone; the horse is unable to walk, and soon he lies or falls down, unable to rise.

In the treatment, the indications are to remove all the horses from the cause to a more dry and airy location, and a cure is more likely to be effected; ventilation and cleanliness, keeping the bowels free by injection, with the avoiding of all irritation of every kind, are the main indications. However, the practitioner has to discriminate

carefully between oppression and prostration. The former may require evacuants, the latter cannot.

In the whole management of this affection the strength must be supported by tonics. The following will be found very applicable in all cases : take tincture of gelsemium fifty drops, sulphate of quinia ten grains, water one tea-cupful. Mix, and give at one dose, and repeat every two hours until its specific action is discovered by distressed prostration and clouded vision. Then the following stimulant may be given : carbonate of ammonia one-half ounce, capsicum one drachm, water one half pint. Mix, and give at one dose, and repeat every half hour until the horse appears refreshed. If the horse is unable to stand, give him a good bed, and turn him from one side to the other, to prevent sores on the body.

GLANDERS—FARCY.

This fearful disease of the horse tribe arises spontaneously, without doubt, by human depravity. Would man remove the following causes, glanders would in one year undoubtedly be banished from the list of diseases to which the horse is liable.

The causes of glanders are the usual influences that generate putrid poisons, namely : insufficient and unwholesome food, close confinement and ill ventilation. This poison when introduced, acts as a ferment, the matter is resolved into new compounds, and disease quickly follows. It is undoubtedly highly contagious both to man and other animals, and no man who regards his own welfare and that of his neighbors should keep a glandered horse.

Symptoms.—It may occur in two forms which, however, are merely manifestations of the same disease in different tissues. When seated in the nasal cavities, it is called glanders ; when in the lymphatic system, farcy. But these two forms are essentially identical : the pus of either

of them will produce the other ; and farcy always terminates in glanders if the animal live long enough, and its progress is not arrested. The symptoms of glanders are a continual flow of discharge from one or both nostrils (generally the left), which discharge is at first thin, acrid, transparent, and without odor ; then thick and glairy like the white of an egg ; but after a time becomes purulent, bloody and horribly offensive, retaining, however, its viscosity. Soon after, the enlarged submaxillary gland may be felt under the lower jaw adhering to the bone. Next, if the nose be examined, its lining membrane will be seen to present one or more ulcers, having ragged and sharp edges, with depressed centres ; these spread wide and deep, and lead to caries of the bone. Then the lips and eyelids swell, and the conjunctiva suppurate ; and the external parts of the face may become gangrenous, and the animal die in a few days with putrid fever ; or he may perish more slowly. The disease may spread to the lungs, (then called *equinia glandulera*, or glanders with tubercles of the lungs), and death may be induced by cough, emaciation, and the formation of unhealthy abscesses in the lungs and other parts of the body.

Symptoms of Farcy.—This disease begins with hard, cord-like swellings of the lymphatic glands, appearing in the shape of small tumors in the skin, called farcy-buds. These buds are usually met with in the thin skin covering the inside of the thighs, lips, face and neck ; sometimes very painful, suppurating and degenerating into foul ulcers, which discharge a copious thin, sanious matter. In process of time the general system suffers as in glanders, and if suffered to proceed unchecked, farcy leads to glanders, although more frequently the latter arises first.

In the treatment, the disease most generally resists all remedies, and as the risk of contagion is too great to be incurred, the horse ought at once to be destroyed. How-

ever, many cases of glanders, by giving antizymotics, have been cured, and few cases of farcy die from them. In the management of the disease, allow the horse a good generous diet, a clean and well ventilated stable, and give the following once daily : carbolic acid fifteen drops, sulphate of iron, in powder, two drachms, Peruvian bark four drachms ; mix, and form into a ball with molasses and linseed meal.

In the second and third stage of glanders, no remedy can be relied on, and the patient ought to be destroyed.

LAMPASS.

Lampass consists in an active inflammation of the ridges, or burs, in the roof of the mouth. The mucous membrane of the roof of the mouth swells so much that it projects below the level of the nippers, and is so tender that all hard and dry food irritates ; therefore, it is mostly refused. Young horses are the ones most liable to lampass while shedding the teeth or putting up the tushes. The treatment consists in the scarification of the part with a sharp knife, and give a mild dose of physic. This is far better than the barbarous treatment of burning the swelling down with a red hot iron.

MARKS OF AGE.

The appearance and shape of the teeth constitute what is most generally relied upon as a means of determining the age of a horse ; and they really form a quite accurate mark of age until the animal is past his prime.

The teeth of the horse are the hardest and most compact bones of the body. There are usually forty of them in the horse, and thirty-six in the mare. In the latter the tushes are usually wanting. They are divided into twelve nippers, four tushes and twenty-four grinders, which number are equally divided between the two jaws. There are two

sets of teeth, a temporary, or milk set, and a permanent set,—a provision which kind Nature has furnished for both man, and the most of the brute creation. The shedding of the milk teeth and the replacement of them by the permanent teeth, and the changes which occur in the permanent teeth by the natural wear, is now the general criterion of age.

At ten or twelve days old the mouth of the foal will show four front teeth, or nippers, two in each jaw ; about the close of the first month the next four appear, one upon each side of the others in both jaws. Between the seventh and eighth month the corner teeth, or last pair of temporary nippers appears in each jaw, and at one year old, the four central nippers in each jaw are worn nearly level, and the corner teeth, which are now of the same length, are rapidly becoming so. During the second year the dark brown groove is worn out of all the front teeth. The third year the central nippers are shed, and their place occupied by the permanent pair nearly full grown. In the fourth year the same changes occur in the second and third pair of nippers, and at the age of five, the mouth is complete, the tushes are in plain sight. During the sixth year the tushes attain their full growth, and the grooves fill up in the central nippers. At seven the groove in the second pair of nippers is no longer visible. At eight, the whole of the grooves are filled up. At nine years old, a hook has been formed on the corner teeth ; the point of the tusk is worn off, and the gum is shrinking away from the front teeth. In consequence, they are becoming of a long and narrow shape. After this there is no criterion to go by. True, many judges undertake to tell a horse's age from nine to twenty years old, (by the lips, hair, chin, the dim eye and wrinkled eyelid), which, in my opinion, is impossible ; they merely make a guess, and four times out of five they labor under a mistake.

A P P E N D I X.

CHAPTER XIV.

VETERINARY PHARMACOPŒIA.

ALTERATIVES.—ANÆSTHETICS.—ANODYNES.—ANTISEPTICS.—ANTIZYMOTICS.—
 —ANTHELMINTICS.—APERIENTS.—ASTRINGENTS.—BLISTERS.—CAUSTICS.—
 CLYSTERS.—DEMULCENTS.—DIAPHORETICS.—DIURETICS.—EMBROCATIONS.—
 —EXPECTORANTS.—FEBRIFUGES.—LOTIONS.—STIMULANTS.—STOMACHICS.—
 STYPTICS.—TONICS.

ALTERATIVES.

