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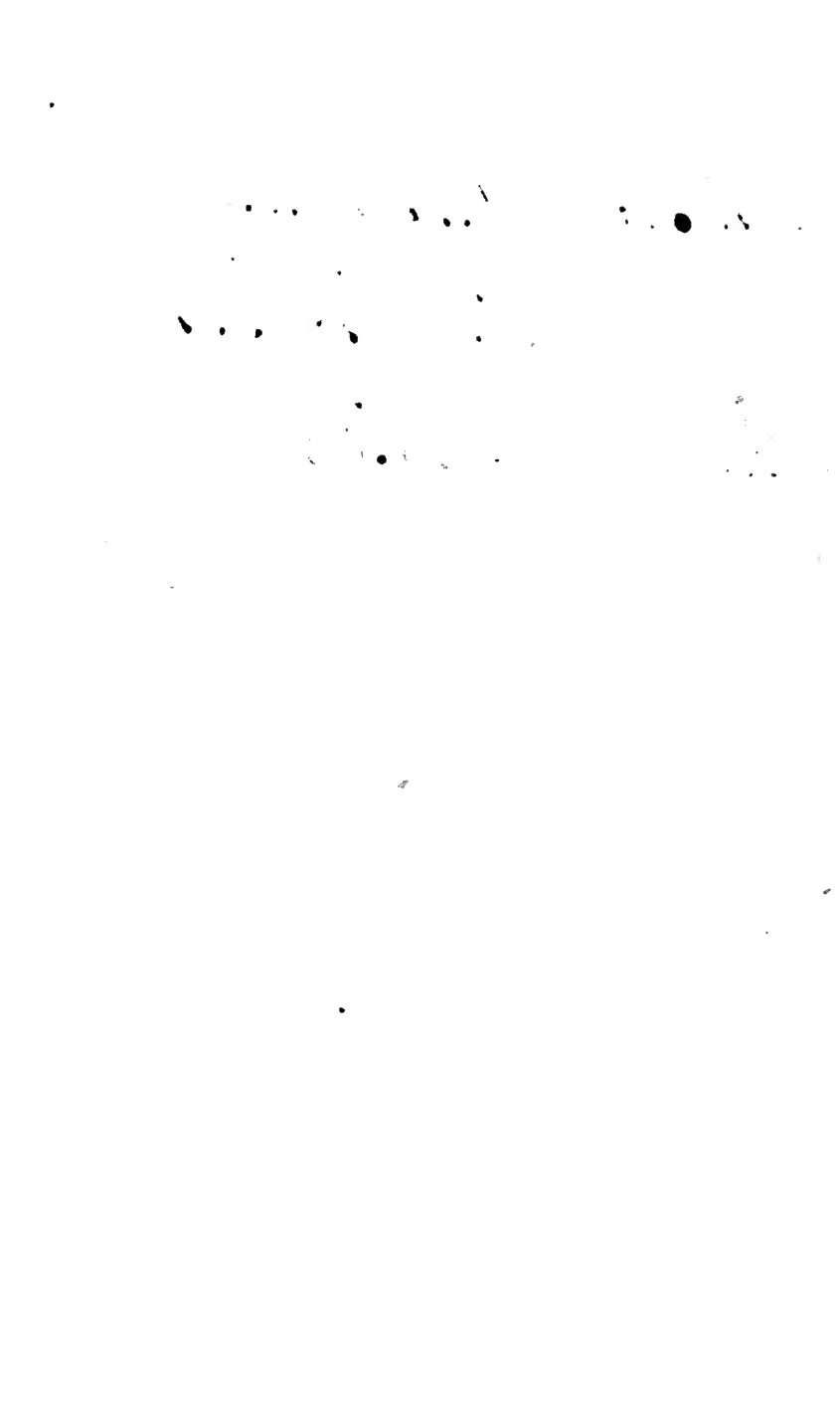
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Cincinnati 1850



HIPPOPATHOLOGY,
A
SYSTEMATIC TREATISE
ON THE
DISORDERS AND LAMENESSES
OF
THE HORSE,

WITH THEIR
MOST APPROVED METHODS OF CURE;

EMBRACING THE DOCTRINES OF THE ENGLISH AND FRENCH VETERINARY
SCHOOLS; THE OPINIONS OF PROFESSORS COLEMAN AND SPOONER,
DIRECTOR GIRARD, HURTREL D'ARBOVAL, AND OTHER BRITISH
AND FOREIGN VETERINARIANS.

WITH ILLUSTRATIVE WOODCUTS.

SECOND EDITION,
CORRECTED AND IMPROVED.

BY WILLIAM PERCIVALL, M.R.C.S.

*Licentiate of the Company of Apothecaries; late Veterinary Surgeon in the First Life Guards;
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VOL. I.

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“ A righteous man regardeth the life of his beast.”

J. E. ADLARD, PRINTER, BARTHOLOMEW CLOSE.

PREFACE TO THE FIRST EDITION.

THE Author offers the present production to the notice of the Public as a work in which the Principles of Veterinary Medicine and Surgery are deduced from their natural or legitimate sources—the Anatomy and Physiology of the Animal. Upon no other foundation can a rational practice be instituted for the Cure of Disease; and even this requires tempering by experience ere it is rendered suitable and effectual. The Author's experience is derived from twenty years' service in the Army.

Next to the solicitude of rendering his work of value in a medical or practical point of view, the Author has felt desirous of adapting it for general use; and on that account, has refrained from the introduction of technical language beyond what appeared essential to the completion of his primary design, as well as refused admission to other Names for Diseases than those by which they are popularly known and understood: though these appellations he has, as occasion seemed to require, both qualified and explained.

The Nosological Arrangement of the work the Author has been led to adopt after much unsatisfactory research

among the many plans already in existence. He is fully conscious of its imperfections: but, after the signal failures that have occurred in attempts to frame "Systems of Nosology," what is to be expected from a writer on a branch of science which is not even furnished with an established Nomenclature?

The completed Work consists of Four Volumes; which, though connected as a whole, are so constructed that each may be separately perused. The present volume treats especially of the *External Disorders*. The Second will comprehend those that are *Internal*. The Third will, more especially, be devoted to a consideration of such specific diseases, as are of too much importance to be condensed into the limits of the previous volumes. While the Fourth, illustrated by highly finished coloured engravings, will be confined to Lameness, and the Affections of the Foot.

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HIPPOPATHOLOGY.

INTRODUCTORY SECTION.

I. HEALTH. II. TRANSITION FROM HEALTH TO DISEASE.

III. DISEASE.

THE SCIENCE OF MEDICINE has for its single object the preservation of health, or the cure or removal of disease. Strictly speaking, a domesticated animal must either be in a state of health or one of disease; at the same time, in practice we are not unfrequently reminded that states do exist which cannot be said to be altogether healthy or diseased; they are not in truth entirely referable to one condition or the other, but to a state which is either a compound of both, or else consists of a transition from one to the other. Thus, a knowledge of health, and of the means necessary to its preservation and improvement, come no less within the province of the veterinarian, than does that science by which he undertakes to mitigate or eradicate disease.

This science applied to man takes the name of HUMAN MEDICINE; extended to animals it becomes VETERINARY MEDICINE. Its first division, that regarding the conservation of health, has got the name of HYGIENE (*ὑγιης*, health). The study of diseases, that of PATHOLOGY (*παθος*, affection; *λογος*, discourse); while a subdivision of the last-named part makes us acquainted with the means by which diseases are cured, and is called THERAPEUTICS (*θεραπευτω*, I cure).

HEALTH.

“Health we regard as the standard (or sound) condition of the body. But it is not easy, nor is it necessary, to express in what that condition consists. It is sufficient to know it implies freedom from pain and sickness—from all those changes in the structure of the body which endanger life, or impede the easy and effective exercise of the vital functions. It does not signify any fixed immutable condition; for it varies in different persons according to age, sex, and original constitution, and in the same person from day to day. Again, health does not necessarily imply perfect integrity; indeed, it is not incompatible with great and paramount alterations, and even loss of parts that are not vital, as of an arm or leg.”¹

The natural habits and peculiarities of the horse become objects of study hardly less essential in practice than are the structure and functions of the various parts of its body; it being by a close and consistent approximation to them that we are best enabled to keep the animal healthy and vigorous in its state of domestication. Although health and disease are conditions equally familiar to us in their true or genuine characters, yet to append correct definitions to them has perplexed our ablest medical writers: the difficulty lying in drawing a line in the midst of those forms and stages through which one state shades into or vanishes into the other—those faint and evanescent links by which the two ends of the chain are united. Our great moral philosopher, Locke, used to say, that if we would but rightly estimate good and evil, we should find they lie much in comparison: in like manner, we may briefly sum up the general nature and characters of health and disease, and, with Locke, pronounce, “they lie much in comparison.”

The SIGNS OF HEALTH, at least the outward signs, are too notorious to need much description. We may say, with Gibson, “When a horse eats a moderate allowance of hay

¹ Dr. Watson's Lectures, 'Med. Gaz.,' 1840.

and corn ; when he drinks a moderate quantity of water ; endures his exercise well, without being faint or dispirited ; when his exercise does not take him off his feed, but rather quickens his appetite ; when his coat is smooth, and looks wholesome ; we may reasonably suppose, nay, even conclude, such a horse to be free from sickness :” provided, he should have added, there be no signs of disease present at the time ; for a horse may possess all these evidences of health, and yet at the time manifest disease, and that even of a malignant nature. As medical inquirers, therefore, we look farther than this. We expect to find the functions of life performed with a degree of ease and perfection consonant with the well-being and comfort of the animal : at the same time we are prepared to meet with considerable variety in the performance of these functions in different individuals, and under diversified circumstances. The animal may eat or drink much or little in comparison with others ; he may be naturally lively or naturally dull ; he may sweat from little or much exertion ; his pulse may run thirty or fifty beats in a minute ; his breathing may be perceptible at the flanks, or it may not ; and yet we may have no reason to suspect that he is out of health.

IN a STATE OF NATURE, animals can hardly be viewed as the subjects of disease : “ the pure stream their drink ; the simple herb their repast ; neither care disturbs their sleep, nor passion inflames their rest.” Within the course of the year, however, though they may not be troubled with disease, yet are their bodies subject to certain natural inward revolutions, which render them, if not actually ailing, at all events in a much less vigorous condition of health at one season than at another. The process of shedding the coat is attended with expenditure to the constitution. The operation is renewed in the spring ; thus throwing horses twice a year, at least, out of their usual health. The apparent nonliability of horses to disease while roaming in their native fields and forests, has impressed some people with the notion that they are exempt from the evils flesh is heir to : so far from this being the case, the moment they are subjugated

to the dominion of man, they become liable to pain and sickness, added to injury through mismanagement and abuse.

There is the same observable difference between horses turned out to grass, or into the strawyard, or horses kept in stables, and well fed. Those of the former kind will not only endure all the high feeding you can give, especially in cold, wet weather, without becoming disordered, but without getting fat. They will thrive,—their hides will be loose, and their bellies full; but they will not deposit fat upon the ribs. Whereas, the pampered and stabled horse, will not only cram and feast, but will lay a quantity of fat upon his ribs, and soon become in the stuffed condition of the stall-fed or prize-fed ox. Now, inasmuch as the strawyard horse does not fatten in this manner, it becomes a question if the animal does not *grow* in greater proportion than the stabled horse? I have ever considered that, in pursuing the life nearest to its wild or natural state, it was more likely to grow large than to become furnished, and that we by these means shall obtain an animal of greater frame than if he had been kept with the most assiduous care in the stable.

IN a STATE OF DOMESTICATION it is, that we look for the transition from health to disease. Were I roundly to assert that the diseases of horses had their origin in domestication, though I might be accused of stating that which was not strictly and unexceptionably true, yet should I be instilling highly useful practical notions of their general source into the mind of the veterinary student. Although all but exempt from suffering in their native condition, yet, when they come to be housed, do they evince more susceptibility in this respect than any indifferent person would believe. Even the sturdy ass and stubborn mule, when they come to be domesticated, manifest exceeding softness of constitution under the effects of medicine; of which I had some remarkable examples in the course of the Peninsular campaign, while in medical charge of a *dépôt*, wherein sick mules and asses were received.

TRANSITION FROM NATURE TO DOMESTICITY.

The AIR an animal respire is to be regarded in reference to its *temperature* and to its *purity*, its *dryness* or *humidity*. By nature the horse appears especially to require not only air that is cooling and refreshing, but such as is pure and fully fitted for the purposes of respiration : he is an animal of speed ; his speed depends on his bodily strength ; and the endurance of that strength is dependent on his wind ; it therefore becomes necessary not only that he should be furnished with a capacious and complete respiratory apparatus, but that the air he respire should be of that description best calculated to fulfil the ends of respiration. This he finds in the open field ; but does he meet with it likewise in the stable? No ! There he encounters an atmosphere confined within certain limits, and, from that circumstance alone, of a temperature higher than the one he has quitted : in addition to which it becomes heated even from his own breath and body, as well as from those of other horses who may stand with him : worse than this, however, its oxygenous or vivifying principle becomes more or less consumed by the numbers who respire it ; and, worse than all, it becomes impregnated with effluvia exhaled from the dung and the urine. The evils of this change were not long concealed from the penetrative mind of Professor Coleman, and he accordingly adopted measures to remedy them ; a step the most beneficial, and therefore the most praiseworthy he or any other man ever took to improve the domestic condition of the horse. It is almost unnecessary to add that I allude to the *ventilation of the cavalry stables*. I have now served twenty years in the army, and every one of those years has added to my conviction of the truth of what I am at this moment endeavouring to inculcate.

FOOD furnishes less cause for complaint. The hay we give in the stable is the same as the grass the animal eats in the field, only one is in a dry and more or less fermented

state; the other in its natural, green, and juicy condition. Little more can be said against the oats, or even the beans, that are but occasionally given. Altogether, they possess more binding and more heating, or stimulating, properties than the growing herb; there is nothing, however, positively hurtful in their artificial or prepared condition: it is to the *quantity* of them that is consumed, and the *circumstances under which that consumption takes place*, that we are to look for any injurious effects they may produce. The only drink the horse will take, either in or out of the stable, is *water*. All that we have to guard against is, its being given at improper times, and in improper quantities. In a general way, drink is given too sparingly: after work is done, and while the body is cool, there can be no good reason for stinting the animal of this wholesome beverage. In a state of nature he helps himself to water; and from that circumstance, as well as the one of his food being green and succulent, drinks much less than when in the stable. I once made an experiment with two horses who had (lead) mangers for containing their water, by the side of those that held their corn; and I found that, when these mangers were filled, and the animals were allowed to drink *ad libitum*, they invariably consumed less fluid than when watered in the ordinary way.

EXERCISE, in regard to a stabled horse, may be considered in two points of view: either as necessary or conducive to the animal's health, or as going beyond that, and coming under the denomination of *work*. That this latter, carried to excess, is destructively injurious, nobody need be told; and yet, had we to choose between this and a state of absolute rest, it would, perhaps, be difficult to say which of the two evils is the least. Exercise is no less necessary to the health of the body than food; and though we are in the habit of oftener witnessing evil than good from what we call work, yet are there many horses that are absolutely ruined for the want of exercise. The nutrient diet of the stable demands a certain expenditure, the natural producer of which is exercise: and unless one keeps pace with the

other, the equilibrium between them becomes destroyed, and health eventually must give way to disease.

GROOMING will also come in for a share in rendering the animal's condition in the stable a still more artificial one. The very act of cleaning works a change in the skin it never probably would of itself have experienced ; added to which, the various trimmings that are practised, and the fair proportions that are too often curtailed, are all more or less concerned in altering the animal's condition.

SHOEING.—More than all this, however, is to be dreaded the farrier's interference. Shoeing is a necessary evil, and all our study should be directed towards its application in a manner that can effect the least possible harm. Nature has made a horny case for the foot, which is adequate so long as the animal treads upon the soft verdure, that at the same time affords him nutriment : as soon as art, however, removes him from his native fields, to hard and gravelly roads, this defence is no longer sufficient protection, therefore it becomes necessary to guard even the hoof. This we do by nailing upon it the rim or half-circle of iron, which we denominate a *shoe*. The essential difference between the natural defence and the one art has invented is, that the former, while it is sufficient for ordinary protection, is yielding and elastic ; while the iron shoe puts a total stop to all that play of the horny case with which Nature has endowed it.

TRANSITION FROM HEALTH TO DISEASE.

An ANIMAL BODY is the union of several complex *organs*, into one entire whole, or *system*; each organ executes a correspondent function, and all of them concur in accomplishing the preservation of life; the continuation of the species; and the maintenance of their living relations with the surrounding world. All our knowledge amounts to on the subject of life, is, that it consists in the exercise of certain organic functions, the end of which is to repair the waste necessarily incurred by their own action.

The ORGANIC FUNCTIONS consist in *assimilation* and *excretion*; the ANIMAL FUNCTIONS proceed from the faculties of *sensation* and *locomotion*. My business at present is more immediately with the former. It is an established fact in physiology, that every part of the animal body is constantly decaying, and requiring renovation—a process that will end but with death. The aliment consumed by the animal is designed to form the renovating material. The food taken into the stomach therein undergoes change; subsequently passing into the intestines, to suffer a further change, and become finally converted into a pulpy mass, wherein is distinguishable a milky product called *chyle*, which, in comparison with other matters, is scarce and inconsiderable. The chyle is conveyed by numerous small vessels, named *absorbents*, into the veins to mix with the blood. The residue of the ingesta passing on through the bowels, becomes feculent, and is expelled. Thus is carried on and completed the process of *digestion*, the finishing part of the work of assimilation is effected through the operations of *circulation* and *respiration*.

The blood being continually fed, would soon fill its vessels to repletion, were there not gates or *excretories* to carry off its redundant or useless parts. The diminution of the quantity of blood is also effected by consumption, or the use

that is made of it in the renovation of worn-out parts, and in a state of decay. The process is likewise called *nutrition*. As the organs lose their vigour from constant use, they are removed by absorbent vessels, and fresh matter is deposited by the *arteries*, or *nutrient vessels*. In this manner a continual change of material is kept up, which is so complete that the body an animal possessed at one period, is really not the body he has inhabited at some time subsequent. The growth of the body, and its decline, both admit of explanation, on the presumption, that, during growth, the arteries deposit as equal to two, the absorbents acting as equal to one; that in middle life these operations are equivalent; but that in old age the nutrient powers fail, while the absorbent continue to act with no abatement of vigour.

The animal fluids are the blood; the fluids that enter the blood; and the fluids that proceed from the blood.

The fluids which enter the blood are of two kinds: 1. Those by which it is renewed and enriched; 2. Those which enter it, in order that they may be conveyed out of the body.

Although we cannot doubt that any considerable modification of the chyle, by aliment or by air, must influence the composition and quality of the blood, we have no means of ascertaining what these modifications are. Nor can we doubt that the absorbed matters from the body alter and contaminate the blood, and act as poisons upon the system, as they may be absorbed from parts diseased or putrefying. In this way, doubtless, disorders at first purely local become constitutional.

The BLOOD may be regarded as the medium through which these changes are effected. It receives fresh supplies from the cavities of the bowels; it *animalizes* this matter; it likewise receives the old and worn-out particles absorbed from different textures of the body, and conducts them into the channels designed for their separation and expulsion.

Again, matters which are harmless in minute quantities, become noxious when retained or accumulated in the blood, from faulty or deficient action in the organs destined to

eliminate them. (Dr. Watson's Lectures, 'Med. Gaz.,' 1840.)

The EXCRETORIES are the *intestines*, the *kidneys*, the *lungs*, and the *skin*. The extensive surface for secretion which the intestines present, and the quantity of fluid, or *intestinal juice* they separate from the blood, justly entitle them to the first place amongst excretories. The kidneys are likewise (in horses particularly) active in extracting superfluous matter from the blood; and the lungs and skin both tend to relieve the system by a discharge of aqueous exhalations. In this manner all useless or redundant matters are got rid of; the blood being all the while the vehicle through which these various ends are accomplished.

The fluids that *leave* the blood may be considered under a threefold division:

1. Those which are expended in the growth and maintenance of parts, some of them becoming fixed and solid; others retaining their fluid condition.

2. Those that are employed in aid of some definite function of the body, as the saliva, gastric juice, &c. Now, the increase or diminution of these secretions may either be the result of disease, or may cause disorder.

3. Those which are separated from the blood merely to be excreted, as the urine, certain secretions from the bowels, and from the bronchi and skin. (Dr. Watson's Lectures, 'Med. Gaz.,' 1840.)

The blood itself is liable to undergo certain morbid changes:

1. It may vary in *quantity*, both in respect to the whole system, and in respect to particular organs and tissues.

2. Closely connected with these differences in quantity is the variety which is observable in regard to the proportions between the several constituents of the blood—thinner, less rich in fibrine or colouring matter.

3. Independently of changes in the relative proportions of its constituents, the blood is liable to great change in its chemical composition, and, therefore, in its physical quality. This appears to be the case in sea-scurvy and purpura.

PLETHORA.

This is a word of Greek origin, signifying *fulness* or *repletion*; in which sense, as respects the quantity of blood flowing in the body, I have prefixed it to this part of my subject.

General and *practical* plethora, is sometimes called general or local *congestions*, sometimes irregular *determination*, and of late, by M. Andral, *hyperæmia*; they all, however, mean the same thing. (Dr. Watson's Lectures, 'Med. Gaz.,' 1840.)

When we reflect on what the habits of the horse are in a state of nature, and contrast these with those imposed on him by art, we shall be led to expect that certain changes or revolutions will happen in his system. One of the earliest and most certain effects of domestication is plethora, or else a condition approaching thereto. Aliment of a more stimulating nature makes more chyle, and perhaps, of a better quality too; more chyle makes more blood; which goes on to create a sort of preternatural distension of the blood-vessels—the state we call *plethora*.

Perhaps it may not be so obvious that the whole quantity of blood contained in the body is sometimes in excess, as it is demonstrable that there exists *local* plethora or congestion. (Dr. Watson's Lectures, 'Med. Gaz.,' 1840.)

Aliment, however, is not alone concerned in this result. The animal coming from poor to good keep, not only experiences a craving appetite for his new food, but has within himself an increased aptitude for the conversion of it into nutriment; so that more chyle is actually made from the same quantity of aliment. The comfortable warmth of his new habitation, together with his state of undisturbed quietude, also favour the process of digestion. This, then, constitutes what we understand by *plethora from excess of nutrition*.

Defective or inadequate secretion and excretion will likewise conduce to a plethoric condition of the system. The

secretions and excretions are all products from the blood ; and so long as they are equivalent to the chyle the blood receives—so long the equilibrium is preserved, and plethora warded off: abridge or interrupt these emissions, however, and an effect similar to that which follows excess of nutrition is produced. The secretions and excretions of the body have not only the effect of giving vent to the redundance of the circulating fluid—they likewise serve to purify it, by ridding it of that which would prove noxious or insalubrious. This operation of the animal economy, in conjunction with that of the nervous influence, has led to the ingenious pathological deduction framed by Dr. Copland: “That the interruption or obstruction of any secreting or eliminating function, if not compensated by the increased or modified action of some other organs, vitiates the blood more or less; and if such vitiation be not soon removed by the restoration of the function primarily affected, or by the increased exercise of an analogous function, more important changes are produced in the blood, unless the energies of life are sufficient to repel the cause of disturbance, to oppose the progress of change, and to excite actions of a salutary tendency.”

SUBJECTS OF PLETHORA.—Young horses, on their first entry into stables, are the common subjects of the first description of plethora; old horses, or such as have become habituated to stable-regimen, of the latter. No prudent stable-keeper would feed his young or fresh horses high; even while upon soft meat, such as mashes, &c. &c., it is seldom that this state can be avoided. In those that are not treated with necessary caution, it is a result almost certain to happen. On the other hand, horses that are habitually fed on stimulating diet, and whose work is irregular, are subject to plethora, from the want of those secretions being performed which require the active exercise of body. Such is the case with a large class of those horses that are kept for the purposes of pleasure.

FORMS OF PLETHORA.—The effects of plethora appear often to be warded off by natural processes going on in the

system. In the growing animal the blood is consumed so fast, that plethora is not of frequent occurrence compared with what it is about the period that growth is nearly completed—the period, in fact, at which our young horses come to be domesticated. *Obesity* is likewise a mode adopted by nature to get rid of redundant nourishment in the system. That blood, over and above what is required for the purposes of reparation, secretion, and ordinary circulation, is often converted into fat, and in that form laid up in many parts of the body, as a sort of reserve in case it should be wanted. Young horses do not in general become fat until they have completed their growth. Old seasoned horses thrive best in the genial warmth of the stable. Although good feeding, little work, and quietude, are all conducive to obesity, yet a horse cannot brook being tied up and stall-fed after the manner of a bullock. His habits of activity unfit him for a state of absolute rest: from want of exercise his legs become swollen, and his body falls into disease. During the many hours that horses in general stand in the stable, it is of some importance that they should be subjected to no disturbance: grooms that have the care of hunters are fully aware of this; and therefore it is that between the hours of feeding and dressing they keep their stable doors locked. Another form or alternative of plethora consists in what is called

CONDITION; which is that degree of perfection whereto we may bring an animal so as to enable it to exert its physical powers with the greatest possible effect. *Nature* presents us with no animal in what we call condition. The state is altogether an artificial one; at the same time it is one grounded upon an acknowledged principle in the animal economy, that *Nature is ever desirous to meet the demands of Art*. Suffer a horse to be idle, and feed him well, then the redundant nourishment floating in his blood will be laid up in the form of fat: put the same animal to work, and the blood, which would have been turned into fat, will now be used to supply the excretions. To take an unprepared horse, and ride him in the chace, would, to a sportsman, appear neither more nor less than an act of

insanity: the certain result is, that the animal would sink under his rider exhausted; and at the time that a hunter in condition was going the same pace without evincing distress. Such is the nature of our animal functions, that not only is the knack of doing anything acquired by practice, but strength becomes added to the performance; so that the act by repetition is not only more effectually performed, but can be persisted in, and continued. I believe an entertaining and intelligent sporting writer, Nimrod, somewhere in his "Letters," observes, "that a horse in condition is on the brink of disease." Mr. Darvill makes the same observation in regard to racers: "I believe," says he, "there is no state or habit of body a horse can be in that renders his constitution so susceptible of a dangerous disease, as that of his being very fat, and full of juices."

More and later experience has taught me that there exist circumstances, and those the most common, in which the contrary is the case. I have frequently had occasion to remark that whenever influenza seizes upon the stables of the regiment (the 1st L. G.), the disease for a few weeks, or it may be and has been *months*, first affects the troop horses, then the officers' chargers become attacked with it. This would seem to show, that *condition* operated in repelling or postponing the attack, in rendering the animal less predisposed. At the same time *age* might have combined with condition to ward off infection. Subsequent experience has taught me that *age* has less to do with this, than condition; for at the time the officers' horses became attacked, it frequently happened that the *old* troop horses suffer likewise. This is the case at present with my regiment (Feb., 1850), although influenza in the old proves less catarrhal, and milder, than in the young horses. An observation that coincides with my arrangement of this state under the *forms of plethora*; this evil consequence being successfully kept off by work and proper stable-management.

CONGESTION.

Congestion means that state of an organ which plethora denotes of the system ; congestion is, in fact, *local* plethora ; at least this is the sense in which it appears to be most correctly used. It seems by no means a happily chosen term, though one much employed in modern medical phraseology : its literal signification leading one to suppose that there is some sort of *gathering* or *collection*, and consequent *stagnation* of fluid ; whereas it is meant to imply that blood is *circulating* in greater abundance than at ordinary times—in other words, that condition of the blood-vessels which precedes inflammation, or holds an intermediate station between that and health, without there being any definite boundaries between either two of the three connected states. If you prick or burn any part of the body, the consequence is pain : the continuance of this rouses the vascular energies of the part into increased action, and thus produces inflammation, or something short of it, which we call congestion. In this case, congestion arises from a determination of blood to the part : it may likewise originate in some impediment or obstruction to the efflux of blood from it, as happens whenever too tight bandages are applied. Congestion does not necessarily amount to disease ; and yet it may exist to such a degree as will materially derange the functions, and so prove the forerunner of organic mischief.

While a sort of universal assent is yielded to the occasional presence of repletion in the system at large, some have withheld their belief of its existence in any particular organ or part thereof ; or have refused to acknowledge any intermediate *local* condition between health and inflammation, although they unhesitatingly admit that there may exist a *constitutional* one between health and fever, which, in fact, is nothing more than *general* inflammation. Even in *theory* this position seems a very untenable one ; and that it is so in practice, I shall now endeavour to prove, with the assist-

ance of opinions which themselves will admit of no contradiction, whatever objections the deductions may be open to, which I may derive from them.

Inflammation, hemorrhage, dropsy, all acknowledge and imply a previous condition of congestion. "There is, probably," says Dr. Alison, "no kind of diseased action of which any part of the living body is susceptible, which is not connected, sooner or later, with increased afflux of blood towards that part, either as its cause or effect; and the immediate object of all our powerful remedies is to act on these irregularities of the circulation." That the blood may be differently distributed in the capillaries at different times, we know by the varying colour of the surface, which depends upon the varying degrees of fulness of the cutaneous blood-vessels. The phenomena of blushing, the red cheek of anger, the heightened colour of the skin under brisk exercise, are familiar facts illustrative of partial plethora of the capillaries consistent with health. (Dr. Watson's Lectures.)

It often happens when these and other parts are visibly redder and fuller of blood than usual, or some symptoms denote the probability of some internal congestion, that other parts are visibly paler; and there are at the same time corresponding and palpable differences of temperature. (Dr. Watson's Lectures, 'Med. Gaz.,' 1840.)

KINDS.—Congestion is of two kinds;—*sanguineous* and *serous*.

SANGUINEOUS CONGESTION, in its developed form, is characterised by the same phenomena as inflammation, from which it is only pretended to distinguish it in a general way, by there being no formation of new products or change of structure. The LUNGS, probably, are the most frequent seat of this. A horse is galloped hard; his nervous energy becomes excited; the heart is beating with quadruple rapidity; blood is pumped into the lungs faster than they can discharge it, and the consequence is congestion, from the vessels becoming distended beyond their tone. The pulmonary vessels are gorged, and ultimately choaked, with the blood they contain. At first, the blood circulates through the lungs with aug-

mented celerity ; but the influx continues so increasing, that over-distension prevails, and in the end obstructs the passages ; a result that is hastened by the blood becoming viscid in its consistence. In such a case as this, the only remedy is instantaneous bloodletting. There are reasons for believing that a sudden accumulation of blood, taking place in internal parts, may sensibly disturb their functions ; causing transient fits of giddiness, insensibility, and sometimes death itself, when the congestion affects the central organization ; and causing difficult breathing when the capillaries of the pulmonary tissue are concerned ; even these consequences for aught I know, may end fatally. (Dr. Watson's Lectures, 'Med. Gaz.,' 1840.) I once had a horse lent me for trial as a hunter, that had been some weeks pampered in a dealer's stable. I had not followed the hounds above ten minutes before my horse fell, perfectly exhausted. I freely let blood, until he experienced enough returning strength to rise ; by which time he had lost from three to four gallons.

The BRAIN, also, is a part in which we have reason to be apprehensive of congestion. In stables, it happens every now and then that some animal dies suddenly in a fit of staggers, without having manifested any signs of previous indisposition ; when the head of this horse is opened, the brain exhibits congestion. It was at one time the practice in the Ordnance service to turn horses that happened to be low into marsh pastures ; and during the months of July and August, it was very common to see several among them attacked with staggers, proceeding from an overflow of blood to the head, occasioned by the prone position of it, together with the heat of the weather.

Even the HEART occasionally becomes the seat of congestion, from which may arise most serious consequences. Any obstruction, such as disease of the lungs, pressure on the large blood-vessels, disordered circulation in the brain, anything, in fact, that operates towards distending the heart, will tend to its enlargement, or that state of the organ which we designate *hypertrophy*.

The LIVER is likewise very subject to congestion. The

nature of its structure renders it so. The large venous vessels entering into its composition; the intricacy and minuteness with which they ramify; together with their circumlocutory distance from the heart, are all circumstances favorable to such a condition. In very fat old horses, whose work is trifling, it is not an uncommon accident to have the gland burst from congestion; in which case it displays a mass of partially congealed black blood.

The SPLEEN, now and then, acquires an enormous bulk from the effects of long-continued congestion. It ordinarily weighs about three pounds: I have seen it so much enlarged as to weigh upwards of fourteen pounds.

CONGESTION OF THE MUCOUS MEMBRANES lining the air and alimentary passages, is frequent; at the same time, it appears to be of a very fugitive nature. In these and other membranous structures, the line to be drawn between congestion and inflammation is so fine, that it is hardly possible to speak of one subject without infringing on the other; for that reason, I shall defer the present inquiry until I speak of inflammation.

A remarkable instance of the effects of congestion is furnished by the case of common frush. Every groom or farrier knows how hazardous it is to arrest this issue, when in the fore feet; that, in fact, its suppression is apt to be followed by heat of hoof and lameness,—a result owing to congestion taking place in the foot.

NEWLY FORMED STRUCTURES, and parts that have been the seat of prior inflammatory attacks, are, in an especial manner, disposed to paroxysms of congestion. The bronchial membranes of horses habitually subject to chronic cough, or afflicted with broken wind, show it during the changes from dryness to moisture. In some horses, so irritable is the mucous membrane of the bowels, that exposure to cold will produce an attack of diarrhœa.

SEROUS CONGESTION.—In those parts of the body in which the vessels exhale a sero-albuminous vapour for the purposes of lubrication, it frequently happens that accumulations of this fluid take place, without producing any

inconvenience to the animal himself, and without any previous signs of inflammation: such are called *serous congestions*. These cases can hardly be denominated inflammatory, seeing that they occur without *heat, redness, swelling,* and *pain*—which we all consider indispensably necessary to the existence of acute inflammation: indeed, often the only one that we can recognize is swelling, and that manifestly owing to the presence of the collected fluid. It is by no means uncommon to meet with a circumscribed tumour in some part of the body where the skin is loose; which, on being opened, proves to be a collection of serous fluid in the sub-cutaneous cellular tissue, and which has come on without any prior inflammation.

In the internal cavities of the body, we occasionally find accumulations of serous fluid, without any traces of inflammation: in the cavity of the pericardium; in the ventricles of the brain; also within the thorax and the abdomen. There appears to be remarkable sympathy between these several parts: should a horse die from water in the chest, we find very often water collected in his belly, and within his brain; in which two last-mentioned cavities the effusion may be regarded as the result of serous congestion.

SANGUINEOUS AND SEROUS CONGESTION may exist in combination. When a horse's legs fill from standing in the stable, the tumour is the result of sanguineous and serous congestion: blood accumulates in these parts remote from the heart; the vessels suffer from distension, and the easiest mode in which they can relieve themselves is to allow the fluid to exude. A disposition of parts like unto this may pervade the whole limb, as well as any individual part of the body, and thus give rise to that which we designate by the general name of *dropsy*.

WINDGALLS may be regarded rather as the effect of congestion than of any inflammatory disorder. They form without heat, and without causing lameness: they originate in congestion and augmented secretion, induced by undue exertion, and are not generally considered unsoundness—simply *indications of work*.

This sketch will, probably, be deemed sufficient to show that *congestion* is deserving of a place in veterinary pathology. I was once, myself, in the class of unbelievers; but I confess that my opposition has been borne down by the force of practical testimony. Those who wish for a more pathological exposition than the limits of this work will admit of, may consult, with the greatest advantage, M. Andral's writings on the subject.

ANÆMIA.

The blood may exist in the body to a greater amount than is compatible with its health; in like manner the same fluid may exist in a less quantity than is salutary. As *plethora* implies redundance, so the term *anæmia* signifies deficiency of blood: the pathology of these two conditions probably is—that in the one the blood abounds in nutritive properties; in the other, it is deficient in them. In a general way, most domesticated animals consume more food than is converted into nutriment; a circumstance that renders a case of anæmia proceeding from lack of aliment of somewhat rare occurrence: such a condition, however, does occasionally proceed from torpid or defective action in the assimilating powers. I have witnessed a case of contracted cardia of the stomach, in which the aperture was so diminished, that the animal was reduced to the utmost extremity from inanition, and would have died, had not an act of humanity put a premature end to its sufferings. Enlarged and scirrhous mesenteric glands arrest the absorption of chyle, and thus produce similar effects on the system. *Diarrhœa* will be attended with anæmia, by carrying off the alimentary matter before time has been allowed for the completion of digestion.

ANÆMIA MAY GIVE RISE TO DISEASE, either from the insufficient quantity of the blood, or from the poorness of its quality. It is too prevalent a practice to keep horses "short of water," under the impression that much fluid is injurious; a notion that probably originated in giving water very sparingly at the time the animal is required for work: hunters

and racers are not allowed any, or but very little indeed, on the morning they go to their work. This, however, furnishes no good reason why the animal is to be debarred from quenching its thirst after its work has been performed.

I have heard Professor Coleman observe that mange is often the result of poverty in horses; an observation my own experience has tended to confirm. During the campaign in the Peninsula, I found mange very prevalent among the mules employed in the service, and especially such as were much reduced from want of better keep. Among our own horses, and even such as are well kept, mange is frequently seen combined with an unthrifty state of body.

VITIATION OF THE SYSTEM.

We have seen that *plethora* is a condition premonitory of disease; we have found that *anæmia* may give rise to disorders: we now learn the system may become vitiated or contaminated. There are various ways in which noxious matters may obtain introduction into the system, some of which are open to demonstration; while others elude our observation so far as to become apparent only through their effects. The channels through which they may gain admission are, the alimentary canal, the air-passages, and the skin.

Diseases of the alimentary canal, interfering with the process of chylication, must affect the blood. Diseases of the organs of respiration, interfering with the arterialization of the blood, will alter it. Diseases of other channels of excretion—the bowels, the biliary apparatus, the kidneys, the skin—will indirectly contaminate it. So will various foreign matters, gaining entrance, as they may in solution or in a gaseous state, through artery, vein, or any membranous structure, such as bladder or intestine. And so, also, there is good reason to believe, will certain states of the nervous system. (Dr. Watson's Lect., 'Med. Gaz.,' 1840.)

THROUGH THE ALIMENTARY CANAL.—An animal may eat that which is unwholesome, mingled with its food, or he may drink insalubrious water; or he may, under some inci-

dental circumstances, lick in and swallow matter of a contaminating nature : in either of which ways he may lay the foundation of disease. We know that within the alimentary canal is elaborated the *chyle* ; that the chyle feeds the blood ; and that the blood nourishes and repairs every part of the body : consequently it is natural to suppose that any hurtful matters swallowed with the food will contaminate the chyle ; the chyle, the blood ; and the blood, the system. In this manner do medicines, given internally, affect the constitution : there are many whose presence can, a very short time after their administration, be satisfactorily detected in the blood. Madder has been mixed with the food of hogs ; and on their being killed, it has been found to colour the inmost parts of the animal's bones. So pastures are known to have their degrees of nutrition ; they all possess their salubrious and insalubrious properties. Although horses are nice in their feed, culling the pasture where the grass is sweetest ; yet, when turned out, they are inclined to be mischievous, nibbling every shrub or tree whose branches happen to hang within their reach. The yew-tree they are said to be fond of, and it is poisonous to them : I once, however, gave twelve ounces of the fresh cuttings of yew, without producing any perceptible effect. Oats or hay of bad quality might prove deleterious : it is rare, however, in the present improved state of agriculture, that we have to complain of anything of this sort. Foxy oats and mow-burnt hay call occasionally for our interference : and we find that their use is apt to be attended with an increased flow of urine, in some instances to such a degree, that the animal rapidly declines in condition, and loses his strength. The following account of a disorder that broke out among a large stud of horses in France, affords an apt illustration of the point, viz., that disease may be introduced into the system through deleterious provender.¹

¹ " A disease, bearing the character of an enzootic, showed itself towards the middle of last year among the horses of one of the largest proprietors on the Somme. M. Renault was sent for. He found the disease had prevailed three months, and destroyed forty-nine horses, leaving fifteen then ill. It was a dis-

There are evidences and arguments in proof of the existence of a *law of periodical liability* in the phenomena of life. To bring the *critical days* of health into relation with critical days of disease, it is necessary to refer to some pathological facts. Fevers generally originate in the entrance of a poison into the system, in malaria, or infection or contagion. In most cases the poison, after it has entered the system, lies dormant there, and the time it remains dormant is termed the latent period, &c. (*Vide* 'Lancet' for 29th Oct., 1842.)

The WATER which the animal drinks may prove the vehicle for the introduction of disease. It may contain some noxious impregnation; or it may have become putrescent. Water forms an excellent vehicle for the exhibition of such medicinal substances as are almost or quite tasteless and inodorous. It is in the recollection of us all, that the race-horses at Newmarket were poisoned by the treacherous introduction of arsenic into their water-troughs.

order of very obscure nature. No particular organ seemed to suffer, nor, indeed, was found in the least altered after death. Many of the patients ate well up to the last moment. Of the fifteen yet living, M. Renault destroyed eight (of which there was no hope of recovery), for the purpose of examination; and the result convinced him that the disease was in the blood. For, whether it were taken from the dead or the living animals, the fluid covered his hands without reddening them, and either did not coagulate, or formed a mass of a dirty grey colour, containing a very small proportion of fibrine. Indeed, so feeble was the force of cohesion between the organic elements of the blood, that, even during the life of the animal, the fibrous filaments separated from the liquid whenever it was agitated. If we add to these characters, the paleness and flaccidity of all the organs which, like the red muscles, are essentially fibrous; the absence of all inflammation, either acute or chronic, in any organ; and the rapidity with which the carcasses became putrid; it cannot be doubted that the disorder existed in the blood—characterised by the small proportion of fibrine and colouring matter, as well as by the ready separation of its elements. This opinion also receives corroboration from the apparent causes of the malady. For nearly six months the horses had been fed on fodder that had stood in the stack exposed to the rains of the preceding year, and that had in consequence become mouldy and insupportably offensive to the smell. The oats also had been of an inferior quality. Added to which, the horses had been much over-worked. M. Renault made entire changes both in the provender and work; and thus put a stop to the further progress of the disorder." ('Veterinarian,' vol. v, p. 51.)

MORBID OR CONTAGIOUS MATTER may likewise gain introduction into the system through the alimentary canal, though we have not much apparent reason to believe such is often the case; nor are we well advised in regard to its probable consequences when such is supposed to occur. A horse having glanders will drop the discharge into the manger, and smear it upon the rack and other parts of the stable, in which situations the matter may dry and be incruited, and subsequently licked off by some other horse: all this may happen; considering, however, how much alive horse-owners are to the danger of glanders, it is, I suspect, not a common occurrence.

AIR is essential to the support of life. In the lungs it changes venous into arterial blood; innutritious or crude blood into nutritious. It conveys from the skin certain excrementitious matters. By pressure it maintains the equilibrium of the circulating fluids, and confirms the resistance of the solids. Its temperature and degrees of moisture vary under different circumstances. The aqueous vapour it contains may hold in solution different gaseous products; and in this state may predispose animals to disease.

Cold and dry air is dense, pure, and exciting. Its effect is to diminish the cutaneous and pulmonary transpiration, and augment the internal functions—as change in the blood, digestion, secretion, nutrition. Where the air is pure, plants grow luxurious, succulent, and nutritive. The moisture and temperature of the atmosphere influence the forms of animals as well as their constitutions, and also affect the operations of their organism. The combined action of such an atmosphere with stimulating aliment produces the sanguine-nervous temperament; thence springs a predisposition to inflammatory disease, also to nervous maladies, to cerebral congestions, tetanus, and to affections of the respiratory passages in particular.

Warm and dry rarified air is exceedingly attractive of humidity. Under its influence animals mostly experience great pulmonary and cutaneous transpiration; their internal secretions are diminished, and the transformation of the

blood is not completed. Notwithstanding this, however, Spanish and Arabian horses, though small, are remarkable for strength and agility. We account for this difference in effect by referring to opposite causes; the watery parts of the blood being abstracted through the skin and lungs, it becomes thicker and more exciting; hence vegetables in those climates are more nutritive than watery.

Warm and moist rarified air, also mingled with watery particles, is rendered light, pleasant, and little exciting. Heat dilates, and weakens the tissues; humidity lessens the transpirations, and renders change of the blood incomplete, producing a less arterial fluid. Moreover, the plants growing in these places, are large, luxurious, porous, aqueous, and furnish but little nutriment. Animals bred in such climates, in marshes, near pools, in the vicinity of stagnant water, have abundant cellular membrane, a very large amount of venous blood, a muscular system wanting energy, a respiration short and quick, the heart's pulsations scarcely perceptible, and are disposed to fatten, also to catarrhal diseases, discharges, &c. Moreover, the aqueous vapour of this air is seldom pure; produced from stagnant waters, it frequently contains emanations from decaying vegetable and animal matter, from which arise the carburet, phosphoret, and the compounds of, hydrogen—gases which are prejudicial to life in every form, and cannot be inhaled with impunity. These are introduced through the breath and with the water drank, engendering putrid typhoid and carbunculous disorders. The warm and humid air of stables, especially in winter, creates the same dispositions, followed by the same effects. Sometimes it happens that this unwholesome air causes sudden determinations of blood to the spleen, lungs, brain, or intestines; at other times, it predisposes the confined animals to catarrh, to chronic pneumonia, and to mange.

. Air, *cold and moist*, that which is indicated by the prevalence of hoar frost and by ice coating the window-panes. Air impregnated with moisture, forms a suitable vapour bath, in which animals are kept constantly plunged. Such

an air arrests, or much diminishes, the sensible cutaneous perspiration; it equally lessens the pulmonary transpiration, and can take off little of the aqueous vapour generated within the bronchi. During hard work, the sweat is not absorbed by the air, but remains upon the surface, there evaporating; thus considerably lowering the normal temperature. Under such an influence, the external deprivations are next to nothing, while the internal exhalations and secretions are much augmented. But as these functions cannot sufficiently compensate for the cutaneous and pulmonary transpirations (there only being the kidneys which can eliminate aqueous elements from the body), the result is, that limpid and aqueous fluids predominate in all the tissues over red fluid or blood; and, moreover, the renal glands which have so much more fluid to eliminate than is natural to them, become proportionably developed. And, besides this, plants in such situations contain a superabundance of aqueous fluid, and upon these the animal feeds, and adds to its debility. If, then, the systems of colourless and lymphatic vessels predominate; if the cellular and serous tissues prevail, and the functions of these are supreme, if all this happens at expense of the vascular, mucous, and muscular systems, how can we wonder at the change manifested in the form and nature of an animal. The skeleton will be huge, and the body large; the abdomen will grow out at the expense of the chest; the cellular tissue will be plentiful, and full of fat, and will give a puffy appearance to the frame; the skin will be pale, thick, and covered with coarse hair; the mucous surfaces will be pallid, and often infiltrated; the lymphatic glands of the throat and groins will be large; the muscular movements will be slow, of short duration, and productive of much sweating. Flemish and Dutch cows are very mild instances of the truth of this statement. English cattle and horses, however, form exceptions; this is owing to the scrupulous care taken of them, and to their excellent feed. Glanders and farcy are diseases generated by exposure to wet and cold. Observation proves animals, little cared for, are most subject to these disorders. (Delafond.)

THROUGH THE AIR-PASSAGES it is that disease finds the most facile road to sap the constitution. Considering how accessible, and at the same time how susceptible these parts are, it becomes no matter of surprise to us that they should prove so frail a medium. The air an animal breathes is a common vehicle of the seeds of disease: miasm, influenza, animal and malignant effluvia, all by turns pervade the atmosphere, and exert their several influences on the delicate and sensitive membrane lining the air-passages. The natural *stimulus* of this membrane is *pure* air; whereas, the atmosphere of the stable is rarely free from animal exhalations, and but too often imbued with animal poison. The subject of *atmospheric influences* is one on which we greatly lack information; and he will be serving veterinary science who may embark in its investigation.

THROUGH THE SKIN, densely clothed as almost every part is with hair, disease finds a difficult entry. We know, however, that many medicaments rubbed where the skin is thin—the insides of the thighs, muzzle, &c.,—will take effect on the constitution; we therefore cannot doubt the possibility of disease being introduced in a similar manner, though we believe instances of it to be rare. So long as the cuticle remains entire, there is an evident indisposition to imbibe any morbid matters: destroy, however, the cuticular covering, and the disinclination ceases to exist. Even upon the bare membrane of the nose I have frequently applied glanderous matter without any ill consequence; although its effect has proved certain on any part of the body by inoculation. Such is generally the case, likewise, with the virus of *rabies*: so long as the integrity of the skin remains unbroken, there is little reason for apprehension.

DISEASE.

Whilst surgeons are engaged in administering to their fellow-men, veterinary surgeons are employed in contributing to the welfare of the animal part of the creation. To our philanthropy there may be gradations, and even qualifications; but it can hardly be said to have limits—

“Friend, parent, neighbour, first it will embrace,
His country next, and next all human race;
Wide and more wide, the o'erflowings of the mind
Take ev'ry creature in of ev'ry kind.”

But half a century ago, the practice of veterinary medicine was in the hands of men as unfitted for the office as the barbers of old were to practise human surgery. And yet, when persons will place their lives in such jeopardy, as we behold numbers doing by their dealings with empirics, we have no right to feel surprise at the hold that farriers still maintain on our art. As, however, we ourselves become more able, and our abilities become known among the proprietors of horses, we shall find veterinary practice rolling into those channels that have undergone the necessary preparation. People will find it their *interest* to come to us; and whatever may be urged on the score of *other* considerations, perhaps this is the one, after all, that will sway the most.

The necessity of treating of *generalities* before we descend to *particulars* or specialities, must not be lost sight of in the study of pathology. General pathology teaches us what is common to all diseases, as the causes producing them, the symptoms indicating them, their termination, course, progress, decline. Opinions given on diseases must have reference to their severity, favorableness, duration, complication. Special pathology is the study of any isolated disease, its causes, symptoms, &c. (Delafond.)

The immediate object of all medical science is *disease*.

The animal we most regard in our investigations is the *horse*—the most noble, the most useful, the most valuable of all dumb creatures. When deprived of his services, we most feel the worth of them; and our desire to have our servant restored to usefulness is, with many, exceeded only by our anxiety to raise our fellow-beings from the bed of affliction.

The groundwork of the science of *veterinary* medicine consists in a knowledge of *zoology*, or the natural history and habits of the animal; of *anatomy*, or the construction of the various parts of his body; of *physiology*, or the laws of living action; and of so much insight into *chemistry* and *botany*, as will enable us to understand the composition of the several substances employed for the cure of his diseases.

DERIVATION AND MEANING OF DISEASE.—That which we are in the habit of calling by the names of disorder, distemper, malady, sickness, lameness, &c., in medical phraseology is designated *disease*. The word is a compound of *dis* and *ease*, and, literally, signifies nothing more than the privation of ease; the same as *dis-order* implies a cessation of order. Simple as this analysis of the term may appear, yet, to give what the schools call a *definition*, has proved a perplexing task. To say disease consists in the absence of health, is to offer a solution of no value, unless accompanied with one of what health itself consists in.

Galen defined disease to be a state in which the functions are disordered; and Broussais has copied him, in saying that disease is the result of irregularity of function. Dr. Brown's definition is, a lesion of irritability. Great disordered function, however, may exist without disease, as in the cases of parturition, and other disturbances, &c.; and there are many diseases in which no disordered function is apparent.

MM. Roche and Sanson have approached nearer truth, in saying that disease is an alteration of structure producing inconvenience or obstacle to the exercise of function. Though structure is commonly altered, are there not several diseases consisting in alteration of circulating fluids?—in displacement of organ or of organs without change in their

structure? And are there not diseases whose nature or essence are not discernible? The definition I shall adopt comes from Chomel. Disease is a "notable" or palpable alteration, occurring in the position, or structure or composition of vital parts, or in the performance of one or more of their functions. This definition appears applicable to all disorders, while it does not include alterations in the circulating fluids. (Delafond.)

The *special* definition of a disease consists in a succinct exposition of all such characters as distinguish it from other and similar maladies. These characters are to be found in the causes, symptoms, progress, duration, termination, and sometimes in the treatment of the malady. (Delafond.)

So far as practice is concerned, neither of these definitions require further description; for the safest guide to the recognition of disease is to be found in an acquaintance with the opposite condition.

DIVISION.—In animals, disease presents itself to us in two forms,—either as *sickness* or *lameness*: the former being that state which is contrasted with the general or bodily health; the latter, that which is opposed to soundness. Disease, however, may exist without the pale of either of these divisions: it may be confined to some one individual part, and not be productive of either sickness or of lameness.

SEAT.—When a sick or lame horse is brought to us, our first inquiry is directed to the discovery of the *seat* or situation of the ailment. This is an inquiry embracing two considerations: first, we must ascertain the member diseased; and, secondly, in what essential part of that member the disease resides. This proves an investigation too often embarrassing even to the surgeon, whose patient, gifted with speech, can in language describe the nature of his pains: how much more arduous, then, must the undertaking be in the case of the speechless animal! By signs alone can it make known its complaints; and on our observations of these, and on the correctness of the inferences we deduce from them, must depend our insight into the seat of the malady.

NATURE.—From the earliest times medical philosophers have been engaged in investigating the essence or intimate nature of disease : whether the fluids were primarily affected ; or whether the solids, to their exclusion, enjoyed this sad prerogative. This variety of opinion has given rise to the different medical doctrines. Having formed our opinion on its seat, we proceed to investigate the *nature* of the disease. This is a subject veiled in obscurity, and for that reason has furnished matter for many a beautiful theory. The powers that control those actions whose combination constitute all we know of life, are the same that operate to the production of disease : so long as their functions are executed with their accustomed regularity, we say the animal is in health ; but whenever any manifest disturbance happens, we say that disease is present.

The same power which builds the body up, is continually renewing every part, and furnishes all the secretions. How they effect all this is to us a mystery. Since, therefore, we have no clue to these vital actions, and can entertain very imperfect notions of them, we must necessarily be imperfectly informed of the mode in which disease proceeds. We must be content with observing the operations of disease as they present themselves to our notice ; and with noting the consequences to which they give rise, in order that we may be advised of their tendencies, and regulate our remedial measures to ameliorate them.

HUMORAL PATHOLOGY.

The father of medicine, Hippocrates, taught that diseases had their origin in the *humours* of the body. These humours were the blood, the phlegm, the bile, and the black bile. Diseases arose from lack or superabundance of these ; the establishment of their equilibrium constituted health. He ascribed three periods to maladies : the crudity, the coction, and the crisis or evacuation. In crudity, the morbid element preserved its form, and resisted nature ; in coction, if these morbid forces or powers were not weakened, death

was the consequence ; if it yielded to the influence of nature, it became expelled from the economy during the crisis or evacuation. Chemical science introduced the doctrine of the thickness, solidity, acidity, excess of alkali, &c., of the fluids. The Greek horse-doctors, Aphyrtis, Eumalis, Pelagonius ; the Roman agriculturists, Varro and Columella, and afterwards, Virgetius ; in later times, the French veterinarians, Colleysel, Garsault, Lagueriniere, Saulnier, Latopafils, and Vitet ; last of all, the founder of veterinary schools, Bourgelât, and his pupils, Chabert, Flandrin, Gilbert ; all these adopted the humoral pathology ; the latter making a droll mixture of the Hippocratic doctrine with that of the grand humorists, Galen and Boerhaave.

The knowledge possessed by the ancients concerning the structure of an animal body was imperfect : it led them to suppose, when they beheld any morbid matter produced under the operation of disease, that it was the result of a vitiation of the fluids, by them called the *humours* : a doctrine to which moderns have applied the appellation of *humoral pathology*. Above all, the blood was viewed as an extensive source of mischief : it was considered to be either too thick or too thin ; or else to be in a state of fermentation, or even putrefaction. These were the tenets at the time our earlier works on farriery were written ; whence the humoral pathology has met with such advocates in grooms and farriers ; whose descendants, even of the present day, discourse with sagacity on the subject of "humours," holding a faith in their ebbing and flowing, and breeding, and requiring expulsion, quite as strong as could possibly have possessed the minds of the patriarchs of medicine. Progressive improvement has diverted attention to the *solids* ; which, in their turn, so completely engross all interest, that the fluids have become nearly discarded from pathology. Singular as it may appear, the influence of the fluids—at least of the blood—in disease, is once more beginning to be acknowledged, in an equal degree to that of the solids themselves. After all, we shall probably find most truth between the two extremes.

SOLIDISM.

Themison established the principle, that the fibre composing different textures was in one of two opposite states: one state was that of tension, which indicated *sensibility*, or irritability; the other state represented *debility*; and that excess of either condition constituted disease.

These ideas were renewed by Baylini, Cullen, and Hoffman. With them were afterwards amalgamated the vital properties of Haller: for subsequent discoveries in pathological anatomy had shown that diseases had their seats in the organized solids. Three doctrines became based upon the principles of the solid Pathology: viz., those of Brown, Pinel, and Broussais.

According to Brown, life is maintained but by stimulants. The faculty of nerves to receive impressions, constitutes excitability or irritability of fibre. Stimulants are either internal or external: the first are mental emotions, functional duties, muscular action; the second are external bodies, whether ponderable or imponderable, or in any state. When these affect the economy, they are called *general excitants*—when parts only, *local excitants*. Life and health being influenced by stimulants—which when too strong produce inflammatory disorders, when too weak cause debility—the accumulation of excitability, its *expenditure*, *reparation*, and *exhaustion*, are the physiological conditions to which recourse is had to explain the phenomena of disease. Their distribution and concentration, also their change of seat, are explained by the facility with which excitement is shifted, and by the readiness of other parts to receive it. Brown called predisposition to disorder an intermediate state between health and disease. The *sthenic diathesis* is the predisposition to inflammatory disease, occasioned by an excess of excitability—the *asthenic diathesis*, or predisposition to debilitating disorder, owing to a diminution of all excitability. Brown's therapeutics consisted in combating, with debilitants, diseases of an inflammatory tendency; and with excitants, those of a debilitating character. The choice

of remedy is regulated by the fierceness, mildness, locality, and duration of the malady. This doctrine had many advocates on the Continent; but it has very few or none in England.

The THEORY OF RAZORI.—Adopting the principles of BROWN, RAZORI, an Italian physician, sought to discover some agent that would, as a specific, counteract all excess of excitement, and establish an equilibrium: these agents he called *counter-stimulants*. At length, however, he found that the body withstood a larger dose of the new medicine than the most excessive predisposition called for. He also found that debilitating disease might be generated by the continued employment of counter-stimulants. RAZORI'S theory, with all its errors, has, however, led to some useful innovations in practice—such as commencing treatment with emetics, which cuts short many diseases.

The THEORY OF PINEL.—Professor PINEL, appropriating all done before his time, made a droll melange of humorism, Brownism, vitalism, and solidism; vitalism, however, predominated. It is nature which is debilitated, excited, perverted, &c.

The THEORY OF BROUSSAIS is a physiological doctrine. Profiting by the labours of Hunter, BORDAN, BARTH, PINEL, and BICHAT, BROUSSAIS brought forth a doctrine, which was opposed by the Pinelists and by the partisans of anatomico-pathological study. It is this: 1st. Diseases chiefly result from alteration in the solids, although some originate in the liquids. 2d. All spring from irritation. 3d. All diseases have a local origin; constitutional disorders being the result. 4th. Diseased organs transmit their sufferings to others through sympathy. 5th. Independently of these special sympathies, the brain receives all morbid sympathies, and transmits them to other structures, in variable intensity, through the nerves. 6th. The intestinal mucous membrane ranks first in this reflected sensibility; so that all diseases causing sympathetic irritation are accompanied with gastro-enteritic disturbance. 7th. Four fifths of diseases are caused by intestinal disturbance. Fever springs from intestinal disturbance. 8th. All exciting causes, external or internal,

acting upon this very sympathetic membrane create irritation. The different causes of disease—poisons, contagions, excitants, putrescents—are referred to intestinal sources. Worms, even, are ascribed to it. 9th. He who cannot regulate the irritability of the digestive surface, cannot successfully encounter disease. The knowledge of gastro-enteritis constitutes the key to pathology. Vomits, purges, general stimulants, are regarded as generators of disease, and ought to be used only under very rare circumstances. Tonics are only useful in debility or convalescence. This theory has many advocates: among these range Gerard fils, Rodet, Vatel, D'Arboval, Cruzel.

Solidism is the doctrine which attributes all to the *solids*: it comprises two theories. While both admit that disease consists in alterations both of function and structure, one insists that the functional disorder is the primary cause of the phenomena that follow; while the other asserts that, were the nature of disease thoroughly understood, we should probably be able to refer the altered function to some corresponding change of structure: in which case the former would constitute but a symptom of the latter. This is a question far too subtle for me to think of discussing: my object was but to state its existence; that done, I shall dismiss it, and conclude with observing, that as our views of disease can be only drawn from observations made during life and after death, to such evidences must all our attention be directed.