Peruvian Bark.....	2 ozs.	Fenugreek.....	2 ozs.
Gentian.....	2 “	Black Antimony.....	2 “
Colombo.....	2 “	Licorice.....	2 “
Resin.....	2 “	Gentian.....	2 “
Licorice.....	2 “	Aniseseed.....	2 “
Stramonium Seeds.....	$\frac{1}{2}$ oz.	Resin.....	2 “
Linseed meal.....	4 ozs.	Tartar Emetic.....	2 drs.
Mix. Dose, one tablespoonful at night.		Mix. Dose, one tablespoonful twice a day.	

FOR GENERAL USE.

Flower of Sulphur.....	1 lb.
Resin.....	1 “
Glauber Salts.....	1 “
Linseed meal.....	1 “
Mix. Dose, one tablespoonful at night.	

IN DEBILITY OF STOMACH.

Aloes.....	1 oz.
Subnitrate of Bismuth... ..	$\frac{1}{2}$ oz.
Cascarilla Bark, powdered	2 ozs.
Gentian Root, “	2 “
Ginger, “	2 “
Colombo, “	2 “
Dose, one tablespoonful every other night.	

ANÆSTHETICS.

This term is now almost restricted to agents which produce such effects by being received into the lungs in the form of vapors, and passing with the blood to the nervous centres on which their action is exerted. A sort of intoxication supervening with imperfect power of regulating the movements; sensation and motion are suspended, and ulti-

mately if the quantity inhaled be sufficient the respiration ceases, and death is the consequence. They have been, and are greatly used in surgical operations; and in such cases, as well as in many diseases, especially of a painful nature, produce the most beneficial results. Chloroform is the drug generally used in veterinary surgery.

ANODYNES.

ANODYNE DRENCHES FOR COLIC.

No. 1.

Gum Myrrh, powdered.... $\frac{1}{2}$ oz.
 Cayenne Pepper..... $2\frac{1}{2}$ drs.
 Caustic Potash..... $\frac{1}{2}$ oz.
 Gum Camphor..... 6 drs.
 Rye Whiskey..... 1 pt.
 Mix. Dose, one ounce in a pint
 of hot water every half hour.

No. 3.

Chloroform..... 1 oz.
 Tincture of Opium..... 1 oz.
 Water..... $\frac{1}{2}$ pint.

Mix, and give at one dose.

No. 2.

Chloroform..... $1\frac{1}{2}$ ozs.
 Tincture of Opium..... $1\frac{1}{2}$ "
 Tincture of Camphor..... $1\frac{1}{2}$ "
 Spirit Ammonia Aromatic. $1\frac{1}{2}$ "
 Oil Cinnamon.....20 drops
 Brandy..... 2 ozs.
 Mix. Dose, one ounce every
 hour in a pint of water.

No. 4.

Dioscorein.....20 grs.
 Asclepidin.....20 grs.
 Ginger..... $\frac{1}{2}$ oz.
 Whiskey..... $\frac{1}{2}$ pint.

Mix, and give at one dose.

ANODYNE DRENCH FOR DIARRHŒA.

Gum Arabic..... 2 oz.
 Boiling Water..... 1 pint.
 Dissolve, and then add :
 Fluid Extract Blackberry Root..... $\frac{1}{2}$ oz.
 Tincture Opium..... $\frac{1}{2}$ oz.

Mix, and give night and morning.

ANTISEPTICS.

- | | |
|---------------------------------|-----------------------------------|
| 1. Carbolic Acid..... 1 dr. | 2. Bro-Chloralum (Tilden's) 1 oz. |
| Water..... 2 ozs. | Water..... 8 ozs. |
| 3. Nitrate of Lead..... 1 dr. | 4. Chloride of Zinc..... 1 dr. |
| Water..... 1 pint. | Water..... 1 pint. |
| 5. Permanganate of Potash 1 dr. | 6. Liquor Chlorinated Soda. 1 oz. |
| Water..... 1 pint. | Water..... 1 pint. |

ANTIZYMOTICS.

Sulphite of Magnesia, 1 ounce three times a day.	Carbolic Acid.....15 drops.
Sulphite of Soda, 1 ounce three times a day.	Sulphate of Iron, in pow.. 2 drs.
Carbolic Acid.....15 drops.	Peruvian Bark..... 4 drs.
Glycerine..... 1 oz.	Mix, and give once daily.
Tincture of Opium..... 1 dr.	Sulphate of Zinc.....15 grs.
Water..... 4 ozs.	Spanish Fly..... 7 grs.
Mix, and give twice a day.	Powdered Allspice.....15 grs.
	Mix, give once a day.
	(Recommended by Prof. Clark.)

ANTHELMINTICS.

Indian Pink Root, pow... 2 drs.	Santonin.....20 grs.
Barbadoes Aloes, " ... 3 drs.	Powdered Ginger.....10 grs.
Powdered Savin..... 1 dr.	Barbadoes Aloes..... 4 drs.
Santonin..... 5 grs.	Sulphur..... 1 oz.
Miz. Molasses to make a ball, give at night, and follow by a purge next morning.	Mix. Molasses enough to make a ball, give once a day for three days.

APERIENTS.

ORDINARY PHYSIC BALLS.

1. Barbadoes Aloes..... 6 drs.	2. Barbadoes Aloes..... 6 drs.
Castile Soap..... 4 drs.	Bitartrate of Potash... ½ dr.
Ginger..... 1 dr.	Ginger..... ½ dr.
Mix. Dissolve in a small quantity of boiling water, and then slowly evaporate to a proper consistence, by which means griping is avoided.	Powdered Cloves..... ½ dr.
	Dissove and evaporate, and then add Oil of Caraway, 12 drops.

LAXATIVE DRENCHES.

Barbadoes Aloes..... 4 drs.	Castor Oil..... 4 ozs.
Powdered Cloves..... 2 drs.	Epsom Salts..... 4 ozs.
Bitartrate of Potash..... 1 dr.	Warm Water..... 1 pint.
Oil of Caraway.....15 drops	
Boiling Water..... ½ pint.	

ASTRINGENTS.

FOR BLOODY URINE.

1. Gallic Acid.....40 grs.	2. Extract of Rhatany.... 3 drs.
Syrup..... 2 dr.	Water..... ½ pint.
Water..... ½ pint.	Give three times a day.
Mix, and give twice a day.	

ASTRINGENT LOTIONS.

- | | | | |
|--------------------|---------------------|----------------------------------|---------|
| 1. Alum..... | 1 dr. | 2. Tannin..... | 1 dr. |
| Water..... | $\frac{1}{2}$ pint. | Water..... | 4 ozs. |
| 3. Oak Bark..... | 2 ozs. | 4. Sulphate of Copper.... | 2 drs. |
| Boiling Water..... | 1 pint. | Water..... | 1 pint. |
| 5. Catechu..... | 1 dr. | 6. Liquor Persulphate of Iron. | |
| Boiling Water..... | $\frac{1}{2}$ pint. | 7. Elixir of Vitriol and Tannin. | |

BLISTERS.

MILD BLISTER OINTMENT.

- Lard..... 4 ozs.
 Oil of Turpentine..... 1 oz.
 Powdered Spanish Flies... $\frac{1}{2}$ oz.
 Mix.