A VERY LARGE MAJORITY OF DISEASES CONSIST IN INFLAMMATION.—This may be laid down as an axiom in *veterinary* medicine. In what does inflammation consist? For, unless we can solve this question, our assertion will amount to little more than shifting the saddle from one horse's back upon that of another. This will form the subject of subsequent inquiry. In the mean time I may observe, that there are some diseases which are *nervous*, and others which are *spasmodic*; and that both are independent of inflammation. It is these practical facts which make the study of inflammation so important to us.

We must study diseases from their causes, known and appreciable; from their symptoms; from pathological physiology; and from the morbid alterations discoverable after death.

The PRACTICAL STUDY OF DISEASE is to be conducted in the stable: there alone can the "book of nature" be consulted. We must bear in mind that our patients cannot speak to us about their sufferings, or inform us of anything that may have happened during our absence: for all that can be learned we have to rely upon a man who may be veracious, or who may have some interest in distortion: consequently it becomes imperative, if we would know facts, to spend much time in the stable, and, while there, to institute every inquiry calculated to throw light upon the case. The late Mr. Abernethy told us, that "the best mode of obtaining and extending medical and surgical knowledge is, in my (his) opinion, *to pay strict attention to diseases*; which qualifies us to note even the slightest shades of difference that distinguish them from each other. Such discrimination leads us to form some regular arrangement of them, which, even if it be not correct, may ultimately enable us to discover their natural series and order.

CLINICAL OBSERVATION, as this practical study is called, cannot be too much insisted on. Through it we learn the changes that take place during life; and the account, thus began, is after death completed by an examination into *internal* alterations. In this manner we obtain a knowledge, 1st, of the *signs* by which the presence of the disease is indicated; 2dly, into its *history*; 3dly, into its *causes*; 4thly, we watch its *course*; and, 5thly, we note its *termination*.

Touching the essence or intimate nature of disease—that morbid action which is going on between the cause and the effect, or appearance of the disease—let us cease to look after it. Content ourselves with studying the sensible effects, such as are palpable, material; for the ultimate essence, distinct from the organic lesion, is a point which Nature has covered with an impenetrable veil, which the

genius of man never has been, nor will be, able to raise up. (Delafond.)

SIGNS OF DISEASE.

The SIGNS or SYMPTOMS of a disease are the circumstances denoting its existence. We collect them from observation, until at length we acquire a tact of pronouncing this or that organ to be the seat of disease, and the disease itself to be of this or that nature. All symptoms are referable to two general heads; to alterations either in the structure of the part affected, or in its function. In a part whose situation in the body is superficial, all physical changes are readily noted; such as swelling or shrinking of the part, hardness or softness, warmth or coldness, change of colour, &c. But when it is a deep-seated part that is ailing, we can no longer avail ourselves of this class of symptoms, and therefore we have recourse to those which spring from deranged function.

The EARLIEST SYMPTOMS of disease in the horse are, in a general way, loathing of his food; or (in the language of the stable) the animal being "off his feed:" he consumes in the course of the night a portion of his hay, but the whole of his corn remains in the manger, untouched. Being called to the animal, because he is "off his feed," we inquire into his spirits, and are told that he has lost much of his usual liveliness; that he hangs heavy in hand at his work; and is averse to move, unless urged to it by whip or spur. Or we may, perhaps, even perceive this depression ourselves, by the hanging head, drooping eye, &c. We feel his pulse, and find that beating with increased celerity. We perceive that the surface of the body has lost its natural warmth—the coat stares; and the ears, and legs in particular, feel chilled. With such symptoms as these, we may rest assured that disease has commenced; but the precise nature of the disorder it is not commonly in our power to determine. It becomes our duty, however, to act, and to do so without delay to the best of our judgment; as by so doing we may occasionally arrest the attack.

The STATE OF THE PULSE is highly important in almost all diseases. Naturally it beats about 40 times in a minute. A few beats either above or below this standard need not be noticed: but when it ascends to 50, it furnishes reason to suspect the operations of the body are disturbed. As regards its frequency, or in reference to the natural standard of 40, the pulse may be *slow*, or it may be *quick*. I have found the pulse myself as low as 24: I have heard Mr. Sewell say, he has met with it not more than 14. As regards the force with which it beats, the pulse may be *hard* or *soft*: as regards its size or diameter, the pulse may be *full*, or it may be *small*, or *thready*, or *wiry*. An *oppressed* pulse is a state of preternatural or extraordinary fulness. The pulse is said to *intermit* when its beats are interrupted by intervals of marked duration: when short and long intervals occur without any regularity, the pulse is said to be *irregular*.

During sleep is not a favorable time for feeling the pulse: it is then low. In the horse, in health, the average pulse is 32. It rarely rises as high as 36, or sinks below 28. It is set higher by veterinarians, but the foregoing is considered more correct. In ordinary breathing, the respirations are 6 per minute; in sleep, only 4. In judging of that material point, "wind," in a horse, gallop him out of breath, and then let him rest quiet, when his disturbed breathing will readily subside, if sound; but if his lungs be unsound, it will require several minutes for subsidence. ('Sun' Newspaper, 21st April, 1851.)

The STATE OF THE RESPIRATION.—*The heaving or panting of the flanks* is very important in disease. There are but few diseases in which the respiration remains undisturbed; in some, it forms a primary and leading symptom. When we find the flanks *panting*, we may conclude such is more the effect of pain than of organic disease: in fact, it is one of the most significant modes the animal possesses of expressing pain. When this is the case, we shall find the heaving of the flanks outstripping the pulse; though, generally in disease, the latter surpasses the former.

PAIN is a symptom of most diseases ; one that originates in impression upon the nerves distributed over the body. Speechless as the horse is, yet it is possessed of many ways to make its wants understood in health ; so under disease does it point out the seat of its sufferings with a sagacity hardly to be credited by persons who are strangers to its habits. The drooping eye, in several chronic disorders ; the looking back at the flank, in pneumonia ; the vividness of the glance, in colic, together with the frenzied roll of it in delirium ; are so many examples not to be misinterpreted by the practitioner. Thus, we may apply to horses what Sir Thomas Brown has said of men :—“ In long observation we may acquire a physiognomical intuitive knowledge ; judge of the interiors by the outside ; and raise conjectures at first sight.”

A DIVISION OF SYMPTOMS is into *primary* and *secondary* : the former being those which first arise, and owe their existence to the organ diseased ; the latter are such as owe their production to the sympathy of other parts. Almost all diseases present us with these two sets of symptoms : so prone is the system to sympathise when disease is established.

Another DIVISION OF SYMPTOMS is into *local* and *general*. It is one, however, that hardly differs from the former. Local symptoms are such as belong to the part primarily disordered ; general, such as are indicative of the disturbance of the system.

PATHOGNOMONIC SYMPTOMS are those which point directly to the seat and nature of the disease.

DIAGNOSTIC SYMPTOMS are those that serve to distinguish one disease from another that may resemble it.

HISTORY AND CAUSES OF DISEASE.

The HISTORY OF A DISEASE comprehends whatever may throw light on its origin. In veterinary practice, the history is of much importance. We have two objects in seeking for it. We have to frame our theory of the disease

present; and we have to regulate our remedial measures by what has or has not been done before we were called in: indeed, it oftentimes dispels a cloud of mystery; frequently becomes absolutely necessary towards the future treatment of the case.

By the *cause* of a disease is to be understood, anything that may give rise to the ailment. By *etiology* is meant the study or doctrine of causes.

The CAUSES OF DISEASE comprehend a variety of circumstances tending to its production. When we come to consider the number and nature of the functions; the delicacy of the structures; and take into our account the chances to which the animal is every day exposed; we can only wonder, while the causes appear so numerous, that disease is comparatively so rare. In a state of domestication, the horse is surrounded on all sides by the incentives to disease: he harbours them within his own body, and they are inflicted on him by man. Numerous as they are, however, these causes admit of classification under two heads:—they are either *predisposing* or *exciting*. Some add a third class, and call them *proximate*.

Occasional causes are such as excite disease to which there is a predisposition. *Determining* causes are such as give rise to disease. *Specific* are such as produce always the same disease or effect. (Delafond.)

These divisions should be confined to such complaints as by their slow operation modify the organization and change the structure of parts, giving them an aptitude to display the different phases of disease.

Predisposing causes are either *general* or *local*: the former influencing numbers, the latter but one animal. The general predisposing causes are—1. The *air* animals breathe. 2. The *food* they eat. 3. The *drink* they imbibe. 4. The *places* they inhabit. 5. The *work* they perform.

PREDISPOSING CAUSES are those which render the body susceptible to exhibit disease. In their nature, they may either be *innate* or *acquired*: *i. e.*, an animal may be born with a predisposition to some particular diseases; or he may

be so circumstanced as to acquire predisposition. A horse may inherit from its dam or sire a predisposition to *ophthalmia*, to *roaring*, and to various other diseases; or it may manifest, in the narrow make of its chest, an inclination to pulmonary disorders; or in the sickle-like bend of its hocks, a disposition to curbs. Take a colt out of its native fields, place it in a warm stable, and feed it well, and you predispose it to all sorts of inflammatory affections: you render it *plethoric*; and *plethora* (as has been already shown) is a condition verging upon disease.

In the course of our observation, we note two kinds of predisposition:—a *healthy* and an *unhealthy* predisposition; which may either pre-exist independently of each other, or may be engrafted one upon the other. To explain this, I will suppose several horses of tender ages to be pent up in warm stables, put to work, and fed accordingly: some of these will get colds; some inflammation of the lungs; some swelled legs; some farcy; some glanders; some ophthalmia, &c. In all, the same exciting cause has been operating, and under the same circumstances: we can only explain the different result by asserting the predisposition has been different. We will suppose, however, that one of these horses having an attack of swelled legs is worked on: the case, which was but swelled legs, now turns into one of farcy. We may account for this by supposing, either that an unhealthy predisposition has become engrafted upon an originally healthy body; or by saying, that the intensity of the exciting cause has been such as to create malignant effects. I knew a horse—a farmer's riding horse—which, after having been hunted, and returned to his stable, tired and *over-marked*, exhibited on the following day swelling of all four legs, in combination with signs of a highly nervous excitement: at the end of a week the animal was shot for having become virulently farcied and glandered.

EXCITING CAUSES are such as, when applied to the body, *excite* the disease. A blow, a burn, a blister, inoculation, the atmosphere of a foul stable, are all exciting causes. In nature, therefore, it is obvious there are but *two* kinds of

causes; one that *predisposes*, and one that *excites*. According to medical logic, both must operate in the production of disease: the part must be predisposed before the excitement can take effect. There are many exceptions, however to this rule. An excitant may (as in the case of a red-hot iron) be so potent as to take effect under any circumstances; though, the effect will be greater under circumstances of predisposition. On occasions it happens, that what at one time is a predisposing cause, at another becomes an excitant; such is the case with vicissitudes of temperature; peculiarities in feeding; irregularities in exercise, &c. Sometimes, the exciting cause appears to be altogether wanting; at least it is not discoverable; in which case we are in the habit of attributing to the disease a *spontaneous* origin: after all, however, it seems but a tacit acknowledgment, that we are in ignorance of its inward exciting cause; for, as in physics so in medicine, where we see effects, we naturally look for causes.

A CLASSIFICATION OF EXCITING CAUSES has been made into *mechanical*, *chemical*, *natural*, and *malignant*. The mechanical causes comprise blows, bruises, cuts, punctures, wounds, and injuries. The chemical causes include escharotics, caustics, blisters, irritants, &c. The natural causes are vicissitudes of temperature, and irregularities in diet or exercise. The malignant, are poisons of all descriptions: the virus of glanders and farcy, and of rabies; animal effluvia; the poisons of venomous creatures; and vegetable poisons of all denominations.

THE PROXIMATE CAUSE is the change in an organ wherein the disease is seated, and on which its existence depends. When we speak of the *nature* or *essence* of a disease, we speak of its *proximate cause*. In a word, it is the disease itself—it has nothing to do with *cause*.

FORM AND PROGRESS OF DISEASE.

THE FORM a disease assumes will appear to depend on two leading causes: on the state of the system at the time

of its generation ; and on the nature of the exciting cause. Some peculiar conditions there are, under which, no matter how trifling or insignificant the exciting cause may be, disease will assume the malignant form ; while under other and more ordinary states, even though the exciting cause be most powerful, no unhealthy action will result. The nature of the exciting cause, however, may be such as to ensure a malignant effect ; as in the case of farcy and glanders from contagion, from concentrated animal effluvia, from excessive exertion, &c.

The PROGRESS of disease in the horse, whose vascular system is one of great development, could not fail to be remarkable for its rapidity. In man, the celerity with which disease proves fatal, is owing to nervous excitement, or *constitutional irritation*, but in horses it will proceed rapidly yet run through the stages of inflammation, and extinguish life at last, from sheer organic destruction. Inflammation of the lungs has run on to a state verging on gangrene, and destroyed the animal within twenty-four hours of the onset of the attack. Diseases of the nervous structures, however, though they are fewer and more rare in horses than in men, are likewise less active in the brute creation.

KINDS OF DISEASE.

Diseases are distinguished in relation to their seat, their influence, their intensity, and their duration.

A *local disease* is one circumscribed in its situation and effects, extending no farther than the part in which it is seated. A *general* or *constitutional disease* disturbs the system at large. Splints, spavins, curbs, windgalls and other lamenesses—also slight or trifling injuries and irritations of all sorts—come under the head of local diseases : while such disorders as amount to sickness—inflammations of the lungs, bowels, brain, and other organs—form a class of general or constitutional diseases, inasmuch as their influence is felt through the entire system ; although, as far as their seat alone is concerned, they may be *local*. The only

disease we have whose seat is said to be general, is *fever* : this, however, is but a subterfuge—an excuse for our ignorance in not knowing in what organ or set of organs the action is primarily or principally going on. Such is the nature of an animal body, and the sympathy existing between its different parts, that no organ can be affected to any extent without occasioning a correspondent disorder in the system ; converting that which was purely local, into a general or constitutional affection. On the other hand, it may happen that a constitutional affection will settle down into a local disease : such is very commonly the case with *strangles*.

Acute and *chronic* are epithets applied to diseases in relation to their intensity and duration : the *acute* being the violent, painful, well-marked form ; the *chronic*, the tardy, lingering, protracted form—in which a disorder, less painful and marked, may continue for months, and even years. The diseases assuming the most acute forms in horses, are colic, inflammation of the bowels, peritonitis, pleurisy, inflammation of the lungs, and mad staggers ; though some of these often appear in the chronic type. The most remarkable example we have of chronic disease, however, is furnished by *chronic glanders* ; a disorder that has been known to continue for years, and without, to appearance, deteriorating at all the general health of the animal.

NUMBER AND NAMES OF DISEASES.

Of the NUMBER OF DISEASES any animal is liable to, the nature of disease forbids any attempt at calculation. Diseases exhibit such shades of difference ; such connexions ; such fluctuations ; that any undertaking of the sort must terminate in disappointment. That the diseases of horses are few in number when compared with those of the human species, and that they are less complicated, is not to be doubted : all this, however, is nothing more than any pathologist would anticipate, when he had contrasted the regular habits of the one with the irregularities of the other. The

horse is in a measure exempt from two, and those two of the most fertile sources of disease in man, viz., emotions and intemperance: we have only to inspect the catalogue of human nosology to see how frightfully these sources add to human afflictions.

The NAMES OF DISEASES are of importance, because conveying notions of the seat or nature of the diseases they serve to indicate. Very many of the names owe their origin to some one particular symptom of the disorder: of this kind are *strangles, staggers, roaring, &c.* While others of a coarser description are only emblematic of barbarous ignorance: such are *grease, molten-grease, broken-wind, mourning of the chine, &c.* The modern medical nomenclature will be found very appropriate; of which *pleurisy, hydrothorax, pneumonia, carditis, enteritis, cystitis, &c.,* furnish examples.

NOSOLOGY means the classification of diseases. In the acquirement of science, the utility of *system* or *method* is universally acknowledged: not only is it of great use to the student, it is also serviceable to the teacher. And yet, important as it is admitted to be, and notwithstanding that men of great talent have framed *systems of nosology*, yet are we without one free from objection. There is not much room for evincing surprise at this, when we come to reflect how imperfect knowledge is of the *nature* of disease, and occasionally even of its *seat*: it would be as reasonable to suppose Linnæus could have formed his 'Systema Naturæ,' without possessing a thorough comprehension of the external characteristics belonging to animals and vegetables, as to expect a perfect system of nosology from men but imperfectly acquainted with the science they professed to systematize. The only sure foundation nosology can have is one grounded on anatomy and physiology. While anatomy inclines us to assemble in one class all such diseases as infest parts of identical structure; physiology points out how natural it would be to class them as they affect organs whose functions are similar. By pursuing the former method, organs united in their economy are separated; by

following the latter, identical textures are dissevered. In fact, there appears to be only a choice of evils; and I shall endeavour to select the least.

TRANSLATION AND PROBABLE TERMINATION OF DISEASE.

METASTASIS means the shifting of disease from one part or place to another. This is a circumstance which may arise either from the supervention of overpowering disease in a fresh part, or in consequence of its arrest or subsidence in the one primarily affected; it being a law in the animal economy, that no two great or paramount actions can go on at the same time in one system. A most remarkable instance we have of metastasis, in *fever in the feet* supervening on inflammation of the lungs. The sudden arrest of an habitual frush is apt to induce lameness by causing actual inflammation in the foot. In some cases, metastases are explicable through the acknowledged sympathetic relations existing in the system. In the instance of the suppressed frush, the congestion is what ought to be expected. In specific ophthalmia, the eyes are affected alternately in consequence of their sympathy. In the case of the inflammation in the lungs involving the feet, however, these explanations are not applicable.

PROGNOSIS, a Greek word literally signifying *foreknowledge*, is the term we apply to an opinion given concerning the probable termination of disease. Accurate observation will so far mature our judgment as to enable us to offer a prognosis; perhaps not altogether unincumbered with doubt, yet of a nature sufficiently satisfactory. In some instances we assure the owner "that nothing can save our patient;" in others, that "from *present* appearances there is no reason to doubt the ultimate restoration." The word "*present*," as it stands above, is properly introduced into the prognoses of medical men; the fluctuations of disease often being such as to astonish even physicians.

TREATMENT OF DISEASE.

THE TREATMENT OF DISEASE consists in the employment of such means as tend to its cure ; and in the cure more is expected from us than from human practitioners. If a surgeon can save the life of his patient with the loss of a limb, or his sight, he not only satisfies his employers, but often gains great credit for the *cure* he has accomplished. But what sort of a cure would a man be persuaded we had made of his horse, when we returned the animal to him *blind*, or with the loss of a leg ? It behoves a veterinary surgeon to restore the diseased part to its healthy functions, or he runs a risk of not giving satisfaction, and even of encountering the unmerited reproaches of his employer.

The principles on which medicine is conducted are few and undeviating : they adjust themselves to the views we take of the disease ; therefore it follows, though the animals be different, yet, if we admit the sameness of their disease, we must be governed by the same treatment. In most disorders the living actions are *excited*—inflammation, in some form or other, is present ; to counteract and reduce which, our treatment becomes *depletive*. Some morbid states there are in which the functions are *depressed* : here we must act on an opposite principle — *stimulate*. A third principle on which we practise medicine is one we are compelled to admit, though it is one concerning which we cannot offer much in explanation : we may denominate it *the principle of experience* ; though it more commonly passes as *quackery*, from the abuse made of it by pretenders as an impenetrable shield to their ignorance.

MEDICAL PRACTICE, in fact, is a combination of *rational* and *empirical* means : the one consisting in the employment of remedies whose operation on the animal economy is known ; the other, in the application of agents without any reference to the circumstances under which their agency may operate. Every practitioner knows that it is not the

remedy, so much as the *circumstances* of its exhibition, on which success depends.

I dare say it has occurred to others as it has occasionally to me, in particular cases, from a certain spirit of over-zeal, or from pushing theory, and the practice consequent on it, beyond their legitimate limits, we find out, sooner or later, that we have been doing harm instead of conferring benefit—making the case worse instead of better—converting that which was originally simple into a very complex affair, or even one of danger. This observation is especially applicable to pretenders in medicine—such as grooms and farriers, who are ever meddling with and thwarting nature's best operations, under a notion that their drinks and ointments—not nature's hand—works the cure. The evil is not, however, I am sorry to assert, confined to such persons as these; it is too often applicable to the young, inexperienced surgeon; and on some occasions to the oldest and most practised among us.

The MEDICINAL AGENTS employed for the alleviation of disease, are derived from each kingdom of nature,—the *mineral*, the *vegetable*, and even the *animal*. Some of them are exhibited, in prescribed quantities, *internally*; others are used as *external* applications. Some are given as they are found in nature; but the greater number undergo some modification in the hands of the chemist. In the use of medicine, though theory may often enlighten us in our calculations, experience is to be our grand rule of procedure: it was experience that taught the learned Boerhaave, “that the great art of medicine consists in the application of the proper medicine, in the proper dose, and at the proper time.”

FORM OF MEDICINE.—We commonly exhibit medicine either in a *solid* or a *liquid* form. As a solid, we give it either in the form of *ball* or *powder*; as a liquid, either as a *drench* or in the animal's *drink*. The ordinary form in which we make up medicine, and beyond all comparison, the best, is the *bolus* or ball. And this should be of a *long* cylindrical shape—not of that short oblong form to which

any difficulty in swallowing the ball, may be mostly traced. Of the first figure I have given balls, for nearly thirty years: and I have never once witnessed an accident—never once been troubled with a case of “ball sticking in the throat.”



Powders are only adapted for medicines of an inodorous and tasteless character, such as *calomel* and *antimony*. *Nitre* seems, however, to be an exception to this rule. A horse appears to be pleased with the flavour of salt, for he will readily eat bran-mashes with nitre in them; or if a piece of rock salt be in his manger, he will lick it continually.

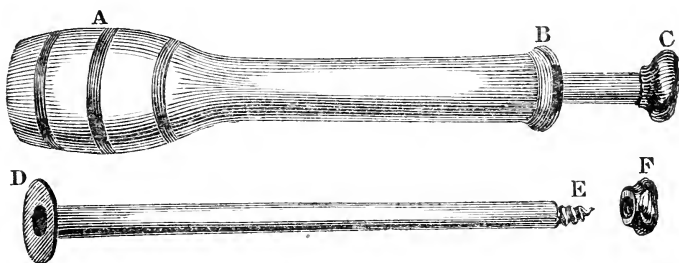
The LIQUID FORM possesses the advantage of more speedy operation; this is an advantage, however, which supposing the drench to be introduced into the stomach, an affair always of more or less uncertainty, which on too many occasions is not a little inanced by the dislike the animal has to the medicine and to the mode of administration, also by the animal's struggles and plunges during its exhibition. Moreover, the drench cannot take effect until it is introduced into the stomach; and how to get it there is a question not always of easy solution. Some horses will *take* a drench in the common way, with the drench-horn, very well; others will swallow it best out of a wine bottle: while others, again, prove so untoward and refractory as hardly to take it at all. In fact, though I am willing to admit that an expert operator with an able assistant may evince much dexterity in giving drenches, it too often happens, either from unsteadiness of the horse, or clumsiness of the administrator, that the patient loses half his dose; in consequence of this, the effect, calculated on, is not produced. Thus in our effort to *gain* time, we have *lost* time, inasmuch as we are obliged to repeat the drench. On this account, a larger dose of physic in solution, is generally required to

produce an equivalent result to the same quantity in form of a ball. I do not mean that I have entirely abandoned giving drenches; but that, from the uncertainty attending their operation, I rarely have recourse to them. There are some medicines which we can exhibit, conveniently enough, by dissolving them in the animal's water or common drink. Corrosive sublimate is of this kind. We may also mechanically mix some light powder that will not easily or at all dissolve in water with his drink, such as croton powder. For the success of a deception of this kind, it will be necessary that the pail, the water, and medicine, should all be perfectly clean; and, in some cases, the animal will require to be kept short of drink, or even without any for a day or two, before it will take the medicated water, though to our senses the liquid be tasteless and devoid of smell.

Without adverting to the uncertainty attending the administration of drenches, there is a stronger objection to their adoption in preference to balls, and this serious hinderance is the danger attendant on their administration. Many a horse has met its death through receiving a drink. A little of the liquid enters above the *velum palati*: coughing is excited: during this act, the larynx being drawn downward, the communication between the nose and mouth is thrown open: the drink quickly flows into the larynx, and falls upon the lungs: the consequence of which is the animal is suffocated, and either dies at the moment or is immediately attacked with symptoms, too manifestly indicating the cause of death. The way to prevent this accident is, *the instant coughing is excited, to let the animal's head down*, thus giving it liberty to cast out through the nostrils, as well as mouth, what otherwise would run down the windpipe. When the animal does not immediately die, but survives for some time, the symptoms evinced are, agony changing into debility and death. As a precaution, it is prudent to filter drenches: because it is not the liquid so much as the substances with which it is mixed that produce the fatal termination—by rendering respiration impossible.

The ADMINISTRATION OF MEDICINE to horses is, in gene-

ral—at least when given in the form of ball—an operation readily performed: a man has nothing to do but to carry the ball between his forefingers to the back of the tongue, by the retraction of which it will be drawn so far within the pharynx, that the animal is compelled to swallow it: added to which, if the ball be of a proper shape, it will be swallowed as it was delivered, without change of direction. A very useful mechanical contrivance for giving balls was put into my hands twenty years ago, by Farrier Major Thomas, then of the Artillery. It is called a *ball-gun*, I suppose from its resemblance to the child's popgun.



A B C represents the ball-gun complete, with ramrod (C) drawn out, in order to leave the bowl or cup (A) unoccupied, and ready for the reception of the ball. D E F represents the ramrod, supposing it to be drawn out from the barrel of the gun (A B), which is readily done by unscrewing the nut (F) from the male screw (E). At the other end of the rod (D) is fixed a circular plate of iron, which plays backwards and forwards within the bowl, pushing out the ball, or anything that may happen to be lodged inside.

Mr. Goodwin, sen., has evinced much ingenuity in attempts to improve on this homely contrivance. He has constructed an instrument, which, instead of having an internal moveable rammer, is so contrived that the bowl itself moves; thus instead of the ball being thrust forward, it is left upon that place in the mouth just before occupied by the bowl of the instrument. There is much ingenuity displayed in this contrivance; but it is a costly one; and, after all, is not so sure in its operation as the common ball-gun. Drenches

are administered either with a *horn* or a *bottle*, and the assistance of the *elevating pole*. We are very much in want of some improvement here.




VIS MEDICATRIX NATURÆ is the phrase used by medical men to express that power, inherent in every body endowed with life, of repairing injuries and rectifying derangements to its integrity. To the existence of this curative property we owe the healing of wounds, the union of fractured bones, and that agency which is always working (not only during every injury, but in every disorder of the body) towards the restitution of health. Though the natural tendency of this power be salutary, however, we should know it may become over-excited or depressed, or have its action perverted so as to degenerate into an evil influence. These deviations from the healthy or natural action are part of the phenomena of disease. Our duty, in reference to the *vis medicatrix*, is to direct it, to control it, or to take care it be not thwarted, according as the case shall require: it may demand curbing, or it may need to be excited; it may even call for temporary repression; destroyed it cannot be but with life itself. There are many cases which, from the salutary operations of the *vis medicatrix*, call for nothing by way of treatment beyond abstinence. Indeed, in every case, we must not lose sight of the medical axiom—that Nature can do everything without remedies; but that remedies can do nothing without Nature.

The DEATH OF OUR PATIENT gives us an opportunity of investigating disease; it also affords us more or less insight into the nature of disease. The examination of *morbid* parts often supplies us with information of a highly valuable description: and, in the opportunities of obtaining this instruction veterinarians possess advantage over surgeons. It occasionally happens that horses die whose bodies disclose no perceptible marks or traces of disease; but it oftener happens that more disease is found on the *post-mortem* examination than was anticipated during life: a circumstance which forms an additional reason for habitual investigation.

OPERATIONS (OF SURGERY).

Operating is an inferior part of a surgeon's duty: yet its neat and expeditious performance will gain him much applause, while the contrary will lose him much of his reputation.

It is a hundred times more gratifying and creditable to save a limb or to dissolve a stone, than to have recourse to an operation, however clever the operator. It is proper and highly creditable for a surgeon to be able to operate at a moment's notice, if required; but whenever there is a doubt, it is his duty to give the patient the benefit of that doubt. Hence "the advantages of modern surgery consist (not in multiplying operations, but) in limiting the expenditure of blood and pain, and often averting altogether the use of operations." Whilst, however, many operations are averted, others are introduced successfully for diseases, tumours, distortions, &c., which before were considered incurable. It is not only necessary to study anatomy well, but (to operate) the knowledge must be kept up by dissection. Pain is saved by dividing the skin from within outward, instead of the contrary, and boldly, at once. And when large incisions are required use *large* knives. The parts being kept on the stretch is of great importance in making a free incision. All knives must be used on the principle of the *saw*. By a magnifying glass you will see some are set backwards, some forwards. A razor is set differently from a dissecting knife. (Liston's Introductory Lecture, in the 'Lancet' for June 1st, 1844.)

INCISIONS (in operating) should always be made in the direction of the muscular fibres underneath. One cut falling into another at right angles affords two flaps  One flap is raised by making two incisions meet at a point, forming, by this juncture, either an acute or obtuse angle, thus  Four flaps are made by making two incisions cross each other, thus  Diseased skin may require removal, but its saving is always of the greatest import.

SECTION II.

I. INFLAMMATION. II. TREATMENT OF INFLAMMATION.

INFLAMMATION.

NOTWITHSTANDING we are forced to admit that disorders do exist in which no manifest signs of inflammation can be discovered, yet, from its universal influence, do we feel ourselves fully warranted in laying down the axiom, that he who has made himself acquainted with the laws of inflammation, has acquired almost all the knowledge of disease in general which it is in mortal power to impart.

Our lexicographers define *inflammation*, in its passive sense, to be "the state of being in a flame;" in accordance with the signification of the Latin word, *flamma*, flame, the radicle from which it takes its derivation. The word is of ancient and even sacred use. Among the laws of Moses we find, in reference to the signs which are to guide the priest concerning the leprosy, "And if the bright spot stay in the place and spread not in the skin, but if it be somewhat dark, it is a rising of the burning, and the priest shall pronounce him clean: for it is an *inflammation* of the burning."

Every solid part of the body, (with the exception of those that are *inorganic*, which possess neither blood-vessels or nerves, such as the hoofs, the hair, and the cuticle,) is liable to become the seat of inflammation; and therefrom to have its state and structure either temporarily or permanently altered. Every organized part is furnished with blood for its nutriment or support; and there are some parts in which no other living action is performed, save its own sustenance or growth; while others there are in which, in addition to this common vital action, functions are performed peculiar

to themselves, and widely differing one from another. Now, when inflammation has attacked a part, not only does its nutritive action become disturbed and irregular, but any peculiar function it may have also becomes more or less deranged.

ORIGIN OF INFLAMMATION.—Excited sensibility appears to be the earliest sign of inflammation. It is this which immediately follows the application of a stimulant; as well as this to which the vascular phenomena that succeed seem referable: the energy of the vascular powers appearing to be roused through excitement produced in the nervous system. A tingling sensation draws our attention to the part affected, and we discover that it has become red, hot, tumid, and painful: to express which conditions in one word, medical men use the term *inflammation*.

SYMPTOMS OF INFLAMMATION.

The SYMPTOMS by which inflammation is known to have commenced are, then, *heat, pain, redness, and swelling*. Celsus, who wrote before the Christian era, thus quaintly exhibits them:

“*Rubor et tumor cum calore et dolore.*”

As the Roman author has handed them down to us, so they stand in our present description; they, not separately, but *collectively*, constituting inflammation. Both heat and redness may be created in a part by friction, or by exposure to the fire; pain will result from nervous irritation; and swelling will arise from extravasation of blood, or from the efflux of any of the secretions—urine, bile, saliva, &c.: and yet, in none of these instances is inflammation present.

HEAT is perceived according to the part inflamed; at the same time, it is a sign consisting rather in effect than originating with a cause. That there exists a sensation of heat, even of burning at times, any one who has had a whitlow will not fail to remember: but the hairy covering of the horse renders the transmission to our fingers comparatively

dull, though heat occasionally must exist, as is evident from its penetrating the thickness of the hoof: which it does, and to a degree that renders the part actually hot under the hand. The expired air, in cases of inflamed air-passages, is so charged with heat as to convey really a burning sensation. There cannot, therefore, be entertained a doubt respecting the increase of temperature in *external* parts. But it is different in regard to *internal* organs: they are not subject to those fluctuations of temperature to which the external are exposed; moreover, every internal part is already of the natural heat of a living body, to which any vital action can add but very little. Mr. Hunter excited a high degree of inflammation within the rectum and vagina of an animal, without being able to augment the temperature of those cavities above a degree of the thermometer: in fact, he concluded, that "the heat could hardly be said to be increased." We may, therefore, lay down two axioms concerning heat in inflammation—that the temperature may be augmented, in any external part, as high as the natural standard of the body, or be raised to 100° Fahr.; but with internal parts already of this temperature, inflammation, though attended with the *sensation* of heat, is not found to become in reality augmented (or but very little) beyond that point. The truth being, that heat is generated much more rapidly than in health, and consequently acts on the feelings of the patient, as well as on the perception of another person; although the actual temperature, from the heat being carried off as fast as produced, undergoes but very trifling augmentation.

PAIN, though equally present as a symptom of inflammation, and probably equally variable, yet is one concerning which we can learn only from careful observation. Animals, it is true, feelingly and impressively exhibit their sufferings; solicit our aid by signs too plain to admit of being misunderstood; for all this, however, though they may make us sensible of the *intensity* of their pain, they often leave us much in the dark respecting the *nature* of the agony they endure. In the generality of cases we are

much assisted in our investigation into this symptom, by recollection of the facts, that the pain is generally commensurate with the violence of the disorder and sensibility of the part inflamed; that it is augmented by any use, or motion, or exertion of the part; and that it is likewise increased by pressure. The poor sufferer labouring under *fever in the feet*, advances his hind legs as far under his body as possible, in order to relieve the fore ones, in which effort he puts himself into such a characteristic posture as denotes, at once, the nature of his complaint. In cases of lameness, it is the pain that occasions the halting, whereby we are informed that disease is going on in the limb, which, but for that symptom, we should probably remain ignorant of until the work of destruction had been completed: an event apt to occur in neurotomized horses, whose hoofs may be shelled before we are warned of the presence of disease. In inflammations about the body—in *strangles*, for instance—we ascertain the degree of pain felt in the tumour by *pressure*: we apply our fingers upon the part, and accordingly as the animal shrinks from this test, we estimate the pain he feels. It must be remembered, however, that there are disorders of the most grievous nature in which inflammation has not been discovered, or only in a secondary form; such are *spasms* and *tetanus*.

REDNESS is so rarely exhibited in the course of the practice of the veterinary surgeon, that he would almost be justified in withholding his assent to its existence, did not analogy convince him of the fact. Those who know anything of the nature of inflammation in man, would never think of doubting the presence of redness in horses, although their coats debar us from having ocular demonstration of it; yet shave off the hair, and heightened colour will be found. In parts naturally bare—the *eye*, the *membrane lining the nose*,—in white and cream-coloured horses, the *muzzle* and *lips*—the scarlet change is apparent enough. Could the foot, in a high state of fever, be stripped of its horny case, it would probably look like a piece of intensely red flesh. The absence of *redness*, and the imperfect manner we are

often compelled to judge of *pain*, may serve to convey some idea of the disadvantages in practice, under which the veterinary surgeon labours.

SWELLING or *tumour* may either predominate in inflammation, or may be almost wanting, according to the nature and situation of the part affected. One of the most remarkable instances we have of swelling is furnished by *strangles*. The tumour assumes the spherical form, being most prominent in the middle, or where the inflammation runs highest, and where the heat, as well as pain, are felt most acutely: from this prominent part the swelling on every side declines, becoming softer to the feel as it grows distant from the centre. Parts whose texture is dense or fibrous—such as tendon, ligament, cartilage, and bone—swell but little under inflammation. Some parts are so closely enveloped by unyielding fibrous sheaths, that they are prevented from swelling to the extent they otherwise would: such is the case in sprain of the back sinews, in which not half the tumour is evinced which would appear were the sheath itself ruptured; an accident which does sometimes attend the lesion. In like manner, the eye, when internally inflamed, is prevented from swelling by its fibrous case. Most of all, however, the foot is worthy of observation in this respect: however highly inflamed, though its vessels become turgid under inflammation, it is impossible the parts can *swell*, closely covered and walled in as they are by the unyielding hoof.

IMPAIRMENT OR SUSPENSION OF FUNCTION.—When the eye is inflamed, vision is more or less impaired: should the ear be in the same state, deafness is the consequence. In inflammation of the kidneys, either no urine at all is secreted, or little and of a morbid quality. In *hepatitis*, the dung of the animal is clay-coloured, from deficiency of bile. When one, or any part, of the four limbs, is in an inflamed condition, the animal halts or goes lame: a circumstance arising, in most cases, from two causes—from actual inability of the moving powers to perform their functions, as well as the pain such movement causes to the animal.

With facts such as these before us, we cannot refuse our assent to the introduction of the suspension of function as a sign indicating inflammation.

THEORY OF INFLAMMATION.

When we consider the paramount influence of inflammation, we shall evince no surprise at learning that the part of our subject at which we have now arrived is one that has for years engrossed the attention of the medical profession. The four indispensable signs of its existence—*heat, redness, swelling, and pain*—have at all times been acknowledged: plain and obvious, however, as these four facts are, and simple as they appear to be in their nature, yet they have collectively furnished materials for more hypotheses than any one subject in the range of medical inquiry. The *blood-capillaries* were by all admitted to be the structures principally concerned in the production of these changes; but when they came to explain *how* these were affected, there arose a difference of opinion. The earlier pathologists confined their views exclusively to the blood, looking upon inflammation as the result of a vitiated state of the *humours*. This error was no sooner exposed, than an equally undivided attention was given to the blood-vessels: their action was found to be considerably increased under inflammation, and to the quantity of blood thrown into a part by enlarged ducts was attributed the redness, heat, and pain; there still being a difficulty in reconciling the swelling with this theory. To surmount this obstacle, it was said, that the increased action only affected the vessels running to the inflamed part; that in them the blood was *congested*. The obstruction causing the congestion, Boerhaave asserted, consisted in some inflammations, in thickness and viscosity of the blood, a condition he called *lentor*; while in others he found it to be owing to the larger globules of the blood being impelled into vessels too small for their transmission, which he designated *error loci*. Cullen disputed this theory, contending that the *vessels*, and not the blood, were in fault.

“The cause of obstruction,” says this learned writer, “is *spasm* of the extreme arteries supporting an increased action in the course of them.” So far as distension or swelling is concerned, spasm is a condition quite opposed to this, which would indicate that *less* instead of more blood existed in the inflamed part. In framing theories on inflammation, the grand difficulty has been found in reconciling the increased action of the vessels with a state of preternatural distension of them. The more a vessel is distended, the more we believe its contractile power to be weakened; so that we are not only giving the vessels more to perform, but in supposing them to be dilated, we are placing them in circumstances the very opposite of those most favorable to exertion. Then, whether the capillaries possess a power of propelling the blood, or whether it is forced through them by the heart; or whether the two powers conjoin in circulating the blood, we are by no means certain.

These considerations present difficulties which, when added to the universal influence of the nervous system, contribute greatly to confuse any investigation into the nature of inflammation. Of late years the subject, however, has undergone renewed inquiry, and much assistance has been gained by a more accurate observation of parts actually under disease; and the result has been, the pretty general admission of certain facts on which future theories may be safely grounded.

THAT AN INCREASED QUANTITY OF BLOOD IS SENT TO AN INFLAMED PART, admits of demonstration: First, from the *throbbing* of the arterial trunks supplying it, which is an unequivocal sign of increased action; secondly, from the state of the part itself; viz., its redness; the distension of its vessels; their dilatation or enlargement; the admission of red blood into vessels which were of insufficient calibre to admit any but the serous part of that fluid.

THAT THE BLOOD IN THE INFLAMED PART IS NOT ACCUMULATIVE, CONGESTIVE, OR STAGNANT, BUT IN CONTINUAL ACTIVE CIRCULATION THROUGH IT, is demonstrated by the distended and enlarged state of the veins which convey it

away,—by the experimental fact, that more blood will flow within a given interval from those veins than from the correspondent vessels on the healthy side of the body,—from the circumstances of inflamed parts, when cut into, exhibiting blood of the *arterial* character, and yielding it *more rapidly* than corresponding structures when in health.

CONDITION OF THE CAPILLARIES.—This brings us to the pith of the question. It appears, that the blood, which is sent to the inflamed part, so far from being congested or anywise stagnant, is actually flowing with increased velocity, as well as fulness of current, through the capillaries: this is made manifest by the plethora of the vessels that conduct the blood away from the inflammation. Were it detained in the capillaries, or retarded in its course through them, it would undergo the changes consequent on its protracted absence from the heart, and become dark in its hue; and it would issue but tardily from the venous trunks: whereas, we know that the contrary of these suppositions is the case. In fine, it would appear, from all facts we are able to collect, that the blood is actually circulating through the capillary system of a part under inflammation both in greater proportion and with more rapidity than through the same vessels in a state of health: the only explanation of which preternatural performance I can offer is, that the vascular powers are roused and rendered capable of it by the sympathy of the nervous system. Let us see how these explanations tally with the symptoms.

EXPLANATION OF THE REDNESS.—This symptom is owing to the blood in inflammation filling all its vessels to repletion with red globules, the tubes in health being too small to admit any but the finer and colourless portion of that fluid. The shade of the redness is owing to the quality of the blood, and also to the vascularity of the affected part: the florid scarlet complexion of the part being attributable to the arterial character of the current of blood; while tendons or ligaments assume less redness under inflammation than skin and muscle, because they are naturally less vascular. I say “naturally” so; for, as Mr. Hunter tells us, “parts in-

flamed appear to become *more* vascular;" though he imagines that appearance may be owing to the dilatation of the capillary vessels. The same distinguished pathologist placed the ear of a rabbit in a situation where it froze; after which he thawed it: this occasioned intense inflammation. In this condition the animal was killed, and the two ears injected, and afterwards dried. The uninjured ear dried clear and transparent, beautifully displaying its arborescent vessels from a *single* trunk; but the inflamed ear dried thick and perfectly opaque, at the same time exhibiting vessels double in number, and of larger size; and, instead of one, *two* principal trunks.

EXPLANATION OF THE HEAT.—An animal body derives heat from its blood. That fluid in its passage through the lungs undergoes certain changes, in consequence of which it acquires the requisites for heat, to be evolved in a sensible form in the course of its circulation: consequently, any part through which a larger quantity of blood circulates than is natural will be hotter than in health. At least, as was before observed, this will be the case with parts whose temperature is by nature below the standard of the body, or lower than from 98° to 100° Far. Not but more heat is evolved in every inflammation; only, as was before stated, it does not appear to accumulate: it seems to pass off almost as quickly as produced, operating on the sensations of the patient without raising the actual temperature of his body. Mr. Hunter conceived the body had the power of generating *cold* as well as heat: and though his proofs of this faculty are rather of a negative than of a positive kind, we may say, it promotes evaporation in places of unusual warmth to carry off any excess of heat. Our theories on the subject of animal heat are not yet sufficiently matured to enable us to speak more decidedly on the present point. The nervous system is probably very influential; and this will necessarily add to the complexity of the subject under consideration.

The SENSATION OF THE PAIN is referable to the nervous system. The nerves of the part inflamed appear to be in a

state of excitement, and that which under ordinary circumstances would call forth common sensation, now produces pain. One cause appears evident in the tumefied condition of the part: the general bloated and tense state of the inflamed tissues must oppress the nervous filaments, at the same time stretching many of them considerably beyond their natural tone. In parts of an unyielding nature, as tendon or ligament, the pain is violent, at the same time peculiar in its kind, owing to the severity of the compression which the nerves must experience. Anything that tends to relieve distension, at the same time relieves some of the pain felt: during a violent inflammation in my own hand, I experienced considerable mitigation of the pain whenever I held it in an elevated position, with the arm as much as possible extended; the return of blood through the veins being thereby greatly facilitated. On this principle it is that pain is augmented at every throb of the inflamed part. Gradations in pain are very variable, and will admit of explanation because of the distribution of the nerves the inflamed part may contain; because of the yielding or unyielding texture of the part; because of the violence of the inflammation; and, also, because of the nature of the exciting cause. After all, however, we shall find ourselves forced to confess, that the morbid sensibility of the nerves will not admit of complete elucidation until we shall have become better acquainted with their operation in health.

EXPLANATION OF THE SWELLING.—The tumefaction of an inflamed part is ascribable to the immoderate distension of its vessels with blood, and to the effusion in the form of serous fluid and coagulable lymph into the cellular tissue and surrounding textures. In the early stage, the swelling seems attributable to distension: effusion, however, speedily supervenes, and in the latter stages constitutes the major part of the enlargement, imparting to it a degree of firmness, and often remaining after the inflammatory action has subsided. The solid feel the tumour has about its more prominent part, is owing to the effusion of a mass of gelatinous matter, which turns out to be the same as coagulable lymph;

while in the surrounding parts, where the swelling is less prominent, serous effusion is found mingled with the solid deposition. In anasarca or œdematous affections, the effusion seems altogether of a fluid nature.

CAUSES OF INFLAMMATION.

Inflammation may arise in a great variety of ways, some of which are obvious to us, while others are mysterious, or concealed from our view. Numerous and various however as these are, they admit of classification into *accidental*, *spontaneous*, and *sympathetic*. An inflammation is said to be accidental when its exciting cause is self-evident, or external to the body; comprehending all such as arise from mechanical and chemical injuries, as well as such as are ascribable to atmospheric vicissitudes. Spontaneous inflammations are imagined to spring up of their own accord; or without any apparent cause: they are mostly what are called *inward affections*. Sympathetic inflammations owe their production to disease in other parts.

MECHANICAL INJURIES comprise wounds, contusions, and abrasions; sprains, dislocations, and fractures; and undue exertion of any organ, or of the body.

CHEMICAL EXCITANTS comprise all such substances as possess properties of an acrid or poisonous nature: they are the mineral acids, the caustic alkalies, and the metallic salts which we are in the habit of using in our practice of medicine.

STATES OF THE ATMOSPHERE—heat or cold, moisture or dryness, in their turn become excitants of inflammation; their mischievous agency residing more in the vicissitudes than in any unhealthiness in our climate from their excess. They may operate either directly, as excitants; or indirectly, as predisposing causes. Horses turned out from warm stables and exposed to the open air, even during the inclement seasons of the year, seldom experience any direct inflammation from the change; though the reverse of this vicissitude cannot be practised without danger, especially

upon young horses. Although horses may escape immediate evil from the first change, few veterinarians will feel inclined to deny the injurious effects of cold and wet, or maintain the animals do not in such situations often contract the foundation for disease, which, at some future time, is apt to prove fatal. Cold, apart from wet, is not found to be near so prejudicial as when combined with moisture: hence we are in the habit of viewing frosty weather as a season of health; hence it is the wet months of spring and autumn are the most unhealthy, the weather then being moist and variable. But, independent of these changes, there are conditions of the atmosphere which we regard as *peculiar*: when prevalent, they are apt to produce a sort of *epidemic* among horses, called *influenza*.

ANIMAL POISONS are found to be occasionally suspended in the atmosphere, and through its medium these produce their effects. The air of a hot and ill-ventilated stable may prove an excitant of inflammation, not only from its high temperature, but also from the effluvia with which it has become impregnated. Animal poisons may also be conveyed through the medium of the secretions. Rabies is transmitted through the *saliva*. Farcy and glanders may be transferred by inoculation with the discharge of the nasal membrane; and mange is conveyed by simple contact.

SPONTANEOUS INFLAMMATIONS are such as arise without any assignable cause. That there are many of this description we have daily proof; and yet it is contrary to our philosophy to suppose that diseased action can be set up without a cause, though it be one difficult to discover. The causes we esteem among the inevitable provocatives of disease, are all external to the body: we do not reckon with sufficient accuracy the results of internal functions, or the variety of diseases which may be engendered by their faulty action, or through the imperfection of the blood. By this fluid all organs are nourished, and on this fluid many of them work important changes. Were our knowledge only perfect, and had we a thorough comprehension of the relation subsisting between the body and the various organs, we

should probably be enabled to connect disease with its origin in every instance. But at the present time we are in the dark concerning internal causes: we want knowledge, also, about those which are external; and we likewise are ignorant as to the effects of atmospheric influence.

SYMPATHETIC INFLAMMATIONS are such as owe their origin to disease already existing. Mr. Hunter showed us how apt one set of parts were to take on disease when another were suffering; and Mr. Abernethy has prosecuted the subject with a success truly enviable. This last author has fully demonstrated the effects of local disorders on the constitution; he has also developed the operation of constitutional disorders on local diseases: he has likewise placed the subject in a practical point of view which has materially benefited both surgery and medicine. In man, the digestive organs oftener than any other evince disorder; in the horse, the respiratory apparatus is the most common seat of disease: both which sets of organs may generate disease in other parts of the body. The skin sympathises readily both with the digestive and pulmonary organs. The same may be asserted of the kidneys and the brain. There exists a striking sympathy between analogous structures: disease of one serous membrane is followed by disorder in another; so it happens with the mucous, and likewise with the fibrous membranes. Sympathy is evinced in a remarkable manner between fellow-organs on opposite sides of the body: one eye is no sooner affected with ophthalmia than we begin to entertain apprehensions for the opposite organ.

PROGRESS OF INFLAMMATION.

The progress of inflammation depends on its nature, the part it is affecting, the condition of the animal, and other circumstances. It often assumes the violent form, and runs its course rapidly; or, in technical language, it is of the *acute* character. At times, however, it appears of a different aspect—in a mild, sluggish, or indolent form—being then of the *chronic* description. But we shall

not only have to mark the acute and chronic *kinds* ; we shall likewise meet with acute and chronic *stages* of inflammation ; for, in fact, it rarely preserves the same character throughout its progress. Both its commencement and its decline are mostly imperceptible. Notwithstanding, however, that these acute and chronic forms run into each other ; and notwithstanding that they are both said to be inflammation, yet is the process different ; and, therefore, chronic inflammation is followed by results which we never see in the acute disease. It might be supposed that in chronic inflammation, there being commonly but little inconvenience felt, there was little danger : this is an inference, however, that must not be too widely drawn ; often it happens that chronic disease proceeds so imperceptibly as to make considerable ravages before we are aware of its presence, and then at a period too late to repair the mischief already accomplished. It too often happens in veterinary practice that, trifling illness being manifested by an animal, the master does not imagine it worth while to call in medical aid, so that the foundation becomes laid for disease, and, by the time we are consulted, it is out of the power of medicine to alleviate the complaint.

TERMINATIONS OF INFLAMMATION.

No sooner is inflammation established than we begin to look forward with more or less apprehension to its *terminations*. These will be found to depend on its violence, its duration, the cause that gave rise to it, the nature of the part affected, the peculiar constitution of the animal, and a variety of circumstances, such as the remedies employed, must aim at counteracting.

To the appearances I am about to describe, Mr. Hunter affixed the name of *terminations*, from the circumstance of the inflammatory action subsiding as soon as they had taken place. Inflammation may terminate so early and so favorably as to leave the part in an unimpaired condition. On the other hand, the termination may be so protracted, or so

destructive, as to disorganize structure, or even extinguish vitality. Or the effects of the inflammatory action may be of the intermediate character, which so far affects structure as to leave it in a state of irremediable impairment. The terminations of inflammation are, *resolution*, *metastasis*, *suppuration*, *abscess*, *ulceration*, *interstitial deposition*, and *mortification*.

RESOLUTION is the term medical men employ to signify that inflammation has declined without occasioning any material derangement in the organization. A horse is brought to us with "a sprain of the back sinews;" we examine the leg, and find it swollen at one particular part, which manifests heat and tenderness on pressure. We apply a bandage wet with refrigerant lotion round the leg, and, perhaps, at the same time bleed and purge. The swelling, pain, and heat gradually subside: in other words, inflammation is arrested by the timely employment of remedies. The leg recovers its natural fineness, and the animal goes sound. This constitutes *termination by resolution*. And another horse, we will suppose, in reaching his head to a high rack, happens to have a hay-seed fall into his eye. Instantly the eye is closed, a flood of tears is discharged, and the animal twists his head about to get rid of the annoyance created by an irritative body sticking in a part so sensitive. Some hours afterwards, the groom, not knowing what has occurred, brings the horse to a veterinary surgeon; who, on everting the upper eyelid, discovers the seed sticking to the conjunctive membrane, which by this time has become as red as a piece of scarlet cloth. However, the irritant is removed, and by the following day the eye is seen to have recovered its natural colour and brightness. Here is another instance of termination by resolution. There is, however, an evident difference between this and the case of the sprained leg; inasmuch as in the one instance resolution was accomplished within the space of twenty-four hours; while in the other it required a week—perhaps a month—to bring it about. In the case of the eye, inflammation existed in its purest form, consisting in turgescence of the capillaries, which,

when the irritant is removed and the circulation in consequence diminished, contract on their too copious contents, and recover their original diameter : whereas, in the instance of the leg, effusion had evidently taken place ; and where such happens not only is the inflammatory action itself more permanent, but the matter effused has to undergo the tedious process of absorption. These evident distinctions in resolution have led to the introduction of the French term, *delitescence*, to denote the evanescent form, in contradistinction to the wearisome process which still retains the name of resolution.

METASTASIS, by which is implied the sudden shifting of inflammation from one part to another, occasionally becomes a concomitant of delitescence ; indeed, we have too often reason to apprehend this change when we see disease so suddenly subside. It is very remarkably the case in *pneumonia* ; during which disorder inflammation may suddenly quit the lungs, and we almost to a certainty predict that it will attack the hoofs, or in the grooms' phrase, "fall into the feet." In like manner, we find it often suddenly leaving one eye to invade the other. Nay, in some cases, we see most extraordinary metastases, the origin of which we are unable to explain : a horse will come out of the stable lame, without any discoverable cause ; on the next day the animal may be sound, or else evince equal lameness in the opposite limb. There are also instances of metastasis between the internal organs—between the alimentary canal and brain, the liver and lungs, the stomach and kidneys, &c. : in fact, there probably exist many of which we cannot take cognizance.

SUPPURATION is the term we use to denote the production of *pus* or matter in the inflamed part. It is the mode of termination we look forward to when inflammation runs higher than is usual when resolution ensues ; or where there is breach of surface or a lacerated wound, suppuration becomes the natural termination. For example, a horse has *strangles*. We apply our remedies ; the swelling increases in size, grows daily more tense and tender ; then gradually

changes to a soft, impressible, fluctuating tumour. At this stage it contains pus; which, unless vent be given to it, will accumulate and burst the skin, leaving behind a cavity in which the matter has been lodged. It was this deficiency of substance, probably, that originated the notion of suppuration consisting in the dissolution of the solid parts, which (when melted down) became pus. We now regard suppuration as a process of *secretion*; and *pus* as a product, the same as the urine or the bile; and we pretend to know no more about it than we do about the production of these other secreted fluids. In the different textures, although pus may exhibit some diversities in its appearance, yet in most does it evince the same intrinsic properties—possessing globules, resembling those contained in the blood, and yielding on its analysis both albumen and fibrine; having an identity of composition with the blood, which induced Laennec to believe that pus was really nothing more than altered coagulable lymph. Be this as it may, it is a fluid produced in the animal economy, though with much more apparent facility in some parts than in others. All unnaturally exposed parts—wounds and abrasions of all descriptions—readily run into suppuration: to them pus seems to form a sort of natural shield highly conducive to their healing operations. Mucous membranes promptly assume the suppurative action: in inflammation of the bowels we may occasionally detect pus coating the dung-balls.

ABSCCESS is, however, a higher degree of elaboration, before suppuration becomes established; although it is the end for which local inflammation is frequently set up. The cells of the cellular membrane in the beginning become blocked up with coagulable lymph; in the very centre of which mass, or at the point where the inflammation runs highest granulations are formed: by this is at first secreted a drop of purulent matter; the drop gradually augments, and the surrounding substance is as gradually absorbed; at length, a cavity containing a collection of pus is formed, or an *abscess* makes its appearance.

You frequently find after an abscess has been opened that

there is a sinus, or rather a contracted part of the general cyst, running underneath the skin, and not inclined to heal. Instead of running a bistoury into this and laying it open across the direction of the muscular fibres, make a free incision the other way, in the proper direction, upon the cavity of the abscess, so as to allow the matter to escape in that situation also, and you will have a more rapid cure. The same observation applies to abscesses over joints. (Liston's Lectures, 'Lancet,' June 1, 1844.)

ULCERATION may be defined to be a loss of substance. on any surface attended with the secretion of unhealthy pus. Ulceration cannot be considered as a healthy action. Rather may we view it as a tardy or unhealthy suppurative process in which absorption is more active than secretion. It is an effect of, although not strictly speaking, a *termination* to, inflammation: were it so, its consequences would be in the highest degree lamentable. We have an example of a kind of internal ulceration in the case of the abscess. No sooner is pus deposited than the solid tumour begins to disappear under the effects of absorption or ulceration: a process which in this instance is brought about by the pressure of the purulent matter. The result of the absorption is, that a cavity is formed for the pus, which, in the end, becomes so thin in one particular spot, that it bursts, and gives vent to the contained matter. Ulceration, therefore, differs from abscess, not so much in absorption as being on a surface: abscess lies within a sac, and the abscess ceases when the sac bursts, the wound becoming a suppurating sore or an ulcerating surface. Ulcerations are common in horses. We see them upon the membrane of the nose in glanders; and upon the skin in farcy. One of the best examples of ulcerative inflammation is afforded by the skin of the heels; a part which, in consequence of its remoteness from the source of circulation, is very subject to inflame, and in that state is prone to run into ulceration: hence the origin of the troublesome ulcers we meet with on the heels in cold and wet weather. Some parts are more disposed to ulceration than others; a circumstance ascribable to their relative degrees of vascu-

larity: the skin seems to stand first on this list; the mucous membranes certainly rank next; then come cellular membrane and bones; and, lastly, cartilaginous, ligamentous, and tendinous textures. This accounts for the ulcer in the heel not running deeper than through the skin; the cellular tissue beneath being indisposed to take on the same action. The same observation may be made in regard to the ulcerations of mucous membranes: the recent glandered ulcer extends only through the schneiderian membrane, spreading over its surface rather than dipping into the comparatively little-organized cartilage beneath. In the case of a deep-seated aneurism, however, although the same susceptibility to ulceration is observable, yet by a law of the animal economy, does matter doomed to be discharged, make its way directly to the surface, or else to some internal cavity, as the alimentary canal, or as the air-passages. Although nothing can resist this natural impulse, yet it is curious to observe what a strange course the matter will sometimes take to avoid some vital part, and how the blood-vessels and nerves will escape the general destruction, while bones even undergo the process of absorption. *Poll-evil* and *fistula* afford us dreadful examples of the ravages ulceration may make among bones and cartilages. Occult spavin, and disease of the navicular joint, likewise furnish us with specimens of ulcerative action in the same structures.

GRANULATION is the process by which chasms occasioned by external injury of any kind are filled up with new material: in fact, it is only another name for what used to be termed *incarnation*: *flesh* being wanted to fill the wound, but cellular tissue invariably remains. As soon as the ulcerative process becomes arrested, and the parts recover their healthy action, we perceive springing up from the innermost recesses of the chasm, little red pointed eminences, which have received the name of *granulations*. In the first instance, they consist purely of coagulable lymph; soon after, blood-vessels, and nerves, and absorbents shoot into them, and they then obtain the power of secreting purulent matter. In their organized state, they likewise become

procreative bodies ; so that one crop of granulations produce a second, a second a third, and thus in succession ; inosculating one with another as they grow up, until at last the chasm becomes filled, and nothing remains but for the surface to be covered with skin. In the usually vigorous constitution of the horse, granulation commonly proceeds with a luxuriance calling for repression rather than encouragement. When they grow beyond the level of skin, they constitute what is called *proud flesh*, and require escharotic applications to suppress them. It would appear that some parts are found disposed to ulcerate ; such, however, granulate with difficulty : hence arises the sluggishness and intractability of the ulcer in the heel when once it has penetrated the skin ; hence, also, the indisposition of cartilage and ligament to assume the granulative action, a fact of which we have sufficient proof in cases of poll-evil, fistula, quittor, canker, &c.

CICATRIZATION, the last stage of the healing process, is the union of the lips of a wound by cellular tissue. As soon as the work of incarnation is completed, and the chasm is filled with granulations, the surface becomes level and *dry* ; changes which arise from a filmy covering of glutinous matter deposited upon the granulations. Skin is one of those parts it is not in the power of the constitution to reproduce. It would seem that the process of its reparation even must be a difficult one, since the surrounding old skin uniformly contracts over the sore : this contraction occasions the puckered appearance which scars frequently present : *cicatrices* of old sores being of a glistening aspect, are never true skin, but cellular tissue, which draws the portions of skin together, and ultimately contracting or becoming dense causes the parts it joins to pucker ; the middle being commonly bare, or at least possessing but a few scattered grey hairs. What renders this contraction of the cellular tissue the more remarkable, is, its continuance even for months after the cicatrization of the sore ; so that the scar will go on progressively diminishing, and, in the end, prove of smaller dimensions than we probably had anticipated.

HAIR is never regenerated : but so long as the skin continues whole, and if the bulbs (which are lodged below the substance of the skin) remain uninjured, it grows again : indeed, so long as this is the case, hairs will be produced though they should be plucked out. Where a scar has formed, and where the injury is such as to destroy the bulbs, no hair will ever grow over the place. When we perceive weak, scattered grey hairs growing over the spot, we may conclude that the bulbs have not altogether been deprived of their organization, or have been drawn away from the adjacent skin. Attention to these circumstances will enable us to answer the question so frequently put in cases of *broken knees* :—" Will there be any scar or mark left ?"

INTERSTITIAL DEPOSITION will comprehend *adhesion, induration, scirrhus, hepatization, ossification, softening*, and, in fact, all changes of structure.

ADHESION.—Having completed the description of the process of granulation, and seen how the wounded part is ultimately closed, I shall now return to the open wound, and point out the other modes of healing which the constitution possesses : I mean direct union of the divided surfaces by a process called *adhesion*. Whenever a clean cut wound is made through the skin, the sides of the wound being shortly afterwards brought together and maintained in apposition, we have reason to expect union of the divided parts, or that the wound in this summary manner will be healed up and cured. Mr. Hunter called this *union by the first intention* ; in contradistinction to the process of granulation, which he designated *union by the second intention* ; and he imagined that the blood (effused in consequence of the division of its vessels) formed the bond or medium of union.—“ The blood being alive,” said he, “ becomes immediately part of ourselves, and, the parts not being offended by it, no irritation is produced. The red particles are absorbed, and nothing but coagulating lymph is retained, which being the true living bond of union, afterwards becomes vascular, nervous, &c.” Subsequent observation, however, has shown this conjecture to be erroneous. It is now well known that

extravasated blood is generally removed by the absorbents. Should the blood not be absorbed, it is found to operate rather as a foreign body than one suited to become "part of ourselves. The blood-vessels ooze forth the real agglutinating medium, which is coagulable lymph; the same material is thrown out in the form of granulations. The process of union is not *completed* until this intermediate substance is *organized*—or furnished with blood-vessels and nerves; an end brought about by the vessels and nerves belonging to the parts divided being elongated through the uniting material, and inosculating with the vessels of the opposite sides. From the surface of a fresh wound, not more than four hours are required to produce the coagulable lymph; and, in a few hours after, it will possess vessels capable of being injected.

In human surgery, adhesion constitutes one of the happiest resources of the surgeon: to it, in wounds of all sorts, is the surgeon's attention directed, as being the most prompt, safe, and effectual method of cure. And, indeed, so far as its excellence is concerned, the veterinary surgeon has equal reason to keep it steadfastly in view; though, unfortunately, when applied to practice, it is for the most part an unavailing remedy. Could we stick straps of adhesive plaster over a horse's wound, and, at the same time, persuade our patient to keep the part in a state of repose, we should derive quite as great advantages from this mode of union as the human practitioner enjoys. But, unfortunately for us, we are unable to accomplish either. Plaster will not adhere to the hairy skin of the horse, unless this covering be shorn off, and even then the bristles soon disturb it; nor do we possess any means of keeping our patient in that state of quietude indispensably necessary to the well-doing of the wound. In September following the publication of the first edition, I was favoured by a communication from Mr. Walker, M.P. for Wexford, in which he informs me he has tried glue spread upon linen with good effect. His method of procedure is ingenious and well deserves attention. I shall put it to the test.

The only plan we can pursue, supposing the glue to fail, is to make use of *sutures*—to sew the parts together with needle and thread; but sutures are annoying agents, very apt to create irritation, and bring on suppuration, or to slough from their hold; so, after our attempts to produce adhesion, we are foiled, and are reluctantly compelled to suffer the wound to heal by granulation. Not but what we every now and then see instances of union by the first intention; they are, however, I repeat, but comparatively rare. The result of the common operation of bleeding shows the tendency of the horse's skin to unite is vigorous. How would the arms of men fare were they served as horse's necks are after bleeding? Would they not, almost one and all, inflame and form abscesses? When surgeons are compelled to use sutures—for they never have recourse to them but through compulsion—they naturally look for suppuration instead of immediate adhesion. We have, however, one advantage in some measure counterbalancing our inconveniences; which is, that the granulating process in horses is carried on with a rapidity hardly known in human surgery.

REPRODUCTION OF STRUCTURE.—Whenever parts are destroyed, *coagulable lymph* is still the material by which the chasm is filled up; we now have to inquire what changes the lymph undergoes, or in what cases, and to what extent it undergoes conversion into the structures whose place it supplies. In cases where there has been little loss of substance, the coagulable lymph is, after a time, absorbed, the parts being brought together by contraction after the union is completed. We observe this exemplified in the instance of the skin. When there has been simple division, the edges of the wound gradually contract, and ultimately unite so as to require no new skin; if the injury has been extensive, and much new material is wanted, the old skin spreads itself out so as to leave the smallest interval possible to be renewed. This niggardness on the part of the formative agents evinces that the creation of new formations is an expensive process. Some structures are said to be reproducible after being partially lost or destroyed; the generality, how-

ever, are not renewed : a substance unlike to the lost texture unites the divided surfaces, but it has neither the aspect, the sensibilities, or functions of that the place of which it supplies. Skin is one of those parts never regenerated ; the place covered is ever afterwards not only conspicuous to the common observer—and hence has got the name of a *cicatrix*, or scar—but is also apparent to the anatomist, who discovers that, from a deficiency of cellular tissue beneath the scar, the cicatrix is tightly and immovably bound down ; he also notes that, in consequence thereof, he cannot make the same clean and facile separation of parts which he has made elsewhere. Added to which, if we compare the new skin closely with the old, we shall find manifest differences in their organization. The same observation applies to mucous and serous membranes : both are never regenerated after losses, for, in either instance, the new-formed structure will bear no comparison with the original formation ; the cicatrix after a time turns white, from possessing a lower degree of vascularity than the surrounding parts, and often exhibits a puckered aspect. Neither the cuticular papillæ nor the mucous follicles are discoverable in the cicatrix. Bone seems to be a substance reproducible with peculiar facility ; indeed, there is in the horse a remarkable disposition to take on what is called the *ossific inflammation* : cartilage, ligament, and tendon are of this character ; blood-vessels occasionally become osseous ; and even the heart itself has been found partially changed into bone. To these may be added the muscular and nervous structures, both of which appear to be united by some new formed substance, but neither of which seems susceptible of regeneration. After the operation of neurotomy, the divided extremities of the nerve unite ; the uniting cord, however, is found to consist of fibro-cellular material different altogether from the pulp of the original nerve, having commonly a little knot or protuberance about its middle. Breaches in muscles are repaired by a cellular substance differing from muscular fibre, yet serving to connect the divided parts, but never restoring their function of contractility.

INDURATION, SCIRRHUS, HEPATIZATION, OSSIFICATION.— These terms express the changes in structure which we may look for whenever inflammation is less acute than is commonly productive of suppuration, but is found to continue long or to undergo repeated variations in intensity. On some occasions, inflammation will run to a certain height, and then, abating gradually, will leave the part firm, and even hard to the feel, having diminished heat and sensibility. In this condition it may continue for some considerable time, and then, by a process of absorption, recover its natural state: or the inflammation may return to a more or less perfect suppuration; or else the tumour may lose all signs of inflammatory action, and become *callous* or indurated. It will sometimes even experience a change into a substance the nature of cartilage, or into bone. In this case the inflammation seems to expend itself in interstitial deposition, the deposit being simply coagulable lymph: the other changes, of whatever nature they may be, supervening upon this preparatory one. These changes are probably more ascribable to the duration than to the subacute character of the inflammation; at the same time, much depends on the condition of the part affected; some organs being greatly more disposed to such changes than others. Glands are especially subject, under long-continued inflammation, to what is called *scirrhus*; by which we imply consolidation and induration. *Hepaticization* denotes something of the same sort of change, only that the converted part has a *liver-like* aspect: it is a term oftenest applicable to those alterations found in the lungs after death. In regard to osseous transmutations, I before observed that the horse is prone to them: he possesses hardly any structure which has not been found partially or entirely changed into bone; and where cartilage is concerned, we look for it as a sort of natural consequence: hence we may explain the production of splints, spavins, ringbones, ossified cartilages, ankylosed joints, &c.

Such changes, although they do not endanger the life of the animal, yet so disturb the functions as to render life a

burthen, or else they incapacitate the animal and reduce it to a state which renders it useless to its owner. A property of the utmost consequence to the horse is *good wind*; nothing, however, oftener tends to impair this, and permanently deteriorate it, than changes such as we have been describing taking place in the respiratory apparatus; in the air-tube, giving rise to *roaring*; in the lungs, to *short* or *thick wind*. Lamenesses, of a permanent or incurable nature, are often referable to altered structure; without the power to re-convert which, we are without remedy for the inconvenience occasioned by it. How many a valuable horse is ruined by the formation of exostosis! in other words, by the conversion into bone of those parts which by nature are yielding or highly elastic.

SOFTENING is a change which has been occasionally observed in certain parts that have laboured under inflammation; but, in this case, the inflammation is rather of an acute than a chronic description. Our attention was first drawn to this novel alteration by the French writers. It seems to have been noted in most, if not in all tissues; the nervous substance, however, in particular, is prone to it; it is not unfrequently met with in cellular and in mucous membranes. The affinity to cellular tissue may serve to explain its occurrence in glandular structure: in the horse, the liver frequently exhibits a softening in which the finger may be pushed through its substance.

MORTIFICATION expresses the death of the inflamed part. Although producible by a variety of causes, yet it is but a comparatively rare occurrence in horses. The inflammation that gives place to it is of the acutest kind; the organs in which we oftenest meet with it are the lungs; though now and then we discover such changes in the bowels. Wounds also of a violent or complex nature will now and then turn to mortification. In a small way, every slough we create by caustic furnishes in itself an example of mortification. Any part in which inflammation is running on turns from red to a blackish hue, losing its heat, its sensibility, and, obtaining a semi-putrid smell, has become mortified. We may know

that all vital action has ceased by its deathly coldness, its blackness, its soft and flabby feel, its crackling sensation under the finger, and its putrid odour. Should it be an internal organ, the signs observed of mortification in general are, a sudden cessation of pain (so that, to a common observer, the animal would appear to have experienced an unexpected change for the better) ; this, however, is a delusion, for the issue is denoted by the wild stare, the cold sweat, the sinking pulse, and the delirium which quickly supervene. For, although recovery occurs after mortification in external parts, it is very rare to have a favorable issue when an internal organ becomes mortified.

The blood contained in a mortified part, and for some distance in the trunks communicating with it, is found to be coagulated ; the cellular substance commonly contains fluid, of a more or less offensive character, dependent on the chemical changes it may have undergone since the departure of life. In cases of external mortification, where a separation ensues between the parts, the plugging of the vessels with *coagula* is of immense importance being no less than the means of preserving life, which otherwise would be forfeited through hemorrhage when the dead structure fell from the body. There is a curious fact connected with the blood-vessels in relation to mortification : while other parts in their vicinity, by which they are surrounded, are dying, the blood-vessels themselves are preserved from the general wreck, these last rarely sloughing. I had an illustration of this in a case of fistulous parotid duct, in which it became necessary to remove the gland. I determined on doing this by a sloughing process : to promote this action I injected into it a strong solution of lunar caustic. An enormous and truly terrific slough followed ; which dissected its way with all precaution among the trunks of blood-vessels and nerves without opening or severing one of them.

Having concluded the local terminations of inflammation, I shall next say a few words on its—

SECONDARY OR CONSTITUTIONAL EFFECTS ; though of these it is my intencion to speak more fully hereafter. So

linked together are the different organs of the body; so reciprocally dependent for their general welfare on each other; that it is but natural to expect diseased action in one should occasion disorder in others, or in the system altogether. Although local inflammation may go on either in the nervous or vascular system, yet is it readily diffusible from a part to the whole; for as these two systems act together, and execute the principal operations of the body, so we need not feel surprised if we sometimes subdue a local affection by a remedy which acts on the constitution at large. Secondary affections are denominated *sympathetic* or *constitutional*, and are generally comprehended under the term *fever*; which head I shall now proceed to investigate.

KINDS OF INFLAMMATION.

Inflammation is either *common* or *specific*—in other words, it is either *healthy* or *unhealthy*. The first, common inflammation, presents itself in every ordinary case of accident. The second, specific inflammation, derives its name from peculiarities which are of such a nature as will not be encountered in common inflammation: such are specific ophthalmia, glanders, farcy, &c. Although these specifics are brought in one class, yet do they not possess any similarity, therefore every one may be regarded as an inflammation *sui generis*, or separate from all others. Catarrh consists in *common* inflammation of the membrane lining the nose: glanders in a *specific* inflammation of the same part. In like manner, we have common ophthalmia arising from external injury; and specific ophthalmia generated by a contaminated atmosphere. Notwithstanding these inflammations are different in their natures, it seems one may supervene upon another; thus we see glanders succeeding catarrh, though I do not remember ever having witnessed a case of common inflammation of the eye degenerating into specific ophthalmia.

CHARACTER AND TENDENCY OF INFLAMMATION.

The CHARACTER AND TENDENCY OF INFLAMMATION will be greatly influenced by the texture in which it happens to be seated. Among the simplest textures of the body is *membrane*: but of membrane there are several kinds, each of which possesses a function peculiar to itself; and therefore would lead us to expect differences in each under inflammatory action.

Of INFLAMMATION IN MUCOUS MEMBRANE the prominent symptom is *redness*: the reasons for which are obvious. In the first place, mucous membranes are exposed, and, in some instances, open to the influence of the air: in the second place, their vessels are numerous, and run so near the surface that the blood is readily distinguished through them. The broad surface of membrane lining the nostril affords a good opportunity of observing this change of colour. Along with the redness comes turgescence, followed by actual thickening. A third change is altered secretion. During congestion, the mucous discharges are simply augmented. As inflammation proceeds, a fluid, mingled with mucus, is emitted, the latter often assuming a clotted aspect. Under common inflammation, the natural secretions change from mucus into pus, or else becomes suppressed; while in their stead are produced a thin yellow fluid, with more or less gelatinous matter, possessing the appearance and properties of coagulable lymph. In other cases *hemorrhage* results: the violence of the inflammatory action occasioning a breach of some of the capillary vessels, and either appearing in the form of spots of effusion, or else being discharged from the surface. The former appearance is observable on the nasal membrane: the latter more commonly happens within the bowels. When the inflammation begins to decline, the natural mucous discharges return.

IN INFLAMMATION OF SEROUS MEMBRANES, redness is not a marked symptom, owing to the lower degree of vascu-

larity possessed by them. Under chronic inflammation, they manifest a disposition to pour out a yellow transparent fluid; occasionally they do this in very considerable quantities, as is evinced in hydrothorax, ascites, hydrocephalus, and anasarca. Under a higher degree of inflammation, coagulable lymph is effused with the fluid, in the form of shreds or bands, often glueing the contiguous surfaces together, or else in a regular plastic layer, enveloping the surface of the original texture; we have frequent opportunities of seeing this in fatal cases of pleurisy, also in roaring, and acute or chronic dysentery. Under very violent inflammation the effused fluid is in its appearance turbid and reddish, evidently from the admixture of blood and purulent matter, drops and patches of which last may often be detected clinging to the surface of the membrane.

This difference in the EFFECTS OF INFLAMMATION ON MUCOUS AND SEROUS TEXTURES is of immense importance. Let us but for one moment reverse the cases. Let us suppose mucous membranes were as prone as serous ones to effuse coagulable lymph: every time the animal caught cold, he would be liable to suffocation from solid matter in the nose or windpipe! And did the serous membranes secrete such purulent matters as are produced by mucous surfaces, so great would be the irritation that mortification and death would inevitably ensue. Thus we perceive infinite wisdom displayed in the operations of disease.

INFLAMMATION IN FIBROUS MEMBRANES is most apt to assume the chronic form. Its prominent characteristics are, interstitial effusion, and proneness to run into ossific changes. In cases of inflamed periosteum, of cartilage, or of ligament itself, osseous deposition is almost certain to result, and a bony tumour left to mark the spot where the disease had been. This accounts for the production of splints, spavins, ringbones, ankylosed joints, and other exostoses.

INFLAMMATION IN SYNOVIAL MEMBRANES is characterised by a suppression of their natural secretion—*synovia*—and by the commencement of caries or ulceration of the bone. Sometimes coagulated lymph is thrown out: this first glues

the several pieces of the joint together : then it is converted into true bone, and the bones are fixed for ever, or ankyloses has been perfected.

Other STRUCTURES HAVE THEIR PECULIARITIES.—*Cellular membrane* is prone to suppuration : though this is usually preceded by the deposition of serous fluid or coagulable lymph, as a preparation or *nidus* for the pus. It occasionally happens, however, that this tendency to serous effusion becomes predominant, and we have an abscess containing serum, instead of one enclosing purulent matter. The cellular membrane is also the common seat of gangrene or mortification. *The skin* under inflammation will exude a serous fluid underneath the cuticle, as is seen after the application of a blister. When violently inflamed, the skin, denuded of its cuticular covering, will secrete pus, and even throw out coagulable lymph.

GLANDULAR BODIES BECOME VARIOUSLY AFFECTED BY INFLAMMATION, depending on its kind, degree, and duration. A low degree of inflammatory action augments the natural secretion : but a high degree puts an entire stop to it, and will, unless subdued, run on to its destruction. Continued chronic inflammation in a gland, alters either the quantity or quality of the natural secretion, likewise gradually altering its internal structure ; plugging its cellular interstices with solid matter, and producing such total transformation of its interior as denotes *scirrhus*.

The STATE OF THE CONSTITUTION will influence the tendency of inflammation. In horses which have long been in an unhealthy condition, a swelled leg may run on to farcy ; a catarrh, strangles, or an influenza, may be followed by glanders. In other cases, such unfortunate sequels will supervene without any discoverable cause. My father had a blood colt sent him by Mr. L——, to be castrated. The colt was low in condition at the time : but not to appearance unhealthy. The operation was performed by cauterization, in the usual manner : the after-swelling consequent on it was confined to the scrotum. All went on well until the eighth day, when some small lumps made their appearance on the

near quarter, and the animal halted when walking. Two days from this, similar lumps became apparent on the body, head, and other limbs; there was a discharge of ill-digested matter from the nose. In a fortnight from that period the colt had become so virulently farcied and glandered, as to render his destruction the only alternative. Mr. Coleman saw the case, and attributed the untoward event to the effects of foul air, to which the animal had probably been previously exposed. The impression on the mind of the owner was, that it was destroyed by the operation; on that plea he peremptorily refused to pay the expenses which had been incurred. This case well illustrates what is meant by *unhealthy inflammation*; though we ascribe it rather to ill condition of body than to any peculiarity in the parts.

INFLAMMATION A SALUTARY PROCESS.—Under certain circumstances, inflammation is not only to be endured, but even encouraged. Were it not for inflammation and its effects, no wound could be healed, no bone united, no breach repaired. A puncture into a joint, or a lacerated intestine, is always repaired by inflammation; which is the same process by which the joint is ankylosed and the bowel mortified. Inflammation works good or harm, depending on the nature of the case—on its duration, its cause, the part affected, its character, its tendency, &c. The exercise of discriminative judgment in these particulars it is that constitutes a scientific practitioner. Accordingly, we now and then find it beneficial to artificially excite inflammation in various parts of the body. We do so in an external part, to detract, by way of revulsion, from some internal and comparatively much more seriously inflamed part: blisters, rowels, setons, and irritants of all kinds are used with this view in cases of sickness; and the practice is found beneficial in relieving the patient. It also turns out a very safe artifice, inasmuch as the fresh inflammation commonly exists in a manageable form; although we have no reason for believing it at all differs from that which it is designed to counteract. We very frequently, however, excite inflammation with another view; which is to produce absorption of

some tumour or adventitious deposition—such as spavins, windgalls, curbs, &c. Now and then we create a fresh inflammation in parts already inflamed, but in too sluggish a form to accomplish the desired end.

TREATMENT OF INFLAMMATION.

To lay down a scientific and rational plan of treatment, we must be well acquainted with the condition the cure of which it is our object to accomplish: we must have ascertained its extent, learnt its history, and have formed in our mind some theory of its nature. Fortunately for us, though diseases are many, and though no part of the body is exempt from their attacks, yet is the essential nature of structures pretty much alike, because the constituent textures are in themselves but few. What renders disease in appearance so diversified is, the great dissimilarity that exists between organs and their functions. Inflammation is essentially the same, whether it exist in the stomach, the lungs, or the brain; but it assumes different aspects in these three organs, and is productive of symptoms altogether opposed: still, it is inflammation, of the same nature in all three cases, and all the cases may have originated from similar causes, nay, require to be treated on the same general principles. When we come to couple with these facts the important one, *that the great majority of diseases consist in inflammation*, it will appear evident, that a knowledge of its treatment must form the key to the curative art.

Although our theory of inflammation is far from being perfect, yet have we arrived, by careful observation, at very correct conclusions in regard to the character, tendency, and effects of inflammation: so that when we behold disease in any part, we know at once what the probable result will be, and by what rule of practice we should shape our plan of treatment. We are partly guided by the nature of inflammation; but are principally ruled by the knowledge we have gathered from experience. This accounts for our not being able to treat diseases through the medium of *books*;

we may acquire general principles—obtain an introduction to the art; but the practice can be learnt nowhere but in the stable. On the same principle it is, that a man unversed in theory—an unscientific, unlettered individual—may make a good common routine sort of practitioner, purely by dint of imitation: it is the man of science and of practice combined, however, that can alone direct the cure when danger threatens and life is in the balance.

Before undertaking to treat inflammation, we should obtain the clearest insight possible into its *seat*, its *kind*, its *causes*, its *present* and its *probable effects*. The part in itself may be of a nature unfavorable to the progress of inflammation; or it may be of such comparative insignificance, as to have its function arrested without great inconvenience; or, on the other hand, it may be one of a highly inflammatory nature; or else, one whose function is of such value that the existence cannot support its interruption, much less can the life endure its suppression. A horse will have ophthalmia, mange, grease, even glanders and farcy, in certain forms, and yet maintain its general health outwardly unimpaired: from the moment, however, it becomes attacked with inflammation of the brain, bowels, lungs, &c., it must be considered in a condition tending to destruction. In the latter case our treatment should, of course, be of a more determinate kind than in the former.

The degree and kind of inflammation must, in the treatment, be taken into account. The more acute the one, the more bold should be the other: though, where inflammation is of a *specific* kind, experience teaches us, that we are far less hopeful of a beneficial result. In specific ophthalmia, in farcy, and in glanders, we bleed and purge with little benefit: to be of real service to our patient, we must have recourse to constitutional remedies.

In regard to the *causes* of disease, not only is our treatment influenced by them, but their removal, if possible, is absolutely necessary: consequently, our earliest inquiry should be one tending to their discovery. In numerous cases hardly anything else is required. A horse suffering from common

ophthalmia caused by hay-seed in the eye, will commonly not need other treatment than the extraction of the source of annoyance. Should a thorn be lodged in the flesh, we shall effect a much more speedy cure if we extract the substance; for, should we not be able to accomplish the extraction, a little cyst will be formed, in which the body will afterwards remain: though with some risk of exciting inflammation at a future period.

In considering the *effects* of inflammation, we must regard both the part affected and the constitution in general. The part may have its function deranged, or altogether suppressed. The inflammation in it may be so slight as to leave the part in its original healthy condition; or the inflammatory action may have a destructive tendency, running on to mortification. We are not to suppose, because inflammation does not assume a violent form, it calls for no treatment: chronic attacks, or frequent relapses, are the common precursors of change of structure, and consequent loss of function. Frequent attacks of specific ophthalmia alter the delicate tissues of the eye, and end in blindness: a condition by which the animal is rendered unsafe. Chronic inflammation of the air-passages is apt to terminate in thickening of the membrane lining them, and thus give rise to *thick wind*, or to *roaring*. Hepatization of the lungs oftener results from chronic than acute inflammation. Disease of joints—of the navicular bone, and of the hock, consists rather in chronic than acute inflammation; and tends to ulceration of the lining membrane of the articular cartilages, and of the bones also; to thickening and induration of the surrounding textures. It is wrong, therefore, to suffer inflammation to linger in a part: though apparently mild, it may in time effect changes of structure which will stop the functions of an organ, and in the end disable the animal for life.

I shall make a division of the treatment of inflammation into that which is *preparatory* and that which is *essential*.

PREPARATORY TREATMENT.

REMOVAL OF THE EXCITING CAUSE.—The first thing to be done in the treatment of inflammation is, to remove the *cause*, supposing it to be still operating: indeed, in some affections, this is all that is required: the cause being removed, the inflammation gradually subsides. Should a horse pick up a nail in his foot, and wound the quick, the extraction of the foreign body, with attention to opening the orifice and preventing the entrance of dirt, will be all that is commonly necessary to effect a cure. On the other hand, however, should these simple measures be postponed, violent inflammation may ensue, and the case call for the utmost exertion of our art.

REMOVAL OF ALL IRRITATION.—As soon as inflammation is established, it becomes necessary not only that we remove the cause, but that we place the part affected out of the influence of everything which may operate against the subsidence of the inflammation. It would be well if we were able to suspend the function of every organ during the existence of inflammation; over such only as are under the influence of the will have we any control in our own persons: though there exists an instinctive aversion in every creature to refrain from that which gives it pain. A horse will not stand upon an inflamed foot; but will throw all the weight upon the sound limb.

When the eye is inflamed, the lids and the haw are drawn over its surface to shield it from the light; which, though under ordinary circumstances a healthy stimulus, now that the sensibility is augmented, becomes an annoyance: this teaches us in cases of ophthalmia to exclude the light.

REPOSE OF THE INFLAMED PART.—All this shows us the necessity of paying attention to that important principle in the treatment of disease, viz., to *put the diseased part into a state of rest*. Not only does the part itself demand this; the whole body—the constitution calls for it; and there are but few local diseases of any magnitude in which the

constitution is not sympathetically affected. In no way can we better accomplish this object than by placing the animal in "a loose box." A sick horse is so far like a sick man, that everything in motion annoys him;—the noise of his companions; the narrowness of his stall; the confinement of his head; all this disturbs him: he seems to ask us for a solitude, where he can have his head at liberty, breathe a pure atmosphere, lie down when he feels disposed, and place himself in any posture that affords the most ease. In thus tranquillising the system, we shall find we are abating vascular action in the part inflamed; and so rendering it in a condition fitter for the remedial agents, whose operation is of a direct character.

POSITION OF THE INFLAMED PART.—With animals that cannot be made to understand what conduces to their good, little can be effected in the particulars of management: what little can be done, however, ought to be done. Inflamed parts should always be placed in a state of repose, and, if possible, at the same time in that relaxed condition which leaves every fibre at ease. We may do much towards this end, by raising or lowering the heel or toe of the shoe, as the case may require. Should the head or the neck be the seat of inflammation, it is beneficial to keep the head elevated: often mischief is done by suffering the animal to hang down the head, &c. In fact, the principle by which we are to be guided, is to maintain the inflamed part in that position which is most favorable to a return of the blood.

CLOTHING.—The next step is attention to clothing. There are few diseases in which it is not desirable to keep the body warm, for which we employ woollen clothing. The thickness of the clothes must be regulated by the season of the year, by the previous habit, as well as by reference to the disease under which the animal may be labouring: in hot weather, clothing is required rather to protect the wound from flies than for warmth, and, consequently, linen is to be preferred. In no case should the quantity of clothes be burthensome. It is also important, where the respiration is

disturbed, that the roller be not buckled tight. Woollen bandages wrapped round the legs may be regarded as part of the clothing, and when the extremities are cold, become of great service in restoring warmth to the limbs.

DIET.—There is so little variation in the diet, and so little in the food to disagree with the stomach, that we have no occasion to dwell long on veterinary dietetics.

The common food in stables consists of oats and hay; during the existence of inflammation, it is common to withhold the oats, and substitute bran; also to direct that the bran be given in the form of mashes, in order that they may be bland and laxative in their tendency, rather than accumulative within the bowels, which is likely to be the case with oats given during disease. On this account, green meat is preferred to every other description of provender. Vetches, lucerne, green clover, and various roots, as carrots, turnips, potatoes, &c., are all suited for the sick stable, because they are easier digested than dry food, and likewise keep the body relaxed, as well as being more grateful to the palate of the animal than the ordinary diet. Whatever is given the sick horse in his box should be placed within his easy reach: his appetite is often so fastidious, that, rather than exert himself, he will go without nourishment. For cases in which no desire to take food at all exists, aliment is forced into the stomach, by drenching with water-gruel or administering oatmeal balls. This force-meat plan is what I do not approve of. During an inflammatory disorder, food is not required, and would be apt rather to irritate the stomach than benefit the body; as soon as the disorder declines, the appetite returns. Even though the loathing continued for days, as long as the animal drank freely, I would not force him. This thirst, when it is judiciously managed, may be made to supply the want of appetite. In place of giving water, let a pailful of well-made water-gruel, perfectly cold, be hung up somewhere in the box, and let this be renewed (whether drunk or not) every twelve hours. Should the gruel be refused, no water must be allowed; but all drink withheld until thirst compels the gruel to be taken.

Even water, however, let it be observed, contains partial support, and will, for a long time, furnish nutriment sufficient to maintain life in a sick body.

Should the disinclination to feed continue, and the animal be in danger of sinking, then nourishment in the fluid form must be forced upon the horse. For this purpose, gruel, made with equal proportions of water, and good stout or sound home-made ale, is to be preferred. The admixture of malt liquor serves to counteract any typhoid tendency, which is certain to be present where dangerous abstinence is displayed.

AIR.—It is of great importance that the atmosphere of the sick apartment be cool and free from impurities. Observe a horse suffering from fever, will have his head turned towards the part of the box which admits the fresh air. Be attentive, therefore, to the ventilation; and likewise look to the cleanliness: for where dung and urine are suffered to accumulate, there will be vitiation of the atmosphere.

MEDICAL TREATMENT.

The medical treatment of inflammation consists in the employment of both *constitutional* and *local* means. The constitutional are *general bleeding, purging, sedatives, diuretics, febrifuges, and alteratives*. The local means are *topical bleeding, cold, and warm applications, clothing, and counter-irritation of every description*.

BLEEDING.

When we come to investigate the nature of inflammation—it will be seen that abstraction of blood must be one of the most direct means of subduing it.

Horses should be bled on the off side. This is necessary, because animals are generally shown upon the near side. By observing the rule, therefore, the marks left by the

fleam are not obtruded upon the view ; and such should always be the practice, excepting where the left jugular vein has not been lost.

The blood is the food of inflammation ; the more we reduce the one, the more shall we diminish the other : drawing blood, therefore, is the most direct means we possess of abating inflammation. Indeed, in practice, it is our most decisive means of cure, and in some cases is the only remedy we have it in our power to employ. In the acute stages of inflammation of the lungs, neither internal nor external medicaments will take effect until we have abated the morbid action by venesection ; in cases which we dare not purge, we commonly effect nothing without the lancet. Although, as certainly as we bleed we reduce the inflammation, yet we do not effect a complete cure : no sooner are the vessels emptied, than they are filled again. Do all we may, there must be time allowed for the inflammatory action to subside : it arose gradually, and gradually it will decline. Professor Coleman, in a case of ophthalmia, tied the carotid and maxillary arteries ; he also cut through the vessels running into the cornea, and afterwards made a line of division with a red-hot iron between the cornea and the sclerotic coat. Notwithstanding all these barbarities, however, in the course of three or four days other vessels were re-produced, and fresh inflammation started up in the eye.

GENERAL BLEEDING is distinguished from *local bleeding*, by the quantity of blood drawn being so great as to affect the system *generally* ; whereas, in the latter, the inflamed part only is influenced by the abstraction of a much smaller amount. In proportion as we reduce the quantity of blood in the body, we diminish the power of the agents by which inflammation is carried on ; consequently, general bleeding possesses the advantage of lessening the force by which blood is propelled into the part, at the same time that it abstracts blood from the place by creating a demand for it in other parts. Local bleeding, on the other hand, is designed simply to lessen the quantity of blood in the inflamed part.

QUANTITY.—in order to reap the full advantages of general bleeding, we must continue to draw blood until some visible impression is made on the system. Some horses will bear to lose a much larger quantity than others, without our being able to explain the reason of the difference. The quantity which an animal can lose will depend on his condition at the time; his age; and on the nature of his disease. Horses that work hard and live well, will bear bleeding best; fat subjects worse; but poor animals worst of all. Under acute inflammatory disease, an animal will support the loss of a larger quantity than it could in health.

Under ordinary circumstances, a gallon is reckoned a moderate bleeding: under pressing disease I occasionally draw three gallons: I have heard of *four* being taken! A gallon of blood may be reckoned equal to the loss of about a pint in a man. Though under forms of disease we are in the habit of prescribing so many quarts of blood to be drawn, yet, when it becomes necessary to make a sensible impression on the system, our only safe guide is a steady observance of the effects produced on the pulse as the blood flows through the arteries.

The EFFECTS OF ABSTRACTION will depend on two circumstances: on the quantity taken, and on the time it occupies in flowing. The fuller and more rapid the stream, the greater will be the effect created by a smaller quantity: when we are desirous, therefore, of producing “an impression on the system,” and to do this at the least possible expenditure, we make a large opening. In order to know when this impression is made, we keep our fingers steadily on the pulse; the declining force of the beats, with their subsequent total failure, indicate to us that the required effect is accomplished: this we call *the sinking of the pulse*. About the time that the pulse “sinks,” the animal commonly evinces signs of uneasiness: it becomes fidgety; jerks its head up and down; and moves step by step backward, until it has gained the corner of the stable, where, finding a rest for the hind quarters, it becomes once more tolerably tranquil.

Should the bleeding be continued beyond this, the respiration becomes disturbed: the animal heaves at the flanks and puffs at the nostrils, sighing deeply. Its strength also begins to fail; its body to rock from side to side; if it lifts a foot, it staggers in putting it down again: in fact, there is now danger of its falling headlong upon the persons about it. These symptoms are quickly followed up by a profuse sweat, and this is often succeeded by a sort of *rigor* or shivering fit. In some instances, these symptoms appear a short time after the operation has ended. After the animal has been tied up for some hours, on returning to it, we find it heaving and wet with sweat. When we perceive exhaustion, we may often arrest its progress by turning the animal's head towards the open air, and suffering it to take three or four gulps of water; afterwards sponging out the nostrils and wetting the eyes: all which may so refresh it as to arrest the fainting fit altogether.

In bleeding horses that pass pampered lives, it frequently happens this puffing and blowing will come on during the flow of the second or third quart: then take away the blood-can, and suffer the blood to circulate for two or three minutes, when the animal will have recovered. The operation may then be resumed, and the required quantity generally be obtained.¹

VENESECTION AND ARTERIOTOMY.—Blood may be drawn

¹ I was once summoned to attend a case of colic, the subject of which was lost from the influence of *mind* or *temper* over body. The dread this horse had for medicine or operation, rendered every attempt to administer remedies altogether ineffectual. It was from condition and age, well able to bear the loss of a large quantity of blood, yet every effort to extract more than two quarts from it totally failed. No sooner was it struck by the fleam, than it was seized with shivering, and would pant, and reel, and stagger, as if gallons of blood had already flowed: under which sense of faintness, we were compelled to desist, pin the neck up, and release it. In the course of a few minutes all trembling would subside, and the symptoms of gripes would be renewed. In this manner was I foiled in every attempt. The administration of medicine it obstinately opposed. A ball it would not and could not be made to swallow; and it employed seven men to force liquid into its stomach: but although the latter was accomplished, the efforts were such, that no benefit seemed to be derived from it. In fact, this animal died a martyr against the cause of physic.

either from a *vein* or an *artery*: in the former case, the operation is called *venesection*: in the latter, *arteriotomy*. The current possesses such force in arteries, that, were we to open a large one, we should run a risk of not being able to stop it: independent of which, they are in general, out of our reach. The vessel we commonly open to let blood from, is the *jugular vein*; which we select as well on account of its accessibility as of its large size. The place we find most convenient to puncture, is about one third down the neck, measuring from the jaw. Not that it signifies from what vessel we take the blood, providing we produce the same impression. The advantages of arteriotomy over venesection are two:—the one is, where we cannot obtain the requisite quantity of blood, or that with the desired rapidity, from a vein; the other we can bleed from an artery supplying the inflamed part. In pulmonary and cerebral congestions we sometimes find it difficult to obtain blood from the jugular vein; we then have recourse to the temporal artery: though, before we do this, we may make the experiment of compressing the opposite vein, which I have known occasionally to succeed.

LOCAL BLEEDING consists either in drawing the blood directly out of the inflamed part itself, or from some vessel near enough to have the same effect. Surgeons apply leeches and cupping-glasses to their patients: but these are of little service to the veterinarian. Our only effectual modes of locally letting blood consist in *scarifications*, or in opening vessels connected with the inflamed part. In ophthalmia, we occasionally scarify the external parts of the eye; and we reap decided benefit, in acute foot-lameness, from bleeding in the toe. In violent sprains of the back sinews it is a good practice to take away blood from the plate-vein. In opening the plate-vein, let me advise the operator to puncture it at the angle it makes towards the lower part of the shoulder, as that part is comparatively without motion: for, in opening it *upon* the arm, he runs great risk of afterwards producing a *thrombus*. Local bleedings may be practised where general depletion is not called for, or where bleeding has been carried to the extent

which the system will bear: in no case of danger, however, ought local abstractions to be trusted; for, though we may obtain so much out of the diseased part, that the inflammation becomes diminished, yet will the fluid speedily return and reproduce all the prior vascular repletion. The object is, to unload the vessels, and to weaken the power that is forcing blood into them; unless you do this you accomplish no good; and this is the reason why general bleeding is preferable to local evacuation. The most efficacious and desirable mode of taking blood is that which combines the local and general effects: it is not always we have an opportunity of uniting these advantages; when we have, it ought never to be neglected. When any disease is going on in the foot requiring general depletion, we should take the blood from the toe in preference to the jugular. Sometimes the jugular itself becomes a channel of local draft, as in inflammation of the brain and eyes.

WHEN BLEEDING IS REQUIRED.—In all cases of active disease, such as of the brain, the lungs, the bowels, the urinary and generative organs, the eye, &c., it is our duty to arrest the progress of inflammation; not only that we may save the animal's life, but that we may prevent those changes of structure which reduce him to a state of unsoundness. Whenever the inflammation is of the acute character, we should let the blood flow until we have made a sensible impression; and should this not abate the disease, we must bleed a second, and even a third time. Should the inflammatory action decline into the subacute or chronic kind, I have found the repetition of small bleedings, at short intervals, of more effect than large emissions. Sometimes bleeding is requisite to prevent disease. A horse falls backward, the poll of the head being the part dashed against the ground. The next day, or the day afterwards, it is dull, and perhaps a little off its feed. Such a horse should be bled, in order to prevent brain-fever, which we know is likely to supervene upon an accident of this nature. It is a common practice to bleed horses that are in health, or that have no disease that calls for it. Either the groom or

his master conceives that the horse requires bleeding, and, fortunately for them and their victim, no great harm follows the deprivation. The animal will soon regain the blood taken from him. Should the practice be pursued, I believe its continuance will become necessary for preserving the health. Bleeding is not to be recommended for reducing flesh; although it may emaciate for a time, yet, on its discontinuance, will the animal rapidly grow fat again. Indeed, it often increases the disposition to fatten, as farmers well know who bleed their calves.

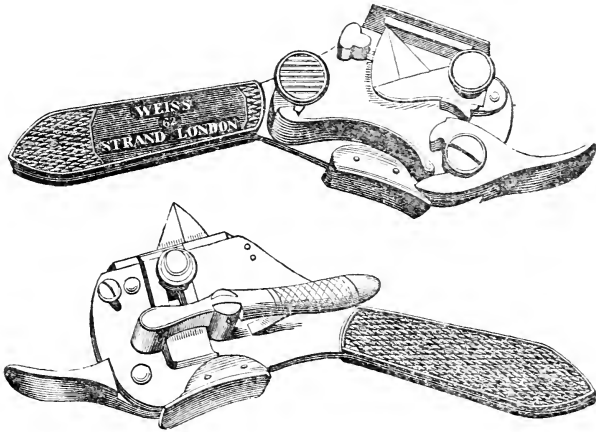
The INSTRUMENTS USED FOR BLEEDING are the *fleam* and the *lancet*. In jugular venesection, the fleam is the best; in regard to the convenience of the operator, the lancet is to be preferred. But the lancet will not produce effect equal to the fleam: the instantaneous impulsion the latter receives from the bloodstick causes it to penetrate the skin and vein in a manner we never can effect with the lancet. I admit that the lancet is the more *gentlemanly* instrument; but for efficacy I prefer the fleam and bloodstick. Not that I would by any means discountenance the lancet. In private practice it is highly convenient, being so portable. Indeed, in any other part but the neck, the fleam and bloodstick prove awkward, and the lancet becomes absolutely necessary. This is the case with the plate and femoral veins. Also, in arteriotomy, the lancet is preferable. Let which will be used, its blade should be a broad one, six-tenths of an inch across its shoulders or broadest part. Greater breadth than that will be found to make a wound of inconvenient dimensions to close, and one consequently that will be apt to gape and fester afterwards. Of lancets, I prefer such as are spear-pointed.

I cannot dismiss this part of my subject without noticing an ingenious instrument for bleeding invented by Mr. Weiss, of the Strand. Some few years back I drew his attention to this matter, impressing on his mind the practical value of our clumsy combination of fleam and bloodstick. At first, he did all in his power to imitate these by machinery. However, it at length struck him he might

obtain every advantage by proceeding on another principle—on that of a *revolving* fleam: and I may say he has succeeded to admiration.

The annexed engraving conveys a very good idea of the construction of this instrument.

Weiss' Patent Fleam.



TREATMENT AFTER BLEEDING.—The required quantity being drawn, the orifice is to be closed by approximating the lips, and inserting a pin through the skin in the middle of the wound: then around this pin is to be twisted some tow. This being finished, and the blood sponged from the neck, let the horse's head (unless illness plead against confinement) be racked up for the remainder of the day and the succeeding night. This elevation of the head gives the blood free current to the heart, and prevents any swelling or *thrombus*—arising from its extravasation—which forms the commencement of *inflamed vein*.

PURGING.

Purging constitutes the most powerful medicinal means we possess of reducing inflammation. It is a remedy to which we almost universally have recourse, and, generally

speaking, with salutary consequences. Of such value is this operation in veterinary medicine, that, had we no means of purging the animal, our art would be almost lost.

A PURGE ACTS, first, by causing an expulsion of the abdominal contents; secondly, by determining blood to the intestines; and, thirdly, by withdrawing more or less of that fluid from the system. The medicine we are in the habit of administering to purge horses, is *aloes*; and the mode in which it acts, is the following:—in the stomach, the ball undergoes solution, and, on account of its obnoxious quality, it probably becomes gradually diffused over the intestinal canal, mingling with the alimentary matters therein: in this form it stimulates the lining membrane, whose surface is, as we know, everywhere pervaded by capillary vessels. The effects of this stimulant are threefold. It causes a determination of blood to the bowels, whereby a plethoric state of their lining membrane is produced. It is followed by an augmented flow of their secretions; which accounts for the liquid nature of the evacuations. At the same time, the peristaltic action is increased, and this accounts for the frequent evacuations.

PURGING RELIEVES INFLAMMATION by drawing blood to the multitudinous capillaries of the bowels; by lessening the actual quantity circulating, consequently diminishing the amount in the inflamed part; and, by ridding the bowels of their contents, from the insalubrity of which the inflammation may be sustained, or may owe its origin. There is another way in which purging tends to abate inflammation. It hurries the alimentary matters through the canal, and creates the nausea which disposes the animal to loathe its food: in both of which ways a purge depresses the vascular system, and benefits the organ in a state of inflammation.

PURGES IN DISEASE.—With two or three notable exceptions, purges are proper in constitutional inflammations and in such local inflammatory diseases as affect the constitution. One of the exceptions is *inflammation of the lungs*: in that disorder experience shows that purging is highly dangerous. Another case in which purging is contra-indicated, is

dysentery; although in that disease there are certain stages in which purgative medicine may exert a beneficial operation. In all cases of constipation, or in inflammation of the brain, purgatives are especially called for. In cutaneous affections we often exhibit purges, there being great sympathy between the skin and the digestion. We also occasionally administer—

PURGES IN THE ABSENCE OF POSITIVE DISEASE.—When a horse returns from grass, the custom is to give him three “doses of physic:” the object of which is, in the language of the groom, *to cleanse him; to get up his belly; to pull off his grossness; to fine his coat; to set him thriving; and, at the same time, to keep down humours;* all which conduce to bring about that aptitude for bodily labour, called *condition*. In this case, the operation of the purge is, to rid the bowels of their contents, and thus prepare them for a less voluminous food; which accounts, in some measure, for the reduction of the belly. A secondary effect of the operation is, that by medicine the absorbent system is roused into action, and the fulness which had been gained while the animal was at grass removed. Another tendency is, to rectify any derangement of the digestive organs, and thereby render the coat smooth and glossy. Withal, purgatives will keep down the inflammatory habit consequent on the nutritive provender of the stable; and, therefore, purgatives must be regarded as valuable preventatives.

PURGATIVE MEDICINES.—Though there are several medicines possessing cathartic properties, there is but one in general use amongst us; and that one is—

ALOES.—Of aloes there are two kinds used in veterinary practice, *Cape* and *Barbadoes*; difference of opinion existed respecting their relative strength and efficacy. It is now acknowledged the *Barbadoes* is *stronger* than the *Cape*: however, I believe the one equally as efficacious as the other; although I am at present in the practice of using the *Barbadoes*.

The following formula I find to answer every purpose, whether we use *Cape* or *Barbadoes* aloes:

Take of Aloës, ℥iij ;
Soft Soap, ℥j.

After having broken the aloes into small pieces, melt them over a slow fire: as they dissolve, stir them well, allowing them to simmer gently until such time as they become a smooth mass. An ounce of any essential oil may be added during the cooling of the mixture.

The COMMON DOSE is from half an ounce to an ounce, according to the size, age, and apparent strength of the horse. A large bulky horse, of the cart-breed, will require less than one of the hackney or hunter description. Much will depend on the condition in which the animal happens to be: a horse that is at hard work, will always take more than one that is pampered, and more than one recently come from grass. Peculiarity of constitution is also to be observed. Professor Coleman mentioned a horse that required no more than *three* drachms of *Cape* aloes to purge it: in opposition to which I may set the case of a thoroughbred filly which took *fourteen* drachms of *Barbadoes* aloes to produce purgation. In prescribing, the dose will depend on the nature of the disease medicine is meant to relieve. In cases of obstinate constipation, also in brain affections, we have occasion to exhibit much larger doses than in health: ten, twelve, or fourteen drachms, and so much as two ounces, are, now and then, required in such cases.

Apportioning the dose of purgative medicine is rather a delicate duty, as more horses are killed by aloes than by all the poisons. Well-bred horses require the largest amount. Young animals take less than old. Soft, overgrown, or washy, tucked-up horses should be physicked with every caution. Light chesnuts or light bays, especially if they have white legs, are said to bear medicine badly; yet, in contradiction of the last report, I have a light bay horse, which has always been looked upon as "soft" and "washy," not only because of the colour and conformation, but because the animal scours generally during exertion. This soft, light-coloured horse it is difficult to purge with aloes.

Therefore the reader will perceive no book can be written which shall meet every exception.

Foreign horses, especially with long legs or huge bodies, will of all others bear purging the worst. They fall and die often from an ordinary dose of aloes, and frequently will not bear the amount which a pony would take and scarcely be moved by.

LAXATIVE denotes an effect short of actual purgation. In a state of health, the dung is voided in *balls*; under purgation the excrement is discharged in a liquid state; while the effect of a *laxative* is to render it intermediate between these two conditions. To produce such an effect, we commonly give three drachms of aloes, having kept the animal the previous day upon bran mashed, and allowing it as much tepid water as it will drink.

PREPARATION FOR A PURGE.—When it is intended to give a dose of purgative medicine, we “prepare” the animal, or rather its bowels, for the operation of the physic. The object of this is, that there should be sufficient alimentary matter in the bowels to receive and blend with the purgative, thereby mitigating its acidity, and that what food may be present should be of a character to aid the effect. The substitution of bran for oats answers this purpose, and the directions I give are as follow:—The horse to be deprived of hay the evening before the physic, and to have a double or treble feed of bran-mash. The physic to be given the next morning after the animal has been watered, but prior to his being fed again with bran-mash; no hay being allowed him until mid-day: after which he may be fed in the usual manner with bran-mash and hay. The next morning, early, he should be allowed to drink his fill of tepid water, and be gently exercised for an hour; during which time he may be watered a second or even a third time. On his return to the stable, he may have a bran-mash; of which his food should principally consist. After having rested for a couple of hours, the exercise must be repeated; and this time, having walked for half an hour, he must, if necessary, be slowly trotted for some time, tepid

water being given in any quantity he will drink. In the summer, grasses may be allowed during the operation of physic. In the winter, the animal will require extra warm clothing. By a judicious regulation of the exercise and the watering, we may mostly produce either a brisk or a tardy purgative effect. On the third day, commonly, "the physic sets;" that is, the dung grows consistent. So that three days are occupied by the operation of a dose of physic: on the first, it is administered; on the second, it works; on the third, it sets.

A singular fact—at least what I have had declared to me to be such by persons in constant attendance on young horses, some two, three, or four of which are every now and then put under physic, to the exclusion of the others—is, that a horse not having taken aloes, but standing next to one that is under physic, becomes likely to be purged. What kind of sympathy is this? or is it the operation of some subtle agent too fine for our senses to detect?

THE TARDY ACTION OF ALOES seems to be a common complaint; and it is, in some instances, one of serious moment. In a general way, we never look for their operation under four-and-twenty hours; before which time our patient, suffering from some acute affection, may be dead. Hence it happens, that bleeding, which at once takes effect, possesses such advantages over purgation at the outset. There is frequently very great difference, however, in the length of time aloes require to operate; sometimes a horse will purge the evening of the same day on which the ball is given, while cases do occur where two or three days are necessary to produce any effect. I have known a dose of physic sixty hours before it operated, and to keep the horse nearly the whole time in a state of nausea. This shows the impolicy of administering a second dose at an interval less than four days after the first: nothing would warrant such practice but urgent disease. In cases where a speedy purgative is of very great moment, an *aloetic drink* in lieu of the ball may be given, and its operation promoted by frequent injections.

Take of Aloës (roughly powdered), $\bar{3}$ iss ;
 Subcarbonate of Potass, $\bar{3}$ j ;
 Gum Acacia (powdered), $\bar{3}$ j ;
 Mix together, and add
 Boiling Water, Oj ;
 If required to be kept for any time, add
 Spirits of Wine, $\bar{3}$ j.

This quantity is sufficient for two ordinary doses.

It has been, and, indeed, still is, a great desideratum with us to discover a purge of quicker operation than aloes. The mixture of the extract or the powder of gentian with the aloes, is thought to hasten their operation. The amount of the last must, however, be diminished in proportion as the former is admitted, the gentian supplying the place of the generally supposed more active drug.

OILY PURGES.—*Castor oil* has been both praised and abused as a medicine proper for horses: some declaring it to be useful, while others have denied to it any effect beyond that of common oil. In the course of my own experiments with it, a horse having taken a pint and a half purged *seven* hours afterwards. Another animal I gave a pint, and this did not purge for *four-and-thirty* hours afterwards; but manifested symptoms which gave cause for alarm, lest inflammation of the bowels might supervene. To a third, I gave a pint and a half *without effect*. To say the least of it, therefore, castor oil is extremely uncertain; and, apparently, not free from danger: so that I would not exhibit it, but for experiment. *Linseed oil* seems to me to be more potent than castor oil. It is, however, equally uncertain in its operation: added to which it cannot be administered without leaving us in a state of apprehension in regard to the consequences. “A bottle of linseed oil had been given upon the previous evening and this provoked the purging, which ceased not but with life.” (‘THE VETERINARIAN’ for 1839.) *Common olive oil* is, perhaps, the only agent of this class we can exhibit without fear: but then, its power is weak, and its action uncertain.

CALOMEL, in large doses, will purge; but its operation is

liable to generate such symptoms of disordered bowels as will not dispose us to repeat the experiment. Even a half ounce dose is not to be risked. In doses of half a drachm and a drachm, we give it occasionally in combination with aloes, the operation of which it renders more brisk. By itself, and of these last quantities, I gave it in one disease with peculiarly good effect: but then it had no purgative action on the bowels.

CROTON SEED is a purgative of whose use I am able to speak in a more satisfactory manner. It appears that, in India, both the wood and seeds are medicinally used: in this country the seeds only are exhibited. Mr. Hodgson, V. S. to the Company's artillery, informed me, that the natives roast the seeds; a process found to render them milder in their operation; and that a physician of his acquaintance in India, prescribes a seed so prepared in combination with six grains of calomel, to be made into four pills: two of these pills are to be given at bed-time, and the remainder twelve hours afterwards, unless the first dose should have operated. Mr. Hodgson made some experiments with the roasted seeds on horses. He found their operation uncertain; though, when it did take place, very violent. The croton seed is about the size and shape of a tick bean, and of a brownish colour. When slit open it exhibits a strong capsule, inclosing an oleaginous kernel; and between the two a light-coloured pellicle adhering to both, but most intimately to the latter; it does this apparently through the intervention of a volatile powder, which is very apt to fly up into the eyes and mouth, and occasion considerable irritation when the capsule is opened. The kernel itself is composed of about one-fifth oil, mostly separable by expression, and of a farinaceous residue. The latter becomes caked during the extraction of the oil, and requires for the separation of its particles to be ground; after which we obtain it in the form of a light brown oleaginous *farina*; and this is the shape in which it is at present generally used in veterinary medicine.

Croton is apt to be even more protracted in its operation

than aloes. In one mare (D 23), to whom was given on account of cracked heels, ℥ij of the powder was sixty-seven hours before it purged the animal. (Dec., 1850.)

The expressed oil is sometimes used as a highly powerful purgative. I believe this preparation not to be fitted for universal adoption, on account both of the uncertainty of its operation, and its extreme violence when it does act. I reckon an average dose to be about thirty drops. I once gave a drachm; from which the horse became violently purged twenty-four hours afterwards.

The farina appears the preferable form for the exhibition of croton. Deprived of its oil, it seems to have lost much of its acidity, and comes to us as a purgative, if not more certain, at least with less danger in its operation. Indeed, some practitioners are in the habit of prescribing it in preference to aloes: for my own part, I seldom use it unless it be for lock-jaw, or for horses that are troublesome in taking balls; on those occasions it being convenient to have a powder which can be introduced into a bran-mash, or a pail of water. The warmest advocate in praise of croton I know is Mr. W. Chadwick, V. S., Hot Wells. In a communication he sent, in the year 1832, to 'THE VETERINARIAN,' he states that for physic, he "always makes up a croton ball;" and that he considers five grains equal to a drachm of aloes: a proportion, which I believe, is now pretty universally admitted. The average dose, therefore, may be rated at from thirty to forty grains. In opposition to this very favorable report, it is my duty to state, that, with other practitioners, fatal cases have occurred from the exhibition of croton. Mr. Cartwright, who is known, not less on account of the number than the practical worth of his communications to 'THE VETERINARIAN,' relates an occurrence of this kind. He gave a pony 25 grains of croton *seeds* (not the *farina*), which operated the following day, and continued purging for three successive days, when it died with symptoms of a very ambiguous character. The cæcum and colon were studded with ulceration. It appears, therefore, pretty well established, that the *farina* is the preferable preparation

of croton : indeed it would seem that it was almost the only one whose operation is free from danger,

CONCLUDING OBSERVATIONS.—After all, for general use, we possess no purge equal to *aloes*. It is the one I prefer, after having tried others ; though I have not *banished* croton, yet the bottle containing it is seldom moved, unless it be for the cases I before mentioned. Independent of all considerations, I do not know the advantage possessed by croton over *aloes*. It requires quite as great, or even a greater length of time before it operates : when it does act, it appears to be less certain in its effects, and altogether less under our control.

Purgatives are aided in their operation by—indeed, it may happen, cathartis is to a degree excited by—

ENEMA.

There are various ways of exhibiting injections to horses. The most common is with a bladder tied to a pipe. The bladder is filled, and squeezed after the pipe is inserted. This apparatus is faulty, because the horse requires more than the contents, and the pipe has to be withdrawn before the operation is ended. The quart pewter syringe is the second, but is in less general use. It is, however, a heavy and cumbersome machine ; it cannot be employed with requisite delicacy, and may without loss be abandoned. The best invention for this purpose is Read's pump, which, as now sold, will administer tobacco smoke as well as fluid. It is worked with ease, and without the danger which may occasionally attend the use of those previously mentioned. Moreover, it admits of the operator occupying a position which is removed from the possibility of soil, which he must expose himself to when attempting to employ either of the other two.

Injections consist of simple water, of gruel, and of linseed tea. Either of these may be rendered more active by the admixture of common salt, Epsom salts, *aloes*, or turpentine.

The last should not be exhibited in larger quantities than ζj to Oj .

SEDATIVES.

It is a law in the animal economy, that whatever excites a sense of sickness, causes the pulse to fail; on this principle, we give nauseating medicines for the abatement of inflammation. By diminishing the action of the vascular system, we increase the chance of combating inflammatory disorders. Medicines that nauseate, in consequence of possessing this sedative effect, have got to be classed among those which are direct *sedatives*.

NAUSEATING MEDICINES.—*Aloes* is no less valuable as a sedative than as a purgative. In doses of half a drachm or a drachm, repeated every four, eight, twelve, or twenty-four hours, aloes keeps up a sort of continued nausea, and augments the secretion of the bowels, so that a constant drain is maintained from the system. After we have met the first attack of inflammation by bleeding and purging, we most opportunely administer small doses of aloes; combining them with other medicine or not, as the case may seem to require.

HELLEBORE is another nauseant, and a very potent one. The white hellebore I have for many years been in the habit of prescribing as a sedative, especially in diseases of the chest; in some of which, from the apprehension of inducing purging, we durst not give aloes. In doses of a scruple or half a drachm, repeated every four, six, or eight hours, it nauseates the animal, lowering the pulse with more effect than aloes, and, at the same time, exerts a depressing influence on the system. In large doses, hellebore is a poison; on which account, even in the quantities we ordinarily prescribe, its operation requires watching. It is, therefore, not a medicine proper for the use of unprofessional persons, or one that even we can safely exhibit, unless the patient be situated immediately under our eye: when that is the case, we have nothing to fear. The pulse of itself will always prove an index of the

medicine beginning to operate; in addition to which, when sickness is approaching, the animal will become dull, hang its head, and slaver more or less at the mouth. In some instances this slavering is accompanied by a grinding motion of the jaws; protrusion of the muzzle; eversion of the upper lip; by gulplings of the throat, and fulness about the neck, as though something from the stomach became ejected into the œsophagus. I have seen these effects produced so soon as an hour and a half after a horse has taken half a drachm in a ball; other cases require a longer time or several balls to produce this effect; in others, again, no such result exhibits itself. All this might seem to condemn the use of hellebore: it certainly shows the imperative necessity there is to watch its operation; and then, though we may fail in doing any demonstrative good, yet we may abstain from doing harm.

A SYMPTOM OF NAUSEA in the horse is the curling and eversion of the upper lip. It is not unfrequently seen in horses under physic. This is the signal for discontinuing the hellebore. Should it be persisted in, it will produce efforts to vomit, convulsive curving of the neck, with violent straining or retching, and yet throwing nothing up but mouthfuls of saliva; and, probably, will occasion irritation of the bowels, now and then diarrhœa, as well as colicky symptoms. This action may alarm, though we need apprehend no dangerous consequences unless the medicine has been exhibited in doses far too potent. The time for its administration is after impression on the system has been made by the fleam.