STRONG BLISTER.

- Lard..... 4 ozs.
 Oil Origanum..... $\frac{1}{2}$ oz.
 Powdered Euphorbium... $\frac{1}{2}$ oz.
 Powdered Spanish Flies... $\frac{1}{2}$ oz.

LIQUID BLISTERS.

- Spanish Flies..... 1 oz.
 Oil of Origanum..... 1 oz.
 Oil of Turpentine..... 2 ozs.
 Aqua Ammonia..... 2 ozs.
 Olive Oil..... 2 ozs.
 Mix.

By Dr. Stewart.

- Turpentine..... $\frac{1}{2}$ pint.
 Fine Pow'd Corrosive Sub. 1 oz.
 Gum Camphor..... 1 oz.
 Mix.

SWEATING BLISTERS FOR SPAVINS, RING-BONES, ETC.

- | | | | |
|---------------------------|-------|---------------------|-------|
| Biniodide of Mercury..... | 1 dr. | Iodide of Lead..... | 1 dr. |
| Lard..... | 1 oz. | Lard..... | 1 oz. |
| Mix. | | | |

CAUSTICS.

- | | |
|---------------------|--|
| Nitrate of Silver. | Verdigris, used in powder or ointment. |
| Sulphate of Copper. | Red Precipitate, used in powder or ointment. |
| Butter of Antimony. | Burnt Alum, used dry. |
| Nitric Acid. | |
| Chloride of Zinc. | |
- Powdered White Sugar.

CLYSTERS.

ASTRINGENT CLYSTERS IN DIARRHEA.

- | | | | |
|---------------------------|---------|-----------------------------|---------|
| 1. Slippery Elm Mucilage. | 1 pint. | 2. Fluid Extract Blackberry | |
| Tincture of Opium..... | 1 oz. | Root..... | 1 oz. |
| Mix. | | Water..... | 1 pint. |

PURGATIVE CLYSTERS.

Epsom Salts.....	2 ozs.	Extract Colocynth.....	2 drs.
Water.....	1 pint.	Boiling Water.....	1 pint.

CLYSTERS FOR DESTROYING WORMS.

Aloes.....	1 dr.	Aloes.....	$\frac{1}{2}$ dr.
Castile Soap.....	1 dr.	Castile Soap.....	$\frac{1}{2}$ dr.
Water.....	1 pint.	Assafoetida.....	$\frac{1}{2}$ dr.
		Water.....	1 pint.

CLYSTERS FOR "PROLAPSUS ANI."

Tinct. Prickly Ash Berries.	4 ozs.	White Oak Bark.....	2 ozs.
Tincture Nux Vomica....	3 drs.	Water.....	1 qt.
Mix. Inject one tablespoonful		Boil for twenty minutes, and	
into the rectum three times a day.		strain. Inject 4 ounces three times	
		a day.	

DEMULCENTS.

Linseed.....	4 ozs.	Slippery Elm Bark.....	2 ozs.
Water.....	1 qt.	Water.....	1 qt.
Simmer till a thick decoction is		Simmer 1 hour, and give night	
obtained, and give night and morn-		and morning.	
ing.			

DIAPHORETICS.

Liquor Acetate of Ammonia	3 ozs.	Liquor Acetate of Ammonia	3 ozs.
Tincture of Opium.....	1 oz.	Sweet Spirits of Nitre.....	1 oz.
Mix. Give at night.		Mix. Give at night.	

DIURETICS.

Powdered Resin.....	3 drs.	Saltetre.....	$\frac{1}{2}$ oz.
Saltetre.....	2 drs.	Cream of Tartar.....	2 drs.
Castile Soap.....	3 drs.	Juniper Berries.....	1 dr.
Oil of Juniper.....	1 dr.	Castile Soap.....	3 drs.

DIURETIC POWDERS FOR MASHES.

Nitre.....	$\frac{1}{2}$ oz.	Resin.....	1 oz.
Resin.....	$\frac{1}{2}$ oz.	Sulphur.....	2 ozs.

EMBROCATIONS.—(LINIMENTS.)

STIMULATING EMBROCATION.

Camphor Gum.....	1 oz.
Oil of Turpentine.....	2 ozs.
Oil of Origanum.....	$\frac{1}{2}$ oz.
Alcohol.....	3 ozs.
Mix.	

FOR BLOWS AND BRUISES.

Tincture Arnica.....	1 oz.
Tincture Aconite.....	1 oz.
Muriate of Ammonia.....	3 drs.
Water.....	2 ozs.
Mix.	

SWEATING EMBROCATION.

Strong Mercurial Ointment.	2 ozs.
Camphor Gum.....	$\frac{1}{2}$ oz.
Oil of Amber.....	2 dr.
Oil of Turpentine.....	1 oz.
Mix.	

ANODYNE LINIMENT.

Aqua Ammonia.....	2 ozs.
Chloroform.....	1 oz.
Camphor.....	2 ozs.
Tincture Opium.....	$\frac{1}{2}$ oz.
Alcohol.....	4 ozs.
Mix.	

LINIMENTS FOR GENERAL USE.

Alcohol.....	1 pt.	Oil of Rosemary.....	2 ozs.
Fluid Extract Arnica.....	2 ozs.	Aqua Ammonia.....	2 "
Camphor Gum.....	1 oz.	Oil of Turpentine.....	2 "
Aqua Ammonia.....	$\frac{1}{2}$ oz.	Olive Oil.....	1 $\frac{1}{2}$ "
Tincture Opium.....	$\frac{1}{2}$ oz.	Oil of Amber.....	1 $\frac{1}{2}$ "
Oil of Amber.....	$\frac{1}{2}$ oz.	Oil of Origanum.....	1 oz.
Water.....	1 pt.	Mix.	
Mix.			

EXPECTORANTS.

FOR ORDINARY COUGH WITHOUT INFLAMMATION.

Gum Ammoniacum.....	$\frac{1}{2}$ oz.	Powdered Licorice.....	$\frac{1}{2}$ oz.
Powdered Seneka.....	1 dr.	Gum Ammoniacum.....	2 drs.
Powdered Squills.....	20 grs.	Balsam of Tolu.....	2 drs.
Powdered Licorice.....	1 dr.	Powdered Seneka.....	$\frac{1}{2}$ dr.
Honey enough to form a ball.		Powdered Ipecac.....	10 grs.
Give at night.		Mix. Linseed meal and honey	
		enough to form a ball; give at night.	

FOR CHRONIC COUGH.

Spirits of Turpentine.....	2 ozs.	Powdered Gum Myrrh....	1 oz.
Mucilage of Slippery Elm.	6 ozs.	Oil of Tar.....	1 "
Gum Ammoniacum.....	$\frac{1}{2}$ oz.	Tincture of Ipecac.....	1 "
Balsam of Tolu.	1 dr.	Tincture of Squills.....	1 "
Powdered Licorice.....	1 dr.	Honey.....	2 ozs.
Tincture of Opium.....	3 ozs.	Alcohol.....	1 pt.
Water.....	2 qts.	Mix. Dose, one tablespoonful	every night. Beneficial in heaves.
Mix. Dose, $\frac{1}{2}$ pint as a drench,			
every night.			