SEDATIVE MEDICINES.—Although nauseants have the action of sedatives, that effect is but a secondary one: let us now inquire if we possess any medicine of a *direct* nature—any one that acts exclusively on the nervous system—that soothes irritability, without also having a weakening tendency. We believe the vascular action to be much under the nervous influence: consequently, if we can allay or anywise diminish this influence, we shall lower the vascular action.

DIGITALIS and ACONITE reduce the force of the pulse; and they appear to exert this influence through sedative action on the nervous system. In doses from half a drachm to a drachm twice or thrice a-day, they often have considerable effect in diminishing the vascular action: generally rendering it intermittent. Like hellebore, however, they require to be watched, and to be given by a professional man; being certainly of a poisonous nature. In over-doses, or in doses continued after the warning of the pulse, they produce depression of the whole system: the pulse becoming imperceptible at the jaw, and showing great irregularity at the heart. Accompanying this depression, we have coldness of the extremities; lividness of the nasal membrane; clammy condition of mouth; stupor, vertigo, and unsteadiness of limb; trembling; convulsions; death. I do not regard them as so influential as hellebore; though there are many of a different opinion. However, I exhibit them if hellebore seems to do harm by irritating the bowels. The following formula will serve either for one or the other:

Take either of Powdered White Hellebore Root, or Aconite Root;
 Or, of Powdered Digitalis, ʒss;
 Licorice Powder, ʒss;
 Syrup or Treacle sufficient to make a ball.

These doses may be diminished or augmented according to circumstances.

DIURETICS.

Diuretics are medicines that have the effect of augmenting the urinary discharge. The kidneys produce urine from the blood circulating through them; anything that stimulates these organs is a *diuretic*. By this function the kidneys become one of the grand emunctories of the system, eliminating fluids which might prove obnoxious. Man, who is subjected to temperature, readily perspires, and thus not only rids his system of redundant moisture, but at the same time his body is cooled; whereas the horse, covered with hair, and consequently not exposed to these influences, though he

may perspire through exertion, gets rid of superabundant fluid through the kidneys. This accounts for the greater susceptibility of the kidneys in horses, and the more available agency of diuretic medicines in these animals. The physician, when called to a case of fever, prescribes with certain effect his *diaphoretics*—medicines that induce perspiration. The veterinarian possesses little of such medicinal power that he can rely on; there is no medicine that will certainly produce *diaphoresis* in a horse. In making this assertion, I am quite alive to the properties ascribed by our best authorities to *antimony*; and, as creating (with the aid of clothing) a *determination* to the skin, I am quite ready to join them in opinion: but my disbelief of any medicine being able to produce *actual diaphoresis* at any time must be repeated. Some give *nitrous ether* to act as a diaphoretic. I myself have thought hellebore manifested that tendency. However, whatever may be the diaphoretic agent, it has not such decided action that it can be employed with confidence to arrest the progress of inflammation. The veterinary surgeon, therefore, is driven to operate upon the kidneys, through which channels we cannot expect the benefit which arises from perspiration of so large a surface as the skin. In fact, diuresis is not an operation to be generally employed for the abatement of inflammation, so much as for the removal of its consequences. In the acute stage of inflammation I do not think much good is done by diuretic medicines; none whatever during the action of purgatives: and it is where inflammation has been acute, and effusion is taking place, or where it is chronic, with a tendency to effusion, that diuretics prove most serviceable.

DIURETIC SUBSTANCES.—Many medicines, and some descriptions of provender, prove diuretic to the horse. Mow-burnt hay, foxy oats, and all sorts of high-dried or over-fermented food, are apt to have a diuretic effect on animals unaccustomed to eat them; and nothing tends to debilitate a horse so much as the prolonged excitation of the kidneys. In the exhibition of diuretics it is necessary to be more attentive to the doses, and the intervals at which we repeat

them, than to the individual selection. The neutral salts, *nitre, soap, &c.*, the balsams, especially that of *copaiba*; some of the essential oils; *Spanish flies, digitalis, savin,* and *nitrous æther*; all come into the catalogue of diuretics.

DIURETIC BALLS.

No. 1.

Take of Flowers of Sulphur, $\bar{3}$ ss.

Venice Turpentine, sufficient to form a ball.

No. 2.

Take of Powdered Resin, $\bar{3}$ ss;

Soft Soap, sufficient to form a ball.

No. 3.

Take of Powdered Nitre, $\bar{5}$ ij;

Syrup or Treacle, sufficient to form a ball.

No. 4.

Take of Venice Turpentine,

Castile Soap, of each $\bar{5}$ ij;

Powdered Juniper, sufficient to form a ball.

I am not aware it matters which of the above we make use of. Where we want the greatest possible effect, we must vary the ball from time to time. Sometimes we shall find one answer; sometimes another; most cases require a change.

SEDATIVES and DIURETICS are often usefully combined. When the inflammation tends to dropsical effusion, and evinces considerable activity, while we endeavour to abate action by sedative medicine, we combine this last with diuretic agents.

SEDATIVE AND DIURETIC BALLS.

Take of White Hellebore Root, $\bar{5}$ ij;

Resin, $\bar{5}$ ij;

Soft Soap, sufficient to form a ball.

Take of Digitalis, ʒj;
 Nitre, ʒij;
 Venice Turpentine, sufficient to form a ball.

These balls may be given once a-day : in fact, the diuretic does not affect the action of the sedative, for the latter most demand our vigilance.

The MODE OF OPERATION.—The way in which diuretics remove the consequences of inflammation, is by abstracting from the circulating blood its aqueous part, thereby creating a demand for more; this acts as a stimulus to the absorbents to take redundant fluids wherever they are to be found in the body. A horse is brought to us for *swelled legs*. We prescribe a diuretic ball, and direct that it should be walked out twice a-day. In the course of a day or two the legs become fine again. The groom reports the animal has staled more than ordinarily; by which augmentation of the urine the absorbents have been roused to activity, and have removed the serous effusion in the legs. The presence of aqueous matter in the blood may of itself stimulate the kidneys: this happens when a horse drinks more than ordinarily; hence *water* is said to be a diuretic. The same thing takes place when the absorbents, from any cause, are roused to inordinate operation; hence such medicines as stimulate the absorbent system are said to be diuretics; in which class we therefore occasionally reckon *mercury*.

ALTERATIVES.

Alterative, though a term in frequent use, permits considerable latitude of construction. An alterative is a remedy that works some beneficial *alteration* in the system without occasioning any sensible evacuation. A *specific* is an infallible remedy for some particular disease. An alterative may be used where no determinate disease exists, but yet where the system is labouring under some derangement. Whatever the cause of that derangement may be, the alterative is supposed gradually to remove it, and to do so without creating any disturbance in the body; for, should the

remedy purge the animal, or sensibly increase the flow of its secretions, the medicine would no longer be alterative in its action.

ALOES, ANTIMONY, NITRE, and MERCURY, are the agents commonly given as alteratives. Aloes is our common *purge*; antimony is a *diaphoretic*; nitre is a *diuretic*; and mercury increases the flow of bile and saliva: hence we discover that alteratives form no distinct class of medicines, but are derived from most, if not all, of the other classes. This shows that the alterative effect is brought about in various ways; for, notwithstanding the agents to be alteratives must be given in diminished doses, and though called by one name, they cannot in effect all be similar: thus a purgative operates, in however small a quantity, differently from a diuretic; while, so extensive is the action of mercury, that, while it differs from all other alteratives, it, in a measure, resembles them, from combining their properties, to a greater or less degree, within itself.

ALOES, then, is exhibited with one of three objects in view—either as a *purge*, in doses from four to eight drachms; or as a *laxative*, in doses of two and three drachms; and as an *alterative*, in doses of half a drachm or a drachm; in fact, we give aloes in small doses either as a nauseant or an alterative; the first being its immediate effect on the stomach; the second, the effect it has on the constitution. To explain how aloes, or any other alterative, produces all the good ascribed to it, is not within our power: we may, however, approach nearer to this than in the case of other alteratives; for we know that aloes when administered and continued in small doses, improves the digestion; a change within the stomach must, in all cases, be followed by a general amendment of the health. The gentle stimulant of small doses within the bowels increases the peristaltic action, and produces a slow drain of what Mr. Abernethy regards as “morbid secretions.” Aloes also augments the flow of bile; and in small doses affects the kidneys, producing more urine than ordinary. Still, all these effects are produced, in a manner, imperceptible to the observer; and therefore

aloes, in the reduced form, comes under the denomination of an alterative. In cases of chronic inflammation, alterative doses of aloes are often highly beneficial.

ANTIMONY.¹—I have expressed my doubts as to the diaphoretic virtues of this mineral, or that any medicine has the power of producing actual sweating. It, however, stands high as an alterative. Our admirable sporting writer, Nimrod, in his ‘Letters,’ thus alludes to it: “Without the use of alterative medicines, exclusively of physic, no hunter can be got into blooming condition; that is to say, to look well in his skin, to dry immediately after a sweat, and to be in full vigour of body. Of these medicines there are several sorts in use; but the diuretic and diaphoretic are, in my opinion, the best—antimony forms the principal.”

NIMROD’S RECIPE FOR ALTERATIVE BALLS is

Cinnabar of Antimony, ℥ij;

Balsam of Sulphur, ℥ij;

Camphor, ℥j;

Nitre, ℥iv.

To be made into ten balls.

RECIPE FOR RED CONDITION BALLS.

R Guaiaci Pulv., ℥ij;

Sulphuris, ℥iv;

Camphoræ, ℥j;

Potassæ Nitrat., ℥iij;

Sapon. Castil., ℥ix;

Cinnabar. Antimon. Rubr., ℥j;

Mellis, q. s. ut f. massa.

One ounce to be given for a dose.

It is a curious fact that antimony, which (in the form of tartar emetic) produces upon the skin so much irritation, causes no decided effect when taken into the stomach: the

¹ For a full account of the effects of antimony in human medicine, see an article on “Treatment by Tartarized Antimony,” by A. Smece, F.R.S, in the ‘Med. Gazette,’ for the 7th October, 1842.

efficacy we ascribe to antimony, in the doses we usually exhibit that drug, is rather gratuitous than demonstrative. It requires very large doses to make any sensible impression; and even when taken in quantity, I have never witnessed an instance of actual *diaphoresis*. My father, many years ago, experimented on two horses. He commenced with an ounce of crude antimony morning and evening, augmenting the dose until the fourteenth day: each swallowed four ounces thrice a-day, which was continued for seven days afterwards. During this time they voided their urine largely, lost their appetites, and fell away in condition; on discontinuing the medicine, however, they recovered their appetites and their condition, soon looking as well as ever. In twenty days each horse had consumed eight pounds twelve ounces of the mineral!

NITRE is a remedy in general use, and one to which various beneficial effects are ascribed. "Nitre," says Nimrod, "has been much used by grooms as a cooling diuretic, and a preventive of disease from such causes; but it must be borne in mind that nitre is a strong *repellent*, and of a *debilitating* nature." From the place which nitre, as a *neutral salt*, occupies in human medicine as a refrigerant and febrifuge remedy, it has obtained a similar reputation in veterinary practice. The chief end we have in view when we employ it is its *diuretic* effect; there can be no doubt that it augments other secretions besides the urinary—perhaps, in some degree, those of the bowels. So far it is useful as an adjunct in inflammation; and so far it may be ranked among febrifuges and alteratives. It is, however, a remedy we could do very well without; at the same time it is one that, since we possess, we can find uses for.

Among the medicinal agents most potent in combating inflammation, and preventing as well as causing the removal of its injurious effects, must be accounted mercury. In veterinary and in human practice, we have, by frequent experience of its uses, and the variations in the manner of exhibiting it, discovered that, in membranous affections—in that destructive and frequent disease of horses, pleurisy, in

particular—its administration is attended with the happiest results.

“ If two grains of calomel, and a third of a grain of opium, be given (to a man) every six or eight hours, the effect is at its maximum on the second or third day, whilst its excretory or absorbent properties begin to manifest themselves on the third or fourth day. According to this view of the case, mercury, given in large doses, does harm on its first administration, gradually increasing the symptoms until it reaches its maximum excitement, when the same remedy alters its effects, and causes absorption and excretion. This fact is invariably seen either in *iritis*, inflammation of the lungs, or peritonitis, when treated by this remedy; and hence arises the frequent necessity for bleeding before the administration of the remedy, and the frequent, apparent, and even real necessity for its repetition, either general or local, at the maximum excitement. In practice, we should endeavour, as far as circumstances will permit, to cheat the remedy of this baneful effect by introducing it very gently and carefully into the system; and we find that nearly every case will yield to such a gradual administration of the remedy. In some degree the excitement is governed by the nature of the mercurial compound, the oxides appearing to act more gently, and with less stimulation, than the chlorides, &c. Whether the remedy is taken in by the stomach, the skin, or by fumigation, it does not seem much to matter: though by the former its effects are much more easily controlled; for the absorption by the latter is uncertain in the amount. Sometimes the combination of small quantities of antimony with the mercury lessens the excitement. The evidence of the period (of excitement) being at hand, are additional pain, heat, and redness in the inflamed part, but more especially by a large increase to the deposition of lymph, and a considerable additional impairment of the function of the organ. Moreover, the system is much disturbed; the patient is restless, sleepless, feverish, and generally in a most uncomfortable state. As the intensity of salivation and absorption are directly proportionate to the intensity of excitement, to

lower the system by an abstraction of blood, if that can possibly be avoided, would be unwise. If antimony be compared with mercury in the above qualities, a vast difference is seen between them.”¹

MERCURY, after all, is the remedy that nearest approaches the nature of an alterative. It works good on the constitution—it is, in fact, a veritable alterative: it brings about a beneficial alteration without any operation of which either ourselves or our patients appear to be conscious. In large doses, it will purge the horse. In doses short of producing purgation, continued for any length of time, it will salivate; this it will do to such a degree that the animal will be unable to masticate or to swallow its food: this effect may be carried so far as even to starve the horse.

As in man, so in the horse, there is considerable variation with regard to a dose or quantity of mercury which will make the mouth sore or salivate. I have known horses take two ounces of calomel, in drachm doses daily, before this effect was perceived; against which I may adduce the case of a young mare which had cough, and was out of health, and took fifteen grains of calomel daily, in composition with a drachm of antimony and a drachm of digitalis, for five days—making altogether but seventy-five grains of mercury,—before her gums grew red and tender: she cudded her hay, and her breath became tainted with the characteristic mercurial odour. The effect of mercury is certainly not in keeping with the largeness of the dose; in diminished quantities it often appears quite as effectual as though it had been exhibited in the greatest amount.

¹ This extract is taken from an article by Mr. Smee, F.R.S., “Treatment by Tartarized Antimony.”

“Any surgeon, even of limited experience, must have seen frequent cases of death from the use of mercury, and sometimes even from very small doses.” (From the same article.)

NARCOTICS.

The false notions I imbibed during my pupilage, for too many years closed my mind against the use of narcotics. I was told opium took no such effects upon horses as upon men, and I believed the dogma, and took no further concern about narcotic power; using the medicine only as an anti-spasmodic, an astringent, and an allayer of pain. Accident at length revealed to me its narcotic or soporific virtues. A mare was suffering from diarrhœa, and had been reduced to a weakly state by the disorder: it had likewise lost the appetite, when, to suppress the discharge from the bowels, I added to the dose of $\bar{3}j$ of P. Creta Comp. c. Opio (which she had been taking for three days), one ounce of laudanum. Ten or fifteen minutes after swallowing it the head was hung, and the animal would soon have fallen had it not reeled against the side of the box, where she supported herself, standing with her head hanging down, and her eyes closed, as if in a profound sleep, though certainly no snoring was heard: and thus it continued for an hour, when it once more stood without support: then turning the body half round, with the head pressed against the boards, the mare occasionally bored forwards, like a horse with the staggers, evidently experiencing, though the eyes now were opened, stupor and vertigo. I opened the eyelids while closed, but found the pupils active and intolerant of light. The stupefying or soporific effects of the opium were most evident. The mare slept, or remained insensible, for an hour, and was not herself again for two hours more. The effects commenced in ten or fifteen minutes after taking the laudanum.

LOCAL REMEDIES FOR INFLAMMATION

Are employed by themselves, or in conjunction with general ones. When the inflammation is trifling and superficial we may trust the cure to local means alone: it is not

often, however, that such is the case, for, in most slight local inflammations, we give physic, which is at once introducing *general* treatment. On most occasions, both general and local treatment are employed, the latter being auxiliary to the former: but now and then it happens that topical agents become the principal ones. Local remedies are: *bleeding from the part, cold and warm applications, and counter-irritants of every description.*

Of bloodletting I have already spoken. Let us therefore proceed to the consideration of

COLD AND WARM APPLICATIONS.

Cold seems the natural remedy for disease consisting in a superabundance of heat: at all events it is grateful to the feelings; and on that account does deserve our attention. Any application to an inflamed surface much lower in temperature than the part itself, affords relief, on the common principle of *abstracting heat*: in addition, cold has a *sedative effect*, quieting the action of the vessels, and, at the same time, bracing them or diminishing their canals. This may be carried so far as to suppress the inflammatory action altogether—nay, even to the destruction of the part. In general, *cold water*, or salt and water, is used for this purpose. We dip a bandage in the liquid, and roll it round the part; or we lay a piece of linen, folded and wetted, immediately upon the part. We may with advantage further reduce the temperature of the water by *ice*; or we can even apply ice itself—powdering it first, and confining it by means of a bladder.

GOULARD'S LOTION is frequently used in place of water: I believe, however—unless it be in the case of ophthalmia—with no sort of advantage. It may be made with the extract of Goulard, after the following manner:

FOR A QUART OF GOULARD'S LOTION.

Take of Goulard's Extract, ℥j;

Distilled Water, Oij.

Mix together.

EVAPORATING LOTIONS are a convenient, and, perhaps, the most effectual means of producing cold. Vinegar and water, in the proportion of one part to three; or spirits of wine and water, in the same proportions, will answer this purpose very well. Sometimes we add three or four ounces of spirits of wine to the quart of Goulard's lotion, and thus render it evaporating. In cases of sprains, we require discutient applications, and we use the following:

DISCUTIANT LOTIONS.

Take of Sal Ammoniac, ℥j;
 Vinegar, ℥iv;
 Spirits of Wine, ℥iv;
 Water, Ojss.

Mix together the Sal Ammoniac and the Vinegar, and add the spirits and water.

Take of The Liquor of Acetated Ammonia, and
 Spirits of Wine, of each ℥iv;
 Water, Oj.

Mix together.

WARM APPLICATIONS in some cases answer better than cold. Indeed, in the treatment of inflammation we should "blow hot or cold," which cannot fail to impress anyone but a medical man with some sort of surprise:¹ nevertheless, both are excellent for particular cases. The knowledge we gain from experience is, disease is apt to fluctuate with circumstances: it is not always in our power to decide what we should adopt. Cold must be applied *upon* the inflamed part: whereas heat will often do good, applied *at some distance* from the affected region. When heat is used

¹ A private gentleman came to me, requesting I would look at a horse of his. I found the animal lame from superficial inflammation about the pastern of the near fore leg, evidently caused by external injury. After a time, I discovered that a veterinary surgeon was already in attendance, and the gentleman was very desirous to ground an accusation against him for having used *cold* applications, especially as I seemed to confirm his views by recommending *warm*. I told him that "*either warm or cold* might answer the purpose;" which, I believe, in his mind, settled the question that I knew little about the affair.

to the part itself it must be in combination with moisture ; otherwise it is likely to be prejudicial.

FOMENTATIONS and POULTICES open the pores of the skin, which tends to relieve the vessels, and abate the inflammation. To reap benefit from fomentations requires perseverance in their application : either the part should be for hours immersed in warm water, and the temperature kept up during the time ; or cloths, constantly renewed, should be dipped in the water and applied to the part. The latter is, perhaps, the more convenient mode of procedure. In cases of recent injury it is really quite surprising what relief may be afforded by the use of warm water, or by fomentation unremittingly persisted in for hours, with an abundance of fluid whose temperature is steadily maintained. Poultices are made by pouring boiling water upon bran or linseed meal, or upon a mixture of both, stirring the ingredients all the while, to prevent the mass being lumpy. As soon as made, a poultice ought to be applied. Now and then the parts may with advantage be immersed in bran or meal, wet with cold water. In fact, the application of different temperatures depends much upon the sensations they produce, and upon the results to which they give rise. They are governed by no other rule. In cases of catarrh, sore throat, and strangles, great benefit is effected by the employment of steam as a fomentation to the seat of disease.

COUNTER-IRRITANTS.

COUNTER-IRRITATION is extensively practised. It implies the *counteracting disease*, that is, the instituting of one disease to cure another—the artificial production of inflammation in some part of minor importance, with a view to mitigate the inflammation of a more vital structure. Counter-irritants, consequently, differ from local remedies, inasmuch as they are not directly applicable to the inflamed surface : although, as we shall find hereafter, they are used to the parts when inflammation has departed. That accurate observer, John Hunter, found it was a law in the animal

economy, that two great operations could not go on in one system at the same time; in confirmation of which we have only to refer to our daily practice. Do we not find that inflammation of the lungs very much abates or entirely subsides when fever in the feet supervenes? And that inflamed lungs will supersede a common catarrh? On this principle of one disease curing another, we proceed when counter-irritation is employed. The counter-irritants we commonly resort to, are *blisters*, *rowels*, *setons*, and *firing*.

BLISTERS.

For general use we possess no counter-irritant equal to a *blister*. While it inflames the skin, and thereby causes a sort of *revulsion* from the diseased part, it induces an effusion of serous fluid from the true skin to collect under the cuticle.

Blisters exert more influence than other counter-irritants; their operation is superficial; and the discharge they create is abundant. There are a variety of substances which, applied to the skin, act as excitants; we can trace these agents from the simple *rubefacient* to the powerful *caustic*; some of them will blister, while others will only bring forth pimples: many have no other effect than producing angry inflammation. For the purpose of *blistering* the skin, there are few substances equal to *cantharides* or *Spanish flies*; the same that forms the base of our common blister: though I believe *euphorbium* and cheaper drugs to be often substituted by the shops.

Portions of the flies should never be left in blisters designed for the horse; because these irritate the true skin after the cuticle has been removed, and often provoke the animal to gnaw the part. When the blister does not take effect, another should not be applied, but a little simple oil may be rubbed into the part. Oil is a solvent for the cantharidine or active principle of the flies. Fresh oil, therefore, redissolves the blister, and this will frequently occasion sufficient vesication, whereas a fresh blister might produce sloughing of the cutis.

The above may serve to account for the superior efficacy of the Ol. Cantharid., the Ol. Nucis being the solvent of its active property.

The way to make sure of the result is to prepare the blister ourselves; and a good recipe for this purpose is the following:

RECIPE FOR A BLISTER.—Take of Spanish flies, a quarter of a pound; bruise them in a mortar; and then mix them in a glazed pipkin with a pint of nut oil. Set the mixture upon a slow fire, and watch for it boiling; then suffer it to simmer gently for the space of ten minutes, and add another pint of oil; all that remains to be done, is to strain it. Linseed oil should not be used for this preparation, it being an irritant to the skin of the horse. There are several other forms, however, in which the flies are compounded into blisters:

BLISTERING INFUSION.

Take of Bruised Flies, ℥ss;
Boiling Water, Oijss.

Macerate in a covered vessel until cold; then strain and add ℥ss of Spirits of Wine.

BLISTERING OINTMENT.

Take of Flies, finely powdered, ℥ss;
Wax, ℥ss;
Hog's Lard, ℥ijss.

Melt the wax and lard over a slow fire; and when they are dissolved, and the mixture has become nearly cold, stir in the powdered flies.

BLISTERING TINCTURES.

If we would make a preparation similar to "Leeming's Essence," we have nothing more to do than to steep for a fortnight an ounce of bruised flies in eight ounces of spirits of wine or in the same quantity of distilled vinegar: then strain the mixture or, if we prefer it perfectly bright, filter it through blotting paper. This makes a cleanly application. An useful tincture for immediate effect is made by substituting *oil of turpentine* for the spirits of wine.

OTHER BLISTERS.—Cantharides require six or twelve hours to produce effect; and this, in pressing cases, is a long interval. We occasionally employ boiling water, with a

view to speedy operation ; and sometimes it seems to succeed tolerably well. It is not a practice, however, that I can recommend, for in cases of urgency ammonia is more quick and more under our command.

An old remedy, and one that, in callous swellings, answers our purpose (though it possesses no advantage that I know of over cantharides) is *oil of thyme*—or *oleum origanum*. For curbs and sprains it was once held in great estimation. Turpentine annoys and harasses the animal exceedingly : but does not blister. In short, we possess few things that blister better than Spanish flies.

It has been observed to me—indeed, I have remarked it myself—that horses will sometimes break out into partial sweats. These animals are apparently in good health, and the perspiration lies in spots, where blisters are often applied, and also occupies the space a blister might be supposed to affect. I have therefore concluded, this symptom is exhibited upon places where vesication has been produced. The skin suffers from debility after the stimulant has ceased to act. It therefore becomes excited when a moderate exertion has caused a small quantity of blood to raise the temperature of the surface ; it consequently, from innervation, pours forth its secretion before other parts of the body are warm. These partial perspirations are sometimes seen in the stable, and are always signs of weakness.

A good preparation for a blister (in cold weather particularly) is the soaking or bathing of the part to be blistered in water as hot as the hand can be borne in it.

APPLICATION OF BLISTERS.—The hair should be clipped off the part. Not that this is necessary on all occasions ; for often we can accomplish all we desire by what is called *sweating* the part ; by which is meant, applying only such strength of blisters as will simply produce a serous oozing from the surface, without tending to separate the hair or the skin. In human medicine it is a common practice to “keep the blister open :” that is to say, to dress the sensitive skin with some irritating ointment—such as *savin*—to continue the inflammation, and thereby cause a purulent matter

to be secreted. The same practice may be, and, indeed, occasionally is, pursued in horses: but I give the preference to a repetition of blisters—allowing one to subside, and then applying a fresh one. To any part of the outer skin that is sound we may apply a blister; but any diseased or denuded part we in general abstain from blistering, for the obvious reason of its probably increasing the malady already existing. Never apply a blister to the points of flexion of joints, or to that portion of a limb that is bent during motion; this caution, the reader will perceive, alludes to the fore part of the hock, the hind part of the pastern, the heels, the back of the knee, &c.; for the consequence generally is ulceration, resulting from motion interfering with the healing process. Cracks on the heels of a deep and virulent character frequently originate from this cause; so also scurfy eruptions, called “mallenders” and “sallenders,” are often provoked by the like imprudent practice. To avoid the oil running down the leg upon the heels, by way of precaution, cover the heels with some firm ointment, which may encase and protect the parts: this is very well as a preventative, and should never be neglected; but it is better to have the hair clipped short, and to use only so much oil as may be absorbed. If this rule be followed, and the friction be not spared, very little harm will come to any part below the blistered surface.

USE OF BLISTERS.—The benefit derived from a blister depends upon its seasonable application. In cases of acute disease were we to apply blisters we should be adding to the irritation of the system: we, therefore, never order a blister until the inflammatory action has received a check from the employment of remedies. We, by bleeding, and purging, and sedatives, make an impression on the pulse, as well as on the symptoms; and having done this, we may have recourse to blisters. Indeed, in some cases, it would be useless to employ them before this is done; for every one in practice knows that blisters will not act during the height of the inflammatory paroxysm: hence we regard it as a good omen when they rise well.

Blisters are used for the reduction of enlargements left by inflammation. But in such cases their employment is forbidden, so long as the inflammation continues. Yet, by their after-application, we revive it: but then, we only originate irritation of a superficial description, such as, after the decline of the greater action, proves a stimulus to the absorbents; which is the object we seek when we blister a tumour.

STIMULATING APPLICATIONS.—By which we understand such as create irritation without raising vesicles. Cantharides, as well as other blistering agents, may, by dilution, be converted into a simple *stimulant*. Water may be heated to a degree which will scald without occasioning blisters. As a stimulating application or *rubefacient*, I find our Lin. Ammon. c. Terebinth. excellent. Under the jaw in cough or sore throat, to the breast in bronchitis or pneumonia, to the belly in abdominal pain or colic, to the shoulder in shoulder-lameness, &c., I find it most useful. One gentle rubbing produces simply rubefaction, without causing the hair to fall off the part; the second rubbing is apt to endanger that; the third is certain to occasion depilation. Ammonia will blister, though it is commonly used but as a stimulant. There are, however, some applications which, though stimulating to the highest degree, will not blister. The turpentine, mustard, and diluted escharotics have this character. Formerly terebinthinate applications were employed to the skin for the purpose of producing counter-irritation: they are, however, found to occasion so much excitement of the nervous system, that they appear to be productive of harm rather than good. Mustard has no such spreading influence; its action is more circumscribed; at the same time it makes an impression where hardly anything else will act. We sometimes use it as a counter-irritant where blisters fail or are objectionable. Probably the most useful of all these applications is the tartarized antimony ointment:

Take of Tartarized Antimony, ʒj;
Hog's Lard, ʒj.
Triturate well together.

About a drachm of this rubbed daily into any indurated

swelling, will often be found highly advantageous. It produces small pustules upon the surface, swells the part, and will, if continued, occasion the skin to peel off.

ROWELS AND SETONS.

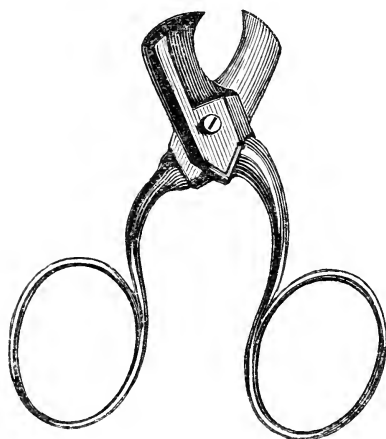
These are but different modes of employing *counter-irritation*: the principle is still *derivation* in the form of purulent issue. Some horses, or horses in certain peculiar states of body, are so extremely irritable that a rowel or seton, a few hours after its insertion, occasions such a fearful amount of inflammation, with effusion, and swelling, in the subcutaneous cellular tissue, that the rowel or seton is necessitated to be withdrawn; and the parts to be fomented—if possible poulticed—and, perhaps, treated as a common injury.

As regards the *principle*, we are fully borne out, whether we prescribe a blister, a rowel, or a seton; a circumstance that reconciles the apparent differences among veterinarians, with respect to the use of these three modes of counter-irritation. They are but different modes of accomplishing the same end. There is, however, this to be said in regard to their employment; the expeditious action of a blister renders it suitable for cases of inflammation; the tardy operation of the rowel or seton, fits them more especially for cases of an established character. Much idle discussion has taken place on the comparative efficacy of blisters or rowels, and rowels or setons. Certainly, cases do occur where it is quite unimportant which we make use of: we may, however, do great good by combining them, or employing them in succession, and in different places. Under many forms of inflammation, neither rowels nor setons will take effect; we therefore, from necessity, use blisters.

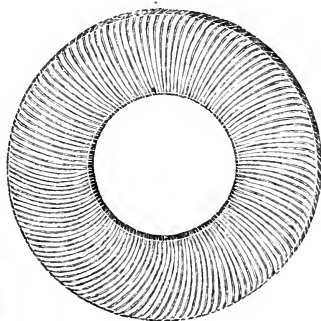
The INSERTION OF A ROWEL is an operation of great simplicity. The object is to introduce a foreign body underneath the skin, which by its presence will irritate, and consequently provoke the secretion of pus, that will drain off

through the external opening. We prepare a circular piece of leather, rather larger than a crown-piece, with a round aperture in the centre; around the margin of this, prior to its introduction, we lap a thin skein of tow. Some veterinarians before they insert the rowel *medicate* the tow, or dip it into turpentine or blistering oil, some into *digestive* ointment, &c.: there is no occasion for this, unless it be in a case where the rowel is inactive and requires additional stimulus. With a pair of rowelling scissors, we first slit the skin sufficiently to admit of the finger, with which the skin is detached from the subjacent parts, equally at every side. Into the space thus made the rowel is inserted, and should be turned every twelve, being dressed every twenty-four hours, in case they require it. It is a bad sign in disease when rowels begin to "dry up."

ROWELLING SCISSORS.



PREPARED ROWEL.

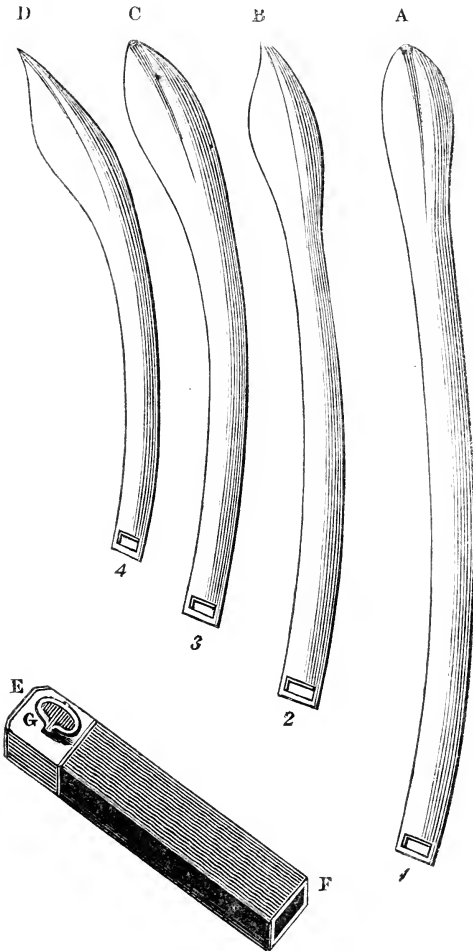


The INSERTION OF A SETON requires more skill, and on that account is an operation seldom practised by the farrier. For the same reason that uneducated men dare not meddle much with setons, some veterinarians seem to be over fond of them, and to have persuaded themselves that these agents

possess superior efficacy to rowels and to blisters. There is great delusion in all this. A seton is neither more nor less than an elongated rowel; and is no more adapted to take the place of a blister than is a rowel: both are useful in *chronic* cases, without possessing any other conspicuous advantages than result from their individual fitness to the situation. It used to be the custom to insert setons with red-hot pointed irons: this barbarity, however, has pretty generally given way to the equally efficacious method of introducing them with instruments made for the purpose, called *seton-needles*: of the forms of these the representation on the opposite page will convey sufficient idea to enable any one to purchase, or to get them made.

The skin should first be cut with the rowelling scissors, whether the sharp or the blunt seton needle be used. The latter will be found the preferable in every situation where it can be thrust through the subcutaneous tissue: in fact, the sharp-pointed needles are but seldom used. The blunt needle, having tape inserted, is fixed in the handle. The skin is next snipped with the rowelling scissors, and the seton needle being put through the incision, is made to break down the cellular tissue under the integument by the strength of the operator. When it reaches the point to which it is desired the seton should reach, another small cut is made with the rowelling scissors, and, the handle being removed, the needle is withdrawn through the opening. The tape is then divided close to the instrument, and being tied in a knot at either end, large enough to prevent it slipping through the channel, the operation is ended. When a sharp needle is employed, the rowelling scissors need not be twice used. All that is then required, is to force the skin against the point, and the instrument will cut its own passage.

A SET OF SETON NEEDLES WITH SHIFTING HANDLE.



A B C D, are four seton needles, curved for facility of introduction, with square apertures or *eyes*, in their bases, 1 2 3 4, through which the tape is to be passed, prior to their being introduced; that, at the time of their withdrawal, the string may be carried under the skin. A and c, are probe-pointed

needles: B and D are sharp-pointed; E and F represent the handle to which they are all four fitted; and into which either of them is fastened, at any part that may best suit the operator, by a screw G.

The best material for setons is the coarse or *beggar's* tape, as it is called; which will admit of being medicated in any manner the operator may fancy. I would warn the young practitioner against tying the ends of the seton together, which is liable to hitch upon projections, and be torn out with laceration of the skin. The ends had better be made into knots, as I have ordered in my directions, and left hanging out of the extremities of the wound.

PLACES CONVENIENT FOR INSERTION.—Setons may be introduced almost in any part of the body: rowels, on the other hand, can be inserted but in places where the skin is loose. The throat, chest, belly, and thigh, are the common situations for rowels; but setons we put in any part of the body.

ACTUAL CAUTERY.

The cautery literally means anything that burns. Now, in medicine, there are two things employed by way of cautery: the one is a heated iron; the other any caustic substance, such as lunar caustic; the latter, by way of distinction, being called the *potential cautery*. While there is nothing more painful in its application than a red-hot iron, its effects are of the most powerful description; it is, therefore, wisely regarded as a last resort: at least, those who otherwise employ it, would seem to be possessed of little feeling, or to be influenced by erroneous convictions. In this view it was regarded by veterinary surgeons of past ages. Hippocrates states the rule amongst his aphorisms, and Laffosse, the celebrated French farrier, copying from this ancient author, enforces the same thing.

THE OPERATION OF THE CAUTERY will depend on the degree to which it is heated. It will pain, irritate, inflame, destroy. We employ it to excite violent counter-irritation;

to destroy morbid and fungoid growths; to staunch hemorrhage; to score the skin, under a notion that the torture the animal endures strengthens the part burnt. The cautery, lightly applied, will inflame and blister the surface; impressed with more force, it will destroy the tissue with which it is in contact.

The USE OF THE CAUTERY, to the credit of our art, is on the decline. The farriers of former days had always the firing iron in their hands: with these barbarous instruments they opened abscesses and penetrated tumours, introduced setons, cleansed sores, and scored the skin for lamenesses of all descriptions: indeed, now-a-days, we occasionally meet with some horse bearing marks of having been scored over every joint in his body. This barbarous practice is, however, much diminished: the improvements of modern times have shown that we can afford the same relief in a much more humane manner. I need say little more on the subject here; since I shall have occasion to recur to it hereafter. It is our duty before we put an animal to torture, to be thoroughly convinced it is necessary for its cure or relief: for if I thought the same benefit could be produced by mild means, I should certainly adopt them. In fact, I esteem it one of the boasts of modern veterinary surgery, that the red hot iron is in many cases superseded by equally efficacious measures: and let us hope the day is not far distant when we shall require its aid even less than we do at present.

SECTION III.

F E V E R S.

I. COMMON { IDIOPATHIC.
SYMPATHETIC.

II. SPECIFIC { INFLUENZA.
STRANGLES.

THE subject of *fever* has shared a fate somewhat similar to that of *humours*. Old works present us with copious accounts of fevers; the veterinary school in this country set out with denying their existence. I commenced practice myself with a belief that there was no such disease in horses as abstract fever, but I was soon compelled to alter my opinion, I having met with diseases it was impossible to class under any other heading. And I believe, at the present day, the revival of this doctrine is pretty general.

DEFINITION.—To express, in a few words, what fever essentially consists in seems to have puzzled medical writers as much as defining health or disease. Boerhaave says: “In every fever, arising from internal causes, there is always a *shivering*, a *quick pulse*, and *heat* ;” but adds, that “the *QUICK PULSE alone* is present through its whole course, from the beginning to the end, and *by that only* the physician judges of the existence of fever.” Dr. Cullen defines febrile diseases to consist in “after shivering (or a sense of coldness), a quick pulse, increased heat, disturbance of several functions, prostration of strength.” Dr. Fordyce presents us with an account of what is called an *ague*, as a specimen of genuine fever. Now, an *ague* consists in *fits*, as they are called; a quick pulse may be the result of debility, and the symptoms recounted by Dr. Cullen characterise nearly every disease quite as well as fever.

Professor Coleman appears to have based his opinion, that horses are not the subjects of fever, upon the study of the previous definitions. *This kind* of fever, so far as my observations have extended, they certainly do not exhibit.

Are we, however, to regard the cold stage as imperative to the existence of fever? Does not observation, both in human and veterinary medicine, tend to a different conclusion?

NATURE AND SEAT OF FEVER.—*Heat of body* appears to have given origin to the appellation of *fever*; like other diseases, its designation has been derived from a single symptom. Medical inquiry has discovered that the body is never heated without the pulse being accelerated; and that the latter result is quickly followed, if not preceded, by derangement in the functions. For which reason these two concomitant alterations have been added to the definition of fever. But these symptoms have only been allowed to constitute fever so long as no determinate disease was present; for, whenever such is the case, the symptoms are said to belong to the disorder, and not to indicate fever. In fine, fever is an assemblage of such symptoms without being referable to any discoverable organic disease; hence some have contended that fever had no particular seat; others have maintained that, were our science perfect, fever would be found to have a local habitation. Indeed, there are those who have gone so far as to assign a seat to fever; though they have not agreed concerning the spot where it is located. Broussais derives fever from disordered stomach and bowels. Dr. Clutterbuck, with more reason, assigns its origin to the brain. From what has been said, one would feel inclined to regard fever as a term under which medical men were in the habit of screening their ignorance. As we become more enlightened fevers seem to diminish in number; and a day may arrive when we shall trace disease to its source, or have no disorder left that can be called fever.

FEVER IN HORSES.—The question for our consideration, then, appears to be, whether fever has existence in horses; if so, whether it can be traced to its source. That heat of body, accelerated pulse, and functional disorder, are to be found in horses as in men, no one will attempt to dispute: it remains, therefore, to inquire, if these symptoms admit of being referred to organic disease. Will any qualified person say that he never met these symptoms but in connexion with

manifest disorder of some part of the body? I think not. On the contrary, veterinarians must confess that, if these constitute fever, there can be no doubt of its existence in horses; and that, so far from its being a rare case, it is one of daily occurrence.

KINDS OF FEVER.—To what kinds of fever is the horse subject? I should say, but to one *common* kind; though to two of a kind which I have named *specific*.

COMMON FEVER.

Some denominate this affection *inflammatory* fever: I think the epithet “inflammatory” may be dispensed with; it being understood fever is but a diffuse inflammation. Common fever may exist either in an *idiopathic* form, in which it has no local excitant, or it may proceed from local disease or irritation, when it is said to be *symptomatic* in its origin. A horse picks up a nail in its foot; it becomes lame, and suffers pain from the injury. Should the pain continue, this will provoke sympathetic fever or heat, and accelerated pulse. On the other hand, when the same symptoms arise without local injury, the fever is called *idiopathic*. There is no difference between these two forms of fever, unless it be in injuries, the symptomatic is disposed to be more oppressive than we find the idiopathic form generally displays.

IDIOPATHIC FEVER.

SYMPTOMS.—Generally speaking, fever in horses is ushered in by a *cold fit*: by which I do not mean actual shivering—though that is occasionally observed—but, staring of the coat, coldness of the surface, the extremities, and the mouth. At the same time the animal becomes dejected, hangs down its head, looks dull, and manifests considerable disinclination even to turn in its stall. After the cold fit has been succeeded by warmth, smoothness of coat, heat, dryness of mouth, and acceleration of pulse, are prominent symptoms. The appetite is lost from the beginning. The bowels are commonly in a costive condition: though efforts may be made to dung,

little is passed but hard, small, and dark-coloured lumps. The urinary discharges are scanty and high-coloured. The respiration is not disturbed.

PRECURSORY OF OTHER DISEASE.—Though these symptoms denote idiopathic fever, yet they may usher in any local inflammatory attack: for, as Professor Thomson observes, in regard to fever in the human subject, “as local inflammation gives rise to constitutional febrile symptoms, so idiopathic fever often gives rise to, or at least is accompanied by, local inflammatory symptoms.” It is, therefore, impossible for any one to say, in the early stage, what the case may turn out. Commonly, inflammation of the lungs is the affection which it develops, though it may prove the forerunner of simple catarrh, and it does sometimes turn to inflammation of the brain. An acute observer will soon detect any symptoms that may arise, and become speedily informed as to the tendency of the case. However, should these febrile symptoms continue without any indication of some organ being disturbed, we may set the case down as simple fever.

CAUSES.—Alternations of temperature are the most frequent. During the spring and autumnal seasons fever often becomes epidemic. Over-exertion is also a cause. Horses kept in a state of plethora may be regarded as verging on fever, and generally exhibit it upon work.

PROGNOSIS.—In a general way we have little to fear from fever, so long as it is not associated with any other malady. It seldom runs high, and in general begins to decline when we attack it with moderate depletion.

FEVER FROM OVER-EXERTION.—There is a form of fever, the result of *over-exertion*, which is frequently of a fatal description. An over-exerted, or *over-marked* horse, may have simply a fit of cold and trembling, succeeded by heat and fever, which, after a while, will pass off; or he shall give evidence of much greater disorder, and such as we may be unable to quell. I will state the symptoms: The animal presents a spectacle of exhaustion. It is commonly found down; but is easily roused. The general despondency be-

speaks a hopeless condition. The skin is cold, perhaps bedewed with clammy sweat. The flanks heave painfully, and the head is turned round from time to time. The animal is restless—continually up and down—and occasionally pawing with the fore feet. The pulse is 60 or 70; and so weak that its beats can hardly be counted. Nothing is discharged from the bowels; neither does the animal stale. In extreme cases, the fundament is unclosed—nothing but a little mucus issuing from the bowel. Death is seldom long supervening on these symptoms. *Post-mortem* examination discloses little worth recounting, save the lungs, as might be expected, in a state of congestion. We call the case death from constitutional exhaustion. It is a sort of low fever. Bleeding does harm; and medicines are of little avail. I have lost a horse of my own from this disease.

TREATMENT.—Mr. Spooner has shown these cases (which, in the former edition, I thought were instances of fever) to consist of congestion of the lungs. Active measures destroy the life. All now depends upon our reviving the sinking powers of nature. The animal is exhausted. Stimulants are suggested. Those of the public-house may be used in cases of necessity, but they are too inflammatory to be preferred. Sulphuric ether and opium—an ounce of each in a pint of cold water—is here the best medicine. This drink must be repeated as occasion may demand. A horse has swallowed half a pint of ether—taking a dose every quarter of an hour—before nature began to rally, but by perseverance the ultimate result is made pretty certain. At the same time place the horse in a loose box, well bedded down. Let the body be clothed, the legs bandaged, and a pail of good gruel in the manger. Nurse gently, and feed with bran or malt mashes, or green meat; vetches, lucern, or green clover, are preferable to hay. Avoid strong or bold measures. It is not well to bleed or purge in the presence of fever, debility, or congestion. There will elapse some time before the pulse will declare returning vigour, and when vigour is announced, it will be the energy of health, not the violence of inflammation, that will be present.

SYMPATHETIC FEVER

Is characterised by the same phenomena as indicate idiopathic fever; only they spring from a local cause, and exhibit greater violence of symptoms. Along with constitutional irritation, there is often superadded a disturbance, arising from the pain which gives the fever an alarming character, and in some cases operates so on the vital functions as to destroy life. I remember a horse which most improperly had all four legs blistered at one time; as the blisters rose, sympathetic fever sprung up, and kept on increasing, until it reached a height which killed the animal.

CAUSE.—Sympathetic fever may be caused by any serious injury, or by local injury. In some injuries, so great is the pain produced, that fever commences even before inflammation sets in: such is often the case in open joints and punctured wounds, more especially punctures of the foot. Where the injury is of a serious nature, we may look for the rise of fever as inflammation becomes established; and, whether local inflammation be produced in this manner, or whether it arise spontaneously, it never exists in any degree, without being attended by sympathetic fever. Inflammations of the lungs, bowels, brain, urinary organs, &c., are all thus aggravated; so that every one of these diseases is resolvable into a local inflammation, and a sympathetic affection generally; the one will require as much of our attention as the other.

TREATMENT.—It would be idle to lay down any directions for the treatment of sympathetic fever without being acquainted with the cause of its origin; though there are many cases in which it outruns the local disease, and absorbs our attention, without needing any reference to its cause. Injuries of tendinous or fibrous textures are very apt to occasion sympathetic fever. A horse died from a nail having run into the frog; another died in consequence of being nicked: in both cases there was no known possibility of arresting the fever. Sympathetic fever runs much higher

than idiopathic; is much more resistful, and we therefore use the fleam more cautiously; and, instead of purging, make use of simple laxatives. It would be useless to pursue the treatment further, as everything must depend on the nature of the case before us.

SPECIFIC FEVERS

Are such as arise from some unknown cause; and manifest symptoms similar to common fever; at the same time each has its peculiar characteristic by which it is distinguished. There however exists no other identity between these disorders, save the fever which becomes their leading symptom; each of them is possessed of totally distinct natures—being, in fact, a disease by itself.

INFLUENZA.

Such is the Protean character of this disorder, that one finds it very difficult—nay, next to impossible—to assign any particular set of symptoms to it. In one year it takes the form—and this is the one it oftenest assumes—of a febrile or malignant catarrh; at another time, fever is accompanied by extreme dejection, and utter loathing of all kinds of food; at some future season the brain will show most derangement; there will be vertigo; weakness, or sinking of the loins; and paralysis. I have known the complaint so slight, as to consist in nothing more than swelled parotid glands, or a sore throat; in other cases so violent as to swell the legs and sheath to a prodigious bulk, and take on the appearance of farcy.

Any subject, organ, or part that has from any cause become debilitated, or ill-conditioned, is especially liable to imbibe influenza. A horse that is out of condition or in an unthrifty state will be exposed; an organ or part already diseased or in an irritable state, will render the animal liable to be attacked. For this reason, all kinds of operations, firing, and blistering, are extremely likely to be followed by an attack of influenza, and therefore by experienced

practitioners are either altogether abstained from, or very cautiously enforced.

Our professional knowledge is not at present sufficiently advanced to assign to influenza the place which it should hold among other diseases. Its symptoms appear to indicate it is a typhoid affection of the great mucus-track. From the eye and nose copious discharges often drain. The trachea and the lungs, we are aware, are frequently the centre of the ravage. The appetite bespeaks a deranged stomach, and gripes or purging prove the bowels are subject to be involved. But this is not all; influenza does not terminate here. Local swelling, occasionally of magnitude, show other parts are implicated. The weakness demonstrates the muscular system is disordered. The pulse proves the vascular system is not in health; and the lethargy and confusion which the animal exhibits, indicate the brain is oppressed.

Taking these facts into proper consideration, it does appear that influenza, more than any other disease of no higher intensity, envelops the whole body as with a mantle. No part can be said to be exempt from the disorder, though any part may on any particular occasion escape its virulence. All is, therefore, conjecture as to the precise character or actual location of the disease. It has puzzled, and still puzzles the ablest investigators; and, until we know better, perhaps, it were as well to name it mild universal typhus fever.

The SEASON OF THE YEAR is believed to have much to do with the production of influenza—indeed, it is thought to be caused by a something floating in the air. The Italians christened it *influenza*, because they imagined it originated in the *influence* of the stars! Among the horses, it occurs at the spring and fall of the year; more frequently in the former than in the latter season. The prevalence of an easterly wind, or of a wind that frequently changes, joined with a hot sun, has often seemed to me the forerunner or the exciter of influenza. At some periods the disorder will run through entire stables; at others it will attack them

piecemeal, and in situations where no connexion can be traced. The disease will in general be found to select the young—the three, four, and five year-old horses. Some veterinarians believe that the disease is

CONTAGIOUS: I never thought so myself—I never had sufficient reason for so believing. I have never taken pains “to prevent its spreading.” I never conjectured its “spread” in the way contagion would have become developed. When the disorder prevails, or “spreads,” as the phrase is, it does not attack horses standing together, unless they happen to be both of the age for receiving it, but runs from stable to stable, from one side of a square building to another, selecting, wherever it makes its appearance, in nearly all cases, the *young* horses.

SYMPTOMS.—Considering the disorder as produced by atmospheric influence; and considering it attacks horses at seasons of the year when they are naturally weak, in consequence of this being the time they are shedding their coats; and taking into account the situation and condition the animals may happen to be in at the time of attack; we shall be prepared to meet with differences in the mode of the disease showing itself, and still greater in the form it assumes. In its simplest form, it bears some resemblance to common fever; though there are still strong characteristic distinctions between the diseases. To a practitioner the look—the eye—at once betrays the malady; either it exhibits that dolorous aspect which extreme depression might give; or else, being itself affected, its upper lid, instead of being simply dependent, is nearly closed, while the lower one is wet with tears. The head rather hangs from than is supported by the neck. The coat looks *dead*—it has lost all gloss. The extremities—the ears and legs—are cold; but the mouth is hot, dry, and feverish. The pulse is accelerated, but very weak. The respiration is undisturbed. The dung is voided in small quantities. The urine is scanty; and passed with difficulty. As for appetite, the animal cannot be induced to look at food; but despondingly averts its head, as though all hope of recovery had been relinquished.

Ten years ago influenza suddenly underwent a total change of character. The antiphlogistic means formerly employed with no great benefit or very flattering results, became all at once a certain step towards death; the disease seemed to lose much of its intensity; the pulse, which prior to this time ranged between 60 and 70, with some tone about it, now became weak and of increased rapidity. Sore throat now showed itself as a prominent symptom, accompanied with fearful and excessive debility. The appetite was fastidious. The animal would not move to the manger for a mouthful of food, but he would accept it when offered by the hand; frequently even then he would hold it between his teeth without attempting to masticate, or having chewed the morsel, and made it into a bolus ready to swallow, the pellet would fall from between the jaws upon the ground. In a few instances, sore throat, watery discharges, and excessive debility, were the leading symptoms. It is consequently impossible to lay down any absolute line of treatment. Where debility is marked, the treatment must be very mild and excessively cautious. Where the disorder, however, appears with its customary tone, and exhibits some strength to stand active measures, the practitioner will do well to think thrice and long before he oversteps the latitude we have elsewhere allowed to his operations.

There exists no apparent disturbance of the breathing; at least to no amount that creates alarm; and were we not aware how deceitful appearances occasionally are in this disorder, we should be apt to take no account of pulmonary translation.

Other symptoms often present themselves with the foregoing. Now and then the disorder is ushered in by a shivering fit. Many cases exhibit *catarrhal* symptoms: that is, the membrane of the nose and eyes is reddened; and from the nostrils is poured a yellow viscid matter. This matter is generally remarkable for its yellowness; yet, in some cases, it turns to a greenish hue. Sore throat is in most instances an accompaniment: indeed, the pharynx, larynx, and windpipe appear to suffer the brunt of the

disease. On other occasions, the disorder commences with *vertigo*—the brain is attacked—so when the animal is walked out he staggers, and can hardly keep his legs. A common accompaniment of influenza is swelled legs. In all cases, it is marked by early and rapid debility.

SEQUELS.—The ordinary consequence of influenza is disease either of the lungs, or of their investing membrane. In many cases, especially when protracted, while we are expecting the animal to rally, the disorder will insidiously fasten on the lungs, and without giving any notice, until all at once the respiration becomes disturbed. The insidious manner in which lung-disease supervenes on influenza, and consummates its ravages (although no motion of the flanks may be discoverable), we shall best discern by slowly and steadily watching the nostrils, which will softly but perceptibly be agitated, and evidently indicate disturbance or difficulty in the breathing. And at this stage of the disease, such a symptom is of vast importance—one that announces to us a fearful secret.

The most perilous form of this insidious pulmonary accession is—pulse a hundred or thereabouts, and no abatement in its frequency produced by bloodletting or by medicine. Despondency of countenance, and general dejection continue throughout. Prolonged loathing of food, and now, perhaps, of water also. Cold skin and extremities; or else one leg warm, another cold. No lying down; or if lying at all, only a short and unsatisfying rest. The animal soon rising again, and standing for hours together in one place and posture, with his fore legs partially extended outwards from each other, to strengthen the body's support. Blisters, rowels, or setons not swelling, dry at their orifices; or else issuing on pressure but a little thin, bloody, watery discharge; at other times an opaque, dirty, whitish fluid, of an unhealthy purulent character. If an aged horse, purulent discharge (in some cases mingled with blood) from the nose, with a most offensive odour. The saliva likewise has an extremely disagreeable smell.

In aged horses, where the respiratory apparatus is un-

sound, an attack of influenza is too likely to terminate within the lungs, and by reviving latent, morbid action, carry off the animal in a kind of "galloping consumption."

The case is no longer dubious in its character: but the time has past for remedies to be of service. The animal is hurried off in a rapid manner. We commonly find, on examination of the body, the thorax full of water; the pleura having become the seat of disease. Sometimes when all appears to be well, and the animal has recovered from the active symptoms, it happens, especially in cases of catarrhal affection, that roaring or thick wind is left as a sequel. So that, although the influenza in itself be not fatal, it is a disorder attended with grievous consequences.

In its NATURE it is said to be *specific*—that is, a disease of a peculiar kind. And it is so considered for three reasons: 1st. Because it breaks out at particular seasons raging more in some localities than in others. 2dly. Because it is less under the power of remedies than common fever. 3dly. Because of its variety of combination, which remove it wholly from simple disease.

TREATMENT.—Provided we are called *early*, if the cold stage has gone by, we shall benefit by taking a moderate quantity—one, or at most three quarts—of blood. This done, administer 2 drachms of purging mass. Remove the horse into a loose box, well bedded down; clothe him warmly, according to the season; and flannel-bandage his legs if necessary. Let him have a pure atmosphere; and feed him on scalded oats, green meat, and thin water-gruel if he will drink it. Should his dung evince no signs of softening, give a fever-drink, and repeat it daily until a laxative effect results. The catarrhal symptoms must be met by steaming the nose twice a day with a nose-bag, having inside bran, on which boiling water has been poured; and by stimulating the throat. Whenever vertigo is present, we must support the strength, for the giddiness is caused by debility. We must take care not to abstract more blood. Debility so soon succeeds fever, that we often seem to wish we had the blood again to instil into our patient.

Where a doubt exists that, towards the abatement but prolonged endurance of influenza, the disease has fixed upon the lungs, our chief aim must be to support the strength of the animal. Weakness, when excessive, naturally leads to congestion; congestion in a debilitated body rapidly passes into effusion. The intermediate inflammation oftener escapes observation than attracts notice. We frequently suspect hydrothorax only after it has taken place. This is no time for further bleeding; the condition permits of no additional repletion. We must endeavour to rally the dormant vigour by strengthening mixtures and diffusible stimulants; these we may pour in without fear of their effect; their operation is only denoted by the improved appearance of the patient. All other symptoms are delusive, and of all appearances, that of returning appetite is the very best.

In all cases proving hopeless or irremediable by the ordinary treatment, the exhibition of mercury has often proved a successful resort. (*Vide* 'VETERINARIAN' for 1842, p. 336.)

TONICS.—Concerning debility, a common practice is to prescribe *tonics*. How far we can by medicine impart tone to a body, which, although reduced, is free from disease, is a question that does not appear yet to have been solved. I must confess myself a sceptic in their virtues. My plan is to do all in my power to remove disease; which done, I find the animal's appetite returns; and this once regained, points out the surest mode of recruiting the strength. Let the granary be searched for whatever may coax the appetite; and take care that it is not palled by too long persistence in the same kind of food, and we shall find we have little occasion for assistance from the pharmacy. Good hay, oats, and beans, judiciously apportioned; vetches, lucern, and green clover, when they can be obtained; and when they cannot, carrots, parsnips, Swedish turnips, and linseed, are wonderfully effective as restoratives.

STRANGLES.

Though, in accordance with custom, I call this disease, *strangles*, it is with the impression, that the term is inadequate,

and one apt to carry a false notion of the disorder it designates. It appears to have had its origin when little more was thought about the disease than its evident tendency to *strangle* the patient.

“The old English term for this disease,” says John Lawrence, “was the *strangullion* ;” which is evidently a corrupt rendering or transmutation of the French word *étranguillon*—from the verb *étrangler*, to strangle.

My reason for classing strangles among fevers, is, that I regard the fever with which it is acknowledged to be accompanied, not as a sympathetic, but as the primary one.

Mr. Castley has left us an excellent paper on this subject, in which he remarks, that “often when a young horse is looking sickly, delicate, or thriftless, farmers or breeders will say, ‘he is breeding the strangles,’ or that ‘strangles is hanging about him, and he will not get better until he gets over that complaint.’” From which it appears that the animal is suffering from what I call *strangle-fever*—from a fever, the tendency of which is to produce local abscess; and commonly underneath the jaws—whence it has obtained the appellation of strangles.

Mr. Prosser (who wrote a small work on strangles and fever in 1786) contends that strangles could be, with certainty and advantage, communicated to colts by inoculation. (Spooner’s ‘White’s Farriery.’)

The reader who desires to enter fully into a discussion concerning the contagiousness of strangles, may with advantage turn to the ‘VETERINARIAN’ for 1851.

NATURE OF STRANGLES.—Mr. Castley’s paper induced me to take different views from any I had entertained before. It was from comparing that account with a retrospect of the observations which had occurred to myself,¹ I concluded that not only the local affection was secondary, and

¹ In looking over my notes, I find the following memorandum, penned some time prior to the publication of Mr. Castley’s paper:—“Cases not unfrequently present themselves, in which the cellular tissue covering the parotid gland, becomes the seat of abscess. Is this to be considered as the disease itself, or merely as a precursor or the sequel?”