FEBRIFUGES.

Cream of Tartar.....	$\frac{1}{2}$ oz.	Cream of Tartar.....	4 drs
Camphor.....	1 dr.	Saltpetre	2 drs.
Calomel.....	20 grs.	Mix. Give in a bran mash.	
Mix. Linseed meal and water to			
form a ball.....			

COOLING DRENCH.

Saltpetre.....	1 oz.	Saltpetre.....	2 drs.
Sweet Spirits of Nitre....	2 ozs.	Soda Carbonate.....	1 dr.
Tincture Aconite.....	15 dps.	Sweet Spirits of Nitre....	3 drs.
Water	1 pt.	Water	1 pt.
Mix.		Mix. Give twice a day, if neces-	sary.

LOTIONS.

COOLING LOTIONS FOR EXTERNAL INFLAMMATION.

Sugar of Lead.....	$\frac{1}{2}$ oz.	Sal Ammonia.....	1 oz.
Borax.....	$\frac{1}{2}$ oz.	Vinegar.....	4 ozs.
Vinegar,.....	2 ozs.	Tincture Camphor.....	1 oz.
Alcohol.....	2 ozs.	Tincture Arnica.....	$\frac{1}{2}$ oz.
Water	1 qt.	Water	$\frac{1}{2}$ pt.
Mix.			

LOTIONS FOR THE EYES.

Sulphate of Zinc.....	20 grs.	Borax.....	1 dr.
Water	6 ozs.	Water	$\frac{1}{2}$ pt.
Mix.			

Tannate of Zinc.....	30 grs.	Sulphate of Zinc.....	12 grs.
Water.....	6 ozs.	Tincture of Opium.....	2 drs.
Mucilage.....	$\frac{1}{2}$ oz.	Water.....	$\frac{1}{2}$ pt.
Mix.			

STIMULANTS.

Whiskey.....	1 pt.	Whisky.....	1 pt.
Cayenne Pepper.....	1 dr.	Carbonate of Ammonia...	1 dr.
Tincture of Ginger.....	4 drs.	Tinct. of Virginia Snake-	
Mix.		root.....	4 drs.

STOMACHICS.

Powdered Colombo.....	1 oz.	Golden Seal.....	1 oz.
Powdered Ginger.....	2 drs.	Powdered Cascarella.....	$\frac{1}{2}$ oz.
Bicarbonate of Soda.....	1 dr.	Canella Alba.....	2 drs.
Mix. Give once a day.		Mix. Give once a day.	
Powdered Cascarella.....	1 oz.	Peruvian Bark.....	1 oz.
Powdered Gentian.....	$\frac{1}{2}$ oz.	Cascarella, (Powdered) ...	$\frac{1}{2}$ oz.
Cayenne Pepper.....	1 dr.	Virginia Snake Root.....	2 drs.
Mix. Give once a day.		Mix. Give once a day.	

STYPTICS.

FOR BLEEDING FROM THE NOSTRILS.

Matico Leaves.....	$\frac{1}{2}$ oz.	Alum.....	1 oz.
Boiling Water.....	1 pt.	Sulphate of zinc.....	1 oz.
Infuse, and when cold, strain and inject into the nostrils.		Boiling Water.....	1 qt.
		When cold, strain and inject.	

TONICS.

Muriated Tinct. of Iron... 4 ozs.	Comp'nd Tinct. of Quassia 6 ozs.
Tincture of Colombo.... 4 ozs.	Muriated Tincture of Iron. 3 "
Dose, one tablespoonful twice a day, in a pint of cold water.	Tincture of Colombo..... 2 "
	Dose, one tablespoonful twice a day, in a pint of cold water.

CHAPTER XV.

MISCELLANEOUS PRESCRIPTIONS FOR VARIOUS DISEASES BELONGING TO THE VETERINARY ART.

PURGING DRINKS FOR CATTLE.

Epsom Salts..... 1 p'nd. Ginger..... $\frac{1}{2}$ oz. Warm water..... 1 qt.	Epsom Salts..... $\frac{1}{2}$ p'nd. Croton Oil..... 10 d'ps. Warm Water..... 1 qt.
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COUGH AND FEVER DRINKS FOR CATTLE.

Tartar Emetic..... 1 dr. Tincture of Aconite..... 10 d'ps. Saltpetre. 3 drs. Give in a quart of thick gruel.	Powdered Licorice Root... 2 ozs. Boiling Water..... 1 pt. When cold add : Powdered Squills..... 2 drs. Powdered Gum Guaiacum.. 1 dr. Tincture Balsam of Tolu.. $\frac{1}{2}$ oz. Honey..... 1 oz. Mix. Give twice a day. (For cough.)
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TONIC DRINKS FOR CATTLE.

1. Powdered Gentian Root. $\frac{1}{2}$ oz. Powdered Colombo.... 1 dr. Powdered Ginger..... 1 dr. Epsom Salts..... 2 oz. Mix. Give in a pint of warm gruel morning and night.	2. Powdered Gentian..... 2 drs. Tincture of Iron..... 1 dr. Ginger..... 1 dr. Mix. Give in a pint of water.
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ANODYNE DRINK FOR CATTLE.

Tincture of Opium..... $\frac{1}{2}$ oz. Sweet Spirits of Nitre.... 2 ozs. Water..... 1 pt.

ASTRINGENT DRINKS FOR CATTLE.

Prepared Chalk..... 2 ozs. Fluid Extract of Rhatany. 1 oz. Powdered Catechu..... $\frac{1}{2}$ oz. Tincture of Opium..... $\frac{1}{2}$ oz. Ginger..... 2 drs. Mix. Give in a quart of warm gruel.

DIURETIC DRINK FOR CATTLE.

Saltpetre..... 1 oz. Powdered Resin..... 2 ozs. Ginger..... 2 drs. Warm Water..... 1 pt.

DRINK FOR WORMS IN CATTLE.

Oil of Turpentine..... 2 ozs. Sweet Spirits of Nitre.... 1 oz. Linsced Oil..... 6 ozs.
--

OINTMENT FOR SORE TEATS.

Spermaceti Ointment.... 6 ozs.
 Sugar of Lead, Powdered. 1 oz.
 Alum, Powdered..... 1 oz.
 Mix.

PURGING DRINK FOR CALVES.

Epsom Salts..... 1 to 2 ozs.
 Ginger..... 20 grs.
 Powdered Cloves..... 10 "

Mix. Give in a half pint of warm gruel.

PURGING DRINK FOR SHEEP.

Epsom Salts..... 2 ozs.
 Ginger..... 1 dr.
 Powdered Caraways..... 1 dr.

Mix. Warm thin gruel half a pint.

ASTRINGENT DRINK FOR SHEEP.

Prepared Chalk..... 2 drs.
 Ginger..... $\frac{1}{2}$ dr.
 Catechu, Powdered..... $\frac{1}{2}$ dr.
 Tincture of Opium..... 20 d'ps.

Give in half a pint of slippery elm tea, twice a day.

ALTERNATIVE TONIC POWDERS FOR CATTLE.

Flour of Sulphur..... 4 ozs.
 Black Sulphuret of Antimony..... 1 oz.
 Resin, Powdered..... 1 oz.
 Nitre, Powdered..... 2 ozs.
 Powdered Gentian..... 2 ozs.
 Powdered Ginger..... 1 oz.

Mix. Divide into six powders, and give one daily.

OINTMENT FOR GARGET IN COWS.

Solid Extract of Poke Root 2 ozs.
 Lard..... $\frac{1}{2}$ p'nd.

ASTRINGENT DRINK FOR CALVES.

Prepared Chalk..... 2 drs.
 Tincture of Opium..... 1 dr.
 Powdered Catechu..... $\frac{1}{2}$ dr.
 Ginger..... $\frac{1}{2}$ dr.

Powdered Caraway Seeds. 20 grs.

Mix. Give in half a pint of gruel.

ASTRINGENT DRINK FOR LAMBS.

Comp. Powder of Chalk... $\frac{1}{2}$ drs.
 Tincture of Opium..... 5 d'ps.
 Powdered Gentian..... 20 grs.
 Powdered Caraway Seeds. 10 grs.

Mix in half a teacupful of slippery elm tea, and give night and morning.

DISINFECTANT LOTION FOR CATTLE.

Bromo-Chloralum (Tilden's)..... 1 oz.
 Water..... 8 ozs.

OINTMENT FOR LICE ON CATTLE.

Strong Mercurial Ointment 1 oz.
 Lard..... 6 ozs.

Mix. Apply well, on wherever the animal cannot lick it off.

CHAPTER XVI.

LIST OF VETERINARY DRUGS, WITH A SYNOPSIS OF THEIR MEDICAL PROPERTIES AND DOSES.

- ACID, ACETIC.—Only used externally as an ingredient in cooling lotions.
- ACID, CARBOLIC.—Antiseptic, disinfectant, and escharotic, externally, and stimulant internally. Dose, 10 drops, largely diluted in water.
- ACID, MURIATIC.—In small doses. Tonic, dose 1 drachm, diluted with water.
- ACID, NITRIC.—Externally escharotic, internally tonic. Dose, 1 to 2 drachms, largely diluted in water.
- ACID, HYDROCYANIC ; Prussic Acid Medicinally.—Used as a sedative to reduce the action of the heart. Dose, 20 to 30 drops, administered with caution.
- ACID, PYROXYLIC ; Medicinally Naphtha.—Narcotic and expectorant. Dose, $\frac{1}{2}$ ounce.
- ACID, PHOSPHORIC.—Tonic used in diabetes. Dose, 1 ounce.
- ACID, SULPHURIC.—Caustic, only used externally.
- ACID, TANNIC.—Astringent. Dose, 20 to 30 grains.
- ACONITE ; Monkshood.—Poisonous in large doses. Used medicinally sedative, anti-spasmodic and anodyne. It is generally given as a tincture of the root. Dose, 15 to 20 drops.
- ALCOHOL.—Stimulant. Dose, 2 to 6 ounces.
- ALOES.—Barbadoes is the kind of this drug which is generally used in veterinary practice. Its action is cathartic in large doses, and tonic in small. Dose, 2 to 6 drachms. For a foal, give 5 grains for every week of its age.
- ALUM.—Irritant, astringent and sedative. Dose, 2 to 4 drachms.

AMMONIA, LIQUOR OF ; Spirit of Hartshorn.—Internally stimulant, anti-spasmodic and alexipharmic ; externally irritant. Dose, 2 to 6 drachms.

AMMONIA, AROMATIC SPIRIT OF ; Sal Volatile.—Medical properties bear a close resemblance to the Liquor. It is a weaker preparation. Dose, 4 to 8 drachms.

AMMONIA, CARBONATE OF.—Antacid and stimulant. Dose, 2 to 4 drachms.

AMMONIA, MURIATE OF ; Sal Ammoniac.—Only used externally. Dissolved in water as a lotion.

AMMONIACUM, GUM.—Stimulant, anti-spasmodic and expectorant. Dose, 4 to 8 drachms.

ANISESEED.—Stomachic and carminative. Dose, 1 drachm.

ANTIMONY, SULPHURET OF.—Alterative and anthelmintic. Dose, 2 drachms to 1 ounce.

ANTIMONY, CHLORIDE OF ; Butter of Antimony.—Used externally as a caustic.

ANTIMONY, TARTARIZED ; Tartar Emetic.—Febrifuge and anthelmintic. Dose, 1 to 6 drachms.

ARSENIC, WHITE.—Poisonous in large doses, and tonic in small ones, having also a peculiar effect on the skin. Dose, 5 to 10 grains.

ARSENIC, FOWLER'S SOLUTION OF.—Tonic and alterative. Dose, 40 to 50 drops 3 times a day.

ARNICA, TINCTURE OF—Only used externally as a lotion.

ASAFCETIDA, GUM.—Stimulant, carminative and vermifuge. Dose, 2 drachms.

ASCLEPIDIN ; Active principal of Pleurisy Root.—Tonic, diaphoretic, expectorant, carminative, diuretic and anti-spasmodic. Dose, 10 to 50 grains.

BELLADONNA ; Deadly Nightshade.—A narcotic acrid poison in large doses ; in small ones anodyne and anti-spasmodic. Dose, 2 ounces of the powdered leaves. Tincture, 2 to 4 drachms.

BALSAM OF COPAIBA. Diuretic and expectorant. Dose, 2 to 3 drachms.

- BROMO CHLORALUM.**—Powerful deodorizer, disinfectant and anti-septic. Used externally as a lotion to foul wounds, 1 ounce to half a gallon of water. For wash for diseases to swab the mouth and nostrils, 1 ounce to 8 of water.
- CAMPHOR, GUM.**—Stimulant, sedative and anti-spasmodic. Dose, 1 to 4 drachms.
- CANTHARIDES ; Spanish Flies.**—Should only be used externally as an ingredient in blistering ointments.
- CAPSICUM ; Cayenne Pepper.**—Stimulant. Dose, 1 to 2 drachms.
- CASCARILLA, BARK OF.**—Tonic. Dose, 1 to 2 ounces.
- CASTOR OIL.**—Purgative. Dose, 1 pint.
- CATECHU.**—Astringent and anti-septic. Dose, 2 to 5 drachms.
- CHALK, PREPARED.**—Ant-acid and astringent. Dose, 1 to 2 ounces.
- CHAMOMILE FLOWERS.**—Stomachic, carminative and tonic. Dose, 1 to 2 ounces.
- CHARCOAL.**—Anti-septic. Used externally as an application to foul wounds.
- CHLOROFORM.**—Anæsthetic, stimulant and anti-spasmodic. Inhaled in doses of 2 to 4 ounces. Given internally, dose, $\frac{1}{2}$ to 1 ounce.
- CINCHONA ; Peruvian Bark.** Astringent and tonic. Dose, 1 to 3 ounces.
- COLCHICUM ; Meadow Saffron.**—Cathartic, diuretic and sedative. Dose, of the root or seeds, $\frac{1}{2}$ to 2 drachms.
- COPPER, SULPHATE OF.**—Used externally as a caustic, internally tonic and astringent. Dose, 1 to 2 drachms.
- COPPER, SUBACETATE OF ; Verdigris.**—Poisonous. Only used as an external application.
- CREOSOTE.**—Sedative, anodyne, astringent and anti-septic. Dose, 10 to 30 drops. Used externally in skin diseases mixed with oil or lard, 1 drachm to 3 or 4 ounces.
- CROTON OIL.**—A powerful cathartic. Dose, 10 to 15 drops.
- DIGITALIS ; Foxglove.**—Sedative and diuretic. It is one

of those remedies which should always be administered with much caution, on account of its accumulatory effects in the system, and of its being a powerful poison. Dose of the powdered leaves, 10 to 20 grains. Tincture, 40 to 50 drops.