(as Mr. Feron has observed) "the swelling is not always confined to the jaw, but the animal frequently breaks out in several places of the body, and at different times, before the disease sinks; which renders it tedious and troublesome." This observation is confirmed by Mr. Dick, of Edinburgh, who observes, "although the disease commonly terminates by an abscess under the jaw, yet it may, and occasionally does, give rise to collections of matter on other parts of the surface." To which I may add, that it appears in this character to answer every end it fulfils in the form of strangles. Nay, my observations carry me a step beyond this; and I now begin to doubt whether any abscess is *absolutely necessary* to answer the intention nature has in view when subjecting young horses to the disorder. I believe horses have *strangle-fever*; but I doubt if every one which has the fever has it accompanied by local abscess. The tumour, however, happens in other parts, as well as in the throat. Mr. Castley's three cases (to which he could have added "many others") establish this; and I have now others I could add to them.¹

¹ The first case mentioned by Mr. Castley is of a bay mare, four years old, admitted for "being very stiff and lame of the near hind extremity:"—"the following day a painful tumour began to make its appearance on the loose skin of the flank," which grew to "the size of a cricket ball." In ten days it pointed and was opened. Then another formed on the other flank; which second formation it was that fixed Mr. Castley's attention, and marked the constitutional character of the case. They were both ushered in by febrile disturbance, and each discharged about a pint of matter; after which the mare began to thrive and improve rapidly. There was no sore throat nor any catarrhal symptom. The second was the case of a brown mare who had gone through regular strangles, and was discharged from hospital; but was re-admitted a fortnight afterwards with symptoms of internal disorder of a visceral character. She died the sixth day afterwards. An abscess was found in the mesentery, which Mr. Castley "felt no hesitation in calling one of the sequels of strangles."

The third case was a bay horse, in whom four distinct formations of matter occurred: one under the jaw; one on the right cheek, one in the near arm; one on the near quarter.

"The two last abscesses discharged a quantity of thick pus. Since then the horse has been rapidly improving." ('Veterinarian,' vol. iii, pp. 428-431.)

To these I will add two cases. In July, 1832, a mare, which had been three months out of the dealer's hands, sickened—became unthrifty, and feverish. I

A young blood horse, the property of Captain Bulkeley, and purchased from Sir Wat. Wynne's sale, at Tattersall's, was brought to me in June, 1847 (at Windsor), with a tumour at the lower part of the neck, which was perfectly solid to the feel; uniform and smooth upon its surface; with its circumference extending around into the adjacent cellular tissue—having, in fact, all the character of strangles; though there was no sign of constitutional irritation or fever accompanying it. Still, from its character—and from there being no trace of injury; but from its being thought “a sting”—there was, I imagined, good reason for supposing the disease to be strangles. It proved an abscess; was opened; and discharged a pint or more of pus.

(*Vide* “Irregular Strangles,” in John Field's cases, p. 28. Also see *Retrocedent* Strangles in remarks by myself at the end of a case by Mr. Cooper, V.S., Erith. ‘VETERINARIAN’ for 1853.)

What inclines me to think many horses, though they undergo *the fever* of strangles, do not experience the local disease, is because some of those admitted by us to have strangles, only have it in the form of a swelling under the jaw, neither bulky nor sensible, and which is often resolved by a blister; and because out of the many young horses which have passed under my medical superintendence, not above one in four of them had undergone regular strangles, though very many of them had sickened. I had a young horse, whom I purchased of the breeder; he never had strangles, though he sickened three or four separate times.

gave it some aperient and febrifuge medicine. I had it fed on soft meat; watched it daily, to see which way the case would turn. At length, my attention was drawn to a swelling of the udder, which appeared as if distended with milk. As soon as maturation was completed, I opened it, and two quarts of thick, well-digested pus flowed from it. The mare rapidly recovered its health and never ailed since.—The second is a case of more complicated character. A four-year old mare was indisposed for some days; at length inflammation of the lungs appeared, which reduced it to such a state, that I had relinquished all hopes of the recovery. It did, however, recover; but had abscesses form on the poll, withers, one elbow, and both hips, the maturation of which seemed to restore health.

Another colt was purchased at the same time, was a year older than the last, and has never had strangles. When I compare these facts with the accounts of the disease transmitted by old authors,¹ I cannot reconcile them without concluding strangles must be a disease of *less general occurrence than formerly*. It is to be admitted, some of the young horses we obtain in regiments have had the disease prior to purchase: I cannot, however, believe this has happened to so large a majority as I find apparently escaping it. Let veterinarians attend to these points: we shall then, before many years have passed, elicit some curious additions to our present stock of knowledge.²

¹ "The strangles," says Gibson, "has been compared by the French and other foreign writers to the smallpox in men; because to both the young are more incident, and because the strangles *never* seizes horses but once. But, however that may be, it is certain that strangles is a critical swelling, which, when it breaks and imposthumates, *discharges somewhat obnoxious to the constitutions of horses*, by which they are usually rendered more healthful than they were before." Bracken, commenting on this comparison satirically remarks, "that, on strict scrutiny, it will be found only flourishing on the matter, as is too commonly the practice with long-winded authors; for the strangles are produced from *catching cold*, or from what we term perspiration obstructed." Taplin, who lashes the pathology of Solleysel and Gibson in his usual unsparing style tells us that strangles consists in the elimination from the system of an "accumulation of impurities" *imbibed with the food* in colthood; and that this "lurking viscidities is roused from its latent communication with the juices, and called into action by bringing the frame into sudden exertions and constant exercise:"—"for experience demonstrates," he continues, "that twenty horses have this distemper, after being taken to work, to every one attacked with it" in colthood.

² At the time this account of strangles was going through the press, the following observations arrived from Mr. J. M. Hales, V.S., Oswestry:—"Strangles, in its regular form, is a disease requiring little attention, and is generally considered as an affection which at least nine horses out of ten will have; yet it occasionally takes on an irregular character, becomes very troublesome to manage, and not unfrequently fatal. I do not wish to enter into any discussion as to the contagious or infectious nature of strangles; but my experience convinces me that, *when a bad sort of the complaint shows itself in a neighbourhood, the great majority of horses or colts attacked with strangles in that district will have the disease in an irregular way*." This is an important fact—one that would seem to indicate that atmospheric agency possessed some influence over strangles. By way of illustration, Mr. Hales continues: "In the early part of the present summer I was attending some young horses and colts in a gentle-

PECULIARITIES OF STRANGLES.—The disease is said to resemble measles, being an eruptive fever, and one that occurs but once in the lifetime. But there is another question for consideration. Does strangles, *in any form*, occur in *all* horses? I should answer, No! Many escape.

CONTAGIOUSNESS.—Were it not that I feel desirous to express my disbelief in the *contagiousness* of strangles, I would omit this paragraph. My experience has confirmed me in this opinion. The notion of contagion seems to have taken its rise in the epidemic or the epizootic character, which form strangles certainly does now and then assume: every practitioner has known the disorder to be very prevalent at one particular place or season, and where located it commonly appears in more than ordinary violence.

man's stud with strangles, and there was scarcely a case that had not some anomaly about it; such as secondary abscesses forming about the throat and parotid glands, in the flank, upon the shoulder, &c. Shortly after this, the groom of Sir W. W. Wynne (who keeps his young stock in the immediate neighbourhood of the gentleman alluded to) told me that he had got the strangles showing itself amongst his young horses and colts. I remarked that he was likely to have a troublesome job of it, for I had attended several cases in his neighbourhood, and every one had been of an irregular kind: and pretty well has my prediction been verified; for out of at least twenty cases that have occurred in this stud, not more than four or five have run their course in the regular way. In several, after the tumour between the jaws had suppurated, and the disease was apparently going off, sudden enlargements took place in the parotid glands, and about the throat; in some cases rapidly suppurating, while others, being of an indolent character, required repeated applications of liquid blister and linseed poultices to bring the abscesses to maturity. We also had cases in which abscesses formed in the flank and upon different parts of the body; and although these circumstances created a great deal of trouble, yet we only lost two; the one a pony previously broken winded, in which the secondary disorder attacked the chest: the other a case perhaps worth detailing." A curious case of *abscesses in the mesentery*, which (being too long for insertion here) I must refer to 'The Veterinarian,' vol. vi, pp. 598-600. "In another case, after the usual symptoms and course of strangles were apparently got through, the colt suddenly began to reel and stagger in its gait, and shortly lost all control over the muscles of voluntary motion, and could not stand. It ate a moderate allowance of food, and did not appear to be suffering much pain. After continuing in this state for a few days, the colt died, and *an abscess was found in the centre of the cerebrum*, containing a considerable quantity of pus." These are curious facts; and, I consider Mr. Hales entitled to our best thanks for his communication.

December, 1834.—Three lots of young horses came to Windsor barracks this autumn from the dealer; one lot of six arrived in October; another of three also in October; the third of eight in November. They are all *now* sickening with the strangles. I have already had eight cases. Some of these cases are young horses that came previously. A few have only had catarrhal symptoms; in particular, sore throat. I have not, the seven years and a half I have been in the regiment, had such a general attack of the disease before. This shows there are seasons in which the disease is so prevalent that it might be thought to be contagious. That it is not contagious, however, seems proved by its not attacking horses standing next to each other, and by many in the same stable escaping altogether.

1842.—Since the above year, until the present one few cases have occurred. This autumn it is again become epidemic among our three and four year old horses, not only affecting those in stables, but those in strawyard also. This cessation and renewal of a disorder would seem to afford a strong argument against its contagiousness.

The disease often presents catarrhal symptoms; perhaps sore throat and cough, a little running or not from the nose at the beginning, and the horse is set down to have a "cold," when, as it afterwards turns out, he is in reality breeding the strangles.

Of inoculation for the disease I know nothing. There are those who assert it is thus communicable. It may be. It is not "catching," in my belief.

AGE AND SEASON.—The age at which the animal breeds this disease will much depend on his removal from the field to the stable; though now and then colts contract it at grass. We generally meet strangles at the third or fourth year—these being the periods of domestication—and at the fall or spring: these seasons being variable, as well as the times when horses are housed. A colt, bred by my father, had the disease at six months old; Mr. Coward informed me he had observed the disease three months after birth.

A case (E 12) of strangles occurred in a horse seven years

and a half old, and in which the disease manifested itself after signs of ill-health that had continued for several weeks without our conjecturing what was amiss with the animal.

Lieutenant Hogg's second charger, a horse he purchased of Anderson, Piccadilly, had, subsequently, strangles; sickening with it, and giving every evidence of its being the genuine disease.

C 27, a mare (with short quarters and goose rump), six years old at the time of purchase, in February ensuing had abscess under the throat, following cough, in all respects similar to strangles. I saw the mare did not anywise sicken with it, and that the tumour was confined to the off side of the submaxillary gland. If this was not true, it must have been *bastard* strangles. H.R.H. the Duke of Cambridge, on seeing this mare, and being told her disease was "strangles," replied, "No such thing! Six year old horses never have *strangles!*"

B 28, that is six years old in less than five weeks' time, has now genuine strangles appearing.

CAUSES.—Along with other affections, strangles are generally the consequences of domestication. In saying this, however, nothing is really advanced. We are not sufficiently acquainted with wild horses to point out the diseases to which these animals are liable. Neither is strangles always the result of entering the stables; colts when at grass will exhibit the disorder; young horses which have never been under the roof of a stable do not unfrequently exemplify strangles. Still there are many statements on record which seem to favour the notion that strangles is the result of domestication. The seeds of disease appear by the change to be matured. How all this is brought about, or what is the nature of the disorder, we are, and probably ever shall remain, in total ignorance.

SYMPTOMS.—Strangles being promoted by the causes that excite nasal inflammation, it often happens the disease is ushered in by catarrhal symptoms; though, in other cases, we are forewarned of its approach only by the feverish state of the animal. The horse is dull; pickish in its appetite; coughs now and then; the coat looks rough;

the skin feels tight; the pulse is accelerated; the mouth feels hot and dry, not in any way consistent with health. It is probably cutting the corner incisors or the tushes at the time.¹ We hardly know what is amiss. We may suspect it is "breeding the strangles." After a while we detect a tumour under the jaw: we then assert the horse has got the strangles. In other cases there appears a discharge from the nose, reddened membrane, sore throat, and cough. The strangles supervene on these symptoms.

The SUBMAXILLARY TUMOUR of strangles is *double*. Frequently, its duplex nature is evident from their existing two (equal) swellings; but, be this the case or not, the double swelling, although it externally looks like one, is manifested when we open the abscess, from the pus on either side not flowing readily (through the cellular septum, the cause of the duplicity) into the other side.

The submaxillary tumour is often knotty and divided in its appearance, as though the *glands* received the primary attack. Commonly, the disease is slow in its progress; though I have known it appear suddenly, and enlarge with rapidity.² As the swelling enlarges, it becomes diffused in

¹ I have often remarked that strangles was an accompaniment of dentition. Is there any connexion between them? Hurtrel d'Arboval has made the same observation, and does not hesitate to say there is. Taking this view of it, Hurtrel d'Arboval repudiates the idea of horses having strangles *but once* in their lives. Nor does he believe that *all* horses have it: on the contrary, he tells us there are countries where the disease is unknown.

² I remember the case of a horse, belonging to the Artillery, which, within twenty-four hours, had a tumour on the off-side of the submaxillary space the size of a goose-egg. The animal being in the infirmary for catarrh, the circumstance was accurately noted. The tumour suppurated in the usual manner.—November, 1835. A horse belonging to my own regiment was brought to me with a very considerable swelling of the parotid gland, extending a short distance down the neck upon the jugular, and under the jaw. It was not perceived before it had acquired its present magnitude, nor did it anywise impede swallowing or breathing. I ordered the horse to lose from the off-side—the one swollen—four quarts of blood, and to take, next morning, nine drachms of purging mass, and be fomented all day. By the next morning, before the physic was given, the swelling had totally disappeared. Might it not have been occasioned by some stoppage of the salivary ducts? and yet, it did not bear that corded knotty character.

the cellular tissue between the branches of the lower jaw, involving the subcutaneous parts in a uniform tumefaction. While this is going on, various parts in the vicinity often take on a sympathetic action : in particular, the parotid and sublingual glands,¹ the throat, the pharynx and larynx, the nasal membrane, the sinuses, the mouth, the tongue, the cheeks, and the lips : in some violent cases, the whole head appears to be involved in one mass of tumefaction ; while every outlet is clogged with discharge. Experiencing this violence of the disease, the animal is in a pitiable plight. While a discharge is issuing in profusion from his nostrils, and from between his lips, his throat is so filled with collections of matter, that it is quite distressing to witness his painful efforts to breathe. In such cases as these there is imminent danger of suffocation ; and though we afford relief, so far as the breath is concerned, by *tracheotomy*, yet, from the irritation he suffers, added to the difficulty of getting aliment into his stomach, he still is in peril of losing his life from exhaustion.

In such cases as these, there is but one hope left us, and that is the reliance we have on the disorder, from its nature, declining after it has reached a certain stage or height ; when established in this severity, it will progress, do what we may : all we can do is to assuage, to alleviate irritation, and anxiously watch for the turn of the fever. When once this has taken place, the local affection will gradually abate ; the tumefaction will diminish ; the discharges alter their character, and become a white, thick, clotted mucus, much diminished in gross quantity ; the respiration will be interfered with less and less while this improvement in the defluxions takes place.

When there exists a good deal of swelling about the jaw in the situation of the parotid gland, and no tumour takes place externally, it very commonly happens that an abscess forms and breaks *internally*, discharging its contents through the nostrils. Fortunately, however, it is seldom that the disease assumes this malignant form. In a

¹ For a description of these glands, see my 'Anatomy of the Horse,' sect. v, p. 239.

general way, the tumour continues to augment; feeling firm at first, but soon becoming soft; afterwards fluctuating, and finally *pointing*. It does not always suppurate and come to a head externally. In some cases it appears to be carried off through an internal revulsion, occasioned by a catarrhal flux, which form of disease is called *bastard strangles*. Sometimes it disappears without discharge, the tumour becoming spontaneously *absorbed*: an event that commonly happens while the swelling is small, and solid; though it may happen after matter is deposited. Respecting this—

ABSORPTION OF THE TUMOUR, there is a division among professional men: some favouring the notion handed down to us, viz., that, by bringing the abscess forward “something obnoxious to the constitutions of young horses is discharged;” while others apprehend that benefit is derived, though the tumour be resolved. The former opinion is one which all my observation and practice runs counter to. Indeed, I am inclined to believe that many horses escape strangles altogether. Even with those that undergo the disorder, local abscess does not invariably occur; nor do I consider it *essential* that it should.

THE TREATMENT OF STRANGLES will be found to be an affair of great simplicity. The nature of the constitutional disorder by which the local affection is accompanied, we know little about, farther than that it is best met by feeding the animal liberally on soft meat, putting him in a cool, free-ventilated box, and clothing him well. Avoid purgation, the horse cannot bear it. Do not bleed: there is a debility about the animal that strongly interdicts it.

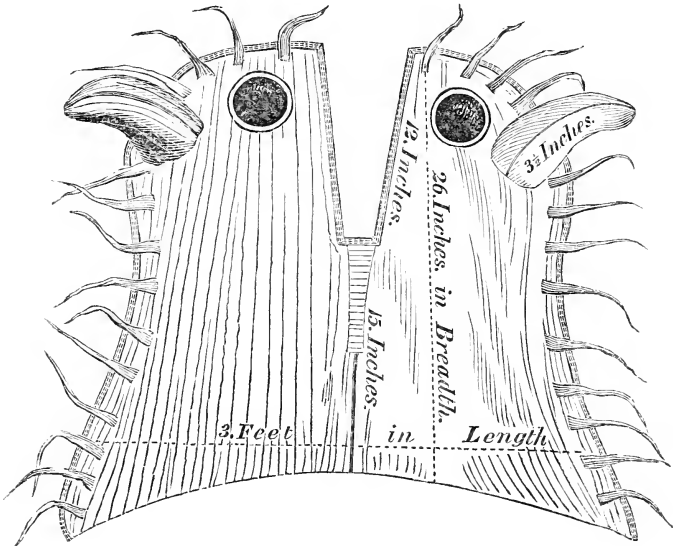
I have frequently observed that a blister applied to the incipient or hard tumour of strangles, brings it forward; but if applied in a more advanced stage, when matter has perhaps begun to be deposited, although there is no external sign of it, the blister is more likely to repel, than promote the maturity of the swelling; and consequently, should the object be, in this stage, to promote suppuration, fomentations and poultices must be employed. My plan of treatment (since I have felt convinced of the desirableness of pro-

moting suppuration and eliminating matters now proved noxious to the constitution) is to foment and poultice continually the tumour, and at the same time to feed the horse high, giving him plenty of corn; beans too, perhaps, and good old hay; the object being by all means, constitutional as well as local, to urge the formation of abscess. And therefore, bleeding, purging, diuretic, or any other medicine promoting absorption, or anything that may elicit discharge from the nose, is inadmissible, and calculated to be seriously injurious to any animal having strangles.

LOCAL TREATMENT.—Feel the throat daily; the tumour will confirm your diagnosis. But do not be in a hurry to open it. Should it enlarge, it will point without our assistance, quite as well as with it. Should it manifest a sluggish disposition, rub it with some blistering liniment, which will bring it forward; only the natural abscess being *spontaneous*, the discharge would probably have shortened the fever. When the tumour is fully fit, freely incise it. This is best done with a knife. Then place a poultice over the wound, and allow the pus to come forth by gravitation, and the pressure induced by the contraction of the sac. This constitutes all that is required.

It being found by experience to be a more desirable object to bring the tumour to a state of suppuration, and through it elicit or let out the “peccant” matter or “humours,” instead of attempting to reduce the patient, I at once allow him a generous diet, give him a peck of corn a day and plenty of good hay; which, aided by the local stimulation, by hot fomentations and poultices, and, where the tumour manifests sluggishness, the comp. turpentine liniment seems most rapidly and effectually to promote the formation of abscess. I do not use blisters, because they are apt in many cases to repel (instead of forward) maturation. When there exists a discharge from the nose, there will be some difficulty in generating abscess, because a continual draining away of the matter is probably kept up, acting as a sort of counter-issue. The nasal flux may be much promoted by steaming the nostrils, &c.

FOMENTATIONS AND POULTICES.—Although the case may do very well without these adjuncts, still those who are very desirous to promote the suppurative process, can make use of them. To apply a poultice with effect we must be provided with what is called a *many-tailed bandage*. The sketch below will give sufficient notion of what it is to enable any saddler to make one.



The *under* or *outer* surface of the cloth is here represented. It is composed of flannel, lined with serge, and bound with coarse tape. The strings for confining it are also of tape. There are holes in it, adapted to the animal's eyes, and cases for his ears. And when put on, the strings tie upon the poll and nape of the neck. It will be found a convenient contrivance for the application of a poultice to the throat. As soon as—

The ABSCESS POINTS, open it freely with an abscess-knife. Make only so many wounds as are imperative to give egress to the pus; more than two are never required. Afterwards forbear to insert the finger; this, like squeezing, breaks down granulation and retards recovery. Do not delay to open it

after it has pointed, and do not suffer it to break of itself, for that causes sloughing or ulceration of the integument, the consequence of which will be a large, irregular, ragged hole in the skin that will require considerable time to fill up, keeping the horse therefore so much longer under treatment. As for dressings, anything containing warmth and moisture will serve the purpose. After evacuating the abscess I apply fomentations or poultices, and encourage as much discharge as possible. As for the healing, that will always take place readily enough without any assistance from us. The animal soon recovers his appetite and vivacity. Only grant time, and all will do well.

TREATMENT OF SUPPLEMENTARY DISORDER.—This must be adapted to the nature of the disorder, and other incidental circumstances. To lay down any precise rules would be presumption. The most usual accompaniment of strangles is catarrh. Indeed strangles occasionally assumes the catarrhal character; and in the nasal flux will discharge itself. Now and then the tumour, instead of forming externally, occupies a situation within the throat, where we can neither see or reach it. As it enlarges, the animal experiences difficulty of breathing, until, becoming almost choked, by an effort to relieve itself the abscess is burst; purulent matter then issues from the mouth and nose; the horse is easy, and mostly does well. Any discharge there may be from the nose is, therefore, to be encouraged; should the animal be able to endure some confinement of his breath, the nostrils should certainly be well steamed. In the event of there being much difficulty of breathing, this is a remedy which cannot be tolerated. Should the case take an unfavorable turn, affecting textures about the head, and causing such tumefaction that the respiratory organs act with difficulty, our treatment must be decided. The smallest delay is now attended with peril. If the enlargement comes on rapidly, the swollen parts may be first scarified, and then fomented; but we must bear in mind that the disorder is one which throughout its stages is highly debilitating.

Therefore, the disease will be aggravated by deple-

tion, and, indeed, to such a degree is this effect certain to follow, as precludes its adoption under any form of circumstances during strangles: all we can safely do is to make use of unremitting fomentations. I know nothing of a local nature more effectual than *fomentation*, when it is unweariedly persisted in. The moment we can detect any signs of the formation of pus, without waiting for complete maturation, we are to plunge our knife to the heart of the tumour: the evacuation of ever so little matter will afford some relief. Cases there are of this hapless turn, in which, to save the animal from suffocation, we are driven to the expedient of an operation—the performance of tracheotomy.

TRACHEOTOMY

Consists in making an opening into the windpipe, through which the animal is enabled to breathe; it is an operation affording the animal instantaneous relief, at a time when, either from the tumefied condition of the membrane, or the continual accumulation of matter about the mouth of the windpipe, he experiences much difficulty in drawing his breath. The animal's head being elevated by an assistant, the windpipe may be plainly felt through the skin as it proceeds in its course down the front of the neck. About one third from the head will be found a convenient place for operating. Should the aperture be made higher than this, the tube, when introduced, will interfere with the application of a poultice. Make a longitudinal incision, three or four inches in extent, through the skin, and carry the point of the knife at once down to the windpipe, the exterior of which should be laid bare.

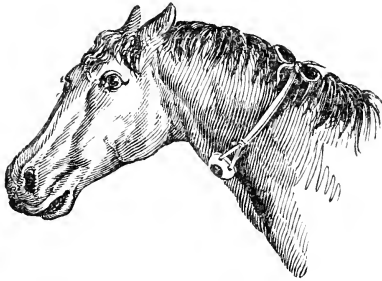
There are several reservations to be made when describing tracheotomy. In the first place, the operation must be performed as best you are able. Unfortunately it is on most occasions called for during the night, when assistants are sleeping, and light in the best stable is somewhat scarce. Then it is not usual to undertake tracheotomy, save upon horses in danger of falling from want of breath. The

operator has neither light sufficient, assistance enough, or a patient capable of steadying its limbs. He acts under every disadvantage, and, to add to his confusion, is the fact that the case generally is one which admits of no delay. With inefficient means, everything must be done in haste, and, when all is over, the surgeon will oftener wonder how any operation was performed, than be able to think whether all was done as drawing-room writers direct.

Under these circumstances it is always well to be provided with a needle and thread. After the windpipe has been cut into, and the animal in some measure relieved, but before the piece of cartilage is excised, the needle should pierce and the thread be fastened to the portion of the windpipe to be removed. This simple resort prevents the portion of cartilage being drawn upon the bronchi, and thus becoming an additional impediment to the breathing.

The trachea being exposed, the point of a narrow-bladed scalpel is to be thrust through its substance, and with this a circular piece is excised, being separate portions of two cartilaginous rings. The object is to remove a piece of the tube about an inch in diameter. This done, a *canula* is introduced into the windpipe, and confined there by tapes carried from it around the animal's neck. A piece of elder, about three inches in length, with a notch cut round the middle, will answer the purpose, though a tube made of ivory, pewter, or box-wood, with shoulders to it, and holes through the shoulders, will be found still better adapted. The tube should be altogether three inches long, so that it may reach some way within the canal of the windpipe. After the performance of the operation, and the introduction of the tube, the animal will exhibit some such appearance as is represented in the following woodcut :

Tracheotomy.



The tube will require to be taken out from time to time, and cleansed. The animal ought to be watched; and it should be abundantly supplied with well-made water gruel, which, after a time, will be drunk with avidity. It often happens, however, after the operation, that, through the difficulty of swallowing becoming lessened, our patient regains the power of deglutating aliment of a nature which is soft and easy of mastication, such as (in summer time) grass and other moist succulent provender,—and, in winter, mashes, grains, scalded oats, boiled carrots, potatoes, turnips, &c. Should the case take a favorable turn, the breathing tube may be removed, when the respiration becomes sufficiently free. I have on two or three occasions, by the performance of this operation, saved my patients from suffocation. There is no sort of danger attendant on it: indeed, the only inconvenience consequent on it worth mentioning is the momentary embarrassment and annoying sensations it occasions every time the animal coughs: the partial escape of the air through the artificial aperture rendering a violent effort necessary. Should any person be near, the extra effort may be rendered unnecessary by simply placing the fingers over the orifice during the cough, and thus sending all the breath through the larynx.

Bird's (V.S. 8th Hussars) mode of operating for tracheotomy is to slit the trachea longitudinally open to the

extent of about three inches, and to introduce a curved tracheotomy-tube, of some such shape as the following :

FIG. 1.



The tube.

FIG. 2.

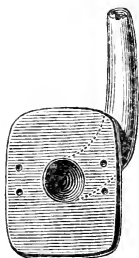
The tube and shield
(front view).

FIG. 3.

The tube and shield
(side view).

It has a shoulder with perforations for tapes, which are to be fastened round the neck. He says he never knew roaring follow the operation, which may be owing to his not excising any of the substance of the trachea. I felt the neck of one horse that had been so operated on, and found a cartilaginous ridge running longitudinally where union had taken place. The tube might be better adapted for the slit in the windpipe by making its mouth of an oval instead of a circular form.

Robert Liston
V. Surgeon
Cincinnati 1850

SECTION IV.

INJURIES.

WOUNDS {
INCISED.
LACERATED.
CONTUSED.
PUNCTURED.

FISTULOUS PAROTID DUCT.
POLL-EVIL.
FISTULA IN THE WITHERS.
SADDLE AND NAVEL GALLS.
WARBLES AND SITFASTS.
INFLAMED VEIN.
BROKEN KNEES.
OPENED JOINT.

INJURIES OF THE EYE.
INJURIES OF THE MOUTH,
TONGUE, AND JAWS.

WOUNDED TENDONS.
PRICKED FOOT.
TREADS AND OVER-REACHES.
QUITTOR.
FRACTURES.
DISLOCATIONS.
BURNS AND SCALDS.
RABIES.

WHEN we regard the horse in the various capacities he is made to serve, or consider the constraints he is forced to undergo, and to these add the abuses to which he is subjected, we need express no surprise should he often be liable to "injury." He becomes more and more the creature of accident from being placed in the hands of those who are either reckless of his life, or else unskilled in his management.

In the army, it too frequently happens that the veterinary surgeon's "Sick Report" is augmented to double the length it otherwise would be, from cases of "injury." And two fruitful sources of these—surpassing in mischief all the others put together—are the bails of the stables, and the chains by which cavalry horses are tied up. Were all cavalry stables stalled, instead of being bailed, and every horse in a regiment were even to wear out or destroy two ropes a year, there would be a very great saving of horses' limbs and lives, and not only that, but at the same time a very material reduction of expenditure on account of remounts. There is another

(and not altogether a worthless) objection to the chains; which is, that the incessant clanking noise they make at night, must most effectually hinder such horses as are fatigued or disposed to repose, from sleeping or even dropping into a refreshing doze. A third objection to the chain is its weight.

I have frequently remarked, myself, to those officers in command, that in a general way, *one half* of the horses reported "sick," had become so from injury.

KINDS.—Injuries are said to be of three descriptions: *Mechanical, chemical, and mixed.* **MECHANICAL INJURIES** comprehend *wounds, contusions, abrasions, &c.*, also *fractures and dislocations.* **CHEMICAL INJURIES** comprise the results of heat, also the effects of various acrid and caustic substances, as the *concentrated acids, caustic alkalies, lunar caustic, corrosive sublimate, arsenic, &c.* **MIXED INJURIES** are the bites or stings of venomous animals, *mad dogs, insects, &c.*, as well as those conveyed through inoculation.

WOUNDS.

A wound may be defined to be a recent division of the soft parts, occasioned by some external cause.

The **KIND** of wound will depend on the nature of the cause, though more depends on the nature of the parts divided. Wounds are said to be in kind either *incised, contused, lacerated, punctured, gun-shot, or poisoned.*

AN INCISED WOUND or *cut* is one of the most simple that can be presented to us; and the sharper the instrument that produces it the more disposed are the parts to unite: on which account, in the performance of surgical operations, we always use the sharpest knives, making our incisions clean, and as direct as is practicable. An incised wound will heal faster than other wounds. It is not, however, the wound we commonly meet in veterinary practice; though, in large towns, cases of the sort do occasionally occur. The appended note will relate one: this will probably convey more practical information than any description.¹

¹ A horse, the property of the Hon. —, in turning the corner of a street in London, came into collision with the wheel of a carriage, and the consequence was an extensive incised wound across the fleshy inside of the thigh. Blood

The perusal of this case informs us of what we are to expect in such occurrences; at the same time it teaches us what steps we have to pursue. In all wounds there are three circumstances requiring our immediate attention and consideration: the first is the

HEMORRHAGE.—In general, incised wounds bleed more freely than contused or lacerated; and the sharper the instrument the more the bleeding: the reason for which is,

trickled from the incision, but not in such quantity as to excite apprehension. The animal was led into a yard hard by, and immediately cast; the wound was cleansed, for the purpose of examination. Though the wound was deep, the principal blood-vessels had escaped injury; therefore nothing remained, but to bring the divided sides together by suture; after which the horse was led into a box, *but kept tied up* (lest by moving about it should disturb the wound, or get the mouth to it and gnaw the stitches), and fed on bran-mashes for the remainder of that day. The same day, I examined the pulse, mouth, skin, and flanks, to see if there was any fever or symptoms of irritation about it: finding there were none, and the appetite being good, I conceived it unnecessary to bleed it. Finding, on the fourth day, the wound was growing tumid and tender, I hailed this as the time for the removal of the sutures; which I effected easily, by dividing the stitches with a pair of scissors, and drawing them out with my forceps. No sooner were the lips of the wound liberated, than they receded from each other, though not, to the same extent they would have done, had sutures not been employed: so that by their use something had been gained. A deep chasm was now exposed to view, the interior of which exhibited a livid aspect, and was moist with serous discharge. I ordered a digestive dressing;¹ at the same, I directed that the animal be loosened, ordering a *cradle* to be worn, to prevent it licking or biting the wound. The next day there was an appearance of purulent matter about the edges: I renewed the digestive, to produce the same from the recesses of the cavity. Soon this point was gained. I now changed my dressing for spirituous tinctures: employing one day Friars' balsam; another, tincture of myrrh and aloes; making use at the same time of powdered bark by way of an astringent and absorbent. Every time, before dressing the wound, I had it (as well as the limb) made thoroughly clean by fomentation. The animal had little fever—none that required anything more than occasional laxatives, and a continuance in cooling diet; in two months the wound was healed; it became covered by contraction of the skin, so that nothing ultimately remained to be seen but a *cicatrix*, consisting simply in a puckered mark across the hair.

¹ Turpentine dressings—either the *spirits of turpentine* or *turpentine ointment*, are used as digestives. I find nothing more effective in producing laudable pus than the farriers' *black oil*.

that wounds of a jagged description are more favorable to the clotting of the blood, as well as to the retraction of the divided vessels, than are simple incisions. The rapidity of the stream will inform us whether any vessels of importance are wounded. Should it come from arteries, the colour will be a bright scarlet; the vital fluid will stream, will *jet* forth, and will by its magnitude indicate the importance of the divided vessels; on the other hand, should veins furnish the blood, it will be of a dark colour, and flow in an uninterrupted and comparatively a tardy stream. When the current is arterial, and of a fulness to excite apprehension, should we not be able to apply a compress in an effectual manner, we must lose no time either in searing the mouth of the bleeding vessel, or in seizing it with a pair of forceps, and securing it by ligature. Now, however, that we have to add *torsion* to our list of means for the suppression of hemorrhage, we may prefer seizing the artery with the *torsion-forceps*, and give it the requisite number of twists to ensure its closure. For the arrest of bleeding during an operation: 1. An assistant may also compress the arterial trunk. 2. A tourniquet may likewise be applied. 3. By compression of the bleeding vessels themselves after the operation the hemorrhage may be stopped. 4. By ligature; and the small round thread ligature is the best; it should be tied tightly. (Liston's Introductory Lecture in the 'Lancet' for June 1, 1844.)

In the selection of means much must be left to the practitioner: unless I were writing on some particular case, it is impossible for me to give any other than general rules of guidance. The limbs admit of compress, though the thigh, hock, shoulder, and knee, are awkward parts (from the motion they possess) to bandage with effect. In all cases the heated *budding-iron* is a ready remedy for bleeding; and (when the *skin* is not concerned) not so painful as people might imagine. Though in most cases, where I could get at the bleeding vessel, I preferred the ligature, cutting but one end off, and leaving the other hanging out of the wound between the sutures.

Ligatures upon arteries in the horse come away in from ten to fourteen days. Accidental wounds can very seldom be put together to unite, even although they are (as all incisions for operations ought to be) made in the proper direction for union: there being always more or less bruising of the surface. Under many circumstances it is better not to attempt union by the first intention. You would not put a wound together (close it) while it was bleeding, but wait, under ordinary circumstances, until the bleeding had ceased some hours. There are some wounds of the face in which the edges can be put together without blood being interposed to prevent union; but in most cases it is best to wait until the wound has become glazed, and then use either what are called *bloody* or *dry* sutures; by the latter being meant some sort of plaster, the blood being generally of the interrupted kind (Liston's Introductory Lecture in the 'Lancet' for June 1, 1844).

Budding Iron.



My budding irons screw into the handles belonging to my firing irons, and fit into the same leathern case, which, for purposes of practice and portability, I find to be an extremely convenient arrangement.

The hemorrhage being suppressed, the next thing to be done is to

REMOVE ALL EXTRANEOUS MATTERS, such as dirt, bits of stick, glass, &c., also the clots of blood in the wound. This is to be done with a soft sponge, some warm water, and a resolute hand. This is a step by which we remove all causes of irritation, therefore of suppuration, among which extravasated blood may be properly ranged.

THE CLOSURE OF THE WOUND is the third thing required. The human *surgeon* approximates the lips of a wound, and confines them in apposition by the aids of plaster, roller, and quietude: the *veterinarian* will find that plaster will not stick upon the hairy skin of his patient; that rollers are not

always applicable; and that quietude is too often rather "honoured in the breach than in the observance." Though we cannot command these aids, it is our duty to avail ourselves of them. Great advantage will often accrue either by raising the heel by calkins to the shoe; or by putting on the long-toed shoe compelling the animal to place the heel flat upon the ground; accordingly as it may be the flexor or extensor muscles we are desirous to relax or extend. This done, we find ourselves, generally speaking, compelled at once to have recourse to

SUTURES.—These are said, in surgery, to be of three kinds: the *interrupted*, the *quilled*, and the *glover's suture*: to which some add a fourth, the *twisted suture*. Of these, the interrupted suture is generally employed for wounds, though I believe the twisted might, on some occasions, prove serviceable. The lips of the wound being brought into contact, as nearly as possible in their natural position, a crooked needle, armed with strong waxed thread, is to be carried through one side and brought out on the opposite side of the wound, but not very near the edge, lest the suture tear out. One end of the thread being cut off, leaving the other loose in the cavity, another stitch is to be taken at the distance of an inch from the first, and so on until the extent of the wound is pierced by so many separate stitches: its sides or lips being all the time held together by an assistant. The rule is to tie the middle stitch first: this, however, is no great matter. The chief precaution is their adjustment, so that, when drawn tight, they may meet each other in straight or parallel lines, without giving the injured part any unnatural constraint. A bandage (in cases which admit of its application) will be of service in keeping the wound together, and supporting the sutures. There are instances in which the divided parts admit of sufficient confinement by a bandage, so as not to require sutures: the incisions made in the operation of neurotomy are of this last description. Prior to its application, the bandage may be dipped in cold water, and wrung out: it will thus serve to keep down inflammation.

If there be any prospect of a cure by the first intention, one end of the ligature should be cut off *quite close* to the knot, (a reef one) and the ends should be carefully gathered and brought out at one corner or another of the incision, after it is put together. If there is no intention of approximating and retaining the edges, both ends of all the ligatures had better be cut off close to the knots (Liston's Introductory Lecture in the 'Lancet' for June 1, 1844).



The needle generally used is here represented. The old crooked form, however, is useful in situations where you cannot turn the other very well. The interrupted suture is the one commonly applied. Use one, two, three, or more sutures, according to the length of the wound, distant about half an inch from each other, using a double or single ligature, and knot them twice: this being called the *reef knot*. The blood is allowed to coagulate around their edges. At the end generally of two days the sutures are snipped through and withdrawn. Isinglass silk, isinglass plaster, gold-beater's skin (the prepared peritoneum of the ox), or *silk gauze*, may be used afterwards to give support; the latter is the best; I have used it for fifteen years past. The *quilled suture*—made by placing the barrel of a quill, and tying the ligature over it, and then another quill—is used only in one operation, that for lacerated perinæum; so long as there is any bleeding, wet cloths may be applied; the patient's limb wetted and covered with oiled silk, the discharge being moderated by some astringent solution. Now and then the cure will be aided by giving support by means of bandages. (Liston's Lecture.)

There is a case, however, in which we must hesitate before we make use of sutures, or wherein, if we do, it will become our duty narrowly to watch their operation. This case is, wound of the scalp. Inflammation and suppuration,

extending over the forehead and temples, and poll of the head, is very apt to follow their application: and there is always more or less apprehension of this spreading to the brain, on account of the known connexion and sympathy there exists between the pericranium externally and the dura mater internally. In these wounds of the scalp the matter is very apt to burrow extensively underneath the skin, on which account, in general, free incisions with the scalpel form one very important part of their treatment.

THE TWISTED SUTURE.—In introducing this, it is not my object to recommend that known to surgeons, but one similar to that veterinarians are in the habit of pinning up the necks of horses with after bleeding. Everybody knows how this simple contrivance answers for closing the orifice made in venesection; and I have found it of other use in practice: indeed, in cases where it is sufficient to preserve apposition, I prefer it to any other form of suture.

REMOVAL OF THE SUTURES.—It must be remembered, although sutures are employed to produce *adhesion* or *union by the first intention*, yet they, being foreign bodies, will soon become sources of irritation, and require removal. It is true they would ulcerate their way out were they suffered to remain: it is, however, advisable to withdraw them, which may easily be done with forceps, first dividing them with scissors. Generally speaking, sutures should be removed on the third day: cases do occur, however, in which they can be allowed to remain until the fifth and even the sixth day. It is seldom that we succeed in accomplishing perfect adhesion. Commonly, about the third or fourth day the exterior of the wound becomes tumid, stretching the stitches, and oozing an acrid matter: this is the signal for the withdrawal of the sutures. When union by the first intention is effected, the parts, though warmer than natural, and somewhat tumid, remain perfectly dry—free from any discharge.

THE SUTURES BEING REMOVED, the sides of the wound are again open, and we behold a large sore, which has to heal by the tedious process of granulation. This opera-

tion will have time; when once established, the veterinary surgeon can do little towards promoting it, beyond freeing the wound from bandages and coverings of all descriptions—leaving it perfectly exposed—keeping it clean, and attending to the general health. Should there appear any indisposition in the wound to suppurate kindly, we may employ *digestives*, as they are called. One of the best, to my mind, is the farriers'

BLACK OIL.

Take of Spirits of Turpentine ℥ij;
Olive Oil, Oj.

Mix, and add six drachms of Sulphuric Acid; leaving the stopper out of the bottle until all the heat evolved has passed off.

As soon as "laudable pus" makes its appearance, or as soon as a healthy action has commenced, the healing process will go on without our assistance.

"As a general rule, the less a healing sore is interfered with the better, and certainly when it is dressed, merely the superabundant pus should be wiped away, not from the sore itself, but from its vicinity." ('British and Foreign Medical Review.')

Our forefathers were in the habit of taking great credit for *healing* flesh wounds: the truth, however, is, nature only can perform the work, and does best when none of our "healing" salves are in her way. In a healthy wound, we can be of no assistance; but when the granulations appear over-luxuriant, looking pale and weak, by touching their surfaces slightly with some escharotic application, a weak solution of blue vitriol, we may check these fungoid growths.

Bird (V.S. 8th Hussars) says, "One of the best dressings for producing a good healthy pus from an indolent wound, and disposing it to granulate, is Ol. Petrolei."

Most horse-owners, who have dabbled in veterinary medicine, have heard of, or are acquainted with—

WOUND-STONE LOTION,

Which, according to the popular recipe, is made by reducing to a fine powder $1\frac{1}{2}$ lb. of green vitriol, 1 lb. of alum, 2 oz. of verdigris, and 1 oz. of sal ammoniac; and after mixing these several powders, putting them into a glazed earthen pipkin, measuring three pints, and melting them together so that the contents boil up two or three times, during which they are to be kept stirred with a piece of wood. Afterwards allow the mixture to cool, when it will become solid and hard, and fit for use. A piece of the magnitude of a walnut is to be dissolved in a quart of rain or pond water, and the wound be, by means of bandages, kept wet with the lotion.

N.B.—The pipkin will have to be broken before the stone can be got out.

LACERATED AND CONTUSED WOUNDS.

These are wounds in which the soft parts of the body, instead of being cut, are torn asunder by violence; and they are often, at the same time, considerably bruised. They do not look so formidable as incised wounds, owing to the hemorrhage and retraction of the divided parts being much less, though they are in reality of a more dangerous character. A horse is seldom lost (unless it happen through hemorrhage) from an incised wound; there are numerous instances, however, of death having followed contused and lacerated wounds.¹ Lacerations of tendinous textures, and bruises upon bones, are always to be regarded with fear: many such injuries have proved fatal which seemed to present no cause for apprehension. Occasionally we meet with contusions and lacerations of a terrific nature: the many and various accidents of this description that occur in

¹ I lost a fine horse some years ago, simply from its breaking loose, and falling down with harness on, the trace-hook being against the point of the shoulder, bruising and lacerating it so much (though not penetrating the joint), that the limb took to swelling enormously, and the animal died from sympathetic fever.

large towns, and in the crowded streets of London, almost forbid the attempt at description. Into the breast of one runs the pole or shaft of some vehicle; the wheels sadly lacerate and contuse the side, hip, or shoulder of another; while a third horse slips down, breaking its head, and cutting open both its knees.

The HEMORRHAGE, occurring from wounds of this description, is in general inconsiderable. Indeed, it is astonishing to behold the extensive injuries which the body will sustain without being followed by much bleeding, although veins and arteries of the first magnitude be ruptured. The carotid arteries have been plucked from the horse's neck without inducing fatal hemorrhage. In some countries castration is accomplished by baring the testicles, and tearing them by force from their vascular attachments, without occasioning much bleeding. It would be easy to multiply instances, but enough probably has been said to show that lacerated wounds need not give much cause for apprehension on the score of hemorrhage.

TREATMENT OF LACERATED WOUNDS.—It seldom happens that we can do much good by sutures; indeed, constraints are more likely to be productive of harm than benefit. The wounded surface should first be cleansed from all extraneous matters, and afterwards, if possible, enveloped in a poultice; when a poultice cannot be applied, the parts may be kept covered with cloths wet with some lotion;¹ the object being to allay the consequent inflammation. We must watch for the approach of sympathetic fever: in fact, when the mischief done is extensive, we should at once take away blood. Inordinate inflammation will be effectually checked by fomentations properly persisted in; the exposed surface will slough, after which granulations will appear, and the healing process proceed without interruption.

CONTUSED WOUNDS.—*Bruises*, though they do not divide parts, often do considerable mischief to their structure; this is caused by their disturbing and loosening the cohesion of the component atoms, and occasionally producing internal

¹ Refer back to the "Treatment of Inflammation."

hemorrhage. A bruised part is commonly tender to the touch, and, should it be in a limb, often causes halting action; particularly when the blow has been upon a bone. Cooling or evaporating lotions may be used here. When a tumour rises from internal effusion, many employ the discutient, or sal ammoniac lotion, believing it to promote the action of the absorbents. Should there be any sign of fever, we must bleed without loss of time. Whether we bleed or not, however, a laxative will generally prove beneficial.

SLOUGHING.—Occasionally lacerated parts whose vitality is destroyed by contusion, slough, or are separated from the contiguous living structures, and cast off. While this process is acting, the surface assumes a livid hue, becoming darker until it has in places turned almost black. An offensive, thin discharge exudes from the part; the fetor is of a disgusting nature: in fact, before now, I have no sooner entered the premises of a veterinary surgeon, than I have said to him, “You have got a case of sloughing in your stables!” A good application in such cases is *camphorated spirit*—made by dissolving two ounces of camphor in a pint of spirits of wine. Wet some soft linen cloths in this, and cover the parts with them. Poultices, when they can be applied, are of great service in these cases: they may be made either of linseed meal, oatmeal, alone, or yeast may be added and they may be applied in a state of fermentation. Carrot poultices I have known useful. When the fetor is extreme, it may be corrected by charcoal, or, by that potent antiseptic—the chloride of zinc. A generous diet should be allowed the animal during the sloughing of a wound; he may even be supported by steel, bark, bitters, &c.¹

¹ My predecessor in the Life Guards, Mr. Bloxham, had great faith (where tonic medicines appeared requisite) in the *sulphate of iron*, given in *porter* or *stout*: he would give a drachm of the salt, dissolved in a pint of warm porter, twice a day.

PUNCTURED WOUNDS.

These differ from other wounds in their disproportionate depth compared with the size of their external opening. Thorns, nails, pitchforks, knives, scissors, and lancets, commonly produce them; they all are more or less dangerous, according to the part pierced, and the depth of the puncture. They are generally attended with more danger than incised wounds, lacerations or contusions: in fact, they constitute the most perilous description of injuries which we have to deal with. From the apparent insignificance of the external wound, people are apt to regard punctures as of little importance; and therefore they often continue using their horses as though nothing had happened. After a time, however, the animal falls dead lame, and is returned to his stable with a foot or leg which will require two or three months to be restored to soundness. On these wounds Mr. Lawrence makes the following practical observations:—"When inflammation is brought on in consequence of a wound of this kind, it affects the *deep-seated* textures of the limb; hence the limb generally swells and becomes hard, the inflamed parts being confined and bound by the fascia which covers them. Under these circumstances, people say, 'Oh! the fascia is inflamed.' It is necessary, therefore, in the treatment of a wound of this kind, to adopt those measures, in the first place, which are calculated to obviate inflammation of deep-seated parts. Although you may not know the extent to which the puncture has gone, you should treat the case as if it were one in which considerable inflammation is likely to arise, and thus you will prevent its occurrence; for if a case of this kind is neglected, the local inflammation (attended, I would add, by suppuration) often becomes very considerable."

I shall now consider the injuries to which *particular* parts are subject.

INJURIES OF THE EYE.

Sometimes the eye itself, more commonly the eyelid, becomes the seat of injury. If a blow be aimed at a horse's eye, so instantaneous is the closure of the lid, that, perhaps ninety-nine times out of a hundred, the eye will escape unhurt.

Blows are commonly received upon the *orbital process*; that being prominent, and so placed as to form a protection to the eye. Here, therefore, we look for marks of the blow. In such a case, the upper lid is swollen, and there is an inability to perfectly elevate the lid; so that half or more of the *cornea* remains covered. The ball of the eye is rarely or never injured: though where there exists much inflammation the conjunctival membrane partakes of it; for we find it more opaque than usual. The tumefied eyelid forms a very simple accident; one that requires nothing more than cold water for its remedy. Wet a thin linen cloth, fold it and lay it upon the swollen lid; or sponge the lid as often as it becomes dry. Simple water is preferable to Goulard or evaporating lotions; the latter being liable to irritate the eye. Should the inflammation run high, take blood from the eye vein, and substitute fomentation for refrigerant applications.

LACERATION OF THE EYELID is an accident which occasionally presents itself. The upper lid, commonly, gets torn from catching some nail or hook in the stall. A horse is apt to do this when raising his head during the time of feeding, supposing there to be any half-driven nails about the head-boarding of the stall. I have had several cases of this kind. I remember the accident happening to a hunter of my father's. I have invariably succeeded in obtaining union by first intention through the use of sutures. The laceration commonly extends along the border of the lid, from the outer towards the inner angle of the eye.

INJURIES OF THE EYEBALL are comparatively uncommon. Hayseeds, insects, bits of dirt, &c. do occasionally lodge upon

the cornea, and, through the simultaneous twinkling are carried under the upper lid; where the particle may stick with so much pertinacity, that its extraction is a difficult operation. The way to remove it, is to seize the upper eyelashes with the right hand, while the left impresses and fixes the lower lid; then, to elevate the former, so as to see underneath it. Should this not succeed, we must *evert* the upper lid: an operation which is not difficult—providing the horse be secured, and the operator be expert—and one that will enable us to discover any foreign body.

CUTS AND CONTUSIONS do occasionally reach the globe of the eye. They then cause much inflammation, and require active treatment. The most formidable cases are those in which the cornea is penetrated, allowing the aqueous humour to escape, and the iris to protrude. Violent inflammation supervenes; the lids are closed; and the animal experiences such pain, as to resist having them opened. We can do little more in the first instance than bleed; exhibit a purge; and use anodyne fomentations—warm water in which poppy heads have been boiled. As soon as the physic begins to operate, we may probably succeed in separating the lids. Should we find the iris protruding, it will be proper to return it. This must be done with care because of its importance as a portion of the eye and because of the high sensibility it has acquired through friction and exposure. After this, healing eye-washes¹ may be used to unite the parts. These should be gently applied by means of a soft camel's hair pencil, and the eye should be shaded during the time of treatment which should consist of a gentle course of mercury.

INJURIES OF THE MOUTH, TONGUE, AND JAWS.

These parts, from abuse and mismanagement, sometimes become cut, contused or lacerated. Horses that have suffered injuries of this description, slaver at the mouth, cud their food, or refuse to eat any but what is of a soft

¹ Zinci Chlor., gr. j, to Water, ℥j.

nature. These symptoms lead us to examine the mouth, where we often find the cause to be wound, tumour, or ulceration, the effect of injury.

The TONGUE is sometimes seen with an incision almost through its substance: at other times the *frænum lingue* is lacerated. This may be produced by a sharp bit. Or it may happen through forcibly dragging at the tongue, and sawing it against the edges of the molar teeth, in the act of administering a ball. Or the tongue may be bitten by the animal, perhaps during sleep, or voracious feeding: at least I have had cases said to have occurred during the night, for which I could in no other manner account. Should the division be deep and recent, we may make trial of sutures; though, unless the wound be very near the tip, we shall find them difficult to insert. And, after all, we must not expect to accomplish adhesion; for the constant motion of the tongue, together with the food continually getting into the wound, precludes all hope of that. We may, however, succeed in preventing further laceration. Though, should there appear no danger of loss, the case will do better without assistance. We may promote the healing by occasionally cleansing the wound from all masticated matter which may have become lodged therein.

Several cases have occurred of horses lacerating their tongues while on guard at the Horse Guards. The accidents appear to have happened when turned round and fastened up to the side-chains by the cheeks of the bit: while in this reined-up condition they receive sudden alarm from the men running into the stable and seizing their horses by the head to hurry them out to parade.

To prevent horses hanging back while tied up with their halters, it is a common practice to put a loop of the rope, or what in groom's cant is called "a chaw," into their mouths; this, on the animals repeating the act of flying back, is very apt to prove the occasion of lacerating the tongue, should it have got confined underneath the loop. To this cause my attention was kindly called by Mr. Mogford, Guernsey.

JAWS.—The repeated contusions made by the port of a sharp curb-bit, will be followed by ulceration of the bone, portions of which will come away through the wound; or it may cause fracture of the jaw. The common situation for the injury is in the hollow under the tongue; though the palate may be the seat of it. The jaw, also, is subject to an injury from violence with the curb-rein; this occurs outside, in the situation where the gum is squeezed by the curb. In this case, the bone becomes tumid, and so tender that the animal will hardly suffer the jaw to be touched. Abscess forms within the bone; the matter from which becomes discharged either into the mouth, underneath the tongue, by the side of the teeth, or through a posterior opening, into which we may readily introduce the silver probe and feel the rugged surfaces of bared jaw: or the caries may be so extensive as to admit the finger. Sometimes we discover a broken piece of bone. In most cases there is carious bone to come away; and therefore we must not endeavour to close the external wound. Mild treatment is best. Give the horse purgative medicine, and keep it on soft food. If it *must* be used, let it be worked in a snaffle.

The best dressings for these sores are the mineral acids diluted: an excellent one is a mixture of half a scruple of hydrochloric acid to an ounce of water. Should there appear any disposition in the soft parts to close over the bone enlarge the opening with a knife. As soon as the wound begins to granulate from the bottom, the cure may be left to nature.

The **LIPS** and **CHEEKS** sometimes suffer laceration. The corners or angles of the lips are occasionally severely cut by sharp and twisted snaffles. The insides of the cheeks may get abraded, and ulcerated from the edges of the grinding teeth becoming sharp and prominent, in consequence of slanting wear. Most extraordinary cases of this kind frequently present themselves; affording us the best proof we can adduce of the continued upward movement and wear of those bodies. These sores, which are mostly superficial,

require nothing after the exciting cause is removed. Should, however, some astringent wash for the mouth be desired, a good one is made by dissolving an ounce of alum in a quart of water.

Where sharp grinders produce the mischief, their edges must be filed off with the

Tooth-rasp.



FISTULOUS PAROTID DUCT.

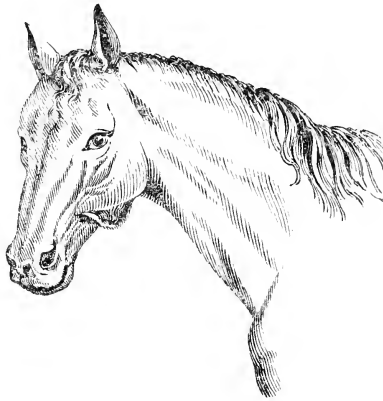
I introduce this affection in the present place, because there is reason to believe it is oftener the effect of injury than the result of disease. It is a subject on which I contributed a paper to the Veterinary Medical Society; and I shall on this occasion take that paper as my guide.¹

By a *fistulous parotid duct* is meant a sinuous opening, communicating with the interior of the duct, through which *saliva* is discharged. The situation of this injury may be the angle of the bone, the inner border of the jaw, or the side of the cheek. The issue of saliva at once proclaims the case, which is confirmed by the situation of the lesion; and frequently, by the distension of the duct, between the opening and the parotid gland, in consequence of the accumulation of saliva. The emission of saliva is remarkable during mastication; particularly when the animal takes his morning's meal. In long-standing cases, the duct undergoes considerable dilatation; so, instead of being comparable to a goose quill, it becomes large enough to admit the finger. Indeed, occasionally we meet with a horse having *enlargement* of the duct. My cousin, Mr. C. Percivall, V. S. Royal Artillery, relates a case in the first vol. of 'THE VETERINARIAN,' in which, at one part, it was "as large as

¹ Those who may feel desirous for more detail than my present limits will permit, had better peruse this paper. It is contained in 'The Veterinarian' for 1828.

a duck's egg ;"—“ being,” as he states, “ where it had been punctured.” He tried to reduce the dilated duct by repeated blisters ; but failed to make any impression on it.

Enlarged Parotid Duct.



The CAUSES of fistulous parotid are natural or artificial. Among the natural is, abscess of the gland and strangles. The artificial causes are wounds and injuries of all kinds.

TREATMENT.—Although these cases may appear to an unprofessional observer of trivial import, they prove of troublesome description to the veterinary practitioner. Should the puncture of the duct be recent, we may *try* the effect of plasters, and of bandages formed by repeated layers of collodion and cotton. To perfect the cure, as is well stated by Mr. Gowing, of Camden Town, it is imperative to daily renew the latter treatment. At the same time, the animal's head should be tied up, and the food for nearly a week wholly consist of thin gruel. Of course before the bandage is applied, any schirrus about the edges of the orifice should be carefully removed. This is the latest and seems to be the most successful plan of treatment.

The CLOSURE OF THE MOUTH OF THE DUCT, in long-standing cases, often proves a complete bar to success. In a

case of this description, a *seton* through the cheek is in human surgery recommended. An ordinary one, with our patient, will not answer. The horse will bite off any knot that may come against his grinders. The only method by which I could maintain a seton in the cheek, was by attaching a flat metallic button (with holes through it, but without a shank) to the tape, and by confining this close to the cheek, I prevented it from being crushed to pieces. The object of the seton was to make a fistulous orifice *internally*; then to heal that which was external. Feasible, however, as this seems, after every effort I completely failed.

LAST BUT SURE RESOURCES.—Should we not succeed by any of the more lenient methods of cure, there is one to which we may resort with tolerable certainty, though over it we do not possess the same control as over others. I was led to make the experiment from having been unsuccessful with other remedies. I consulted some French accounts—and I found that M. Leblanc had extirpated, by incision, the parotid gland. The operation appeared to me of the most formidable description; happening, however, to have a condemned subject in my possession, I first performed it by way of experiment; and I succeeded better than I had anticipated. But such was the hemorrhage, and such the nice dissection and anatomical skill required to avoid wounding one or other of the important blood-vessels and nerves, that I felt little disposed to repeat the undertaking upon an animal I had in the infirmary, for the benefit of which I was making the inquiry. Another French writer, Hurtrel d'Arboval, conceived the possibility of paralysing the gland, of depriving it of vitality, or of rendering it incapable of secretory action. This he proposed to effect by compression, so contrived that the gland might be isolated; its communication with the surrounding parts being completely intercepted. The experiment, however, failed; and the result was I destroyed the *entire substance* of the gland.

THE AUTHOR'S METHOD.—Dissatisfied with all previous modes of proceeding, it struck me that the destruction of the gland might be effected in a simpler and an equally effi-

acious manner. We know, when glands become *schirrous*, they no longer possess the power of secretion ; and, I thought, if we could induce a similar action within the parotid, it might answer every purpose of paralysis, or extirpation. To produce this annihilation of structure—it seemed requisite to excite a certain degree of inflammation : the only difficulty that presented itself was, what degree that ought to be, and in what manner the inflammation thus excited was to be controlled? A very high inflammatory action would be followed by sloughing : a low degree would not accomplish the end.

My FIRST EXPERIMENT was made on a horse having fistula of the parotid duct, which had supervened on the abscess of strangles. Two fistulous openings, both situated upon the gland, remained immediately after the disease ; one of which had closed up, but the other resisted every means that appeared practicable. Into this aperture, which opened under the root of the ear, I injected with a syringe the following mixture :

Lunar Caustic, ʒss ;
Nitric Acid, ʒj ;
Distilled Water, ʒj.

At the same time administering six drachms of Aloes. Four hours afterwards the gland was tumefied, and tender on pressure. Next day, the swelling had spread a short distance down the neck, and the tenderness seemed to be extreme. No discharge from the opening ; the animal purged. Third day : swelling diminished ; discharge of saliva returned. Sixth day : the tumour has daily decreased ; discharge both purulent and salivary ; the same caustic injection repeated. Seventh day : no running from the aperture ; tumour reproduced, but not to the same degree as before. Fourteenth day : swelling abating, but very slowly ; discharge returned, but much reduced in quantity. Seventeenth day : the gland slightly more prominent than natural ; has a firm scirrhus feel, and has lost almost all its sensibility ; very little saliva has appeared during the last four and twenty hours. Twenty-second day : no discharge ; the fistulous orifice closed, and, to all appearances, permanently so. The gland a little more prominent than its fellow of the opposite side ; has a solid, firm, indurated feel ; pressure upon it is endured. From this time the horse got rid of his troublesome disorder.

My SECOND EXPERIMENT was made on a horse purchased with the malady upon him. The fistula was on the side of the cheek, opposite to where the duct terminates internally. In this case I tried *pressure*, by

means of Salmon's patent truss, first on the duct, afterwards on the gland. That failing, I tied the duct, at where it crosses the lower border of the jaw : the only effect was to distend the canal, and cause it to give way where the ligature was applied. I next had recourse to seton, but without any good result. As for the *cautery*, and other means, all had been repeatedly employed before the horse came into my possession. Professor Coleman saw the animal, and recommended extirpation of the gland. At length I determined to treat this animal after the manner tried upon the former case. I cast the horse, and (with a view to rendering my injection more effective) cut down on the duct, and made an opening where it emerges from the substance of the gland. This done, I threw in my injection, consisting of the ingredients I had used before, but of double quantity. The injection was detained for a minute within the gland, and then suffered to run out; most of it did return. This was followed not, as in the other case, by moderate tumefaction, consolidation, and obliteration of the glandular structure, but by violent inflammation and *sloughing*. The whole of the gland, by degrees, came away, leaving a deep chasm to be filled up by granulation : a process that was not completed until the fifty-eighth day from that on which the operation was performed. In due course, the cure was perfect ; no gland whatever remaining. My object, however, viz., the production of scirrhus, had been frustrated. The horse continued in my possession two years afterwards ; appeared nowise inconvenienced by the loss ; nor would any one imagine that a parotid was lost ; that the portion of duct between the angle and border of the jaw always remained enlarged.

Were I to have another case to treat of this description, I would use the same kind of injection, but reduce its strength by at least one half : that is to say, I would mix double the quantity of *water* with the same quantities of the two other ingredients.

POLL-EVIL.

In the 'Farrier's Dictionary' we find poll-evil defined to be "a large swelling, inflammation, or imposthume in the horse's poll or nape of the neck, just between the ears towards the mane : " than which it seems difficult to convey a clearer notion of the nature and situation of this loathsome malady.¹ Some years ago, the disease came frequently

¹ The French call it *mal de taupe*—mole-evil—from the tumour being in form like a mole-hill, as well as from the sinuses being compared to the workings of the little animal.

under our notice: to the credit, however, of horse-proprietors, and perhaps owing to the diffusion of veterinary knowledge, cases of it are now of comparative rarity. From the army, and from all well-conducted horse-establishments, it seems banished, never to return. These observations lead us to believe that poll-evil must originate in neglect or abuse.

CAUSES.—Mechanical injuries, in the form of blows, bruises, pressure, friction, &c., are the ordinary exciting causes of this disease. Cart-horses, are the common subjects of it. Their stiff and hard head-collars, first chafe their polls, and cause them to be continually rubbing the part. It not unfrequently happens that the halter provoking friction, begets a sort of mangy affection about the nape of the neck, the annoyance of which causes the animal to rub his poll against the manger, and occasions that part to inflame and swell. It ultimately excoriates and ulcerates; in either way, poll-evil may be produced. Or, the roof of the stable, or the threshold of the door, may be so low, that the horses are daily hitting their heads against them. Or the man who drives the team may be fond of exercising the butt-end of his cart-whip in preference to the lash. From some of these causes, or from others of similar nature, the poll becomes injured—contused, abraded, wounded: the consequence of which is, the disease under consideration is established.

POLL-EVIL consists in inflammation—in tumour, with or without tenderness—either of the part properly called the poll, below or on one side of it. In the more advanced stages of the disease, the crouching manner in which the animal carries the head, will indicate the presence of the disorder. What symptoms or appearances may be present, will depend on the stage and state in which we meet the inflammation. It may exist in the form of a solid tumour; it may prove a matured abscess; or it may have advanced to the ulcerative stage, and exhibit chasms and sinuses, frightful to behold. In the case of abscess, matter may be lodged under the skin; or it may have a deeper seat

and be below the muscles, in contact with the *ligamentum nuchæ*; or against the bones. The treatment must be various: what would be suited to one stage or condition, would not be proper for another.

THE PECULIARITIES OF POLL-EVIL.—That which renders it different from a *common* wound—arises from the conformation of the parts in which it is seated, and from the continual motion to which it is subject. The ligamentous, tendinous, and fleshy connections uniting the head to the body are concentrated about the poll; at which place exist those joints by the mechanism of which the head is moved.¹ When we therefore consider the complication of the textures concerned in the inflammation, and the moveable character of these parts, we shall cease to feel surprise at injuries of this kind being so tedious to heal. In cases where the matter lies deep-seated—underneath the round portion of the *ligamentum nuchæ*, in the hollow between that and the atlas—it will dissect its way among the cellular connections of these parts, and will occasion ulceration of the ligaments, tendons, and bones. And the ulcerative process in parts possessing such low organization is naturally tardy. Nor is that of granulation, by which such losses are repaired, a more active one. These are parts, in fact, slow to decay, and slow to renovate; peculiarities which account for the intractable nature of poll-evil. We not only hear of the matter ulcerating its way through the synovial membrane into the joints; but of its penetrating the sheath of the spinal marrow, and making its way into the cranial cavity.²

¹ For an account of the ligamentous and articular connections subsisting between these parts, see "Articulations or Joints of the Skeleton," in my 'Anatomy of the Horse.'

² Hurtrel d'Arboval details a case of this kind, the subject of which was a large cart-horse, discharged from the college at Alfort, apparently cured. Some months afterwards, the animal was found to be unsteady on its legs, and to stagger in walking; it became worse, and rather dragged the legs than walked upon them. A fistula existed in the nape of the neck at the time; but it was not deep, was dry, and without swelling. On the twelfth day from the attack of staggers, it was unable to rise from the bed; on the fifteenth it was destroyed. An abscess containing sero-purulent fluid was discovered between the atlas and the occiput, from this some of the matter had made its way between the pos-

TREATMENT OF THE TUMOUR.—The treatment must be conformable to the state of the case. The avoidance of all repetition of the cause is indispensable. We must then call to our aid those principles by which local inflammation is treated, and we shall obtain a clue to our mode of procedure. In the case of tumour without fluctuation, we give laxative medicine, and apply a blister; this may tend to its resolution, and accomplish a cure. Unless there existed much heat and tenderness in the swelling, I should prefer this mode of treatment to the application of discutient lotions. In a case of incipient poll-evil, it becomes an object to prevent the formation of abscess; and I know nothing so likely to effect this as the application of blisters in combination with general evacuations; we must, however, take care not to push this practice to an imprudent length.

Supposing there to be a simple skin wound or excoriation, as is not unfrequently the case in troop horses, we ought to treat the sore in the simplest manner possible, and give it every encouragement to cicatrize. Frequently, however, the lodgment of pus upon it will cause a sinus. Even then, we may succeed in healing this recent sinus by some simple means, for I have often found touching the lips and upper parts of it with lunar caustic an excellent remedy. Should we not succeed in this way, then at once lay it freely open with the knife, and treat the simple wound in the mildest manner.

TREATMENT OF THE ABSCESS.—When suppuration is established, and fluid fluctuates under the fingers, we had better give free egress to the pus. By suffering it to remain, the pus will burrow among the surrounding structures, forming sinuses we shall find it difficult to eradicate. Some practitioners will postpone the opening of the abscess to the last extremity, in hope of producing absorption of the

terior bones of the cranium and the dura mater, and had so surrounded the cerebellum, medulla oblongata, and top of the spinal marrow, as to isolate these parts, at the same time that it compressed them on every side, and squeezed them up into a heap.

matter. And willingly would I agree with them, if I could entertain the notion, that no harm would result greater than in a case of *common* abscess. When, however, I think what mischief there may be going on while I am waiting for possibilities, I cannot withhold my hand. It becomes a question of some consequence, in what manner the knife is to be used. The object being not only to give the matter vent, but to procure such an orifice, that the cavity shall clear itself as fast as the pus is collected. A *dependent* opening would prevent all settlement: but that is impracticable. Should the abscess *point* at any part, that spot should be made the place of puncture; the sac ought afterwards to be freely laid open, till we can examine into the condition of the interior. We may find the matter has occupied a single sac: on the other hand, it may be deep-seated; or there may be more than one abscess, and no communication between them. Should, however, the pus have remained long pent up, the probability is that any separations which may have existed have given way. From the chief cavity, however, sinuses most likely run in various directions, bounded by sloughs and bottomed by carious bone.

Our next object should be, to establish counter-openings to the one we have made; the situation and amount of which must depend on the direction and number of the sinuses. The side of the neck will be the situation for any counter-opening that may be required; through which punctures may be made with a sharp-pointed seton-needle, and a tape may be left hanging from the wound to drain off any matter that may subsequently be secreted. Should any carious bone be felt, it should be removed with a pair of forceps: this done, the cavity had better for a day be crammed full of fine tow, which will stop the bleeding and frustrate all union by adhesion.

The PRINCIPLE OF CURE in these cases consists in the suppression of all morbid action, and the establishment of healthy operations: objects which, where the sinuses and cavities are of much depth, we stand but little chance of soon accomplishing, except it be by laying the sinuses open at

once by an incision ; this line of practice is excellent where it can be adopted, but it is one seldom to be recommended in poll-evil, on account of the substance to be cut through. In laying so much stress upon these operations, it is far from my desire to discountenance the simpler means of healing, as medicated injections, and the employment of *pressure*, from which have resulted beneficial effects. My object is to impress upon the young veterinarian, that *operating* on poll-evil often proves a more speedy cure than that which may appear to be a safer mode of practice.

The DRESSINGS that have been employed in the cure of poll-evil are by far too numerous for description, even were the majority of them worthy of it, which they are not. A better understanding of the nature of inflammation has led to much improvement in our treatment in cases of this kind. We have nearly, I hope, done with that "infernal practice" of pouring *scalding hot* dressings into the sinuses: a practice not warranted on the score of efficacy, and detestable on that of humanity, more especially if we consider how many milder dressings there are will answer as good an end. Should we discover a healthy interior to the abscess, the simpler our dressings are the better. Then freely dilate the external wound, to expose the cavity, and dress it daily with some gently cleansing fluid. Such good fortune, however, we can hardly expect: we must anticipate sinuses, sloughy ligamentous surfaces, carious bone, and even open joints. When the sore is sloughy, and sinews, ligaments, and bones are already laid bare, caustic dressings are to be avoided, and such as are of a purifying nature employed. Time must be given for sloughs¹ and for exfoliations to be detached: for, until these processes are completed, we are not to expect granulation.² The treatment must be guided by the principles which are laid down to mitigate inflam-

¹ The sloughing process, especially where bone is involved, is often much promoted by the use of the *nitric acid lotion*.

² Sloughs emit much ichorous and purulent discharge; this makes the animal in a filthy condition every time it is to be dressed. Much may be prevented by powdering the surface with some absorbent powder—such as charcoal—and greasing the hair upon which the discharge is likely to run.

inflammation; ever bearing in mind that our art consists rather in removing impediments to healing, than in any power to generate that process. Poll-evil is one of those diseases which enjoin us to make a mental calculation as to the probability of cure, that we may guard against censure where we expect, and perhaps will have deserved, commendation. The uncertainty of cure, and the time it will occupy, are considerations which, set against the value of the animal, in some cases suggest destruction on the score of humanity as well as of pecuniary policy.

FISTULA IN THE WITHERS.

The liability of the *withers* to injury, from pressure, pinching, or rubbing of the saddle, the harness-pad, or collar, brings this part occasionally under our notice, though owing to the improvements in saddlery, less frequently than in past days. A case of fistula in a well-conducted establishment would be discreditable: poll-evil and fistula both being diseases resulting from mismanagement, and not from unavoidable causes. Not many years ago these maladies made dreadful havoc among farmers' teams, coach and post-horses. I well remember how many baggage-horses and mules we had in the Peninsula incapacitated from fistula, owing to the bad construction of the pack-saddles; indeed, it was one of the chief considerations with a regiment of cavalry on the march how to prevent these evils; and though, now-a-days, things are much better ordered, yet it must be borne in mind these are results that will occasionally happen when horses' backs become subjected to long-continued pressure. There is no other prevention than gradually inuring the parts to the amount of compression they are required to endure.

There are certain rules in fitting saddles which cavalry veterinary surgeons in particular should be acquainted with. The first is, that the saddle should bear upon the back, to the exclusion of the spine and withers; these last being parts which will not endure pressure. The second is, that the saddle should have everywhere an equal bearing;

neither tilting forward or backward. The third is, that when the saddle is on, and the girths fastened, there should remain space sufficient between the withers and the pommel for the introduction of the hand. The fourth is, that the points of the tree should embrace the sides without pinching them, or so standing outward that the pressure is all downward and upon one place, instead of being in a direction inward, as well as downward, so as to be distributed uniformly over the sides. Horses having low and thick withers are more likely to be injured than others, in consequence of the "riding forward" of the saddle, and its pressure upon them. Fleshy, fat shoulders and sides also become hurt by the points of the trees either pinching them, from being too narrow in the arch, or from the bearing being directly downward upon them. I believe also that injury occasionally results from the interruptions, which a too forward saddle presents to the motion of the shoulders, and the friction the soft parts sustain between the shoulder-bone inwardly and the points of the saddle-tree outwardly.

Independently, however, of the *fitting* of the saddle, the horse's back may receive injury from the foul and hardened condition of the pannel. The matter of perspiration will soak into it, dry, and cake upon it, and render it rigid and harsh, and liable to chafe the skin. This is to be prevented by exposing the saddle-pannel, wet from perspiration, to the heat of the sun in summer, to that of the fire in winter, and when dry, by beating it well with a cane or pliable stick in the manner, though harder, one would beat a dusty coat. Thus not only is the dirt discharged from it, but it is rendered thereby soft for the horse's back. Being woollen (*serge*), the pannel never ought to be washed or even wetted; it never in fact requires moisture.

The NAME of *fistula* is as applicable to a poll-evil as to the disease we are now considering; its true meaning being simply a *sinus*: custom, however, has assigned it to injury of the *withers*; and when we hear of "fistula" we must recollect it refers to this part.

FISTULA only differs from poll-evil in its cause, and in the peculiarities it derives from the structures it affects. It consists in inflammation; and though the word *fistula* is applicable but to one form of disease, yet the malady exhibits three distinct stages.

The STATE OF TUMOUR is the shape in which we first meet with fistulous withers. It is tumid, hot, and tender. The cause, on investigation, proves to be either bearing from the pommel or pinching from the points of the saddle. The

remedy is simple. Abstain from a repetition of the cause, or have the saddle altered till it can no longer do mischief. At the same time cover the part with a piece of folded linen wetted with a cooling lotion, and give a dose of medicine. Should tumour remain when the inflammation has subsided, the evaporating may be exchanged for a discutient lotion. In some cases, instead of manifesting heat and tenderness, the tumour is of an indolent nature. It probably has an *eschar*—a black circular piece of dead skin upon its summit. For this a bran poultice, contained in a bag, and confined by a surcingle, is the best application. The eschar must slough before the cure can be accomplished; and this is promoted by favouring suppuration. There is another way in which fistulous withers may arise—by a small, circumscribed, and fluctuating tumour; this is more commonly in the *middle* of the back. Of it I shall speak hereafter.

SUPPURATION may result from the tumour becoming active. When the swelling assumes this action little attention is commonly paid to it, but, from lodgment of pus, and neglect, the sore sinks lower and lower, until it degenerates into fistula. Even under judicious management an ulcer upon the spine is often troublesome, and may run into fistula; though, in general, fistula has an inward origin. Matter once generated underneath the fascia and ligamentous substance entering into the composition of the withers, speedily becomes, by the movements of the shoulder, diffused among the muscles, cartilages, and bones, and forms sinuses in different directions, some of such depth that our ordinary probes are useless. What renders fistula formidable in practice is its affecting parts of various textures, and complicated connexions; to this cause also should be added those parts not only being in continual motion, but more or less influenced by almost every movement of the body. Purulent secretion is kept up from the bottom of the wound, the cleansing of which, together with perfect rest, are two objects to be strictly enforced.

The TREATMENT must be conducted on the same principles as poll-evil. As soon as its suppuration appears fully

established the evacuation of the pus should be determined on. And, generally speaking, that part should be chosen for puncture where the *pointing* exists.

The abscess opened, our next duty is to ascertain the state of its interior. We shall probably find sinuses deep and devious, or a space of some sort made by the lodgment of matter. At one time I had considerable practice in these cases, and I must acknowledge to being a very unsuccessful practitioner until the scalpel was freely handled, after which I became altogether fortunate in my results. On numerous occasions I tried injections and dressings of all descriptions without success, though I afterwards effected a cure simply by laying open the cavity and leaving it without anything further, beyond dressing the parts every second, third, or fourth day with some digestive. My father was so assured of the benefit gained by this practice, that he was wont to exclaim, after laying open the sinuses, "Now the disease is cured."¹ From the direction of the sinuses, or from the thickness of the parts to be cut through, it is, however, not always prudent to pursue this practice. Where incisions cannot be attempted, we must endeavour to establish a *counter-opening*, or to make an aperture through the side of the tumour in such direction as to pierce the bottom of the sinus, thus giving easier vent to the collected matter. Should we be able to run setons through the fistulous canals, it will not only keep the apertures open, but will be found very serviceable in promoting healthy granulation. When the scapula or its cartilage intervenes, however, this will not be practicable. Any carious bone, cartilage, or ligament, there may be should however be removed. In fine, the case must in these respects be treated as poll-evil.

PRESSURE.—Surgeons treat fistulas by *pressure*; the object being to force the sides close, with a view to adhesion.

¹ Sinuses may be laid open by incisions from within. The cuts are made with *bistouries* of different kinds. The sharp-pointed bistoury, with a director, will be found useful: though, in other cases, the probe-pointed instrument is convenient. To some cases, the *bistouré caché* seems best adapted. This, however, must be left to the discrimination of the operator.

This is a summary mode of healing, and therefore is an excellent plan of treatment where it can be practised. The objection is, that it is not often we can put it into *successful* practice. It is the motion of the parts that forms a reason why sinuses do not heal with readiness; and it is the same motion which constitutes the objection to the application of pressure. However, I am happy to announce that more may be effected in this way than we are aware of. Mr. Alex. Gray, V.S., Edinburgh, appears to have done much towards rescuing our reputation from the imputation of unskilfulness, as will be evident from two cases he has published in the fifth volume of 'THE VETERINARIAN,' which I shall here transcribe :

"About the year 1816, I was in the habit of attending the stud of the late Earl of Morton. Being at Dalmayhoy one day, I met his lordship's land-steward: he asked me to go to the farm, and look at a bay cart-mare, which they had consigned to the kennel. I accordingly went, and saw the said animal, and found the top of her neck much enlarged, accompanied by two deep sinuses, which, upon inquiry, I found to have been running for the last twelve months, nothing having been done, with the exception of cleaning away the matter. I proposed to the steward that she should be sent to my own stable, so that she might be more under my own immediate care; and that I would give her a fair trial, not with the infernal scalding mixture, but upon scientific principles; and I am proud to record, that the result fully answered my most sanguine expectation.

"The mare was sent to me, and I proceeded to examine the extent of the disease. I found two deep sinuses, one on each side of the neck, the bones of which could be distinctly felt with the probe. After cleaning away the matter, I took a scalpel, and laid both orifices open in an oblique direction downwards:¹ then, having fomented the parts with warm water, I dressed the wounds with tincture of myrrh and aloes; and in order to apply *pressure* to the parts (for in this I founded all my hope of success), I had two pieces of wood prepared, about twelve inches long and three broad, thicker in the middle than at the edges, which were rounded off, and also a long flannel bandage four inches broad. I then placed two pledgets of tow next the wounds, putting on the pieces of wood one on each side, and then applied the bandage over all, and as tightly as I could without impeding degluti-

¹ This "laying open of both orifices" had, however, much to do with the "cure," verifying the principles I have already laid down, in speaking of the treatment both of fistula and poll-evil.

tion. It is necessary, while putting on the bandage, to keep the nose extended, in order to adapt the bandage more perfectly to the part, and apply it more closely. I removed the bandage night and morning, and had the parts well fomented and dressed with the tincture; and in the course of four weeks the mare was well, and returned to her work.

“The second case came under my observation about a year after the foregoing. It was a grey cart-horse, the property of Mr. M^cNab, of Cupar, in Fife. This was also an old and inveterate case, and had been under the treatment of some person in the neighbourhood for a considerable time. I proceeded with this in the same manner as the former case, and left it under the care of a very respectable country practitioner, with proper directions, who, in the course of a very few weeks, sent me the gratifying intelligence of the perfect recovery of my patient.”

The simplest and most effectual method of applying pressure to the withers I have found to be the following:

Take a common neck-strap, and sow thereto a piece of strong linen cloth. This last must be sufficiently large to cover the wound, and at its free edge must be secured and fastened to a surcingle. By its double attachment the cloth will be maintained in its proper situation, and may be so tightened at pleasure, as to press with considerable force a pledget of tow put between the cloth and wound. It may be as well to state the sore surface should be oiled and covered with soft lint before any pressure is applied.

HOPELESS CASES.—Now and then it happens disease has made such ravages and the cure is so remote that the animal is not considered worth the expense of treatment, and therefore it is doomed to destruction. In these cases we find the spinous processes of the vertebræ, perhaps the cartilages, and even the bone of the scapula, all carious, with unhealthy discharge of a disgusting character. And such is the established disposition in some of these old sores, that, do all we may, it is not in our power to destroy the morbid action. Nevertheless, if a case of this kind be undertaken, the first step is, to remove the diseased hard parts. The carious bone and cartilage must be taken away at all risk of subsequent deformity, and then, probably, the animal in time may recover.

FISTULA IN ANO.

In the treatment of this disease, on account of the friction which is apt to be continually occasioned by the action of the coccygeal muscles, I have found great benefit from confining the tail to a rope fastened round the neck, the same as horse-dealers do when they link their horses together for travelling.

SADDLE-GALLS, NAVEL-GALLS, WARBLER, SITFASTS,
TUMOUR UPON THE ELBOW.

Trifling injuries of this description present little surgical interest, however annoying they may prove to the animal or its rider. From pinching of the harness-pad, girths, or collar, the part injured swells, that is, vessels rupture, blood extravasates, and tumour is produced; though, where friction exists, the parts are more likely to become *galled*. Nothing is more common than for horses with saddles which do not fit, or for animals with saddles over-weighted, or with either upon their backs for an inordinate length of time, to have swellings on the places that have been compressed. Where such mishaps are expected, the saddle should remain on the back till the horse is perfectly cool. The knowledge of this fact has induced the practice of keeping the saddle on for some hours after the return to the stable. Indeed, we are advised (supposing the saddle to have been removed) in case the back rises, to put it on again, as the best remedy we can adopt. Although, however, these swellings are easily removed when recent, they occasionally produce swellings which will not readily subside. Neglect these swellings, or expose them to fresh injury, and they either turn to abscess or subside into smaller tumours indisposed to undergo further change: for though now and then an imperfect suppuration carries them off, it is very rare for them (though the cause be discontinued) to disappear by resolution. That which gives these swellings

the characters I assign to them is, the repetition of the injury and the parts in which they are located; viz., skin tightly bound down by dense cellular tissue to ligamentous textures.

A SADDLE-GALL is "a hurt or fretting of a horse's *back* by the saddle." The first step to be taken is the removal of the cause. No man who values his horse would ride a second time with the saddle which had produced this mischief. When recent, these injuries require only washing clean once a-day, and being kept wet with salt and water; for which purpose a piece of folded linen may be confined upon the part.

A NAVEL-GALL "is a bruise on the back of a horse, opposite to the navel." It is met with in different states. The most common is a little puffy tumour upon the ridge of the back. It consists of fluid effused underneath the fascia covering the spine. In this state a blister will remove it: if one should not dispel it, apply a second; a third will seldom be required. Occasionally these tumours burst, and discharge a thin dirty-coloured matter. Should the external opening be small, and the skin under-run, the aperture may be dilated; or, without doing that, pressure by means of a surcingle may be applied in the manner previously recommended for fistula. The most effectual dressings for these sores (which are in general of an indolent character) are those compounded of escharotics and stimulants. One of the best is red precipitate. A solution of lunar caustic, ʒj to ʒj of water, will be found useful when the sore has a disposition to slough.

WARBLES "are small hard tumours formed on the saddle-part of a horse's back." When recent, they are easily got rid of by the use of discutient lotion, though sometimes they run on to suppuration, and disperse. Too often, however, either from the continuance of injury, or from being suffered to remain too long in an inactive condition, they become hard and callous—a sort of sitfast—in which state it is not easy to determine what ought to be done by way of remedy. In general, they are not painful to the animal;

and, as the saddle is often chambered, or additional padding is placed where it bears upon the injuries, they continue for years without becoming changed. Under these circumstances, they are often let alone, it being with most people an object not to lose their horses' services from a cause apparently so trifling. Should a remedy be demanded, repeated blisters may be tried. Mr. Blaine recommends passing setons through the callosities: a commendable practice, if you can prevail on the owner of the horse to submit to the loss of time which setons, to prove effectual, demand. To what extent these tumours can be dissected out "without removing the integument" I am unable to determine; but it occurs to me their connexion with the skin must be of too intimate a nature for their removal in such a manner.

SITFAST, "a part of a horse's hide turned horny." The repeated injury any portion of the skin is liable to receive from the saddle causes it to be so contused, as not only to burst its blood-vessels, but also excites and keeps up a continual inflammatory action, the cuticle becomes horny, and an excrescence is formed corresponding to corns on our feet.¹ The tumour now becomes callous and insensible, acquiring a defined border. In many instances we find the skin around the sitfast withdraws from it, and a little matter oozes from between it and the cutis; the hair upon being parted, exposes a line of ulceration indicating separation has commenced, and the sitfast will shortly be cast off as a slough. This process, however, may prove a tedious one. We therefore, promote it by the frequent application of a little blistering ointment to the part. The separation leaves a common wound, which must be treated according to the principles already made known.

TUMOUR UPON THE ELBOW is a very common eyesore, particularly among troop-horses, in which, as I once thought, it originated from contusion or pressure of the hind shoe. I believe it is caused by the heel of the fore shoe, or by the animals lying upon hard pavement, with thin or insufficient

Here is a veritable pathological resemblance. The disease in a horse's foot, called "corn," is quite another thing.

bedding under them. Lieut. Lowther says, such tumours are not rare among race-horses, and are, in them, clearly traceable to hard lying.

INFLAMED VEIN, PHLEBITIS.

An inflamed jugular vein, the consequence of bleeding, is occasionally met with in practice; though it is one of less frequent occurrence than formerly, owing to the more careful performance of the operation, as well as the custom of tying up the heads of horses for some time afterwards. I feel it my duty to state this is an accident which, however, will occasionally ensue under the most judicious regulations.

The HEALTHY PROCESS by which the part wounded in letting blood is repaired, may be thus described: When the incision is pinned up, the blood extravasated beneath it becomes coagulated, and by the clot all further escape is effectually prevented. Afterwards the wound in the vein inflames, and adhesive matter is effused: this unites the divided portions of the vessel, which, in a few days, will have assumed the normal appearance. In the interim, the coagulum beneath the skin is gradually absorbed, until it is totally removed. Lastly, the adhesive matter joining the incised integument is scarcely to be distinguished from the sound parts, save by a varicosity, which ever after remains, though perceptible only when the head is lowered or the vein is raised.

ORIGIN OF THE DISEASE.—Should anything separate the lips of the pinned up wound, suppuration will probably ensue. To bring about this process the parts become tumid, hot, and tender: every symptom indicates the presence of internal inflammation, and ultimately a discoloured discharge weeps from the orifice.

The disease is then inflammatory, the seat of the derangement is the coat of the jugular vein. When we loosen the matted hair, the lips of the external wound will be found everted, and redder than natural; and a sanious matter, mingled with pus, is probably seen issuing from it.

The parts around are in a state of tumefaction; and the vein conveys the sensation to the fingers of a hard cord. As the inflammation advances, pus accumulates, mingled with grumous matter; this forms a sort of abscess, which is easily penetrated, and, when broken, sends forth a foul and unhealthy discharge. In some cases fresh issues of blood itself supervene, and the hemorrhage may prove so frequent or abundant, as even to create alarm. It becomes our duty, then, to secure anew the bleeding orifice either by fresh pinning or by suture, and to bind a compress upon it by a roller of great length, passed many times around the neck. The hemorrhage in this manner being stopped, there will commonly succeed much infiltration and tumefaction of the affected side of the neck; this is best met by fomentation, poultices, and cathartic medicine, all the while keeping the head confined to the rack, and preventing the patient from lying down. All this time mischief is going on in the interior of the vein, the upper half of whose canal is already plugged by a coagulum of stagnant blood. The inflammation now spreads, and involves the side of the head in general tumefaction, even threatening disturbance of the brain, and death. This was the case with a horse, the property of an officer of Artillery. Unfortunately, no minutes were made of the symptoms; nor was any examination of the parts instituted after death. It is the only instance of fatality which has come to my knowledge.

TERMINATION.—The inflammation may result in interstitial effusion, obliterating the cavity of the vein; at least, that portion of it which runs to the head. Or it may produce abscess; matter being sent from some considerable distance along the channel of the vein. These are points on which much light is reflected by the experiments of M. Gendrin.

“If any portion of any artery or vein be included between two ligatures, the intercepted blood first coagulates; a portion of its serum becomes absorbed; a slight degree of inflammation is excited upon the inner membrane; the globules of the coagulum lose their colour; a thin stratum of coagulable lymph is deposited upon the sides of the vessel,

forming a medium of adhesion between the clot and internal membrane ; and the clot itself becomes gradually organized. There is in this instance adhesive inflammation and organization of the blood without suppuration. But if a stimulating injection be thrown into a portion of a blood-vessel, the circulation having been previously suspended by means of ligatures ; and if, after this is withdrawn, blood be again admitted and retained within the vessel, then a more violent degree of inflammation is excited on the internal membrane ; and instead of the coagulable lymph and the entire clot becoming organized, they are observed to acquire less consistency : small yellow globules are soon perceived between their layers, and they gradually undergo a more or less complete conversion into genuine pus." (Gendrin's Experiments on the Formation of Pus.)

CAUSES.—The cause of inflamed vein often is mismanagement subsequent to the bleeding ; though, in the majority of cases, it arises from no obvious influence, and is never occasioned by the operation. A horse, after being bled, should have the head confined in an elevated position—in other words, it should be racked up—for *the remainder of the day* : during which state of erection the blood within the vein is continuing its course uninterruptedly to the heart. Where this precaution is not taken, the prone position of the head is unfavorable to the return of the blood. An objection, moreover, to the head being left loose is, the pin may be rubbed out of the neck and give fresh vent to the blood.¹ When a horse is ridden after being bled, the rein rubs against the pin, and in that manner does mischief. Should the animal be harnessed immediately after bleeding, the pressure of the collar may be followed by evil consequences. It is reprehensible to use rusty or dirty instruments in bleeding : they are apt to leave behind particles of foreign matter, which, however minute, retard adhesive union, and dispose the parts to take on unhealthy action. Idiosyncrasy has, however, most to do with phlebitis. Experiments seem to prove that no kind of instrument, and

¹ This is an accident that happens every now and then during the night. I have witnessed several instances of it. I do not, however, recollect any that turned out fatal ; although, in some of them, the loss of blood was considerable.

no species of treatment, can induce the disorder, when the animal is not naturally disposed to imbibe it; a result confirmed by observations made upon the human patient. Where, however, predisposition presides, the slightest neglect may start up inflamed vein.

NO WANT OF ADHESIVE POWER.—Professor Coleman has announced as his opinion, that indisposition to union in wounds is the frequent cause of inflamed vein.¹ When we consider, however, by what means we are compelled to close the wound, the frequent neglect of all precaution, and the peculiar idiosyncrasy of the patient, these causes will afford reason for phlebitis without ascribing it to an origin the existence of which is at best doubtful. Were it referable to any indisposition of the horse's skin for adhesive inflammation, instances of it would occur oftener than they do; not only from neglect after the operation, but under the most judicious management. Ask any human surgeon, what would be the result of pinning up the *arms* of men as we do the necks of horses?—more particularly if his patient happened to be a maniac, and his injunctions to keep the arm at rest were altogether disregarded? Could we use a fillet, or adhesive plaster, and impress on our patient the necessity of keeping his head and neck still, we should not have to complain of its healing powers.

¹ In the 'Essay on the Wounds and Ligatures of Veins,' we find the following, as part of a communication from Mr. Coleman: "I have no doubt that inflammation of the wound *sometimes* take place in consequence of the mode used to stop the bleeding; but I should observe *that the most simple wound through the integuments of horses is scarcely ever healed by the first intention*; and it is *this disposition to suppurate and resist adhesive union*, that is probably the most frequent cause of the external wound after bleeding not uniting by the first intention in horses, the same as in the human subject." That a clean-cut wound, treated in the ordinary manner, seldom heals by the first intention, I admit; but the lips of the wound made in bleeding, unless they be violently separated, rarely fail to adhere. Nothing is more common, than to close the incisions made when performing *neurotomy* without suppurative action: and could we preserve the adjustment of the divided edges, without the employment of suture, I think adhesion would invariably ensue. These facts induce me to dissent from the opinions quoted: and I am anxious to express myself openly on the subject, when differing with Professor Coleman on a practical point.

CAUSES OF INFLAMMATION IN THE VEIN.—Concerning the exciting cause of venous inflammation, various opinions have been offered. Obstruction of its canal has been adduced, but without foundation, for ligatures on the veins are not attended with serious consequences. Exposure of its cavity has been advanced, but were this correct, we must have fifty cases, where we now have one. The inflammation in the vein appears to be an extension from the external wound, which precedes it, though the latter effect is not always followed by the former result. This may not explain *why* inflammation of the vein is excited, it may serve to point out the means of its prevention;—the speedy closure of the external wound.

AN APPARENT MYSTERY SOLVED.—I shall mention, and afterwards endeavour to account for, a circumstance which has hitherto baffled all attempts at explanation. This is why inflammation of the jugular vein in the horse should extend towards the head or contrary to the course of the circulation; while the same disease in the human arm corresponds to the current of the blood. It appears, that although obstruction does not excite this disease, it determines its course; for, the disease will be found to proceed that way the vein is blocked up. This point, namely, the reasons which regulated the obliteration of the vein, was formerly warmly disputed. The fact, however, seems accounted for by the explanation given by the editor of the recent edition of 'Blaine's Veterinary Art.' The clot we are there told always forms superior to the coagulum. This simple explanation at once instructs us why the disease rises to the head of the animal, when it occurs in the jugular of a horse, and why it proceeds within the arm of a man to the heart. The current of the blood seems to have nothing to do with the matter. But phlebitis affects different creatures in different ways because different vessels are punctured. Were the same veins open in each the effects would be alike; for the whole appears to depend merely upon the well-known law of gravitation.

The TREATMENT must vary with the state we find the

neck in. Should the place where the animal has been bled be swollen, while the pin remains in, the first thing is to withdraw the pin, so as not to disturb the wound. Afterwards commence fomentation, and administer a strong dose of purgative medicine. In a case so trifling, no dressing need be employed; on the contrary, the less the parts are disturbed the better. Should the case have proceeded beyond this—should there be a foul wound, with a discharge excoriating the neck, and the vein corded up to the head, leave the orifice open, and apply a blister. So soon as the effects of this application are beginning to subside, rub on a second blister, and thus keep on using blister after blister until the disease is removed.

While this is doing, attention must be paid to the *position* of the neck, keeping the head racked up, at all events, so long as the cure lasts, and this will prove beneficial. For which purpose a hempen halter had better be substituted for the common leathern collar, lest the throat-latch of the latter do harm by pressing upon the tumour.

LIGATURE OF THE JUGULAR VEIN.—An interesting case of this description is published by Mr. Taylor, V.S., Nottingham, through the medium of 'THE VETERINARIAN.'

Mr. Taylor was called to a colt that had been bled about fourteen days before, which was followed by thrombus. This was succeeded by considerable hemorrhage, which was arrested by pinning up; though subsequent loss of blood occurred, and, altogether, much reduced his condition. Mr. Taylor found, on his first visit, an ulcer leading into the vein, but with little inflammation and cording. He first had recourse to a very broad strap round the neck, to act as a bandage and confine some tow upon the wound. This failed, however, in suppressing the bleeding; and Mr. Taylor determined on tying the vein, an operation he had performed successfully before. The horse was cast, and an incision made through the skin of the neck four inches long. The jugular vein was isolated from its attachments, and tied. Three days afterwards there was little swelling: healthy suppuration had taken place, and all was going on well. On the nineteenth day the wound had nearly healed; but the ligature had not separated. On the twenty-sixth day the ligature separated; and soon afterwards the wound healed up. Three months from this a nice observer could hardly detect any difference in the two sides of the neck.

BROKEN KNEES.

Various causes might be enumerated for horses falling down and breaking their knees. Among these may be mentioned as the most common, *tenderness* and *lameness* of the fore limbs; *tripping action*, *cutting*, *unequal action*, slippery or rugged *roads*, loose or *rolling stones*, *pavements*, &c.

Receiving a large proportion of the weight, nay, at times, the entire burthen of the body, it is not surprising if the fore legs occasionally give way and the fall is attended with serious consequences. Nor will the disrepute of horses with marks of broken knees be found void of reason, when we consider lameness and faulty action form the leading causes of the accident. The fore legs have little to do with progression; their principal office is to support the burthen, which is propelled onwards by the hind limbs: therefore, should the fore legs from any accident, miss or shorten their step, so as not to catch the weight the moment it is driven forward, the equipoise is lost, and a tumble is the necessary consequence.

NATURE OF BROKEN KNEES.—There are few more indefinite phrases than “broken knee:” it conveys no precise idea of the *nature* of the accident. Should the injury only amount to contusion, no skin being cut or divided, then it could not constitute a *broken* knee. A case of this kind would require nothing beyond fomentation or evaporating washes. Should the skin, however, be lacerated, then it becomes a question of moment what else is divided. Is the skin simply torn? Is the sheath of the tendon immediately beneath it opened? Is the tendon itself, with the capsular ligament, ruptured, and the cavity of the knee-joint exposed? It must be obvious these are considerations of importance to the practitioner, and are points that must be ascertained before he can pretend to regulate the treatment.

SIMPLE BROKEN KNEE.—Contusion and laceration of the skin is an accident needing little assistance: however, it

may prove a vexation to the owner of the horse, from the prospect of leaving behind its *mark* for life. However, our business is a very simple affair. In the first place, the wounded parts must be thoroughly cleansed with warm water, care being taken to eradicate every portion of dirt. This done, it will be questionable how far it is advisable to draw the divided integument together by means of suture. It is a practice I never resort to: I find, the wound must granulate; therefore for granulation I generally prepare it. Any inflammation which may arise must be met by fomentation, &c. The horse should not be turned into a loose box; but for two or three days a cradle should be worn, to prevent the wound being bitten. Should the part not proceed kindly, use any digestive but apply it gently, afterwards dressing with *tincture of benzoin*, or *compound tincture of myrrh*. Towards the end a solution of blue vitriol, &c., may be required to repress such granulations as look weakly.

CICATRIZATION, ever tedious, is rendered more troublesome in broken knees, from the accident occurring upon a joint of much motion—that is, a joint much used; for the flexion of the part stretches the skin, tearing the wound open afresh. We must therefore exert patience, for we are possessed of no power to hasten such cases.

A mark may remain, but that circumstance must depend on the extent of the injury which the true skin has sustained. Unless the mischief has been extensive, it commonly happens that the severed skin stretches, and contracts fresh union; in such cases only a sort of seam is left, which the hair grows over and conceals. Supposing the skin to be much bruised, or supposing the space to be filled up by cicatrization to be large, the scar will amount to a blemish: a circumstance of consequence to the value of a horse. In some instances, where the bare place or blemish has been but slight, shaving the hair off the knee—or better, off both knees—with soap and razor, and, subsequently, blistering them has succeeded in obliterating the mark: the chief objection to this experiment is the time it

will occupy: it requiring a space of six weeks before the hair is sufficiently reproduced. At least, this was the time it took in Col. Cavendish's dun horse, whose knees were shaved in March. The time of year will probably make some difference. Grievous as this sequel ever is, the remedy, however, may be much better left to time with which the cicatrix diminishes, and, unless it be so large as is hopeless, ultimately conceals the blemish.

In very many cases of alleged "opened knee joint," I believe it is only one of the *bursæ* that is "opened." And the one most in front, most exposed to injury, and, consequently, most likely to be "opened" is that of the tendon of the *extensor metacarpi*.

H 3 (a shy grey mare) fell when in walking order, contusing and sadly lacerating both the knees, which afterwards discharged synovia from the opened bursa. Bad as was the injury, we could do nothing more than poultice, and then dress daily with astringent powder (composed of flour and alum), washing the powder off every four or five days, and renewing the application as before. Nothing could do better than the case did under such simple treatment.

OPENED KNEE AND OTHER JOINTS.

A wound penetrating into a joint is an affair of moment, and is eminently so when the knee of a horse is the seat of injury, because it is concerned in every motion of the fore extremity; yet it is the joint most likely to meet with this accident. Nevertheless, whatever is said in relation to this part, will apply equally to other joints suffering similar injury.

CAUSES.—The ordinary cause of open knee-joint is falling down; an accident which happens at the time skin, tendon, and capsular ligament, are all on the stretch, and are therefore more likely to be torn asunder. There are other ways, however, in which the joint may be penetrated. It may be pierced by a thorn; or any sharp-pointed instrument may

puncture it. When a horse falls, the nature of the wound inflicted will depend upon the surface the knee may strike. It often happens that the joint, though not at first penetrated, is opened afterwards, in consequence of sloughing; the parts having lost their vitality because of the violence they have endured.

RECENT APPEARANCES AND EXAMINATION.—When the injury is recent, the animal has his knees coated with soil, through which blood is oozing, or with which blood is mingled. The first thing to be obtained is warm water and a sponge, cleansing the wound with a light hand. While we are performing this duty, we should observe the precise nature of the accident. In many cases, the fact is soon learnt; the bones are exposed, or the issue of *synovia* leaves no doubt that the joint is penetrated. We must be careful, however, not to pronounce the joint opened, simply on the appearance of *synovia*: a similar fluid is contained within the sheaths of the tendons; and one of these being punctured, will give rise to precisely such discharge as true joint-oil. The probe will determine this; but it must be handled with care. There is a great objection to a meddling investigation, especially where any force is employed.

SYMPTOMS.—In cases where the wound is clogged with congealed blood, or where, from the length of time the accident has occurred, adhesive matter already appears upon its surface, an examination by probe may be decidedly inadvisable. Rather than disturb such a condition of parts, we had better consult other signs, and form an opinion from them, with regard to the cavity of the joint being actually penetrated. A partial reliance may be placed upon the emission of *synovia*. The poor animal halts with the wounded limb; though when the accident is recent, only because of the inflamed and divided surface. Joints when newly punctured, in fact, have very little or no sensation. The horse stands resting upon the toe, not because the joint is painful, but because other parts are injured, and these are very sensitive. We must be prepared for the consequences which are certain to be violent according to the extent of the mis-

chief. Inflammation of the *synovial membrane* is to be apprehended. The day after the accident, the parts are hot, full, and tender, and these symptoms from day to day augment and spread. About this time the constitution sympathises—*sympathetic fever* comes on. The pulse rises; the animal loses spirits and appetite; the mouth becomes dry; the eyes injected; the skin and extremities exhibit warmth. The breathing becomes disturbed; the animal exchanges his dull mood for watching and irritability: from this period, the irritation, unless some check be given, is likely to exhaust the vital energies, even before time has been allowed for the local inflammation to take a turn towards restoration.

LOCKED JAW has been known to follow an opened joint: the circumstance has never happened in my own practice; but cases of it are on record.

ANCHYLOSIS or *stiff joint* is, however, to be dreaded, this affliction being a common sequel to the accident. The synovial membrane, from exposure and the escape of its secretion, becomes inflamed, involving the ligaments around in one mass of disease. My own observations accord with those presented in Sir B. Brodie's work on joints, viz.: There is a preternatural secretion of synovia; an effusion of adhesive matter into the cavity of the joint; likewise, a thickening of the synovial membrane, and subsequent conversion of it into a substance resembling cartilage; accompanied by effusion into the cellular textures around the joint, cementing them together in one general mass: followed by suppuration of the joint, and abscess if it should be closed, which abscess will burst the capsule, perhaps in a fresh place: ulceration of the synovial membrane ensues, and leads to caries of the cartilaginous ends of the bones: *anchylosis*, being not only a consequence of the foregoing changes, but a result ever to be apprehended from a motionless condition of a limb. The capsular and other ligaments are converted into an osseous mass; even the heads of the bones contract osseous adhesion: so that, in the end, the anchylosis is totally irremediable.

Anchylolysis constitutes one of Nature's modes of cure, since the disease terminates whenever it occurs; thereby removing apprehension for the animal's life. Unfortunately, however, life may as well be lost as any important joint be rendered motionless. Though a man with a stiff leg may still continue a useful member of society, no one would accept of the services of a horse with an inflexible limb.

TREATMENT.—That excellent surgeon, Mr. Hey, of Leeds, always laid stress on the importance of *preventing* inflammation in a joint. His words are—"Upon this circumstance chiefly depends a successful termination." Now, the way to accomplish this, is to remove the cause which provokes inflammation. This cause is the exposure of the cavity: it therefore is our duty to close the opening. How is this to be effected? The human surgeon produces union by adhesive plaster and by bandages. At the commencement of my professional career, I pursued this plan, and not without success: I soon, however, discovered its inaptitude for veterinary purposes; and was compelled to resort to more efficient measures. The actual cautery was, when Coleman lived, in general favour. Since that time it has fallen into disrepute, and numerous remedies have been proposed. Styptics of all kinds, from corrosive sublimate to newly burnt lime. Mechanical genius has also been active. Machines for fixing the leg have been invented, and various improvements proposed, few of which are worthy of notice.

Splints and bandages, moreover, are often productive rather of harm than good; and unless our subject be of a peaceable disposition, even slinging is not always to be recommended. Slight cases will, generally, do well confined in a box, where the animal cannot move much about. It should be turned loose, and wear a cradle. The best plan is to have the head secured to the rack, or the side-reins, so as to prevent lying down, and to keep the animal standing, probably for two, three, four, or more days and nights, according as the swelling of the limbs will admit of it, the knees being all the while fomented.

It is no more than reasonable to imagine, the less flexion the injured joints undergo—the more quiet they are

kept in the extended position—the more favorable will be the process of healing. In fact, this must be regarded as a highly essential part of the treatment.

A case in which inflammation has become established may become very difficult to manage. In this latter case I have repeatedly witnessed the best effects from a blister applied all round the joint. To long-continued fomentations I am opposed: they tend to promote luxuriant granulation. The astringent powder is often a good covering for a small sore.

A powder both styptic, astringent, and absorbent, may be made use of, and the following is much praised by Charles Percivall:—

Take of Powdered Alum, ¹	}	Equal parts and mix well together.
Bole Armenian,		
Linseed Meal,		
(Flour is better than linseed meal.)		

The wound being clean and dry, this powder is to be pushed with the finger into the synovial breach, and afterwards laid upon it as thick as it will adhere; subsequently a quantity of it is to be bound upon the wound by means of a broad, thick pledget of tow, supported and confined by a many-tailed bandage. The lowermost tails being tied first,² will give the dresser an opportunity of lodging the powder so as to be applied at once upon the wound, and then immediately secured without chance of displacement. Over the whole is to be rolled a common leg bandage of some yards in length. Thus packed up, the limb is to be kept as quiet as possible for several days, the horse being all the while racked up and secured with double halter; until swelling forces us to remove the wrapper; or the flow of discharge calls for another attempt to plug up the open joint. We may, however, have reason to slacken the

¹ Query—Would the bichloride of mercury answer better than alum? Or has the alum—like the bichloride—the property of coagulating albuminous or synovial fluids? Would the sublimate do harm by producing sloughing? Perhaps it could be used in such quantity as not to cause sloughing.

² Let the back of the joint be defended by tow or pads, or a troublesome abrasion may result.

bandages without removing them, for should we find (on untying the upper tails) there has been some solid effusion, we must be careful *not* to remove the bandage, but simply loosen the upper part sufficiently to lodge a fresh supply of the styptic powder.

It appears to me to be advisable to treat the case locally, by fomentations and poultices, while the physic is operating and fever is subdued by bloodletting, should these measures be required. Then—the first burst of fever and inflammation having been abated or repelled—I should say was the time for the employment of the styptic powder and bandaging. When these have been applied, let the horse be tied up with two halters or double halter rein, with only sufficient liberty of head to get at the manger: so very much depends upon an extended and quiet position of limb. The bandages may remain on three, four, or five days, according to circumstances. Should very great swelling of the limb supervene, it may be necessary to take them off, and re-apply them, even on the second day, or they may only require a little fresh adjustment and tightening. Should the pad of tow with the dressing have slipped below the knee, all must be immediately removed and bound up anew. Sometimes there will not be any swelling to notice, but the veins of the affected limb will become tumid and have a solidified feel; this must not be allowed to continue, but relief should be given either by temporary relaxation of, or by removing the bandages altogether for a short time.

SUSPENSION.—Where the wound is extensive it becomes advisable to place the animal in *slings*, that the weight of the body may be supported by artificial means. The mode of slinging which least annoys a horse, and affords him every opportunity of resting his limbs, is to suspend him from a cross beam by means of ropes and pulleys, connected with a very broad piece of doubled sailcloth spread underneath the animal's belly. Attached to the cloth should be two breechings and two breast-girths, in order to keep the horse from slipping either backwards or forwards. The ropes and

pulleys enable the attendant to elevate or lower the animal at pleasure. In general, it is not advisable to lift him quite off the ground: the horse is most at ease when his feet touch the earth. The head should also be confined by two collar-reins, and the headstall should be padded. Though horses in such strange situations may plunge a good deal at first, in general they are soon resigned to their trammels, and become altogether as quiet.

The frontispiece will convey sufficient notion of the requisites for this slinging apparatus, also its mode of application, so as to enable any person to fit up tackle of the kind. The additional breeching and breast girth attached to rings upon the sides of the belly-cloth, will be found to contribute much to the comfort as well as the security of the animal. The padded strap carried over the hind part of the neck, will prove serviceable in preventing the breast girths from slipping down.

CONSTITUTIONAL TREATMENT.—This must be regulated by the fever present, and by the age, strength, and condition of our patient. We should lose no time in administering purgative medicine; because, during rest, it will take probably thirty hours before it comes into operation. As for bleeding and other remedies, they must be suggested by the necessities of the case.

A PROPOSED MODE OF TREATMENT.—Mr. Thos. Turner, V.S., Croydon, has a plan for treating the more formidable cases of open joint, which I have put to the test, and can recommend to the notice of my readers.

The particulars of Mr. Turner's method are contained in a paper read to the Veterinary Society, in 1829, and since published in "THE VETERINARIAN," from which I shall extract them:

In cases of puncture, and wounds of similar description, into the joint, Mr. Turner is satisfied with the efficacy of the actual cautery; but in cases in which there is an opening into the joint of large dimensions, and, at the same time, a large external wound, he abandons the cautery for his own mode of treatment. He rests his prospects of success on being called "within a reasonable time after the accident, and before injections of any kind have been forced into the joint."—"Having washed the external wound of the knee with a sponge and lukewarm water, a silver probe

may be gently introduced for the purpose of removing any particles of dirt or gravel within the wound. A paste is then to be prepared, composed of wheaten flour and table-beer only, which are to be well stirred together cold, and afterwards boiled for about five minutes, until the paste becomes of the consistence commonly used by paper-hangers. It may be then coloured by a small quantity of bole armenian, and applied moderately warm to the knee; being spread with a spatula as thick as it will lie, not only on the wound, but all round the joint, and for some space up the arm, as well as about four inches below the knee on the cannon. A very thin light pledget of tow, sufficiently extended to encompass the knee, is to be applied, in front of the joint, upon the paste; then nearly half a sheet of stout brown paper in a similar manner, and a large cotton stocking, with the foot off, drawn well up over the whole. On the outside of the stocking another thin layer of the paste is to be applied, and a calico bandage, six yards in length and from four to five inches wide, is to be rolled round the part with very moderate but regular pressure; another six-yard roller, of the same description, is then to be applied, but with a less degree of pressure.

“A moderate quantity of blood should be drawn from the neck, according to the age and condition of the patient, and a small dose of aloes should be administered, as much as would be expected to render the *fæces* pul-taceous, but without purgation.” The horse should be slung in the manner I have recommended. A cart-horse breeching, with any other suitable tackle that may be found on the spot, will, by management and ingenuity, generally prove very serviceable in effecting this. The part of the treatment on which Mr. Turner chiefly relies for accomplishing his end, is, “*Never to remove the dressing just described until the joint has closed, and the synovia ceased to flow.*”—“By the second or third day the bandage becomes hard, dry, and as harsh as a board, owing to the heat of the inflamed limb having completely dried the paste. There is then usually a considerable tumefaction both above and below the bandage. The animal evinces much pain; his respiration is hurried, his pulse quick, and, perhaps, the appetite impaired. But the time is now arrived at which ease may be afforded the patient, without in the least obstructing the process of cure. This resource consists in making four longitudinal incisions through every layer of the bandage, a notch above and below on each side, and leaving the bandage entire both before and behind. The relaxation from pressure, by the length of these notches or incisions, must be as limited as the urgency of the symptoms will allow; but in every case I make it a rule to afford this relief in some degree. From this period the constitutional disturbance comparatively ceases, the appetite returns, and respiration is tranquillised, although the pulse may remain quick. But now we are possessed of a substitute for the injured capsular ligament,—a compress,

closely adhering and encompassing the joint, of the exact shape of the joint, which never varies its position, is as hard as a tanned hide, and yet flexible.

“If by the sixth or seventh day, owing to the large size of the aperture in the capsule, the compression has not had the effect of closing the joint, and there should be found a considerable lodgement of fluid (a mixture of pus and synovia) in a depending part of the compress, another incision must be made in the compress to give exit to this fluid, beginning in the front at the inferior part, and continuing it upwards, but no higher than necessary.

“It is in this stage of a bad case that great nicety of treatment is required, and we are not to be at all disheartened if the joint be not closed; for there will be found a coagulum filling up the mouth of the wound, and extending to the orifice of the capsular ligament, though scarcely sufficient to close it. The nicety I allude to consists in taking care not to remove or disturb this clot or plug; for it is this coagulum, when sufficiently organized, that becomes as it were the cork to the bottle. This is the material point on which the success of the case depends, and which differs from the ordinary mode of treatment, it being customary to remove the bandage every day, or every second day, in order to give the inflamed parts the benefit of warm fomentations, and cleansing the wound, as it is called, which, in reality, is the greatest act of violence that an opened joint can receive in the shape of curative treatment; and just as often as it is repeated, are the efforts of nature opposed by the removal of this jelly-like substance.

“The next thing to be done is to spread another dressing of the adhesive paste over the outside of the compress, and to apply another six-yard calico roller with gentle pressure upon it. In this stage of the case, regular pressure will be found rather to diminish than increase irritation, but there is some skill required even in the simple act of applying a roller to an inflamed part. This last bandage should remain undisturbed as long as possible, with the expectation that, by the next time the fluid is evacuated from the compress, the capsular ligament may be found closed, and the discharge of synovia ceased; but whether so or not, the same treatment should be continued.

“There is one curious circumstance that not unfrequently attends the process of cure by this treatment, and which I hail as a good omen, but which many writers have remarked upon as indicative of the total destruction of the joint. I allude to an eruption and discharge from another part of the joint, perhaps the back of the knee, and which they describe as the bursting of an abscess within the joint. I merely mention this fact to show that these eruptions do not always communicate with the joint, and that I do not make a practice of indulging my curiosity by introducing a probe

to ascertain that point, although a fluid may be escaping looking more like synovia than pus.

“The treatment here recommended is strictly mechanical, as far as relates to closing the joint: it consists in a surgical operation, conducted on the same principle as the setting of a fractured bone; and I have but little recourse to medicine, from a firm conviction that Nature’s restorative powers are fully adequate to the task.

“The swollen parts above and below the bandage may be rubbed two or three times a day with some discutient evaporating lotion, taking especial care that the part above the compress may not be left so wet as for the lotion to descend and trickle under the bandage.

“However well the case may go on, I usually confine the horse to the sling until I am satisfied that the joint has remained closed about a week. He may then be turned loose in a box for a few hours every day, but must return to his sling at night, until the joint appears to have regained sufficient strength. The original compress may now be cut off; and the limb should be lathered with warm bran water, soap, and flannel, every day, from elbow to hoof. The wound dressed with a plaster of digestive or mild tincture, and a single six-yard calico roller continued with only comfortable pressure.

“The granulations which may rise above the level of the skin will, of course, require to be subdued by the usual means; and when the wound has completely healed, the knee may or may not require a common blister.

“I deem it requisite to observe, that some cases of opened knee-joints are so appalling, not only from the magnitude of the external wound, but likewise from the aperture in the capsular ligament being equally extensive, that if I were called in, even at the moment of the accident, I might despair of success by this or any other mode of treatment. But the case in which I least hesitate to condemn the unfortunate subject, is the opened joint, accompanied with a complete division of both the extensor tendons, the animal being thereby deprived of the power of extending his foot; and such a complicated case is not an uncommon occurrence.”

ANOTHER PROPOSED PLAN OF TREATMENT.—Mr. Dawson, V.S., London, has compounded a dressing for opened joints, which he has used with such success as makes him “sanguine of effecting a cure in cases where he considered before a cure almost impossible.”

Mr. Dawson’s procedure is as follows:—after remarking that the means ordinarily employed are “those which promote and keep up inflammation,” he says, “it is my uniform practice to remove by scalpel every part, whether sinew, ligament, skin, or what not, that Nature herself would

remove by the sloughing process. I then foment, say for half an hour, for the purpose of cleansing the wound, as well as encouraging the discharge of as much blood as can be by that means obtained; after this I dress simply, and bind the joint by a flannel bandage of some yards in length. This dressing I repeat daily, till synovia appears, when I discontinue fomentations, and use a saturated solution of corrosive sublimate in spirits of wine; or a lotion made by first dissolving the salt in muriatic acid, in the proportion of two drachms of the former to four drachms of the latter, and one pound of water. This dressing may be used twice a-day, until synovia has ceased flowing; after which the wound may be treated in the ordinary way. In a few instances, the foregoing liquids will not be sufficiently strong of the corrosive sublimate to coagulate the synovia as it issues from the joint; you may then use the sublimate in the form of a fine powder, either mixed with some description of farina, or even alone, taking care that it does not find its way into the joint, and as much as possible applying it only to soft parts, and in a manner avoiding every thing but the coagulated synovia which will be found about the opening through which the liquid flows. In punctured wounds of joints, the introduction of the powdered sublimate a little way into the opening is the best way of applying it. As a matter of course, I bleed and give physic, &c. ('VETERINARIAN,' vol. iii, pp. 497, 498.)

OTHER OPENED JOINTS need not be described, having entered so fully into that of broken knee. It is but seldom that other kinds occur, and when they do they consist in punctures from thorns or stabs from pitchforks, &c.; which circumstance renders them much more manageable than lacerated knee-joints.