ETHER, SULPHURIC.—Stimulant, narcotic and anti-spasmodic. Dose, 1 to 3 ounces.

GALLS.—Astringent. Dose, 4 to 6 drachms.

GENTIAN.—Stomachic and tonic. Dose, 4 to 8 drachms.

GINGER.—Stomachic and carminative. Dose, 1 ounce.

GLYCERINE.—An emolient. External application.

GUMS, ARABIC and TRAGACANTH.—Used for making soothing mucilaginous emulsion. Dose, 1 ounce dissolved in water.

IODINE.—Resolvent. Dose, 1 to $1\frac{1}{2}$ drachms. Externally it is applied in the form of tincture.

IODIDE OF POTASSIUM.—Alterative, diuretic and resolvent. Dose, 2 to 4 drachms.

IRON, SULPHATE OF.—Astringent and tonic. Dose, 1 to 3 drachms.

IRON, IODIDE OF.—Tonic and resolvent. Dose, 10 grains to 1 drachm.

IRON, MURIATED TINCTURE OF.—Tonic, astringent and diuretic. Dose, 1 to $1\frac{1}{2}$ ounces, diluted in water.

JUNIPER BERRIES.—Carminative and diuretic. Dose, 1 to 3 ounces.

LEAD, ACETATE OF.—Astringent and sedative. Dose, 20 to 60 grains.

LEAD, IODIDE OF.—Epispastic. Only used externally as an ingredient in ointments.

LEAD, NITRATE OF.—Anti-bromic and anti-septic. Only used externally as a wash for diseases of the skin.

LINSEED ; Flax seeds.—Used for food in quantities of 4 to 6 ounces.

LINSEED OIL.—Purgative. Dose, 1 to 2 pints.

LOBELIA.—Expectorant, sedative and anti-spasmodic. Dose, 1 to 2 drachms.

- MAGNESIA, SULPHATE OF ; Epsom salts.—Cathartic and diuretic. Dose, 1 to 2 pounds.
- MATICO, LEAVES OF.—Externally styptic ($\frac{1}{2}$ ounce to boiling water 1 pint).
- MERCURY, AMMONIO CHLORIDE OF ; White Precipitate.—Used as a local application to kill lice.
- MERCURY, BICHLORIDE OF ; Corrosive Sublimate.—A powerful poison. Used as a caustic and ingredient in liniments.
- MERCURY, SUBCHLORIDE OF ; Calomel.—Purgative, alternative and anti-phlogistic. Dose, 20 grains to 1 drachm.
- MERCURY, BINIODIDE OF.—Only used externally as an ingredient in sweating blister ointments.
- MERCURIAL OINTMENT.—Used externally to kill lice and for mange.
- NUX VOMICA ; Strychnos.—Tonic used in paralysis. Dose of fluid extract, 50 to 100 drops ; solid extract, 2 to 8 grains.
- OPIUM.—Stimulant, narcotic and anodyne. Dose, 1 to 2 drachms. Tincture, $\frac{1}{2}$ to 1 ounce.
- POTASS, ACETATE OF.—Diuretic and deobstruant. Dose, 5 to 10 drachms.
- POTASS.—Caustic. Only used externally as a caustic.
- POTASS, CARBONATE OF.—Antacid. Dose, 1 to 5 drachms.
- POTASS, CHLORATE OF.—Refrigerant and diuretic. Dose, 3 to 5 drachms.
- POTASS, NITRATE OF ; Saltpetre.—Diuretic and febrifuge. Dose, 6 to 8 drachms.
- POTASS, PERMANGANATE OF.—Anti-bromic and disinfectant. Only used externally as a wash for diseases of the skin
- POTASS, LIQUOR OF.—Stimulant. Dose, $\frac{1}{2}$ to 1 ounce.
- ROSIN.—Diuretic. Dose, 1 to 2 ounces.
- SAVIN, OIL OF.—Anthelmintic. Dose, 20 to 50 drops.
- SANTONINE.—Anthelmintic. Dose, $\frac{1}{2}$ to 1 drachm.
- SANGIUNARIA ; Bloodroot.—Stimulant, expectorant and alterative. Dose, 1 to 3 drachms.

SILVER, NITRATE OF.—Externally caustic, and used in solution for diseases of the eye.

SODIUM, CHLORIDE OF ; Common salt.—Give at pleasure.

SODIUM, BIBORATE OF.—Borax. Used as a wash for diseases of the eye.

SPIGELIA ; Pink Root.—Anthelmintic. Dose, $\frac{1}{2}$ ounce.

SQUILLS.—Expectorant and diuretic. Dose, 10 to 50 grains.

STRAMONIUM ; Thorn Apple seeds.—Alterative and diuretic. Dose, 1 ounce every third day.

SULPHUR.—Alterative. Used in diseases of the skin. Dose, 2 ounces every day.

SWEET SPIRIT OF NITRE.—Diuretic, diaphoretic, anti-spasmodic and stimulant. Dose, 1 to 2 ounces.

TAR.—Used externally as an ingredient in ointments.

TURPENTINE, SPIRITS OF.—Anti-spasmodic, diuretic and anthelmintic. Dose, $\frac{1}{2}$ to 1 ounce.

UVA URSI.—Astringent, tonic and diuretic. Dose, 2 to 3 drachms.

VERATRUM ALBUM ; White Hellebore.—Sedative. Dose, 20 to 30 grains.

VERATRUM VIRIDE ; American Hellebore.—Sedative and febrifuge. Dose of fluid extract, 30 to 50 drops.

WILD YAM.—Active principal of (*Dioscorea*) anti-spasmodic. Dose, 20 to 40 grains.

ZINC, ACETATE OF.—Dissolved in water to form a wash for diseases of the eye.

ZINC, CARBONATE OF.—Used externally as an ingredient in ointments.

ZINC, CHLORIDE OF.—Used externally caustic and anti-septic.

ZINC, OXIDE OF.—Used externally as an ingredient in ointments.

ZINC, SULPHATE OF.—Dissolved in water to form a wash for diseases of the eye.

ZINC, TANNATE OF.—Dissolved in water to form a wash for diseases of the eye.

CHAPTER XVII.

DEFINITIONS OF TERMS DENOTING THE PROPERTIES OF REMEDIAL AGENTS.