Mr. Cooper, V.S., Berkhamstead, has of late, (1850), been treating open joints on the principle of *union by the first intention*. He employs the *twisted suture* wherever this form is practicable to bring the borders of the broken joint together; if the parts be not close, yet they are approached near enough to admit of tow being wound round small needles, introduced either through the lips of the wound, or when following this method, in parallel lines with their borders: to unite the edges of the orifice, *four* needles may be advantageously introduced.

The last and simplest mode of treatment is that proposed by Mr. Mayhew. I have not been able to try his suggestions, but according to his statement they are all of value.

The knees are first thoroughly cleansed. Then the head is racked up and the knees fomented night and day with a very weak solution of tincture of arnica. At the expiration of a few days, the horse is slung, and the wash changed for Zinci Chlor., gr. j, to water, $\bar{5}$ j. This last and the previous lotion are not directly applied to the part, but a sponge being saturated with either is squeezed dry upon the forearm above the knee. The liquor then, by gravitation, falls upon the wound, and Mr. Mayhew states that in about a month the cure is finished. He further mentions that there are no unpleasant smells, no resistance, no swelling, and no bad features perceptible during the progress of recovery. Should this description prove correct, it will certainly realise a blessing to horse-proprietors by divesting the worst accident of its terrors.

WOUNDED TENDONS.

Every now and then thorns, stubs, flints, kicks or treads from other horses, wound the tendons of the leg. These cases will, when taken in time and judiciously managed, most commonly in the end do well.

A PUNCTURED TENDON, or tendinous theca, will require to be treated after the same manner as an open joint. The cavity is synovial, and must consequently be sealed up with all possible despatch; and nothing will fulfil this object like the application of the budding-iron. Inflammation must be kept down by local and constitutional means. Let a linen bandage be applied to the leg, and wetted with some cooling lotion. Give the animal purgative medicine. Should it be a flexor tendon, put on a high-heeled shoe; on the other hand, should it prove an extensor tendon, lower the heel and lengthen the toe. Should fever arise, blood must be abstracted.

WOUND FROM A THORN.—In cases where a thorn, stub, &c., has wounded the tendon, and the cause of injury still remains in the part, we must foment or poultice, and use every means to extract the foreign body. Should the forceps prove unavailing, and the case be in a recent form, we should

make an incision through the skin, that our search may extend deeper; but by no means should the tendon be cut. After inflammation has begun, we are not warranted in making a fresh wound: we must foment or poultice, that the foreign substance may be ejected by suppuration. Should this plan not succeed, and the inflammation appear subsiding, apply a blister. In a mare that had undergone all this routine of practice on account of a little eminence in front of the coronet which had been for many months continually festering and healing up again, I, by way of experiment, at length introduced some powdered arsenic into the orifice of the abscess. This brought on a slough, at once deep and extensive, with which escaped a fragment of thorn, that had remained buried during the whole of the previous summer. We must not forget, however, that many instances have occurred of thorns, nails, musket balls, &c., becoming *encysted*, or *cased in*, and thus continuing for life, without causing lameness.

On this point Nimrod informs us, "There are few cases of mechanical injury to which hunters are more liable than thorns in their legs, or stubs in their legs and fetlocks. In two instances it has happened to me, that four or five gatherings of pus have been collected and discharged before the thorn would make its appearance, it having been, of course deeply seated. I have the point of a blackthorn, three quarters of an inch long now in my possession, that a hunter of mine carried nearly a whole season in his fetlock-joint, causing suppuration after every day's work."

"Some years since I sold a mare to an intimate friend for a good round sum. The second season he lamed her; and after having been severely fired by the late Mr. Walton, V.S., of Shiffnall, she was turned out for the summer. When she came into work again the following autumn a large blackthorn issued from between hair and hoof! She was then sound."

Major Hall informed me that a mare he hunted, carried a thorn, which for years had been in, at the time he showed the foot to me.

EVEN a DIVIDED TENDON need not occasion despair, or cause the horse to be shot as incurable. There is on record a case in which not only the synovial theca was opened, but the tendon severed: a complication of injury which in a man

would be likely to occasion a lock jaw, and such a result has occurred in veterinary practice. The external wound is commonly of a size to render sutures needless. Where the tendon is divided, however, the most active steps we can take are, approximation—*apposition*, if possible—of the orifice, and resistance to all motion in the limb.

The regulation of the shoe will be the chief agent, and this with a bandage will do much. We must expect sloughing of the exposed parts of the tendon. We must, therefore, treat with linseed meal, yeast, or turnip, or charcoal poultices, with dressings of nitric acid lotion (5j to ℥j), and with spirituous tinctures, &c. We are to anticipate the granulation will be succeeded by sloughing, and must hail it as a step towards the closure of the wound.

Those common-place details I may have omitted, the reader's knowledge of inflammation will enable him to supply.

PRICKED, STABBED, OR CUT FOOT.

There are two ways in which the foot may be "pricked:" either through misdirection of the nail in shoeing or through the animal treading upon a nail, &c. The parts exposed to this injury are those composing the ground surface of the foot. The injury itself will vary with the cause, the part punctured, and the direction of the wound.

PRICK IN SHOEING.—To those who are acquainted with the conformation of the foot, it is matter of surprise that accidents of this nature do not oftener happen: the luckless wight of a smith frequently incurs the maledictions of his employer for pricking the horse, when, but for the unsteadiness of the animal while shoeing, no such accident would have occurred. The injury may result from direct puncture of the sensitive parts, either in consequence of the nail being *pitched* with too much inclination, or from its point splitting, and giving it a contrary direction to that which was designed: or it may be the effect of the nail being driven too near to the quick—"taking too much hold"—in

which case lameness may not be manifest for three or four days.

“Punctures or pricks from nails in shoeing are commonly said to proceed from ignorance or blundering. This may sometimes be the case; but at the same time, it is an accident that may, and indeed does, happen *to the most expert artists*; and it is surprising, considering the narrow space there is in some hoofs for driving nails, that it does not happen more frequently.” (Clark’s ‘Observations on Shoeing.’)

When a direct stab in the foot is made by the nail in the act of being driven, so that blood issues, lameness in some degree will probably appear at the time; though the lameness is likely to become more intense on the supervention of inflammation in the wounded part. Not unfrequently, it happens that a nail goes close enough to the quick to produce inflammation and suppuration at some remote period after shoeing, though it occasions no pain or inconvenience at the time. Horses will go days, at times weeks,¹ even, before they manifest lameness from this cause; and when lameness does occur, and the fetlock or back sinews becoming swollen also, the horse has not unfrequently been pronounced “sprained,” when all the while the disease was in the foot. Taking off the shoe and examining the nail-holes, which give vent to pent up matter, that becomes black and fetid from confinement within its horny cavity, at once relieves the horse of his chief pain. It hardly suffers so long as free issue is given to the discharge, while the wound, being converted by the drawing knife into an open sore, takes on healthy action, and speedily heals sufficiently for the hoof once more to receive the shoe.

PICKING UP A NAIL, or treading on a piece of any other sharp-edged substance, is an event of frequent occurrence. It is surprising how far a long “tenpenny” nail can be forced into the foot as though it had been driven in by a hammer.

¹ Corporal-major Limbert’s horse had been shod seventeen days before it showed lameness. When brought to me, it could hardly put the foot to the ground, and this was strongly indicative of *foot* disease, though, from the swollen sinews (in vesicles like wind-galls), it was, at first, thought to be sprained.

The bottom of the foot cannot indeed be exempt from this description of injury, as the usual place for the nail to enter is the *commissures* ; next to these, the frog, on account of its being a soft body. It rarely happens a nail runs into the sole unless the horse partially casts a shoe and treads upon it: flint and glass, however, often cut through the hoof.

At the time of the riots in London, triangular sorts of iron crosses, called *crows' feet*, used to be thrown about the streets for the purpose of stabbing the feet of the cavalry horses, and so crippling them. It became necessary, at last, to defend the feet from these dangerous weapons, by an iron sole or plate, riveted to the shoe.

NATURE OF THE DISEASE.—The *horny case* in which the sensitive foot is enveloped, renders these injuries distinct in their pathology from all the others we have considered. Though horn possesses no vitality and cannot inflame, so, when pus collects within the hoof, no absorption can follow: the matter must consequently remain pent up; and, from not obtaining vent, commences spreading, until it has diffused itself between the sensitive foot and the hoof. This is the mischief we are so apprehensive of in accidents to the foot; however, the free liberation of the pus deposited, constitutes the grand secret to cure the excessive lameness which accompanies its secretion.

TREATMENT.—A recent case of prick in the foot will require but little of us, though something of the smith. Let the shoe be removed; the wounding substance instantly extracted; and let the farrier pare away the pierced horn, and let him thin the contiguous parts of the sole, so that no pressure be kept upon the injured surface, which we must regard as the seat of approaching inflammation. We are to have the foot pared so as to give the parts within room to swell; and take care to expose them, that, should matter form, it may at once find egress. Should the wound be a recent prick from shoeing, then follow the nail-hole up for a little way with the *searcher*, or small drawing knife, so as to enlarge the canal, and leave a free opening below; and afterwards

immerse the foot in a bran poultice. In fact, our treatment consists rather in expectant measures, than in any benefit we can confer. Dressings of all kinds, save tar, are to be avoided: where there is no disease, they can do no good: their presence may and probably will do harm, for the tar is merely protective.

To show the mischief farriers have done, I quote the following from James Clark: "A fine young chaise-horse, was pricked with a nail in shoeing, which being immediately observed, the farrier poured into the wound *oil of vitriol*! The animal, from so simple an accident, treated in so barbarously ignorant a manner, was, after much disease and pain, and suffering, in the end rendered useless."—Mr. Shipp, V.S., late 23d Dragoons, relates a case in which a wound of the foot "was filled up with turpentine and tar, and that *set on fire in the hole!*"

INFLAMMATION APPEARS.—The case is now altogether altered. We must think of our remedies for local inflammation; bearing in mind that it is the foot we have to treat. From time to time we shall require the aid of the drawing knife. We must examine the wounded place thoroughly, to ascertain whether there be pent up matter: should the horse *walk* lame, and the hoof evince much tenderness on pressure with the pincers, we may feel certain such is the case. When the sole is under-run, it will spring more than usual, and when made thin, feel hollow under the impression of the thumb: in which case, when we open the hoof, the matter (become ash-coloured or black from confinement) will spirt out with a jet, or else will be deeply buried in the wound. When a prick from shoeing is of any duration, we must follow up the nail-hole. When a puncture pierces the commissure, it occasionally is necessary to remove the bar or side of the frog; for, wherever we suspect the presence of pus, *to the bottom* of its recesses we must extend our operations. Exit must be given to the matter by the drawing-knife; since it cannot find vent for itself, unless it mounts upwards and produces a sore on the coronet, between hair and hoof; and unless it is discharged, there cannot be a termination to the case. The matter being discharged, and

the wound freely exposed, whenever the matter is discoloured, the diseased surface will require some mild caustic dressing; as equal parts of muriate of antimony and water, which may be increased or diminished in strength according as appearances may seem to require. The condition of the part will be indicated by the matter discharged, and will determine the strength of the dressing.

Into a sinus running (measured by the probe) full two inches upward from the toe, and from which there had proceeded an abundant discharge of healthy-looking purulent matter, I injected spirits of turpentine. Twenty-four hours afterwards there was but very scanty oozing. I repeated the injection, and the next day the issue was altogether stopped, and the animal moved almost sound upon the foot.

An excellent dressing for wounds in feet, when they require stimulating, and look pale or unhealthy (which my father was in the habit of using), is Ol. Terebinth. Tow wetted with it is placed upon the sore, and on that a pledget of tow is laid. This is firmly pressed by iron hooping when the sole is the seat, or by ligature when the wall or other part is involved.

Experience has broken my faith in poultices for *cases of this description*. I think with C. Percivall, and he says it was my father's practice—after thoroughly exposing the under-run parts—to dress them with Ol. Terebinth. and a firm-pressed pledget, wedged in by iron hoops across the shoe. The parts may be (if thought requisite) soaked in warm water *first*, to wash the grit out.

Give the animal some purgative medicine; it will, as he must probably rest for some days, keep his legs from filling. Then place the hoof in a poultice. A second dressing will not, in general, be required; not unless it turn out that fresh matter has been secreted, or is issuing from parts which have escaped exploration. Provided the first dressing be well executed, it does not often happen that anything is needed. When the inflammation has subsided, and the parts have assumed a healthy aspect, cover the foot with a

leathern sole and a dressing, which will keep the dirt out, and protect the foot; the latter two being the greatest evils to foot sores. Make as much *pressure* as possible upon the new granulations with dossils of tow in binding up the foot; this will harden the exposed sensitive parts, and promote the production of a sound horny covering.

EXTREME CASES.—Occasionally, we meet with cases in which the injury done to the foot is such, that the animal, from excess of nervous irritation, threatens to become afflicted with lock-jaw. The nail may have pierced the *flexor pedis* tendon; or it may have penetrated into the navicular joint: which cases will require the treatment to be modified. Purgative, with sedative or narcotic medicine, according to the particular circumstances, will here be required. It sometimes happens the whole limb is decidedly involved.¹ With regard to the local inflammation, our remedies ought to be soothing, but preceded by a thorough searching of the hoof; afterwards, the applications should consist of poultices. Unless the joint be opened, then the measures taken must accord with those already stated. Should there be appearances indicating the advent of lock-jaw, give large quantities of opium, one ounce for a dose, and this amount frequently repeated. This outline of treatment I must leave my reader to fill up from that which has been said under the heads of “inflammation,” “fever,” and “opened joint.”

TREAD AND OVER-REACH.

These are names for injuries which differ in no essential respect. Both are contused wounds; both are inflicted on

¹ Mr. Shipp records an interesting case of this description. The horse picked up a carpenter's nail, which entered the point of the frog, pierced the substance of the foot “more than two inches,” “and was extracted with great difficulty and pain to the animal.” “The thigh, and even to the middle of the belly, was violently inflamed and swelled, together with the perinæum, and *part of the other thigh*, and his scrotum was at least five times its original size.”—“Symptoms approaching lock-jaw appeared:” which seemed to have been quelled by a drench containing two ounces of ammonia, and two drachms of opium. The case ultimately did well.

the coronet; and both are occasioned by blows from the shoes. They owe their importance chiefly to the structure of the part injured: and this renders such wounds troublesome to heal, and makes persons apprehensive of their animals incurring them.

A TREAD is a contused wound on the coronet of the hind foot, occasioned by a blow from the shoe of the opposite hind foot. The blow is received upon a part which, although vascular upon its surface, is in its interior cartilaginous. The vascular covering becomes *bruised*, and the consequence is, destruction of part: hence the black condition in which we commonly find the wound.

AN OVER-REACH is nothing more than a *tread* upon the coronet of the *fore* foot from the shoe of the *hind* foot.

What part of the hind shoe is it that inflicts the blow? Formerly, it was thought to be the *toe*; ¹ now-a-days, it is believed to be the *inside edge*. ² It is not an easy matter to determine: indeed, had it been easily cleared up, there would not be so much difference of opinion. It appears to me that the accident may occur in either way.

NATURE.—In these injuries, the terminating skin and the incipient hoof are contused; the vascular expansion is rup-

¹ James Clark says, "it is occasioned by the *toe* of the hind shoe." And adds, "Some horses are much addicted to this, owing to the manner of going, viz., the hind foot moving in the same line of direction with the fore foot, in riding fast, the fore foot not giving place in time to the hind foot, strikes against the fore heel: hence some horses in trotting make a clattering noise with the hind shoes striking against the *heel* of the fore ones; hence, likewise, many horses are thrown down by the same cause."—"Trot or walk horses upon soft ground, or sand, and it will be found that those who are addicted to over-reach, place the hind foot either a *little before*, or in the *same print* or tread which the fore foot occupied; others place the hind foot *on the outside* of the print." (James Clark's 'Observations on Shoeing.')

² "Ten years ago (1823) a good judge of these matters informed me that over-reaching was not done by the toe, but by the *inner edge of the hind shoe*. I have since had the inside edge of the hind shoes *bevelled* or rounded off, and have never had an over-reach. Hunters are more particularly subject to over-reach in countries where there is much brook-jumping." (Nimrod's 'Letters.')

tured ; the cartilaginous substance underneath this is broken down. No wonder if a wound on so complicated a structure should require care to promote its healing. It has to cast off a slough ; the chasm thereby exposed has to granulate, and the sore has to cicatrize.

The TREATMENT consists in promoting these processes. With a pair of sharp scissors, we cut off the surrounding hair. Horn once separated from the living parts underneath, can never again become united to them ; consequently, its presence can only serve to irritate, and harbour dirt, as the surrounding hair has a tendency to do ; therefore, both ought to be removed—cut closely off. Then we immerse the foot in a tub of warm water. Lastly, we dress it with nitric acid lotion, and envelop it in a hot poultice. As soon as the slough has come away, and the surface looks clean, apply turpentine dressings. When the heat of the inflammation has passed, and the parts have commenced healing, leave off the poultices, and openly expose the wound : be sure, however, to keep it clean and free from any hair that may annoy it.

QUITTOR.

A quittor is a sore on the coronet connected with a sinus in the foot. The usual seat of the disease is the inner side of the coronet of the hind foot. It appears as a conical tumour, sometimes so painful as to occasion considerable lameness. Its maturation is commonly tardy ; and, after all, imperfect. At first the tumour is so enveloped in long hair as to be with difficulty discoverable : but as soon as it begins to point, the hair falls off, leaving the place nearly bare.

CAUSE.—The suggestions associated with the *seat* of quittor, together with the fact of *cart-horses* being the common subjects of it, tend to elucidate the ordinary way of its production. Every body knows what awkward contrivances the *calkins* of cart-horses' hind shoes are, and it need excite no surprise if they often injure their wearers. The projections

are eternally inflicting cuts upon the opposite legs—the *coronet* being the part which, from its prominence, is almost certain to receive the wound. Mischief may be done by these ugly weapons, even in the stable. Cart-horses after work, acquire a habit of scratching one hind leg with the calkin of the other foot, in which amusement the coronet is much exposed to an accident that may prove the forerunner to a quittor. Any wound of the coronet may, from neglect, degenerate into a quittor. But quittor may have another origin. It may arise from abscess within the foot. In speaking of *pricked foot*, I observed that matter collected in the hoof could not spontaneously issue through the horn, and consequently must mount to the coronet. One of the frequent causes of quittor, after this manner, is a corn that has run on to suppuration: which again accounts for the disease being commonly on the *inner* side, but not then of the hind foot. Quittor will, of course, occur on the outer side, whenever the internal injury happens to be in that locality.

NATURE.—Consideration will throw light on the *nature* of quittor: although this is involved in more intricacy than a superficial observer might imagine. The French veterinarians have described no less than *four* kinds of quittor. The first is the *simple* kind, being the disease in a superficial form, or confined to the skin and cellular tissue; the second or *tendinous* quittor, is where the sinus is contiguous to the sheath of the flexor tendon; the third, or *horny* quittor, is that in which the hoof forms the boundary of the fistula; and the *cartilaginous quittor* is where there exists ulceration of the pedal cartilages. Although these distinctions do not coincide with the results of practice, yet are they not altogether without their use; since they serve to point out the parts that may be affected.

The SIMPLE FORM of the French school is a *spurious* one. The coronet receives a bruise, the cellular tissue loses its vitality; and the consequence is, that the injured parts slough away, leaving a deep circular chasm. Although this does not of itself constitute what veterinarians in this country

regard as quittor, it may, through the want of attention, degenerate into a true disease of the kind.

5th Feb., 1826.—A cart-horse belonging to Mr. T. Goding became excessively lame in the near hind foot from a sand-crack, accompanied with irritative fever, which lasted to February 16th, when a portion of the os pedis exfoliated from the midst of fungoid laminæ which previously displayed no disposition to heal. From this period the horse became free from pain, and the wound gradually closed. A period of eleven days therefore elapsed, from the occurrence of the fractured hoof to the exfoliation of the piece of bone in apposition with the disease. (John Field's 'Notes.')

GENUINE QUITTOR essentially consists in *sinus* running down between the sensitive parts and the horn. Under circumstances of confinement, the pus contained in an abscess will spread, and produce separation between the horny and sensitive parts. When once disease is established within the foot, one part after another will exhibit it, until the cartilages and bone participate: the sensitive laminæ will ulcerate; the elastic structure connecting them to the cartilage and bone will be involved; finally, the hard parts will inflame and become carious: thus will that which in the first instance was curable, be rendered tedious, difficult, and even doubtful. So weak is the vitality of cartilage, that when once inflamed, the diseased portion has little chance of recovering health. Ulceration in such a structure is tardy, often untoward; keeps up continual irritation, and occasions loathsome, green¹ discharges, which in some cases are very abundant. These ravages have been known to make holes through, or to destroy, the cartilage, and afterwards to penetrate the pastern or coffin-joint. So lamentable an event is made known by the augmentation of suffering, and the admixture of synovia with the discharge; it would certainly call for the knacker, that this personage might take a life which our art could not render otherwise than painful.

The CONSEQUENCES connected with these advanced stages

¹ The *green* complexion of the wound is, in particular, an indication of carious cartilage.

of the disease, are *lameness*, *tumefaction*, and *sympathetic fever*. These vary with the degree of inflammation, and the parts it invades.

Our PROGNOSIS must be regulated by the duration of the disease, and by the extent of its ravages. Should the case be recent, or the cartilage be sound, there is prospect of a cure. When, however, time has established a diseased action, the cure is not to be expected under two or three months; and it may require a longer period. The most mortifying circumstance is to find that after the healing of the wound is effected, the horse still continues lame, and is likely to remain so, owing to *change of structure*. The conversion of the cartilage, perhaps of its elastic covering and the laminae, into bone, with the destruction of the coronet, causing *false quarter*, is unhappily too frequent.

The TREATMENT of quittor is either an affair of ordinary skill, or one that will baffle the most experienced veterinarian, depending on its duration, and on the ravages accomplished among the structures of the foot. Should it originate in abscess of the sole, all that in the early stage will be required is, to make a free opening upon the ground surface of the hoof with the drawing knife: through this orifice the collected matter may escape, and any that may afterwards form will drain out. This being done, the case is to be treated as one of pricked foot.

On the other hand, when the quittor originates in the coronet, it will be requisite to observe the degree of lameness present, and to make a thorough examination with a flexible probe. These two states are different, because in one the suppuration has simply risen or sought the nearest point of egress; in the other, egress being at hand, the disease has caused sinuses in an unnatural direction.

The ORDINARY MODE OF CURE is to introduce *caustic* into the sinuses; and while the cartilage is free from caries, this is, perhaps, the most prompt mode of proceeding. The common practice is to mix half a drachm of powdered corrosive sublimate, with thrice the bulk of flour, and to make these into a paste with water. This is taken little by

little with the point of a probe, and worked about the sinuses, until the paste appears at the orifice above. After this is done, the horse is walked for an hour or two—or even sent to slow work again—which produces a still more effectual solution of the caustic, tending also to its uniform diffusion into every recess. The consequence of this caustic dressing is a general slough: every part of the diseased surface is destroyed, and the dead particles are discharged as a curdled mass, called the *core*. This mode of treatment is often effectual; for granulations follow the slough, and fill up the sinus. This is to be the treatment, provided the disease has not yet invaded the cartilages. In quittor originating in a “festered corn” which has broken out between hair and hoof, it is a practice that often succeeds, to pass a seton through it and retain it in for a few days. The parts will then take on healthy action, and will heal up. I can, however, recommend another mode of treatment on account of its mild operation. I am alluding to—

MR. NEWPORT'S METHOD OF CURE.—“After the shoe has been removed, thin the sole until it will yield to the pressure of the thumb; then cut the under parts of the wall in an oblique direction from the heel to the anterior part, immediately under the seat of complaint, and only as far as it extends, and rasp the side of the wall thin enough to give way to the pressure of the over-distended parts; and put on a bar-shoe, rather elevated from the frog. Ascertain with a probe the direction of the sinuses, and introduce into them a *saturated solution of sulphate of zinc*, with a small syringe. Place over this dressing the common cataplasm, and renew the application every twenty-four hours. I have frequently found three or four such applications complete a cure. I should recommend that when the probe is introduced to ascertain the progress of cure, it be gently and carefully used; otherwise it may break down the new-formed lymph. I have found the solution very valuable where the synovial fluid has escaped; but not to be used if the inflammation of the parts be great.” This information is evidently the result of practice, and comes to us in too straightforward a form to be either doubted or disputed.

OTHER MODES OF CURE are to be resorted to when these fail; and cases do present themselves in which we are compelled to adopt measures of a nature which nothing short of absolute necessity could warrant. When the substance of the cartilage has become carious, very question-

able is the power we possess over the disease. Though in some instances caustics are followed by good results, it often happens that fresh eruptions succeed one another until we become forced to admit the truth, that the case is not to be cured by common means; or, indeed, by any means but an operation.

CAUTERIZATION was formerly much practised for the cure of quittor. It has, however, in this country, pretty generally given place to caustic; while the latter has given way to milder remedial agents. Even for such cases as we are now considering, the actual cautery is not so well adapted as the operation of which I am about to speak. For, unless we could cauterize every portion of the carious cartilage, we should fail to eradicate the disease.

THE OPERATION FOR THE CURE OF QUITTOR consists in removal of the *quarter* of the hoof, for the purpose of exposing the lateral cartilage, and the ultimate excision of it, either in toto or of such portions as may be deemed diseased. The operation originated with Lafosse, sen., and has been practised throughout France: though of late years its popularity has diminished through the testimony of Professor Girard in favour of *corrosive sublimate*. Still the professor admits the operation in cases where the quarters and heels are in a state of suppuration, the sole under-run, or the *base* of the cartilage and the coffin-bone carious. There are different ways of performing this operation. Lafosse confined himself to a partial section of the quarter, about an inch in breadth, yet extending from the coronet to the ground surface. This has been found insufficient, therefore the entire quarter has been removed. An improvement on this practice, however, is suggested by Hurtrel d'Arboval: who recommends that our incision be commenced opposite to the anterior extremity of the cartilage, below the coronary prominence, and carried (instead of directly downward, in the course of the fibres of the hoof) *diagonally* across the wall towards the heel; so that when the superior part of the quarter is removed, there will remain the lower border, to which we may tack a shoe.¹ Having made the groove, and detached the quarter at the coronet, the part thus isolated is to be rasped, preparatory to its elevation by a broad pritchel. Its edge is to be raised sufficiently to enable an assistant to lay firm hold of it with the pincers, and with them carefully, though forcibly, rend it from its connexions. After this, so much of the coronary substance and skin as clothe the lateral cartilage are to be dissected off but *not detached*—for they must be carefully laid and bound down again after the operation. So much effected, the state of the parts will determine our next step. What we expect is, carious cartilage, and

¹ At this period of the operation, the animal must be cast and properly secured. Also, before we proceed further it is advisable to put a ligature of tape around the pastern, sufficiently tight to suppress hemorrhage.

perhaps coffin-bone. In this case, we are recommended not to be content with removing the diseased cartilage, but *the whole* is to be cut away; otherwise, the portion left will fall into disease, and we shall be foiled in our purpose. For the more convenient excision of the cartilage, the French use a curved scalpel, which, from its form, they call a sage-leaf knife. I have seen the instrument in this country; but, at present, one seems to hear nothing about the operation—a circumstance probably owing to the rarity of the cases requiring its aid, and to the mean opinion entertained of its justification.

The CHIEF PRECAUTIONS REQUIRED IN OPERATING are, that, in detaching the cartilage from its internal connexions, we do not wound the plantar blood-vessels, cut through the capsule of the pastern-joint, or divide the long lateral ligaments of the pastern-bone; the former of which accidents would not be necessarily fatal; while the latter two would probably prove a source of permanent lameness. A tantalizing occurrence is the co-existence of caries with ossification of the cartilage. Girard notices this vexatious complication; and tells us that we are to proceed with the operation; removing the entire cartilage, though wholly converted into bone;¹ or, should the transformation be but partial, such portions are to be excised as remain.

The DRESSINGS recommended after the operation are those of a stimulating nature; such as the warm tinctures, &c. After the skin and coronary substance have been laid down in their places, and the border of the hoof next to the wound has been made so thin that it cannot press upon the sensitive parts, the bare surface is to be dressed with soft tow dipped in the tincture; over which dossils of coarse tow should be smoothly piled, and the whole bound on with broad tape, so that uniform pressure may be exerted upon the parts. Lastly, the whole may be confined in a piece of sacking, or encased in a leathern boot. The first dressing should not be removed before the fifth or sixth day; or not before suppuration is established. The after-treatment of the case must be conducted on the principles laid down for the general management of wounds.

FALSE QUARTER

More commonly results from quittor than any other cause. It may, however, be occasioned by injury or disease of any kind destroying the *coronary substance*, on the integrity of which that of the wall depends. In the same

¹ It would be as well did the professor inform us how this was to be accomplished without sacrificing the life of our patient.

manner as destruction of the substance at the root of our nails occasions a division in it, so will injury of the coronary substance cause a groove in the hoof directly below; to which absence of horn the name of *false quarter* has been given. This is not, therefore, in itself, a disease; but the *effect* of disease; or, possibly, of simple injury. Its appearance is that of a gap on the side of the wall, extending from the coronet to the ground surface. The gap is covered with a thin layer of soft horn secreted by the sensitive lamina, but the strong protective armour derived from the coronet is lost for ever. Either from the weight imposed, or the jar sustained, the thin horn occasionally splits, and the internal parts bleed. From dirt getting into the opening, or from the soft parts protruding and being squeezed between the divided horn, inflammation may be excited, and pus ooze through the fissure. Under such circumstances, lameness will exist, though, so long as the fissure remains undisturbed, the animal betrays no inconvenience from it.

A REMEDY for false quarter, at least a *radical* one, is not to be found. When once a division of any sort has taken place in the *coronary* substance, no human art can restore the perfect secretion of horn. There will always be a separation in the horny fibres. A false quarter, therefore, not only renders the horse subject to occasional lameness, but considerably weakens that side of the hoof, so that it becomes unable to support its due share of the burthen.

PALLIATION.—Though this be an evil which does not admit of *cure*, it is one we may palliate. By imposing as little weight as possible upon the weak quarter; and by defending it to any practicable extent from concussion, we may accomplish something, and are at liberty to devise any means adapted to these ends. Up to the present we have not hit on any better expedient than was practised by our professional forefathers. James Clark tells us, “we may palliate the complaint so as to render the horse something useful, by using a shoe of such a construction as will *support the weight of the limb without resting or pressing too much upon the weakened quarter*; for which purpose a round, or what is called a bar-shoe, will be most proper. The surface of the hoof on or near the diseased part may be lowered; or, if the hoof will not admit of being cut away, the shoe may be curved from the weak quarter.” Should the hoof on either side of the fissure grow stronger, and become more pro-

minent than in other places, it must be rasped down at the time of shoeing ; and at the same time the fissure itself had better be plugged with *stopping*. In case of division, should inflammation be present, a poultice, and some astringent dressing, as *nitric acid lotion*, should precede the application of the shoe and stopping. The best recipe I possess for *stopping* for false quarter—by which I mean a composition capable of being poured in a liquid form into the crevice, and then becoming solid—is the following :

Take of Pitch, 2 parts ;
 Tar, 1 ditto ;
 Resin, 1 ditto. Melt and mix together.

When required for use, a small quantity should be melted, and poured in the liquid state upon the hoof.

FRACTURES.

This is a subject which has not received much attention from English veterinarians ; although it is one the French have treated in their usual systematic style. The disadvantages under which fractures must be undertaken in animals, will serve to account for this seeming neglect of duty. Perhaps a pistol-ball becomes the most politic measure we can adopt for a case of fracture ; yet it occasionally happens that our patient is of such consideration that expense is no object, providing we can effect the recovery. Whether it be advisable to undertake the cure, it at least is essential we should understand the symptoms these accidents produce. It was not, however, my intention, when I set out, to devote to them the space I have in the present work : nor should I have done so if the subject would have borne abridgment.

A FRACTURE is, in the language of the schools, “ a solution of continuity in a bone : ” this substance being, from its earthy ingredient, the only structure which can commonly be susceptible of the accident.

The CAUSES of fracture are comprehended under the head of *external force* : blows, kicks, falls, slips, &c. Though *muscular force* is capable of producing the same effect,

nevertheless the animal must be forcibly bound for it to occur. It occasionally happens that a horse cast for operation fractures his spine in the act of struggling while in his fetters; and we are told the femur and the patella have been broken in this manner.

KINDS.—With regard to the nature of the injury, a fracture is said to be *simple* when unaccompanied with other lesion; *compound* when the bone protrudes through the skin; and *comminuted* when the bone is crushed or broken into more than two pieces. As regards the manner in which the bone is broken, fractures are said to be *transverse* or *oblique*.

The **SYMPTOMS** of fracture will vary in each particular instance; and while, in some, they are too glaring to need any description; in others they are so obscure as to prove insufficient for us to base any conclusion upon them. *Crepitus* (the grating noise or sensation produced by moving or rubbing the ends of the bones upon each other) is an unequivocal symptom. Another is, the *separation* or *displacement* of the fractured portions. A third is, *deformity*: if it be a limb, *shortening* likewise. To these may be added, *lameness* or inability to move; *pain* evinced on pressure; *heat*, *swelling*, and *tension*, or the approach of inflammation.

The **PROGNOSIS** is generally unfavorable. The impatience of the animal under surgical restraints; his great muscular powers, counteracting or defeating any attempts at extension, or counter-extension, we may make; and the difficulty we experience in adjusting splints and bandages, form so many obstacles to the cure. The only counterbalancing circumstance lies in the vigour of his renovating powers; callus will form in twenty or thirty days; while, in a man, the same substance will require forty or fifty days for its formation. The most propitious cases are those which call for the least artificial aid;—those in which the fractured portions of bones suffer little displacement; such as the ribs, &c. Simple fractures of the cannon-bone sometimes do well.

I would, in this place, caution the inexperienced veteri-

narian against giving any decided opinion early after the accident. It not unfrequently happens, often indeed with bones closely embraced by muscle or tendon, that displacement of the fractured halves of the bone does not take place for some time afterwards, either until the limb is put in action again, or until abscess forms around the broken ends, rendering them loose by detaching the parts in contact with them. This might lead the young practitioner astray with hopes of affecting proper union again; whereas, in the end, he will—should it prove one of the cylindrical bones—find the fractured ends riding one over the other, and all prospects of anything but an unnatural union and terrible shortening of the limb completely overthrown. (*Vide* ‘VETERINARIAN’ for 1848.)

HOPELESS CASES include comminuted and compound fractures; unreducible fractures of the simple class; repeated displacements; indisposition to form callus.

The TREATMENT of fractures is to be conducted on three principles: 1st, to replace the broken portions in their natural position; 2dly, to maintain them in their places until union is accomplished; 3dly, to prevent any untoward symptom, or to counteract them if they should supervene.

REDUCTION is to be effected by processes of *extension counter-extension*, and *setting*. Extension consists in pulling, in a direction from the body, that portion of the fracture which is most remote; whilst, by counter-extension, that portion which is nearest to the body is prevented following the other portion of bone; so that the two pieces are forced into a straight line, in which position setting is readily effected. The sooner reduction is attempted the less difficult of accomplishment it will prove. An erect posture is to be preferred to a recumbent one: at least, there is so much danger in casting under such circumstances, it should be avoided. The transverse fracture is the most difficult to reduce, though the most easy to retain in its place: the oblique fracture is reduced with ease, but is beyond measure troublesome to maintain in the proper position.

OUR MEANS OF KEEPING FRACTURES REDUCED could probably be rendered equal to every emergency, did our patient possess intelligence; however, having to contend with an intractable animal, rendered worse by pain, but of prodigious muscular power, we must expect to meet with difficulties. *Suspension* (by slings), to all appearance, holds out a prospect of success; and, in the improved form, a better one than hitherto; however, experience has shown the animal often does best when left to itself. Compresses, splints, and bandages, constitute the chief means of retaining the bones in their places. Some have proposed, however, to discard all apparatus, and, instead, to cover the part with pitch, or any adhesive application. Others have fired and blistered over fractures. In the adoption of remedial measures, much must depend on the kind of fracture, and more on its situation.

PARTICULAR FRACTURES.

My own experience is limited, and English accounts are so unsatisfactory, that I gladly avail myself of the French authors upon this subject, among whom none stands more pre-eminent than Hurel d'Arboval. From his writings, therefore, interlarded with the information I can glean from English authorities, the following account is derived:

FRACTURED CRANIUM. This, the French writer informs us, is not frequent: the skull itself being small, and the other parts, on that account, oftenest receive the injury. The ordinary cause of cranial fracture is a fall backward; when it happens, either the *occipital bone* is broken, or fracture of the base of the cranium is the consequence. In the former case, the diagnosis is difficult; in the latter, we must rely upon the symptoms. These accidents are always fatal.

FRACTURED ARCH OF THE ORBIT.—Mr Pritchard, of Wolverhampton, details a case where “the orbit was fractured from the superciliary foramen in a line through the zygomatic process of the temporal and malar bones, to the outer angle of the eye.” The fracture was in two pieces. “The skin was carefully drawn together over the orbit, and two pins of silver wire by the twisted suture closed this part of the wound, and had the effect of securing the detached portion of bone in its place. The lateral part of the wound was not closed.” Considerable inflammation ensued, but eventually the bone became reunited, and all did well.

FRACTURED NASAL BONES.—This accident is commonly accompanied with laceration of the Schneiderian membrane and hemorrhage, with or without displacement of the bones themselves. When there is displacement, it is mostly *inwards*, seldom outwards, and this impedes respiration, especially when swelling supervenes. Should there be splinters, they must be withdrawn through the external wound; after which, with the aid of the elevator and long forceps, the depressed bones may be raised, and confined in their places by bandages. The swelling may be such as not only to render the removal of the bandage advisable, but even safe, on account of the support now given by the tumefied parts. In cases where the displacement is outward, H. d'Arboval recommends two supporters to be attached to the sides of a bridle, imagining that they will give the requisite support, while they leave the motion of the jaw unconfined. As for any apertures that may be left, they need not give us concern. They may be as much as possible covered by skin; or else some leathern covering may be fastened over them. These fractures sometimes give rise to symptoms resembling glanders: such cases have been mistaken. If unreduced or ununited, they may occasion roaring or high-blowing. In this condition they are also attended with fetid discharges; enlarged submaxillary glands; sometimes exostosis; and, within the nasal chamber, a projecting callus. (Hurtrel d'Arboval.)

FRACTURED SUPERIOR MAXILLARY BONE has been treated by Mr. Cartwright, of Whitchurch. The depressed part was forced down upon the maxillary sinuses, and could not by the elevator alone be replaced. Mr. Cartwright, therefore, applied the trephine, and with it removed the injured parts, which he found to consist of many small pieces. Adhesive plasters were then used to cover up the wound. In a month the parts were healed, without any symptoms of glanders supervening.

FRACTURE OF THE OS HYOIDES.—For a case of this singular, if not *unique*, accident, *vide* 'VETERINARIAN,' vol. xxvi, No. for December.

FRACTURED LOWER JAW happens oftener at the symphysis than at other parts. J. Field details a case in which the lower jaw was fractured in two places by a blow; one about two inches from the symphysis; the other in the situation of the submaxillary artery, which was divided by the accident, and bled freely, but which was closed by compresses of tow. The horse died, however, within a fortnight, of constitutional irritation.

Happening to be in Mr. Cherry's yard, I accidentally cast my eye upon a horse which had the lower jaw so much on one side that the only approximation between it and the upper, was by the corner incisor of one meeting the corner incisor tooth of the other. I examined it at the articulation, and, as far as I could make out, thought that it proceeded from a fracture of the neck of the condyle, which from bad, or no treat-

ment at all, had united in such a manner as very much to shorten the neck, and, consequently, to throw it on one side. The horse (five years old) was in fat working condition, and (Mr. C. said) a most useful animal; no complaints were made about its feeding.

Fractures are detected by grasping one side of the jaw at its projecting angle with one hand, and moving it in different directions, while the other is applied to the fore part, with a view of feeling crepitation. When displacement exists, the fracture becomes more obvious. In cases of simple fracture without displacement, a bandage is required. For the kind of bandage necessary on this and other occasions, that must depend on the situation of the fracture. In many cases splints will be necessary along the branches of the jaws. The broad head-stall of a bridle, furnished with additional nose-bands and throat-latches, will often prove serviceable. The animal must be nourished by injections of gruel, hay-tea, &c. In cases of fracture of the symphysis, the animal is unable to pick up his food with his front teeth. Here it often happens that a pitch plaster is all that is required. In other cases we find, not only simple fracture of the symphysis, but also separation of the sides of the jaw to such an extent that the soft parts are also severed. In accidents of this nature the incisor teeth will serve for the attachment of ligatures to keep the bones together; straps and bandages must, however, also be used in whatever manner may seem best.

In a fracture of this bone, Mr. Blaine "once succeeded very tolerably by making a strong leathern frame which exactly encased the jaw," and this he caused to adhere by means of pitch.

FRACTURED SPINE constitutes "BROKEN BACK;" though there are other pathological conditions that give rise to similar symptoms. (See case of "Fractured Vertebrae from Casting" in Field's 'Veterinary Records,' p. 214.) From the situation of the spine we should suppose external injury could hardly reach it; and the results of practice tend to confirm the supposition: since these accidents are referable to *internal causes*—to *muscular force*. Casting is sometimes attended with this accident, and without any fault on the part of the operator. It does not happen in the act of falling near so often as while the animal is down. While he is forcibly contorting his back, and struggling violently, all at once his struggles cease, and at the same instant a snap is heard. In aged horses, in whom ankylosis of the spine is very common, in which state it is both inelastic and brittle compared to what it is in youth, I suspect that the fracture happens in the fall—that the spine snaps from the concussion—and that the displacement may take place either immediately afterwards, in consequence of struggling, or may not happen until after the animal has risen. A troop-horse, nineteen years old, was cast for an operation. The cast proved a favorable one, inas-

much as it did not fall suddenly. It suffered and struggled a good deal during the operation; but, on being released from the hobbles, after it was over, instead of rising, it lay quiet, and groaned. It was urged to get up. It tried to do so, raised itself upon the fore limbs, and sat upon the quarters. It could not get more erect. By means of support under the belly with a leaping bar, and the assistance of a dozen or more men, we got it into a loose box. Next day it was destroyed. The body of the fifteenth dorsal vertebra was found fractured through its middle. The spinal medulla not lacerated, but pressed open. There are several instances where the practitioner has been unconscious of any accident until the animal has been released from the hobbles; then it has been found unable to rise, or without the power of walking to its stable. In one case nothing was perceived until after the animal had walked back to the stable; which shows that the fractured vertebræ remained in their place for some time afterwards. The bone broken is commonly one of the posterior dorsal, or anterior lumbar vertebræ; and the fracture is always accompanied with displacement, by which the spinal marrow becomes compressed. This occasions paralysis of the hind quarters. Mr. Hudson, V.S., Lincoln, relates a case of a mare which, "while hunting, in endeavouring to clear a ditch of two yards wide, dropped in with her hind parts, but succeeded in getting out, and staggered a short distance further, when she fell, and could not be made to get up again." Mr. Hudson found the hind extremities paralysed and insensible. The animal survived but a few hours. Mr. Hudson discovered a fracture in the anterior lumbar vertebræ, the spinous process of which was pressing on the theca vertebralis. The lumbar vertebræ appeared all ankylosed together, and every one of the transverse processes was broken about its middle: "which," as Mr. Hudson observes, "must have been occasioned by the action of the muscles covering these parts."

Mr. Turnor (1st Life Guards), in passing over a grip in the middle of a field, while out hunting, "broke his horse's back behind the saddle, and was thrown himself over the animal's head."

Mr. Till, V.S., Windsor, had a horse of Mr. Aldridge's, of Chippenham, to fire. After it was cast, during a struggle it had, one of the men said, "Did you hear that crack, sir?" "No!" replied Mr. Till, and went on with the operation. When the mare came to be released, and to be roused to get up, it had no power in the hind quarters—the *back was broken*. I went the next morning to see the animal. I found it lying in a box, partly covered with straw. On being spoken to, and alarmed a little with the whip, it raised itself up before, but had lost all power of moving the hind limbs. Though motion, however, was gone, sensation remained. When pricked with a pin upon the

quarters and thighs, it evinced by motions of the head that it felt the prick, but could not move the limb out of the way of the annoyance. I saw the spine of this mare three days afterwards, and found the first lumbar vertebra fractured through the body, and one transverse process broken at its junction with the body.—March, 1844.

Captain Sutton's mare (Jessie) "broke her back" in leaping a brook at the steeple-races at Windsor, April, 1844. It had lost all power of standing up or moving the hind parts, and when put into slings, slipped or fell back in them. It was shot after ineffectually trying to make it stand in the slings. The third, fourth, and fifth lumbar vertebra were found fractured; the body of the fourth was completely shattered, exposing the spinal marrow.

FRACTURED RIBS are not always discoverable: the anterior ribs being covered by the fore extremity, it is impossible to detect fracture; and those likewise placed posteriorly are so thickly covered as to render detection difficult. Those most subject to fracture are such of the true ribs as are behind the elbow: the false ribs, from their yielding motion, are much less liable. The fracture happens almost always about the middle of the thorax, and is commonly oblique. They are occasionally broken into splinters; and these may seriously wound the pleura or lungs. A horse of the regiment (Corporal Brunton's old horse, aged twenty), in being led in watering order, ran against a taxed cart; one shaft of which penetrated the side, behind the scapula, obliquely insinuating itself between the ribs and skin for twelve or fourteen inches in extent, and then abutting against one of the hinder ribs, broke it, and drove the point of the detached portion against the diaphragm, behind which, afterwards, an abscess formed. It lived—without our knowing of the fracture—for three weeks, and, after holding out hopes of recovery, died of irritation. This happened in January, 1835.

The way to detect these fractures is to trace the rib through its length; and, should there be any irregularity, to press upon each fragment alternately, in order to elicit crepitation. The absence of any displacement, the corpulence of the subject, and consequent tumefaction, may considerably obscure the case.

Treatment.—Simple fracture, without displacement, requires nothing more than a broad roller, which is to be made sufficiently tight to prevent any motion of the ribs; thereby compelling the animal to carry on respiration with the diaphragm and abdominal muscles. Should the fractured parts project, place opposite to them a compress, underneath the roller. But when they point inwards, we hardly know what to do to restore them to their position, and know less how to retain them therein. The only plan to *set* the ribs, is to cut down upon the parts;

but then how are we to prevent their relapsing inwards? How to stay air getting into the chest? In general, we must trust to the bandage round the chest, it not being advisable to make any artificial wound; such means as are proper for a man being ineffectual in horses.

FRACTURED PELVIS, though rare, yet is apt to be of serious moment, from the organs contained within it being injured. When the fracture is internal we have small means of discovering it, notwithstanding it be followed by suppuration, caries, and even gangrene: though when it is external we discover it at once, from the change of form. The best mode of examination for a fractured pelvis—where the nature of the injury is not manifest externally—is to introduce the arm far into the rectum, and with that change position and manipulate, while an assistant lifts and flexes or extends the hind limb, or moves it backward and forward, according as required.

Three cases of fracture of the pelvis have come to my knowledge. One was a troop-mare, which fell with Corporal-Major Burlinson at Windsor. The other two occurred to John Field. One was that of a horse against whose hip a carriage ran, breaking off the *os innominata* at the ischium, and driving the head of the femur against the acetabulum, fracturing the former into several pieces, and protruding through the fractured cavity into the pelvis: it ruptured the peritoneum. The other was that of a mare which Field had cast to fire. It fell awkwardly upon the hip, John (farrier) hearing something “crack,” and Field himself suspecting something amiss. After lying a while, being released, the animal could only raise itself upon one haunch. It died; and on examination the *os innominata* was found broken in two at the narrow or ischial part; the acetabulum was fractured into six pieces, through which the head of the femur had been forced into the pelvis, without, however, rupturing the peritoneum.

In some cases all six bones of the pelvis are fractured, causing the hind quarters to drag upon the ground. When it is the projecting spine of the ilium that is broken, union will soon take place again. In the case of separation, however, the broken piece, by the action of the muscles, is drawn from its natural position.

M. Levrat relates a case of a mare that fractured the right side of the ilium in leaping a wide ditch. The lameness occasioned was such that the toe of the foot scarcely touched the ground, as long as progression was at all rapid: but in slow paces the foot was placed flat down, though the limb was moved forward with difficulty. By applying the right hand to the fractured part, and seizing the stifle with the left, he felt a movement of part of the pelvis. This enabled him to determine the existence of fracture, which was unaccompanied with displacement. The mare was

kept in a stall for three weeks; then permitted to go loose in a box. In two months it was mounted and exercised at a foot-pace. After another month it was quite sound.

FRACTURED BONES OF THE TAIL.—They are, in general, easy of detection, by tracing the processes downwards. Setting them is effected by raising the tail, and maintaining it in the erect position either by a crouper constructed for the purpose, or by means of pulleys. In twenty-five or thirty days callus will have become sufficiently matured to give the tail its liberty.

FRACTURED BONES OF THE LIMBS may, in general, be regarded as incurable, especially those of the scapula, humerus, femur, and tibia; on account of the difficulty in effecting reduction, and the impossibility of keeping the parts in their places, or of preventing the muscles from moving them. Too often fractures of the bones below these are equally hopeless, if we except the pasterns and coffin; nevertheless there are many instances on record of fractured legs doing well.

FRACTURED SCAPULA is rare, on account of the mobility of the bone and the protection it receives from muscles. Fractured neck of the scapula is the common form in which we meet with this accident. It may be either longitudinal or transverse: in the former case, the glenoid cavity must be split. Such an accident is difficult of detection. The animal is lame, and bears no weight upon the limb, rather dragging it after than putting it forward. With the hand upon the point of the shoulder at the time an assistant is moving the limb, one may possibly find crepitation. Godine relates a case in which the scapula was fractured through its body. He saw it on the second day, and found that effusion appeared to have preserved the fragments in their places. The nature of the accident was made manifest by a grating noise whenever the shoulder moved. Godine covered the shoulder and arm with a thick layer of pitch; he afterwards applied a linen bandage after the manner of the figure of 8 across the shoulder, and around the neck, withers, and elbow, thereby in some measure fixing the shoulder to the chest. The horse after this was turned into a paddock. On the twenty-fifth day he bore lightly on the limb; at which time the dressings were renewed. The shoulder had wasted so much that the callus was perceptible. On the fifty-second day the dressings were entirely removed. The animal was still very lame. The shoulder was fired. Four months from the accident, the animal did not walk lame, but still halted in the trot. The callus was no longer perceptible.

FRACTURED HUMERUS.—Short, and strong as the *os humeri* is, still it is not exempt from accidents of this nature. The fracture is mostly oblique, and sometimes runs from one end of the bone to the other. And when the bone, in this manner, is, as it were, "split in two," the

lameness is so excessive that the animal, hardly touching the ground with the toe, durst not impose the slightest weight upon the limb, and has no power whatever to move it, but in walking drags it along. In such a case as this, the fracture, on manipulation, will prove too evident to admit of any question. Any motion almost given to the limb will produce audible *crepitus*; and when the limb is lifted and carried forward and let suddenly drop, the foot falls, lifeless as it were, down upon the ground. Lord Glamis's "Stranger," in running the steeple-chase at Windsor, in April, 1844, alighting, after jumping over a brook, fractured the humerus. The spherical head was split across, into nearly equal halves, and the fracture extended into the body of the bone, ending six inches from the summit. The lower half of the shaft of the bone and elbow-joint were perfect. The fracture was occasioned by one foot descending upon the pastern of the other. Locomotion is impeded, and the lameness great. To discover crepitation, keep the hand upon the part while the animal is made to walk, or during the time an assistant moves the limb. Generally speaking, fractures of the bones composing the shoulder are hopeless. Any recoveries that have taken place, are attributable to natural causes. Notwithstanding these considerations, should the animal be a valuable one, and the fracture not complicated, we may make a trial at the cure. Cases are related of fractured *humeri*, in which the horses were kept suspended, and bandages applied around the limb. One veterinarian had the pavement taken up, and dug a hole, in which, during suspension, the fractured limb hung unmolested, while the others touched the ground.

FRACTURED ARM is more frequent than broken shoulder. The separation is almost always an oblique one, and commonly commences about the lower third of the bone. It is readily discovered, providing there be displacement, by the mobility perceptible in the bone, by the deformity and shortening of the limb. In this case the obstacles to recovery are not so great as in the shoulder. Reduction here is practicable. Still, when the fracture is oblique, and there is much displacement, the difficulties of keeping the bones in position are extreme, their tendency being to slide off. Four splints, one for each surface, will suffice when the displacement is not considerable: the external one being long enough to reach above the joint of the elbow, while they all extend as far down as the middle of the cannon.

Mr. Glog has furnished an instructive case. A cart-horse, while grazing, received a kick a little above the knee; this immediately lamed it, though still able to walk. The next day, being turned in the stable, the leg suddenly gave way; a circumstance which rendered the fracture obvious. It was a simple fracture of the radius. The ends could be heard grating against each other when advancing the leg. The animal was placed in a sling, but not raised off the ground. The ends of the

bone were placed in apposition; and lard was smeared over the entire surface. Then some slips of green wood (which had been immersed in boiling water until they could be bent to the shape of the knee) were placed on the sides of the joint. In about a fortnight the animal became very restless. In six weeks, much emaciated, it was taken out of the slings, and with considerable ossific deposit about the knee. At first it knuckled over on the pastern, but gradually it regained the strength, and, with the exception of turning the leg a little outward in progression, became as useful as ever for common purposes.

FRACTURED ELBOW is known by the mobility and looseness of the olecranon. The animal halts exceedingly, and can no longer extend the arm; but trails the foot after it. When complete, this fracture is incurable. When the separation is not perfected, there may be a *chance*. The first thing to be done, is by a dossil of tow interposed between the elbow and the ribs, to keep the olecranon in its place. Splints are to be applied to fix the scapulo-humeral joint; after which, bandages must be wound round the elbow and chest, so as to confine the whole together.

FRACTURED FEMUR.—Short, strong, moveable, and protected as this bone is, yet does fracture of it occur; and from extraordinary efforts or kicks on the part of the horse himself. Let what part may be broken—head or body—it is an accident which must be obscure, and often impossible of detection. Whenever its presence is ascertainable, or even presumable, the sooner the subject of it is shot the better.

Mr. Dick has favoured us with a case of fractured inner condyle of the femur. A mare, in leaping a sunken fence, had wounded the stifle: a hard body was felt in the wound, which proved to be the fractured portion of bone: it having escaped towards the inside of the joint, where it was retained by a portion of ligament. The impossibility of replacing this fragment, and the little vascularity of its connections, rendering union improbable, Mr. Dick resolved to remove it. This he did by enlargening the wound, and dividing the portion of capsular ligament which was still attached to it. It proved to be the inner condyle. The wound was sewn up, and adhesive straps applied. Considerable inflammation followed, and some fever; all which, however, under Mr. Dick's management, did well. "From the fifth day it gradually improved: and although in this case one of the largest articulations in the body was laid open, and a part of the articular portion of the bone removed, the wound healed in so rapid a manner, that in three weeks the mare walked without lameness." At the end of another three weeks, "it trotted several times along the stable yard, apparently sound, with the exception of moving the limb in a slight degree wider than usual; and so completely had the part recovered, that

had it not been for the small scar which remained of the wound, a stranger would not have known that any accident had taken place."

FRACTURED PATELLA is rarely seen. Lafosse mentions an instance of it, which he ascribes to a kick from another horse. In whatever manner it may happen, however, and whether it be transverse or longitudinal, it is in all cases to be regarded as incurable.

FRACTURED TIBIA is not so rare an occurrence. When it happens upon the lower third of the bone, it is then almost always transverse. When it occurs higher up, the fracture is mostly oblique; and is less manifest: nevertheless, the shortening of the limb, the unnatural motion and crepitation, render its nature plain. This high oblique fracture is incurable, from the opposition of the muscles. However, when the fracture is transverse, and low down, reduction proves less difficult. We shall find room enough to apply splints, having first nicely encased the limb in tow, which is to be stuck to the surface by some adhesive substance. Over the above, some have added a bar of iron, extended from the thigh to the foot, and fastened to the shoe. Wherever success has been gained, it is the case that the animal is crippled for life. The undertaking, therefore, may be regarded as a hopeless one.

Even of so large a bone, a fracture may exist for several days without showing itself, as the following cases will prove. They occurred in the practice of Mr. Trump. A large cart-horse came from work very lame, but without any sign of injury. The foot was searched, but nothing further was done. The animal stood several days in the stable, and was then turned out; it was afterwards discovered with the limb dependent from a fractured tibia. A mare came home very lame, with a slight scratch on the inside thigh. A few days afterwards, the tibia was found very obliquely fractured. A draught-horse had been lame for eight days; there was a slight scratch inside the thigh, and some little swelling upon the hock. Mr. Trump had twice searched the foot. The lameness continuing, it was turned to grass, when, in three days, it showed the tibia broken.

FRACTURED HOCK.—Mr. Cartwright saw a two year old cart-colt that had hurt the hock. It proved an horizontal fracture of the *os calcis*. A splint was contrived to reach from the middle of the tibia to the cannon bone; underneath which was applied a charge, the whole being well padded and bound together. The animal was kept quiet. Two months afterwards the hock was fired. It is now perfectly well, with the exception of a little enlargement at the place of union.

FRACTURED LEG is more common than any lesion which we have considered. The fracture is commonly transverse, and too obvious to require any description. Reduction is not easy; but once effected, any

force that would otherwise separate them, now only tends to strengthen their union. In some cases we are forced to have recourse to a sort of windlass to assist us in extending the limb. We require four splints in this case, one for each surface; and they ought to extend from the foot to above the knee or hock. Girard uses splints of different lengths, allowing the longest of them to project beyond the foot, for the animal to bear his weight upon: this being fixed to the parts above, the weight becomes transferred to those parts, while all motion is prevented in the region below. Ingenious as this contrivance is, unfortunately it is applicable only to horses that are very tractable. D'Arboval conceives this apparatus might be improved by letting the splints terminate in a patten-shoe: it need not descend further than half an inch below the foot. Two foals, after having their legs properly set and bound up, were kept standing up in stalls for about ten days. In both, the fractures united: one becoming quite sound again.

I know some old practitioners who treat these cases in a very successful manner. They employ such common support with splints, tow, and bandages, as the case seems to require; then the animal is turned out, or into a yard. Special care will be taken not to impose weight upon the fractured member; and, provided the parts are well secured, nature performs the rest.

FRACTURED PASTERN.—Short as the bone is, fracture nevertheless happens when the horse makes a false step, or when the foot becomes locked in a wheel-rut, and the animal exerts force to extricate it. The diagnosis of fractured pastern is easy. The horse bears no weight upon the limb; if urged to walk, the fetlock bends, and the toe turns up. Take up the foot, move it, and crepitation becomes distinct. These fractures are not free from danger; should the separation be longitudinal, it will extend into the joints above and below, and be followed by ankylosis. Nevertheless, this is a fracture most readily reduced. There are many cases recorded of recovery from fractures of this and the coronary bone. A bandage, dipped in some adhesive mixture, is to be applied from the coronet to the middle of the cannon. Upon this wet paste-board is to be moulded, the whole being covered with a linen bandage. Four small splints are now to be laid on, one upon each side: filling up the hollow places with tow, and afterwards binding them on with broad tape. All this occasionally proves insufficient to arrest the play of the joints; therefore we are forced to place four additional splints over these. We must do our utmost to prevent the horse bearing upon the affected limb; it will also prove disadvantageous should the limb be flexed all the while; for that will produce shortening of the flexor tendons, and consequent knuckling. Lameness sometimes continues long after recovery; it may turn out permanent.

FRACTURED SESAMOID BONES are comparatively rare. This accident is generally hopeless.

FRACTURED CORONARY BONE.—This commonly runs into the joints above and below, splitting the bone into several pieces. The accident may occur in two legs at once. Fromage de Feugre has seen the bones in the hind legs of a horse split irregularly into six pieces. On another occasion, he found one bone split into four pieces. Ensnared as the coronary bone partially is within the hoof, and fenced laterally by the cartilages, we are therefore compelled to receive presumptive proof of its fracture. The symptoms that will assist us are, extreme lameness, and inability to bear weight.

FRACTURED COFFIN BONE is difficult of development: we are therefore obliged to depend on presumptive symptoms. The animal halts exceedingly, the foot is hot, and the pain extreme; and there appears no cause for this. It is not so serious an accident as it has been represented. No displacement can take place; and as for the weight being imposed, the pain will prevent that. Moreover, in such a vascular bone as this is, union will be more prompt: only the callus may be accompanied with deformity, and will be likely to press upon the soft parts, in that way keeping up the lameness. It has been recommended to make some grooves or breeches in the hoof, or to thin the wall. All that we can do is, to thin the sole to the utmost, draw blood from the coronet by scarification, and keep the foot in warm baths and emollient poultices.