- Absorbent*.—Neutralizing acid or irritant substances in the stomach.
- Alexipharmic*.—Antidote to poison.
- Alterative*.—An agent considered to be capable of producing a salutary change in a disease.
- Anæsthetic*.—Having the power of producing insensibility to pain.
- Anodyne*.—A drug giving ease in pain, as opium, belladonna, chloroform, &c.
- Ant-acid*.—Agents that neutralize acids.
- Anthelmintic*.—A remedy which destroys or expels worms, or prevents their formation and development.
- Anti-lithic*.—Tending to cure stone or gravel.
- Anti-bromic*.—A destroyer of offensive odors.
- Anti-phlogistic*.—A remedy to allay fever and inflammation.
- Anti-septic*.—A preventer of putrefaction.
- Anti-spasmodic*.—Allaying spasms.
- Anti-toxic*.—Antidoting poison.
- Anti-zymotic*.—Opposed to fermentation.
- Aperient*.—A gentle purgative.
- Astringent*.—Contracting organic texture.
- Carminative*.—Remedies causing the expulsion of wind.
- Cathartic*.—A medicine which, when taken internally, increases the number of discharges from the bowels.
- Cauterant*.—A substance used for firing or disorganizing the parts to which it is applied.
- Corroborant*.—Any substance which strengthens.
- Counter-irritant*.—An irritation excited in a part of the body to relieve disease in another part.

Demulcent.—Soothing.

Deobstruent.—A medicine given with the view of removing obstructions.

Depurative.—Removing impurities from and purifying the fluids of the body.

Detergents.—Medicines which possess the power to cleanse wounds, ulcers, &c.

Diaphoretic.—A medicine which excites perspiration.

Diluent.—A drink which dilutes the liquids of the body.

Discutient.—Medicines which possess the power of repelling morbid swellings.

Diuretic.—Increasing the secretion of urine.

Disinfectant.—Destroying the causes of infection.

Drastic.—Active, applied to purgatives.

Emetic.—A substance capable of producing vomiting.

Emollient.—Substances which relax and soften parts that are inflamed.

Epispastic.—Irritating, blistering.

Errhine.—Exciting a discharge from the nose.

Escharotic.—A caustic destroyer of the flesh.

Expectorant.—Promoting mucous discharges from the air passages and lungs.

Febrifuge.—A medicine which possesses the property of subduing or driving away fever.

Hæmostatic.—Arresting the flow of blood.

Hepatic.—Promoting a healthy action of the liver.

Hypnotic.—A remedy producing sleep or stupor.

Irritant.—That which causes soreness and inflammation.

Laxative.—A medicine which gently opens the bowels, a mild purgative.

Lenitive.—Applied to gentle remedies which allays irritation or palliates disease.

Lithontriptic.—A solvent of stone in the bladder.

Narcotic.—Substances which have the property of producing sleep or stupor.

- Nervine*.—A medicine that soothes nervous excitement.
- Nutritive*.—Nourishing.
- Pectoral*.—Medicines for relieving diseases of the lungs.
- Prophylactic*.—A preservative or preventive of disease.
- Refrigerant*.—A cooling medicine.
- Resolvent*.—Allaying inflammation and dispersing morbid swellings.
- Rubefacient*.—A medicine which causes redness of the skin.
- Sedative*.—Medicines which directly diminish vital actions.
- Silagogue*.—That which increases the secretion of saliva.
- Sorbefacient*.—A remedy that promotes absorption.
- Soporific*.—Medicines inducing sleep.
- Spastic*.—Producing involuntary muscular contraction.
- Spinant*.—Acting upon the spinal marrow.
- Stimulant*.—A medicine which increases vital action.
- Stomachic*.—A medicine which causes a healthful action of the stomach.
- Styptic*.—Arresting the flow of blood ; an external astringent.
- Sudorific*.—A medicine which provokes sweating.
- Suppurant*.—That which facilitates suppuration.
- Tonic*.—Producing a permanent increase in the rigor of the system.
- Vermifuge*.—Expelling worms.
- Vesicant*.—Producing blisters.
- Vulnerary*.—Favoring the healing of wounds.

WEIGHTS AND MEASURES.

The weights and measures used by physicians, veterinary surgeons and apothecaries in the United States when prescribing and preparing medicines are the following :

APOTHECARIES' WEIGHTS.

These are derived from the Troy pound, and are ex-

hibited in the following table with their signs by which they are denoted annexed :

20 grains (gr.)	make 1 scruple.	Signs, sc. or ℥ .
3 scruples	“ 1 drachm.	“ dr. or ʒ .
8 drachms	“ 1 ounce.	“ oz. or ʒ .
12 ounces	“ 1 pound.	“ lb.

APOTHECARIES' MEASURES.

These are derived from the wine gallon, and are given in the following table with their signs by which they are denoted annexed.

60 minims (m)	make 1 fluidrachm.	Signs, fids or fʒ .
8 fluidrachms	“ 1 fluidounce.	“ floz. or fʒ .
16 fluidounces	“ 1 pint.	“ pt. or ℥ .
8 pints	“ 1 gallon.	“ gall, or cong.

APPROXIMATE MEASUREMENT.

A teacup	is estimated to contain about 4 fluidounces.
A wineglass	“ “ “ 2 “
A tablespoon of liquid	is estimated to contain $\frac{1}{2}$ a fluidounce.
“ of powdered roots or bark	“ 2 drachms.
A teaspoon of liquid	is estimated to contain 1 fluidrachm.
“ of powdered roots or bark	“ $\frac{1}{2}$ a drachm.
“ “ chemicals	“ from 60 to 120 grs.
A drop of water or watery fluids	is equivalent to 1 minim.
“ oils and tinctures	“ $\frac{1}{2}$ “
“ chloroform and sulphuric ether	“ $\frac{1}{8}$ “

MEASURES OF LENGTH.

1 line,	the 12th part of an inch.
A hand (horse measure),	4 inches.
A span,	$10\frac{2}{3}$ inches.

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WILLIS'S
VETERINARY PRACTICE,

BEING

AN ACCURATE AND DETAILED ACCOUNT

OF THE

Various Diseases to which the Horse is Liable,

TOGETHER WITH

THE LATEST MODE OF TREATMENT.

TO WHICH IS ADDED

AN APPENDIX,

CONTAINING VETERINARY PHARMACOPEIA AND VETERINARY
MATERIA-MEDICA.

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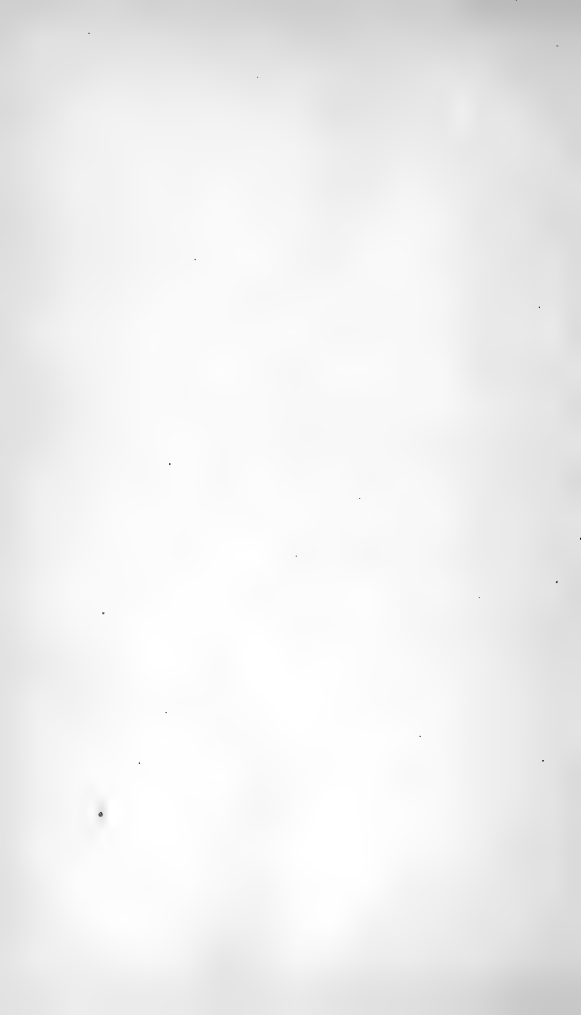
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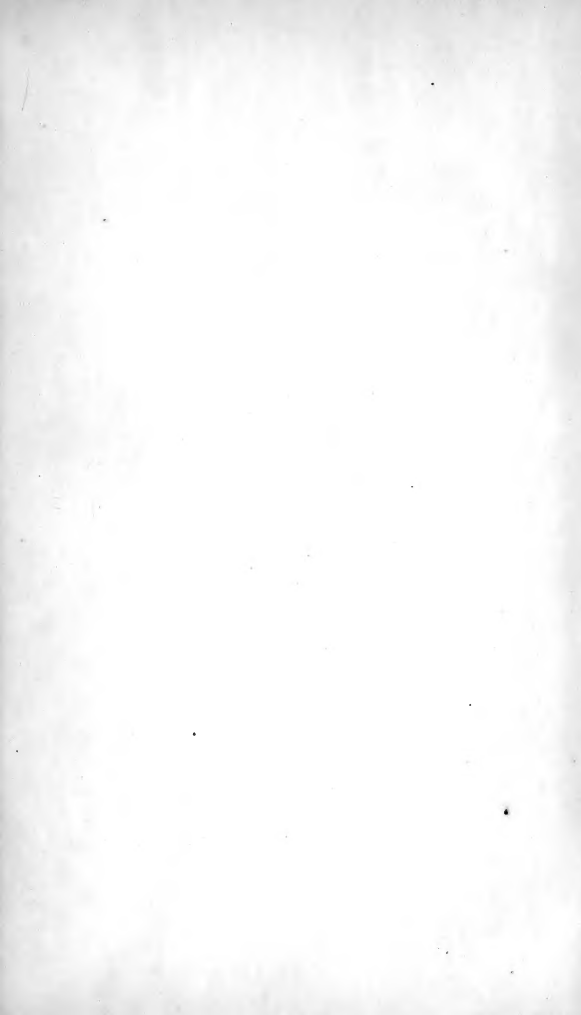
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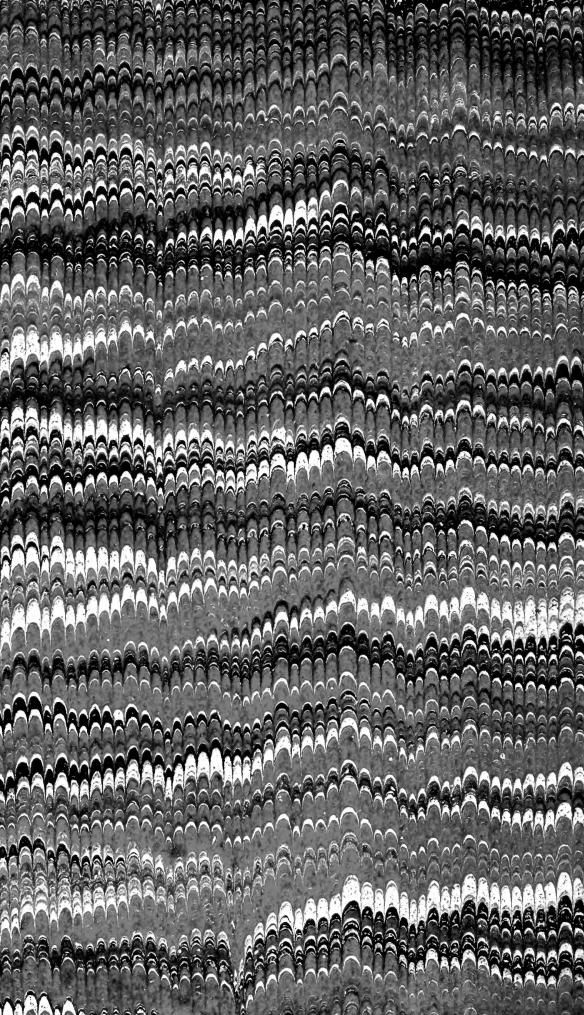
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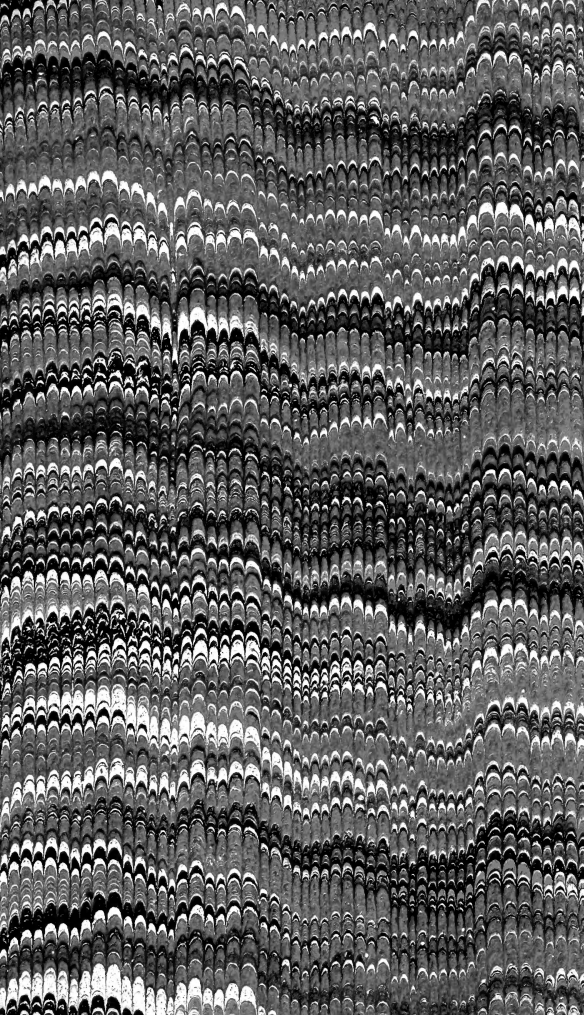
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