Fracture happens in this manner: In the healthy foot, because of the elasticity of the connexions, the bone yields under the bones above: thus they are enabled to bear great weights, and to sustain violent shocks; but disease in the foot is found often to destroy their elasticity: the result is, inability to receive weight and concussion without risk of fracture. Besides which, the strength of the bones is materially reduced from the effects of disease. And horses that have suffered neurotomy frequently meet with this accident, because they batter their senseless feet down with a force which, under similar circumstances, pain would forbid them exerting.

FRACTURED NAVICULAR BONE is commonly owing to disease, which causes it to give way when any sudden impression is made upon it. Though this is the common mode in which the accident happens, ankylosis and consequent loss of ligamentary or elastic connexions may lead to the same result. Formerly, this fracture used to be accounted a rare occurrence: the introduction of neurotomy, however, has made us better acquainted with it.

DISLOCATIONS.

These are accidents of less frequent occurrence than fractures, and of a nature generally less remediable: still, they do, occasionally, come under the veterinarian's notice, and therefore demand some portion of his study.

A dislocation means a *displacement* of some bone in relation to some other bone, with which it forms a joint. Should a bone have been forced *entirely* out of the socket, the capsular and other restraining ligaments being necessarily ruptured, the dislocation is *complete*; but should the displacement be short of this, it is *partial*.

The CAUSES may be comprehended under the divisions of *external* and *internal*. Outward force may operate to their production; such as blows, falls, wrenches, contortions, &c.: or they may be caused by violent action of muscles. In some cases, these causes appear to have co-operated.

The SYMPTOMS of dislocations are thus portrayed by Hurlrel d'Arboval: "a change in the appearance of the luxated part; inability to put it in motion; lengthening or shortening of it; a hard prominence where the displaced bone happens to be lodged, and an evident deficiency in the place from which it has been dislodged; a manifest difference between the joint affected and the correspondent one of the other side; and a particular noise or sound elicited in moving the displaced parts. Acute pain on motion, and considerable tumefaction, are the ordinary accompaniments of these signs."

The TREATMENT can seldom be undertaken with prospects of success. The muscular resistance the animal is capable of exerting, and which he cannot be restrained from employing against our efforts to reduce the dislocation, constitutes of itself an obstacle not to be surmounted. Nor do I see the means by which we can conquer this opposition, unless it be by the influence of some such narcotic as chloroform. This difficulty overcome, there remains another arising out of the circumstances of the case: such as the complication

with fracture ; the changes the parts may undergo between the accident and any attempt at reduction ; the restiveness of the subject ; the peculiar construction of the joint ; the nature of the dislocation, &c.

The CURE involves three objects :—the reduction of the displaced bones ; the retention in their proper places ; and the counteraction of any disease to which the injury may give rise.

REDUCTION.—There are but few joints over which we can exert any effective power unless the animal be cast. After which, the next thing is to make the body a fixed point, from which extension can be made, at the same time that counter-extension is maintained. Pulleys may be employed for this purpose. Chloroform should then be administered until its effect is confirmed. The direction of the extension must be regulated by the veterinarian, who is the proper person to undertake the guidance of the bone back into its socket. The main thing he has to do is, to apply his force in such manner as seems best calculated to overcome the muscles. Nor is he to relax in his efforts while success appears probable ; but he must modify his operations according to circumstances, until every hope is extinguished.

The RETENTION of the reduced bones in their places will not often prove difficult, providing the animal be kept where he cannot use the injured joint. The reduction will probably be followed by inflammation, the solid interstitial effusion attendant on which will tend to prevent motion ; wherefore, we endeavour to excite inflammatory action by the application of blisters, firing, &c. There are some cases in which we may do good by the application of bandages made on purpose. Splints, also, may be useful.

COUNTERACTIVE MEASURES consist in the palliative or depletive remedies, where the inflammation attending the injury disturbs the health. Bleeding, purging, fomentations, refrigerant, and discutient lotions, &c., may be called for, either singly or in combination, and to such an extent as will make a local or a constitutional impression.

PARTICULAR DISLOCATIONS.

On this subject veterinary surgery is more backward than it seems to be with respect to fractures; and this may serve to account for the paucity of our remedial means.

DISLOCATION OF THE SPINE.—Dove-tailed and cemented together as these bones are, it seems next to impossible for dislocation to happen without fracture. As the vertebral canal depends on the vertebræ, any displacement must endanger compression of the spinal marrow; this would cause paralysis posterior to the seat of injury. Nothing but violence should occasion such an accident. Several cases of this description are on record: but the absence of paralysis, and the apparent ease with which the animals recovered, are circumstances that induce a doubt with regard to the nature of them. Most of the dislocations have occurred in the neck: and a common cause is the horse getting the head under the rope by which it is tied up, and violently struggling to disentangle itself. Or it may twist the neck by the hind quarters getting underneath the manger. It frequently happens that an animal in this predicament is in the morning found dead, probably having fractured and dislocated some of the vertebræ, or else strangled itself. The following interesting case occurred to Mr. Spooner, of Blandford: he was sent for to attend a cart mare that had “entangled her head under the manger; in attempts to extricate the body, the animal had got the head under, and dislocated the neck. It presented a very dreadful appearance, the neck being bent in the form of an arch. The head was hanging down almost to the ground, from which the mare could only raise it a few inches. On making the animal walk, it moved round in a circular direction, corresponding to the shape of the neck. The convex side of the neck was much injured. On moving the neck in a lateral direction, the fulcrum of motion appeared to be between the fifth and sixth vertebræ, pointing out the seat of injury.” Mr. Spooner viewed the case as hopeless; but, with the consent of the owner, was willing to try what could be done. He bled and physicked the animal, and bound deal splints upon the neck. The fever ran high. The head swelled considerably; which was relieved by lancet punctures. On the eighth day, the mare appeared better, and was turned out. It managed to eat grass, and from this time gradually improved. In five or six weeks it could walk straight, and the neck had recovered much of its natural shape. A month after it was put to work. The neck gradually righted.

DISLOCATION OF THE SHOULDER.—This accident is a rare occurrence. Hurltel d’Arboval relates that a horse drawing a cart heavily laden, fell with great violence, and dislocated the humerus. It was immediately de-

stroyed. The capsular ligament was torn through, and the muscular fibres burst asunder. The head of the humerus was, as it always is, lodged *in front* of the glenoid cavity. The accident may be known by the deformity, and by the inability to move the limb. It is incurable. In a case which Malthorez succeeded in reducing, the bone continually slipped out again, so he spread a charge over the shoulder, and got a man to hold the bone in its place for six hours a day. In a week the bone kept its situation without further assistance.

23d July, 1852, Hyde Park Barracks.—J— P— rode a black mare which he desired I should examine. It had been kicking, and had in consequence been bought a bargain. I found fault with the shoulders, these being upright; and standing, on her off side, I perceived that the right scapula was monstrously prominent and forward: in prosecuting my examination, I discovered that the crista of the bone had been forced forward, and consequently had thrown the body more upright, besides producing a remarkable prominence below the withers, just behind the neck, to which there was no counterpart on the opposite side. I showed the deformity to J. P., as well as to Corporal Sturt. The scapula appeared to have been forced forward out of its natural position; for I could detect the spine of the bone, though, of course, much more forward than natural. J. P. was riding the mare, and said she was perfectly sound. Notwithstanding, the case seemed to me to amount to a *partial dislocation* of the scapula.

DISLOCATION OF THE ARM cannot occur unless the olecranon be broken. Should this happen, there is no chance of recovery.

DISLOCATION OF THE HIP is oftener met with than any other luxation. Hurler d'Arboval tells us it may happen from a slip while the hind legs are stretched out in the act of staling; when it does occur, the displacement is commonly incomplete: the head of the femur being thrown *backward*, and lodging upon the brim of the acetabulum. It is accompanied by rupture of the round ligament, laceration of the capsule, and breach in the cartilage by which the acetabulum is surrounded. The peculiar halting gait will attract attention to the hip-joint; and, by examination, we shall be enabled to feel the head of the femur out of its proper situation. In time, it happens that the bone makes a socket for itself in its new situation, and obtains, by degrees, tolerable motion; sufficient to enable the animal to do "slow work."

Mr. Feron relates a case of dislocated hip. "The pain was so great the animal could not stand erect; and when down, required seven or eight men to help him up." Mr. Feron cast the horse, and, "with unexampled difficulty and trouble, succeeded in reducing the bone." He then "applied the actual cautery on the joint;" and, lastly, "covered the place with a dressing composed of tar, spirits of wine, and vitriolic

acid." The horse was after this turned out. In four months, "he could get up himself, and walk tolerably sound; though at the trot he was still lame. But at the expiration of twelve months he was perfectly sound, and remained so."

DISLOCATION OF THE PATELLA OR STIFLE-BONE is the most common accident of this description; it also proves the most remediable. My father's 'Veterinary Records,' p. 26, contain an account of a case that occurred to him, June, 1804. Had this been published, it would probably have stood *first* in our annals. To this affection attention was first called by Mr. Charles Percivall; from whose communication to 'THE VETERINARIAN' I derive most of my information.

Mr. C. Percivall has met with *eight cases* of dislocated patella,—“five of them within the space of little more than two years, and during his residence in India;” a circumstance that leads him to believe it is a case “of more frequent occurrence in India than in this country; probably arising from the manner in which horses are tied up;” their heads being confined by side-ropes to pegs driven into the ground; while the hind legs are encircled with leathern straps, and confined by ropes to two other pegs. The dislocation seems to happen either in the act of lying down, or from some violent effort made in rising. On other occasions it happens out of the stable, either in consequence of some external injury, or of some sudden or lateral movement for which the muscles were at the time unprepared.

The Symptoms of this dislocation are—protrusion of the limb backwards; the pastern and foot flexed to their utmost, incapable of being straightened, and trailed along the ground when the animal is made to move, describing a sort of segment of a circle; with perceptible prominence and tenderness on the outer side of the stifle-joint; and also some unnatural depression in the proper situation of the dislocated bone. There is an accident, rare however in its occurrence, which may be mistaken for this dislocation. It consists in tumefaction of the bursal cap of the patella, and is commonly referable to a kick or blow. Although, at first view, it looks very like a dislocated patella, the practitioner will, the moment he sees the horse walk and use the limb as though nothing had happened, feel persuaded that no displacement of the bone can exist. After fomentation, and a dose of physic, the best remedy for this enlargement is a blister.

The Reduction of the bone is effected thus: Let an assistant carry the limb forwards and upwards, towards the abdomen, for the purpose of relaxing the stifle as much as possible; the operator is then to place his hand upon the outer angle of the patella, and keep forcibly depressing the part while he is endeavouring to tilt the bone forwards and upwards. Another mode is with a side-line, or long piece of web, passed around

the pastern: thence carried over the neck, with which the foot may be forcibly drawn forward and elevated. A more summary way of proceeding, and one that often succeeds, is to frighten or flog the patient, to make him spring forward and exert his hind parts; during which efforts the patella will, by muscular contraction, get drawn into its place again. Mr. King, of Stanmore, was called to a case he reduced in this manner; and the next day was informed that the horse was "worse than ever" being a cripple in both hind legs; and, indeed, so he found him, for now both patellæ were dislocated: his remedy consisted in flogging his patient well with a waggon-whip: and it proved perfectly availing, both reductions becoming spontaneously effected, and no future complaint was made. The sooner the reduction is attempted the less difficulty is the operator likely to experience; though it is not the replacing, but the *retention of the bone in its situation afterwards*, which is likely to occasion embarrassment. In one case that occurred to Mr. Percivall, the bone, after being reduced, slipped out again "half a dozen times within the space of ten minutes;" causing him "to despair of keeping it in its place at all." He, however, at length succeeded "by himself retaining the bone in its place with his hand, for some time after the reduction." In another case, the luxation returned six weeks after replacement; half of which period the horse had been performing duty. In this instance, after getting rid of some inflammation, by bleeding, purging, and refrigerants, Mr. Percivall blistered the stifle, which had the effect of preventing any relapse. When a blister fails, I recommend the firing-iron to be tried. In all cases, abstinence from motion is indispensable; the animal should be kept ten days or a fortnight racked up.

Any blister or stimulant applied, from the inflammation it causes, produces, first, a soreness about the part; this indisposes the animal to make use of it; and, secondly, a subcutaneous, or intercellular, effusion; this has the effect of pillowing the bone, and preventing another displacement of it. Mr. Siddall, V.S., R.H.G., says he rubs *Ol. Tereb.* upon the stifle.

In all Mr. Percivall's cases the displacement of the bone has been *outwards*, a circumstance arising from the external condyle of the femur, being less prominent anteriorly than the internal one. Mr. Cherry, however, relates an instance in which the dislocation was *inwards*, occasioning the limb to be drawn upwards.

Mr. Gloag, in a letter to me (Dec., 1853) says, "Several cases of slipping out of the patella from sheer debility have been noticed. I noticed some time since a case of a grey horse, which had been suddenly affected with stringhalt in the off hind leg, when at field, to a most remarkable degree. On careful examination, the following day, I found it to arise from the patella being *partially* dislocated outward, so that, by keeping

my hand pressed to it, the animal was at once well. The horse was what I call a 'cow-hocked' animal; hocks in and feet out. With long rest he got well."

DISLOCATION OF THE FETLOCK *happens, perhaps, more frequently than others*, being producible by any cause to which violent sprains are owing. The displacement may happen in any direction, and it is to be reduced according to the rules laid down for dislocations in general, and then bound up with splints, dossils of tow, and bandages. There is, however, little hope of restoring the case.

BURNS.

Should an animal be burnt, there is more to be dreaded from constitutional suffering, than on account of the parts hurt. The local injury is of *secondary* importance. I shall illustrate this subject with the following case, related by Mr. Feron :

"In 1799, I was at Stratford-on-Avon, visiting the different quarters of the 13th Dragoons. About one o'clock in the morning, a private stable in which Captain Kent, of the regiment, kept two horses, took fire. I was called in a great hurry to render assistance. When I arrived, I found the animals had been dragged into a field. They were apparently suffocated. They had in reality life; but that was all. I immediately set a farrier to bleed them from both jugular veins at once. I was not able to ascertain the quantity of blood drawn, for it flowed upon the ground; during which time, I was employed rubbing their legs and belly with spirits of turpentine. In a few minutes they began to recover. Afterwards they took doses of physic. One recovered in six weeks: the other was left affected with a hard cough which lasted six months."

RABIES.

Rabies is rare in horses; for which, two reasons appear evident. The first is, the horse cannot generate the disease; the second, that a dog or cat is probably less disposed to bite a horse than almost any animal. Now and then, a case of this malady presents itself; and it is of importance we should be prepared to recognize it in its mildest character, that we may take measures to prevent any disastrous consequences to the attendants, as well as to other horses.

There are two gentlemen to whom the profession and the public are obliged for the information on this subject: I mean Mr. Blaine and Mr. Youatt. Both these writers disbelieve that rabies is producible in the horse in no other way than by inoculation.

SYMPTOMS.—“Its attack,” says Mr. Youatt, “is most sudden. The horse will go out apparently well; all at once he will stop, tremble, heave, paw, stagger, and fall. Almost immediately he will rise, draw his load a little farther, again stop, look about him, back, stagger, and fall. This can scarcely be confounded with megrims, for the horse is not a single moment insensible; and, after seemingly recovering, possibly falls twice or thrice before he can be led home. The sooner he is led home the better; for the progress of the disease is as rapid as the first attack is sudden. In many cases, perhaps the majority of them, a state of the highest excitation speedily ensues: the horse kicks and plunges in the most violent manner; he is then quiet for awhile, recognizes his attendant, is sensible to his caresses, and looks most piteously at him. A rabid horse belonging to Mr. Keat pressed his head repeatedly against me; then, without the slightest notice, he plunged and fell. Sometimes he is mischievously disposed. He will furiously seize and bite other horses, and even his attendants; and as Mr. Blaine well describes it, ‘will level with the ground everything before him, himself sweating, and snorting, and foaming amidst the ruins.’—Staggering and palsy of the hinder extremities soon succeed. I once saw a mare sitting on her haunches, and unable to rise, yet pawing furiously with her fore feet. The disease, however, quickly runs its course, and rarely extends beyond the third day. In two cases I fancied I saw something very much resembling hydrophobia. The thirst was excessive, but the act of swallowing was performed with a forced gulping effort, and suddenly the head was snatched from the pail with a strange contraction, a kind of *risus sardonicus* of the lips.”

The following case is related by Mr. C. Marshall, V.S., London, in vol. vii of ‘THE VETERINARIAN:’—“On Thursday evening, April 17, 1834, a message was sent to me by Mr. Reynolds, that ‘his old horse was very ill, and had something sticking in his throat.’ I was from home, and could not attend before Friday morning. I found the horse foaming, breathing very laboriously, tail erect, screaming dreadfully at short intervals, striking the ground with his fore feet, and perspiring most profusely. He would get into the manger, and strike his head against the wall, cringing and drawing himself up as though there was some obstruction in the œsophagus. He was continually biting the top of his stall, and when I approached him, he tried to run at me. I considered him to be

rabid, and advised Mr. Reynolds to have him destroyed." Before, however, the pistols could be got ready, he broke loose, and first made at those in attendance, then turned into the next stall, and died instantly. No trace of any bite from a dog existed; nor was anything unusual noticed, about the horse preceding the attack—unless it was that a lameness under which he laboured, had left three or four days before. "He was at work within four hours of his seizure." Mr. Marshall examined him immediately after death, and "found the upper and back part of his tongue, epiglottis, and the membrane of the windpipe, in a high state of inflammation: the lungs also gorged with blood. The brain, stomach, and every part of the viscera, were in perfect health."

The INTERVAL BETWEEN THE BITE AND THE APPEARANCE OF THE DISEASE is, according to Mr. Blaine, the same in horses as in other animals, "from five weeks to three months: but I have observed," continues Mr. Blaine, "as in dogs, its attack is always quickest when the bite has been received in the head."

The MORBID APPEARANCES, in every case in which Mr. Youatt has had an opportunity of examining the animal after death, have been "inflammation on the glottis, and generally on the trachea. There has uniformly been inflammation in the stomach, and on the lungs, and in patches, as in the dog. Either the membranes or substance of the medulla oblongata have always been injected."

TREATMENT.—Should not the master put an end to the animal's sufferings, Nature will. The disease "rarely extends beyond the *third day*." What most concerns us, is, the *prevention* of the disease: supposing we are consulted in the interval between the bite and the accession of its consequences. The parts should be excised, and the surface afterwards seared with the flat part of a hot firing iron. This will answer the double purpose of destroying the poison, and of stanching the hemorrhage. Should there be any objection to the actual cautery, make use of caustic: the *lunar caustic* is the best. Indeed, so efficacious has this been found in man, that, could we only be certain every part of the tainted surface had been submitted to its operation, there would be little to apprehend as to the result.

VENOMOUS BITES AND STINGS.

These injuries are produced by insects and reptiles, whose bite or sting is often fatal. Serpents, in particular, are known to possess this property: though in Great Britain we have but one creature of the kind indigenous—the *adder*.

From the following extract from the 'Dorset Chronicle' it would appear the sting of the adder occasionally proves mortal:—"On Monday se'nnight, a horse, the property of Mr. Andrews, of the Britannia Inn, Castle Carey, whilst grazing in a field about a mile from the town, was stung by an adder; and so virulent was the poison, that the animal died in the course of an hour, in the most dreadful agony." Mr. Blaine informs us that "the accident is not often attended with fatal consequences; and that country persons merely rub the part with an onion, and force another down the throat." "In more serious cases," continues Mr. Blaine, "the following will give relief:—spirits of hartshorn or turpentine, one ounce, mixed with a point of olive oil. To a horse the whole of this mixture may be given, and some of the same kind rubbed into the bitten part."

The annexed paragraph I have since extracted from the 'Reading Mercury.'

"Two valuable horses were last week stung to death by bees: one dying in great agony within the short space of ten minutes after it had been stung; the other surviving two days. The animals were turned into a yard at Chittern, Wilts, where there was a stock of bees, which they soon upset; the bees then fastened upon the horses, and the result was as stated." (August, 1834.)

One field-day, our regiment had in Windsor Park two of the troop horses stung, in the act of trampling over a wasps' nest. One was rendered for a few minutes very lame from the stings, which had produced two small puffy lumps upon the hind fetlock: the other horse had a similar swelling upon his stifle.

SECTION V.

DISEASES OF THE SKIN.

SURFEIT.	{	PRURIGO.		GRUB IN THE SKIN.
		ERUPTIONS.		MANGE.
		URTICARIA.		HIDEBOUND.
		GREASINESS OF SKIN.		LOUSINESS.
		SADDLE SCALD.		WARTS.
		TETTER, or		GREASE.
		RINGWORM.		CHAPPED or CRACKED HEELS.

MODERN physiologists have demonstrated that the skin performs a highly important part in the animal and vegetable kingdom; that it is a powerful auxiliary to the lungs in oxygenizing and vivifying the blood, and an extensive emunctory by which the fluid materials that have performed their duty are eliminated: the importance of its being kept in a constantly clean and perfectly free state, in order that it be able to perform these functions, &c. ('Lancet,' 27th April, 1844, p. 165.)

SURFEIT.

The word *surfeit* is used, in veterinary medicine, to denote certain appearances on the skin which are the consequences of excessive feeding. Horses standing in stables, and but inadequately worked, are subject to heat and itching of the skin, and to occasional eruptions. By an effort of the vital powers, the redundance is thrown off in the form of an eruption; and in this manner, other and more serious evils averted. Hence, surfeits are regarded rather as signs of exuberant health than of actual disease.

PRURIGO.—I employ this term to signify those hot and itchy states of the skin under which horses are eternally

rubbing their heads or necks, manes, roots of their tails, hind quarters, &c., and thus rendering those parts bare. This is the simplest form of surfeit, and requires nothing beyond some modification of the stable regimen: bran-mashes in lieu of corn; green-meat, if it be in season, or additional work. The itchiness may be relieved by using a lotion composed of half an ounce of sulphuric acid and a quart of water: with this, the parts are to be wetted.

There is a sort of cutaneous furor to which horses—pampered and little-worked—are liable; and which appears to be constitutional in its origin. The horse experiences an insufferable itching, and to allay this, will bite and tear himself with his teeth, and inflict wounds in his skin upon the places rubbed or pressed by the saddle or harness, and by rendering them sore or raw, reduce himself to a state of comparative uselessness. This habit, or rather disorder, once contracted, is exceedingly difficult—in some cases, impossible—to get rid of.

1840, May 3d.—A four year old mare, this morning had four lumps make their appearance. Two upon the inner part of each thigh, directly opposite, and touching each other; which were flattened, quite circular, and about the size of a small captain's-biscuit; another somewhat smaller, appeared upon the belly, and a fourth, still smaller, upon the back in the place where the points of the saddle-tree bear. Their singularity of character consists in the perfect roundness of their figure; only one of them, that upon the belly, having a humpy sort of divergence to one side of the circle. The submaxillary glands of the left side were also enlarged, and the Schneiderian membrane reddened. They made their appearance quite suddenly. Since the attack, the mare experienced a violent fit of coughing; and yet the appetite and spirits are not affected. Nothing done. May 4th. Since yesterday, kept upon mashes. These large lumps have diminished and become more diffused, but numerous small ones—of the ordinary size of half-marbles—have made their appearance in all parts of the surface. May 5th. The lumps have decreased, and appear to be on the decline. Prepare

for physic. May 7th. Yesterday, the physic operated; it indeed still purges a little. And now the lumps, both large and small, are all but gone: only slight elevations in their places can be perceived.

ERUPTIONS are those little lumps or *pustules*, which horses in high condition, or progressing to that state, have break out upon their skins,—more especially during the spring of the year. They constitute a determined form of surfeit. Their appearance is sudden; often they quickly disappear. Sometimes they rise in almost every part of the body: more commonly they are partial. I have known the eruption vanish and re-appear for several days together. A case of this description was treated by my father: the lumps were as large as marbles, but disappeared a few hours after their eruption; breaking out afresh on the following third or fourth day, and doing so several times. The variable magnitude of these lumps—some being small and hard; others large and spreading—with the different times of their appearance and other circumstances, lead us to believe they cannot all proceed from the same disorder. Hurler d'Arboval distinguishes two varieties—*partial* and *general*.

“In the first, the lumps are few, diffused, and isolated, nowise affect the health of the animal, though at times they occasion itching. They last fifteen days or three weeks, sometimes much longer. They disappear by resolution, without leaving marks of their existence. They do not always vanish in this way: now and then they become converted into abscesses, which burst, discharge a serous fluid, and become crusted over.

“In the second variety, the lumps arise at once, and upon almost every part of the body. They are unequal: some are small, some large. All of them are flattened, and disposed in groups, presenting often little vesicles, from which issue a glutinous fluid. The animal's health is disturbed. The appetite is impaired; the skin warmer than usual; the visible membranes flushed; respiration accelerated; pulse full and hard. Eruption, attended with itching and fever, may turn out serious, through metastasis, as frequently happens in young horses that, during the previous winter, have suffered from hard work and poor living. The most common metastasis is that of the air-passages; and it is one likely to ensue when the eruption suddenly disappears.”

I should say, that disordered health is not necessarily connected with the *general* eruption; on the contrary, that it frequently disappears without any ill consequences—without, in fact, any observable change whatever in the health of the animal. The same author informs us, that eruptions are apt, by unprofessional persons, to be

CONFOUNDED WITH FARCY-BUDS; though the circumstances of the farcy-buds being *subcutaneous*, disposed in lines, like so many knots on a string, and being usually found in certain situations of the body, will at all times enable us to make the distinction in practice.

There is a sort of eruption consisting in patchy excoriation and slight ulceration around the verge of the anus, which, in some horses, is apt to make its appearance at the spring of the year, accompanied in general, by a costive state of body. This is to be ascribed to a disordered alimentary canal; to preternaturally hot, acrimonious discharges per anum, which irritate and corrode the external parts. The remedy is, to wash the fundament clean twice a day, and wipe it dry, then to sprinkle it with some innoxious absorbent powder, and none seems better than common flour. At the same time a brisk purge should be given.

I have frequently observed lumps in the skin to make their appearance at the time of *dentition*; and in such cases I have felt very much disposed to, physiologically, connect the two phenomena. If this view be a correct one, the remedy clearly lies in attending to the dental procedure.

D 10, a grey mare, was shown to me, 28th Oct. 1840, for "eruptions" upon the body and limbs. The lumps are scattered, being over the skin some distance apart, and but few in number; they are the size of marbles, and such as have broken, have discharged a serous, yellow-looking matter, which sticks and mats the hair together; in fact, the places look as if so many blisters had been applied. A dose of physic was given, and the broken places sponged with warm water, and I heard no more until about November the 4th, when it was again presented with a fresh crop of similar eruptions: some of the former ones having apparently

gone back, as they felt hard and insensible. Now it was bled to 8lb., and Calomel, ʒj., Purg. Mass. C. ʒx, given. It quitted again quite well on the 7th. After the operation of the physic I heard no more of it until the 12th, when it was again brought with more eruptions and lumps. To take daily, Calomel, ʒi., Ant., ʒj., in powder daily. Nov. 14th. It was admitted into infirmary. There are now about twenty lumps on the body, more upon the near than upon the off side, while the near fore leg has been the especial object of attack. There are several large blotches upon the arm, mostly on the outer, one only upon the inner side, and none below the knee. When closely examined, or if they be bathed with warm water, there is found a partial separation of the hair, which comes off with the incrustation, and exposes the cutis bare and raw. Nov. 16th. To-day, it has had a rigor, after which I had it bled again to 8lb., and gave it P. M., ʒss.; Fever M., ʒss., Calomel, ʒj., as a purgative in consequence of the leg having become greatly swollen, and the eruptions discharging much. The pulse is about 55. The mouth rather feverish. The appetite continues pretty good. The eruptions to be cleansed with warm water; the near fore leg to be fomented, and the mare to continue the exercise twice a day. 17th. The off fore leg has become attacked; shows many eruptions, which, to-day, are seen upon both the legs, and the limbs are swollen likewise. Repeat the ball, with exercise, and fomentation. 18th. Much the same; does not purge; repeat ball. 19th. Purges briskly; no fresh eruptions; legs less swollen. Foment and exercise. 20th. Again better. No fresh eruptions; old ones becoming dried up and shrinking. Swelling less in the limbs. Continue exercise and fomentations. 21st. Going on well. 30th. Sent to the troop-stable. No fresh eruptions having appeared, and the old ones having broken and discharged a sort of glutinous or albuminous fluid, which had matted the hair together, and afterwards caused its separation, while the cuticle came off in white scales, like so much scurf.

The CAUSE of surfcits and eruptions are *plethora*. Young

horses that have recently come from poor to good keep, are the ordinary subjects of its attacks; and spring is the season in which we mostly observe it. I have known horses have it annually on the approach of warm weather. Sometimes, it will break out after violent exercise, or after too copious a draught of cold water while heated. It is said to be an occasional consequence of indigestion, or of unwholesome food.

The TREATMENT must relieve plethora, and remove any inflammatory disposition in the system: the eruption itself should also be encouraged. In cases of simple eruption, nothing more is required than the substitution of a mash for a corn diet; green-meat, if it can be procured, for hay; chilled water; warm clothing and bandages; with additional exercise. Should the eruption evince a permanent character, or should it show a disposition to relapse, it may be requisite to purge moderately; and this evacuation may be followed by febrifuges mingled with the animal's mashes. As Hurtrel d'Arboval remarks, when the lumps are bursting and discharging, the time for evacuations has gone by. We may then be content with cooling diet, and sponging the surface with warm water: though, "should the skin require excitement, frictions with camphorated spirits" are recommended.

ULCERATIVE SURFEIT.—There is yet another—though a comparatively rare—form of surfeit or eruption, the *ulcerative*. The skin in certain parts of the body becomes pimply or pustulous, and at the same time so tender to the least pressure, that the animal shrinks even when the place is but touched. These pimples or pustules before long burst, and discharge a glutinous, serous kind of fluid, which binds and mats the hair together in patches. At length, the skin cracks around these agglutinations; suppuration supervenes in the cracks, and the isolated portions of skin are by a process of ulceration, gradually cast off, leaving exposed deep, ragged, pale ulcers. The eruption, I think, commonly commences on the head; and after healing up there, often attacks some other part of the body—the back, croup, &c. It attacks horses full of gross condition, and at the spring

of the year in particular, on the approach of warm weather. After freely bleeding and purging, I recommend a course of alterative medicine. To the eruption, prior to ulceration, apply either Goulard lotion, or salt and water. When sores appear, let them be fomented daily, and dressed with some escharotic or stimulating application, such as solution of lunar caustic, or white vitriol, or alum; and afterwards sprinkled with astringent powder: charcoal, or common flour.

I am quite persuaded eruptions appear in horses as in children, during the time of the cutting of the teeth. I have seen large, irregularly-shaped "lumps" make their appearance almost suddenly upon the neck, body, quarters, and arms of young horses while cutting their tusches; their gums also being red, swollen, and feeling hot; the pulse, likewise, quicker; the animal dull, though not, perhaps, off its feed. Lancing the gums is evidently indicated here, though, like similar effects from other causes, this febrile commotion once excited, will not subside directly; and will, therefore, be best met by aperients, loose diet, &c.

URTICARIA.

Slight inflammation of the skin, characterised by prominent spots of a redder or paler hue than the neighbouring parts. The pale spots are accompanied by a feeble, circumscribed engorgement, which rarely continues; but re-appears with another attack. Sometimes, these are covered by white vesicles, analogous to those which follow the pricking of nettles.

GREASINESS OF SKIN.

The horse I bought of Capt. Legge, which has recently returned from grass, and is now, (Sept. 1835,) shedding the coat, evinces an exceedingly greasy condition of the skin. The coat feels remarkably soft and slippery, and the fingers, after stroking it, are uncomfortably greasy. I have had

it washed with soft soap, and that rendered it comparatively free from greasiness: but it is now but three days since the washing, and I find it becoming greasy again. A week afterwards I (after giving a fourth dose of physic) had the animal washed with water, in which an alkali was dissolved.

SADDLE SCALD.

Thus I would designate that excoriation of the back, which arises from acridity of the perspiration operating upon a skin possessed of unusual irritability. The friction of the saddle (from its improperly fitting, or being insufficiently girthed) has probably also something to do with its production. Some of these cases, either because the same irritant is repeated, or because we cannot get rid of the irritable condition of the skin, are exceeding troublesome, and have proved difficult to cure. At first, only some slight, patchy excoriation, or rather depilation, is observed; should, however, the saddle continue to be worn, the entire sides of the back—at least those parts covered by the flaps—will lose their hair and cuticle, presenting a sheet of ulcerated cutis, commonly more on one side than the other. This forms one of those vexatious cases which lay a horse up without his being either actually sick or lame; for lay them up you must, if you would cure the disease. And no sooner will you have cured it, than, (unless some alteration be made in the saddle,) the first time the horse is ridden, it will return. Lining the flaps with linen in place of the serge: altering the situation or position of the flaps; improving the fit of the saddle, and rendering it less moveable upon the back, are a few of the necessary remedies. The medical means are, bleeding, purging, and various local applications; none being better, in my opinion, than those recommended for many affections. One horse in our regiment had such continual and violent recurrences of this affection, as disabled it, after being ridden once or twice during hot weather, for

the entire summer; it was at last resolved to get rid of the animal. Mr. Goodwin told me he met a similar case in the Royal stables, and the horse was consequently sold at Tattersall's. In these cases, the sense of itching and irritation is so great that the horses violently bite and tear the skin upon their backs; so that after being kept racked up all day, and even for weeks, or having worn cradles, and being to appearance cured, in one night they will gnaw themselves, and become worse than ever.

Oct. 5th, 1850.—A four year old horse (A 25) was shown me this morning, with one circular patch, nearly bare, upon his rump, close to his dock, and several others (three or four) on the off quarter, lower down. Little vesicles, containing fluid, first came. These run into one another, and break, the hair matting over them, and coming off along with desquamations of the cuticle, which lies in cakes or scabs around the places where the vesicles appear. I viewed the places through a magnifying glass, and distinctly saw heaps of these scabs, which, when they separate, bring the hair off with them, and leave the places bare until new hair springs up and covers them. This horse has got the tushes, and is now cutting his 5 year old teeth, *without* any reddening of gum, or the slightest irritation.

RINGWORM.

I acknowledge myself unprepared to draw up any account of this disease grounded on personal observation: I shall, therefore, have recourse to Hurtrel d'Arboval.

Tetter, or ringworm, is a specific cutaneous inflammation, ordinarily of a chronic character, occasionally intermittent, and almost always obstinate; distinguished by certain signs or appearances from other affections of the skin, by the circumstances of its occupying circumscribed patches, and by those places being separated by boundaries from the healthy parts. Whether it be contagious or not remains an unsettled question. It is a disorder all domestic animals are subject to: but it occurs oftener

among horses than among neat cattle. In all animals we believe it to be essentially the same disease: though seen in the slightest blush and the deepest ulceration, in the different sizes of the pimples, the various aspects of the skin, the numerous stages of ulceration, and the several shades of redness, we may observe signs sufficient to lay the foundation for the several varieties—the *furfuraceous*; the *squamous*; the *humid*; the *crustaceous*; the *ulcerous*.

The FURFURACEOUS VARIETY is the least important of all, and never runs into ulceration. It begins by an assemblage of pimples, often imperceptible to the naked eye, with a slight itching, followed by loss of hair. The cuticle peels off in little scurfy flakes, resembling bran; and if it be washed off, exposes the reddened cutis underneath. The diseased places exhibit a circular figure, and have prominent borders, manifesting little exudation, unless at the beginning. They occupy such parts as envelop bones; the prominences of the head, the points of the elbows, the sides, the haunches, &c. This variety is more frequent than others, and occasionally exists in combination with mange. It does not appear to affect the general health. Animals seem to enjoy even a better appetite, a circumstance explicable by sympathetic stimulation upon the digestion.

The SECOND VARIETY affects dogs in particular.

The THIRD VARIETY consists in pimples, flattened, and so small, as to be hardly discoverable: these burst, and discharge a matter that forms incrustations of a greyish or yellowish cast. Ulceration frequently ensues from puriform matter collecting underneath the incrustations. This variety is of tedious duration.

The FOURTH, or ULCEROUS VARIETY, has been observed in dogs.

Although we have little to apprehend from tetter, it often turns out an intractable disorder; and especially when it has grown inveterate through negligence. It is ascribed to a variety of causes, constitutional and local. It is apt to appear in the spring and autumn among horses that have suffered from bad keep; and will attack many at a time.

TREATMENT.—Unacquainted as we are with the organic lesion to which tetter owes its existence, we have nothing to offer by way of treatment. All our "remedies" are empirical. It is rarely they succeed. We must attend to the general health of the animal, and take care the skin is washed with soap and water as often as required: without which the dressings cannot take proper effect. Should the places exhibit inflammatory action, we must foment. Sulphur ointment, empyreumatic oils, &c., may be tried. The ulcerous tetter is the worst to treat. Should not lime-water, or any stimulants succeed, we must have recourse to the actual cautery. At the Alfort Veterinary School, good effects have been derived from the use of the liquor plumbi, in combination with nitric acid.

Mr. Dyson (of Park Lane, London) told me that some one came into his yard one day, and, talking on the subject, declared oil of tar to be a remedy infallible for this affection.

GRUB OF THE SKIN.

Long as this affection has been known to breeders, and to almost every one who has had to attend upon young horses, yet it has met with no attention from veterinary authors. It has, however, been commented upon by continental writers, and, up to the present time, the best account we have of it in the native language, is to be found in the 'VETERINARIAN' for 1850. Years ago, I used to regard the knots found upon the backs of horses as saddle-galls. I now, however, know better. They arise from the deposit of larvæ of the *lypodium equis*. I have myself seen the tumefaction caused by such irritations extend several inches around the site of the grub, and a great deal of irritation result from it. On the other hand, during the winter, they remain about the magnitude of lentils, feeling like pins' heads buried underneath the skin. They form abscesses, and discharge pus. They are best cured by dilatation of the opening, squeezing out the grub, and destruction of the sac with some escharotic, after which they quickly heal by granulation.

MANGE.

I believe that all quadrupeds are liable to an affection of this kind. The most remarkable characters of mange are, the annoying itching, and the bare places it occasions. A mangy horse will rub himself against any part of the stable or yard; he will even rub himself against his companions, should he be at grass; and, by violent friction, will excoriate the diseased places, thus aggravating the malady. Though no part of the skin can be exempt from mange, the places it commonly occupies are the neck, shoulders, withers, sides, thighs, and head. Professor Cole-

man attributed this predilection to the thinness of the skin, and the circumstance derives additional evidence by comparing itch with mange. Hurtrel d'Arboval, however, ascribes the partiality to adipose matter, and looseness of the skin.

SYMPTOMS.—We seldom detect mange before it has made considerable progress. There are but two ways in which its presence is made known:—by the animal being observed to rub itself, and the state of the skin; which latter circumstance is not likely to be noticed until the hair begins to fall off. The disease is an *eruptive* one. It commences in the formation of minute pimples whose summits gradually expand into vesicles, which burst and coalesce, thus forming patches of incrustation, wherefrom the hair loosens at its roots, and either falls or is rubbed off; leaving the places bare, and the cuticle exposed, arid, and white; a lifeless state in which it desquamates in the form of scales and white dust. Upon the hairless patches may be perceived small red spots: these are owing to the crusts being rubbed off the pustules; the disturbance of the crusts is likely to cause bleeding, producing little bloody scabs. The roots of the hair appear to be secondarily affected, for the coat does not come off until the disease has existed some time: then the adherence of some hairs is often remarkable enough. In inveterate mange the skin undergoes farther changes in its structure, such as loss of elasticity, and corrugation into harsh, arid folds.

The INTRINSIC NATURE of mange is interesting rather for curiosity than utility. It is dependent on the presence of animalculæ—minute insects named *acari*. On removing with a brush the scaly dust, and examining it in the sun, may be distinguished little, organized, shining bodies moving about, which are the *acari*. In the horse, the insect is large enough to be seen without the aid of a lens. After all, however, so unimportant in pathology is the insect, that we rather side with Morgagni in opinion, who, though he does not question the existence of the *acari*, doubts if all mangy pustules possess them."

July, 1851.—Mr. Ernes sent me (in a letter) some *acari* to examine that were taken from a mangy horse. We put them under the microscope, and found that they somewhat resembled minute *crabs*, having

ovoid bloated bodies, claws with tenacula at their extremities, besides legs and tails. They moved but tardily, after the manner of crabs, apparently dragging their bodies by hooks or tenacula in their feet, always making, along some hairs, towards any heap of skin or scales, in which they buried themselves so completely that the glass could take no further cognizance of them.

Oct., 1851.—Discovered acari in Lieut. Walsh's second charger. It had had the mange in the summer, and had been several times thoroughly dressed, both at the Regent's Park Barracks, and at his father's; the animal came up this month, and was thought cured. It, however, commenced rubbing again, and we found upon the sore places *acari*. It is now *shaved* all over, that being found preferable to clipping or singeing, and is dressed with the Ung. Picis.

COMMUNICABILITY OF MANGE AND ITCH.—Professor Coleman says, “Mange is the most contagious disease to which the horse is liable; more so than glanders. I have known horses to be attacked with the disease from being curried with the same comb as had been used about one that was mangy; and I have often thought that persons attending on mangy dogs have communicated the disease to horses.”—Mr. Blaine declares, unhesitatingly, “that the mange of one (animal) can be communicated to the whole;” and adds, he has witnessed several cases where the itch has been taken from mangy horses.”—These English authorities are supported by continental veterinarians:

A farmer purchased a mangy horse, and rode it to his house. The next morning he found he had got the itch, and which his son had likewise caught. The boy who groomed the mangy horse scratched himself greatly the second day afterwards; in fine, thirty persons caught the itch, and some horses the mange.—In the Annual Report of the Veterinary School at Lyons, occurs an account of a mangy horse having communicated the disease to two cows, and to several persons. In the same Report is mentioned the case of a pupil at the School who caught the disease in his hands and arms from rubbing a mangy dog.—Hurtrel d'Arboval records an observation of the same kind. “An inhabitant of Montreuil-sur-Mer bought a pair of fine carriage-horses, both mangy. His servant, to whom he gave them in charge, caught the itch in his chin; and what is remarkable, he contracted the disease nowhere else.”—Such cases as these, however, after all, are rare: and there are those who disbelieve in the communicability of mange from one species of animal to another.

CONTAGIOUSNESS.—That mange is a highly contagious disease appears undeniable, so far as horse and horse are concerned: but that an identity can be established between diseases called mange and itch seems to admit of question. Were these disorders communicable, we should have cases proving the fact frequently occurring. It is true continental writers furnish a solitary case or two: but have we any authenticated instances in our own country? The truth is the contagion depends upon the acari; and the disorder is only communicable by actual bodily contact, or through anything conveying this insect from the diseased to a sound animal. Care, therefore, must be taken not only to put diseased horses separate, but that no article of saddlery worn by the contaminated animal be used for any other, without being thoroughly cleansed.

CAUSES.—We have now to learn that, like most contagious diseases, mange may be generated in the animal's system, without any reference whatever to contagion. Professor Coleman stated, that "mange was brought on by *poverty*; and that want of cleanliness may also contribute to its production. In reference to its spontaneous origin, Mr. Blaine observes, "among the *truly healthy*, it never arises spontaneously; but it does find a spontaneous origin among the unhealthy." Hurtrel d'Arboval is inclined to attribute its self-origin solely to want of cleanliness.

It is a notorious fact, that a gentleman's horse rarely contracts mange: it is the disease of the poor man's horse—of the horse that works hard and lives hard, and whose coat scarcely knows the comb or brush. In our cavalry mange is rarely seen; and yet, during the Peninsular Campaign, it was a common disease, though more especially among the bat-horses and mules. Two years ago, I had a case of mange originating in a young mare that was groomed and fed the same as other horses, but had never thriven: a circumstance evidently owing to disordered digestion, to which source I attributed the skin disease.

TREATMENT.—Mange, when produced, does not appear to be removable by constitutional means: external applications are necessary, nay, will commonly prove sufficient. Sulphur being the sovereign remedy for itch, no wonder it should

have met with a ready introduction for the cure of mange. When employed, I recommend one of the following applications :

Take of Sulphur, \bar{z} vj ;
 Nut Oil, lbj ;
 Common Turpentine, \bar{z} ij.
 Mix well together.

Take of Sulphur, \bar{z} iv ;
 Powdered Hellebore Root, \bar{z} ij ;
 Nut Oil, lbj . Mix.

Mr. Daw's method of procedure for mange and other cutaneous irritations, consists in, first, well rubbing into the affected places with the hand :

R Unguent. Hydrarg. Fort., \bar{z} iiij ;
 Saponis Mollis, \bar{z} xxiv. M.

Two days after which (rubbing), the anointed parts are to be washed thoroughly with soap and water ; and again washed as before in another two days. A third washing to be given after two more days, with the addition, now, of a thorough *scraping*, which is to be followed by a good wisping by a man on either side until the skin be perfectly dry. Send home the horse, with directions that it be exercised daily, so that his skin be made warm or gently sweated ; the wisping or rubbing being repeated on its return to the stable. The results of all this washing and wisping will be the separation of ample scurf, or desquamations of cuticle.

Mercurial preparations will cure the itch ; but they are not so certain as sulphur. This remark will apply to mange : hence, the introduction of mercury into many of our recipes for mange. Even sulphuric acid and water, \bar{z} ss to a quart of water, will, in incipient cases, arrest, and even cure, the disorder. Turpentine, from its stimulating properties, enters also into the applications for mange. Tobacco-water (made by steeping an ounce of common tobacco in a pint of boiling water) will also prove curative in ordinary cases. My favorite remedy, however, is Barbadoes tar and nut oil.

Let a pint of tar be mixed with three pints of common oil; and let the mixture be simmered until incorporated. Those who may seek a cleaner formula, may use the oil of tar and hogs' lard, in the same proportions. Pure oil of tar proves a blister to the skin. It certainly will cure the disease in less time than any other remedy I am acquainted with, and renders the skin supple to the feel, disposing it for a covering of hair, whose growth I have thought it promoted. When required for use, a sufficient quantity of ointment is to be heated in an iron ladle, and, at a temperature comfortably warm, to be thoroughly scrubbed into the skin with a soft brush. In about a week afterwards, let the animal's skin be washed; after which it may be examined. Though a second dressing is not requisite, the common practice is to administer one. Should the case, however, be inveterate, it is advisable to stir a drachm of powdered corrosive sublimate into a pint of the melted ointment; and a third or even a fourth dressing may be necessary.

CONSTITUTIONAL TREATMENT.—Supposing the disease to break out among horses low in condition, their diet should be ordered on a more liberal scale, and be as varied as possible. If in a cold situation, they should be removed to a warm one. In the case of a horse already well fed, in which the digestive organs appear to be faulty in their operation, we ought to give a laxative, with alterative medicines; also bruise or scald the corn, or allow carrots or turnips instead of oats.

INCURABLE MANGE.—I know a horse at this moment (Sir Henry Wyatt's carriage-horse) who regularly every spring, and in some years every autumn experiences an acute attack of mange. It generally affects his head, his neck, and shoulders. There is also a scurfy affection to which troop-horses seem to be especially subject: it commonly affects those parts of the head which are rubbed by the head-collar. It resembles mange more than any other affection, only when it becomes once established, so long as the cause continues, there is no getting rid of it. William Goodwin told me that, after trying every remedial plan upon the horses of Her Majesty's establishment, he has sometimes been compelled to have them slaughtered as incurable.

HIDEBOUND.

Take a fat horse out of a warm stable; turn him during the cold and wet of winter into a strawyard, and three months afterwards you will hardly recognize the animal. You will find him with a shaggy, staring coat; a belly double the natural size, and a skin sticking fast to his ribs, which may be counted with the eye; in a word, the change has induced *hidebound*. Hidebound is not a disease; it is the symptom of disorder. The animal in consequence of having passed from good keep to bad, from comfortable warmth to exposure, has lost condition, lost the fat upon the ribs, the digestion is deranged, and the result thereof is hidebound. The poor man's horse picking its hard fare from the hedge-rows; and the ass that fares harder still, furnish familiar illustrations of this disorder.

Hidebound, however, may also be the indication of disease. How often do we see, among a group of young horses, one that "looks ill!" The coat is rough; the skin is tight; the flanks are tucked up; the dung consists of hay imperfectly digested; in fact, the horse is hidebound.

A horse has inflammation of the lungs, which runs into the chronic stage, and hangs long about him. Under this influence, the animal will gradually decline, lose condition, daily get thinner; while the skin, from absorption of the adipose matter, may be daily felt getting tighter upon the ribs. This horse also is hidebound.

From the foregoing observations we may collect, that hidebound is indicative of general disease. After this explanation it is to be expected that no one will presume to dress the skin as a cure for hidebound, but that all practitioners will at once attack the root of the disease, and attend to the digestion.

LOUSINESS.

It is common for a horse that has been turned out for the winter, and is taken up in the spring of the year, to

prove "lousy" as well as rough, poor, and hidebound: for half-starved and neglected animals are more liable to become thus affected than such as are well kept and comfortably stabled. The cleansing of the skin may have something to do with this; but I am disposed to ascribe more to poverty: though to give a reason why these insects should infest neglected in preference to well fed animals is an impossibility. All our domesticated animals appear liable to these vermin, though each kind seems to possess a species peculiar to itself. When lice are numerous, they occasion itching, and cause the animal to rub or to bite its sides and quarters. Occasionally they collect in particular places, and so disorder the roots of the hair as to cause part of the coat to fall off.

TREATMENT.—Our first object is to destroy the insect: after which, their recurrence will be prevented by improving the condition of the animal, and paying attention to its coat. A variety of medicines have been used to kill these insects: I have but two, of the efficacy of which there can be no reason to complain: one is tobacco-water; the other, a watery solution of corrosive sublimate. In some inveterate cases the lotions may be advantageously combined, or the drachm of sublimate may be dissolved in a pint of the tobacco infusion.

Take of Common Shag Tobacco, ʒj.

Pour upon it a pint of boiling water, cover it up, and let it stand until cold:

or,

Take of Corrosive Sublimate, ʒj;

Boiling Water, Oj.

Let it stand until cold.

Some persons use mercurial ointment, and a very effectual dressing it is: it is, however, more troublesome to apply, and less penetrative, than a lotion.

WARTS.

Everybody familiar with horses is acquainted with these excrescences, nor need be told they are productions to which horses are liable, and some in particular extremely subject.

Such an annoyance are warts to some horses, that hardly any part of the body is free from them. They cannot be harnessed, saddled, or bridled, for warts. The most common situation for warts to grow upon is the head—particularly the eyelids, about the muzzle and ears—the belly, the sheath, the penis, the inner side of the thigh and arm: in fact, they appear to select those places where the skin is thin, and the hair comparatively scanty. Warts vary in—

MAGNITUDE, ASPECT, AND STRUCTURE.—Sometimes we meet with them about the size of peas: in other cases, a single wart has been known to grow to a size which impeded the action of the limbs. In general, warts are enveloped in cuticle, which is thin, smooth, and hairless; though, in time, it often becomes callous, and assumes quite a horny texture. In other cases, their surfaces are ulcerous, and even fungoid, bleeding on the least irritation, and showing no disposition to cicatrize. When cut into, they in general exhibit a firm, fibro-cartilaginous texture, and seldom bleed from their interior, or even exhibit any vascularity in it, though hemorrhage is often considerable from their roots. Warts are said to be produced by the *cutis*, whence they derive their coverings; some growing by pedicles, others possessing broad roots: though there are warts encased in skin, out of which they slip, when liberated by incision. It has occurred to me, when the case appeared to be of this kind, and I expected to give escape to one of these marble-like structures, that the cyst has been filled with a soft matter—in colour and consistence like cheese. At other times, the soft substance is of a *granular* nature. C 27, had upon the nose a wart, covered by smooth, tense, shining skin: this I thought was encysted, and would prove firm and solid: it was *encysted*, but of the granular kind.

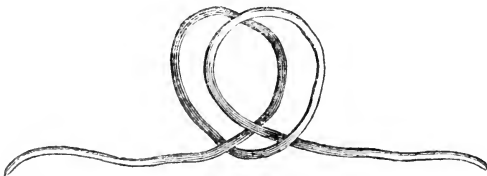
It appears to me that these soft warts never give rise to ulceration of the skin, whereas the solid warts do. B 33, had a wart of this description upon the chin. This appeared to have a deeper origin. Sometimes we meet a wart of old standing, bulky, and with the appearance of being callous; but which, when we come to handle it, proves to be in a

state of unhealthy suppuration ; so that when the matter is squeezed out there remains only the septa of cysts, and the ragged skin which surrounded them.

Aug. 5th, 1852.—A horse was brought to me with a wart upon the near side of the prepuce, evidently “shucking” itself out without mortal aid. On grasping it pretty firmly, forth it came, and was found to be about the size of a walnut, having a close cellular tunic ; when cut across, it proved to be composed of white, fibro-cartilaginous substance, the interior of which was vascular, while the exterior seemed without blood or even sensibility ; this appears to be the ordinary composition of the common sort of wart.

TREATMENT.—Ligature, incision, and cauterization, are the means employed to remove warts ; and it depends on the case which of these modes should be adopted. Where the wart grows from a slender root, *ligature* is the preferable recourse. With a piece of strong silk, doubled and well waxed, encircle the root, and draw it as tight as possible, without cutting into the substance of the part ; the object being, obstructed circulation, and destruction of the vitality of the excrescence.

The kind of ligature best adapted for strangulating warts and other tumours, is what sailors denominate “the double hitch ;” it possesses the advantage, when drawn tight, of requiring no knot. It is very simple in its formation, being made by merely forming two circles with the string or thread ; the ends are within the connexion of the two rounds, and when these ends are pulled the connecting portion presses upon them, thereby keeping them firm. This diagram may serve further to explain its peculiarities :



Should the ligature cut the wart, the budding iron may

be applied to the surface. Encysted warts require nothing more than incisions across their surface: they will then leave the envelops, and the cavities will heal up without assistance. When warts have broad bases, caustic is more effectual than ligature. We moisten the fore-finger, dip it into powdered white arsenic, and sprinkle a thin layer of the substance upon the wart. In the course of a week, blackness and coldness will be perceived, and in another week or two the wart will fall off. The great advantage of employing arsenic is, that no wart ever grows in the place on which it has been used. Sulphur made into a paste with sulphuric acid will answer the same purpose. The chloride of zinc¹ powdered and rubbed with Unguent. Simplex, is used by Field with much success for the destruction of warts. The French use lunar caustic, or else the sulphuret of arsenic. There are some parts of the body to which the employment of caustic might be dangerous, such as the edges of the eyelids, &c.; in such cases the knife is used.

GREASE.

The skin of an animal is a *secretive organ*: its surface everywhere emits exhalation, which, though generally insensible, is nevertheless constantly going on, and attracts notice the moment it issues in the form of *perspiration*. In addition, particular parts have additional secretions: the membrane lining the ear generates a waxy matter, and the heel produces a greasy substance for the purpose of keeping the part supple. And it is the inordinate secretion of this peculiar matter which constitutes the disorder denominated *grease*. I see nothing peculiar or specific in the disease itself; for simple irritation—abrasion with the halter-rope for example—produces what appears to be precisely similar consequences; all that is peculiar or specific about it arises from the structure of the part affected. This is the view Professor Coleman used to take in his lectures; and it is one which

¹ Paste may be made of it, composed of one part of chloride of zinc, two parts wheaten flour, and a sufficiency of any fluid.

my reasoning has served to confirm. At the same time, it is right we know French veterinarians entertain different notions. Hurtrel d'Arboval regards the hair bulbs as the seat of grease; were that true, however, there is no reason why the disease should not appear in other parts of the skin.

SYMPTOMS.—When a horse is attacked, the first indication is filling of the hind legs: which, not being relieved, discharges itself in drops of oily fluid, and the hairs appear erect. The skin, as is perceptible in a *white* heel, exhibits a blush of inflammation; it feels hot, and has a loathsome odour. Should any attempt be made to take up the foot, the animal catches it off the ground, or manifests reluctance to have it touched. The horse goes stiff on leaving the stable; but seldom at the early stage does much lameness exist. From this time, however, the inflammation continuing to increase, the leg becomes so lame, that, from fear of flexing the heel, the animal straddles; while the surface has become exquisitely sensitive. Notwithstanding, however, it causes much pain, continued exercise relieves the anguish; for after walking for an hour the horse will step out more boldly, and hardly limp.

The next form grease assumes is the *ulcerative*. Either from the irritation, or from tension and compression in the motion of the limb, the skin splits or cracks, and ulcerations quickly develop themselves. The discharge, which has been growing thicker and more offensive, becomes converted into one of a purulent nature. The disease will extend around the sides of the pastern; and over the fetlock, even half way up the leg: the tumefaction keeping pace with the ulceration.

The inveterate form of grease is the *grapy*. The cracked skin, still subjected to the aggravation of discharges of a loathsome nature, now undergoes a change of structure, and generates products of a morbid kind. With the thickening of the skin, it secretes from the ulcerated surface, by a sort of granulative process, albuminous matters, which, from their globular form, and their appearance of clusters, have been

termed *grapes*. As St. Bel happily enough depicts this change, the parts look like "the outward coat of a pineapple." These morbid productions rarely spring from the pastern or coronet; they spread up the back part of the leg, but never reach the hock. By degrees they grow vascular; then turn intensely red, and become sensitive in the highest degree. They undergo, however, a chronic change: they lose their feeling and their vascularity, becoming cartilaginous, or even horny. The substance of the skin is also experiencing alteration of structure; it assumes thrice the natural thickness, and is like cartilage. Other changes accompany these. The hair gradually falls off, leaving the grapes very thinly surrounded, and those in a state of erection. From the crevices between the grapes, runs a fetid discharge, mingled with blood. By this time, the leg is of an enormous bulk, from which circumstance, independently of its painful condition, the motion of the limb is impeded. In fine, to make use of the expression of St. Bel, the parts present "a cumbersome mass of disease;" which, though it is just possible we may mitigate, it is not in the power of art to restore to a healthy condition.

The PARTS SUBJECT TO GREASE, are the *heels*, especially those of the *hind* legs: the disorder rarely appearing in the fore limbs. The pathology appears to be this: the hind heels, being far removed from the source of circulation, and the vascular current being comparatively weak, their capillaries become liable to congestion, a condition from which to relieve themselves, they emit the redundance of blood in the form of secretion.

The HORSES SUBJECT TO GREASE are those possessing the least breeding; those of coarse fibre, and *fleshy* heels; cart-horses, particularly such as are large and have white legs. Some seem to be constitutionally prone to the disorder; for there are horses whose legs will, at certain seasons, fill and swell, in spite of all the physic we may administer. We seldom meet with the disease in gentlemen's hackneys and hunters, and more rarely in racers: a circumstance owing to the excellent and great care taken of these animals.

AGE AND SEASON.—At three and four years of age, when they are first stabled, horses are most liable to display this disorder; autumn and winter are the times they mostly exhibit it; though an inclement spring may tend to its production. At these periods grease is apt to break out among dealers' horses, just arrived from the country; and during encampments, it once was prevalent among the cavalry.

CAUSES.—The *proximate* cause is inflammation; or, in the incipient stage, that which we call congestion. Cold and wet *predispose* the parts to inflame. A horse returning with his legs wet, and allowed to stand long in that condition; or the groom washing the heels, and suffering them afterwards to dry themselves, is a very common cause of grease. The groom deserves reprimand whose horse becomes greasy. There are, however, horses, so rank about the legs, that they require every help the groom can afford them; though gross subjects like these, when in working condition, may, by good stable-management, be kept free from the taint. Also, horses who have been standing comparatively idle or well fed, and consequently got into fat condition, will, on being suddenly put to hard work, be apt to contract grease. The increased motion of the heel may in part cause it; in cold weather, or upon dirty roads, the number of times it is made wet and dry; and in hot weather, the dripping of the perspiration down the leg into the heel, may likewise contribute to produce it. But, to recur to the cause I first stated, grease may have a local origin: it may arise from cold and wet; it may follow a blister to the leg; it may, according to Professor Peall, originate even in the ammoniacal exhalations of the stable.

CONTAGIOUSNESS.—St. Bel thus speaks of the disease:—“Grease is *in general* a cutaneous affection, *sometimes* inflammatory, *sometimes infectious*; and I have known it *contagious*.” Dr. Stokes mentions a case, however, in the ‘Med. Gazette’ for July 24th, 1840, which he concludes in these words: “The case shows that a disease remarkably similar to vaccinia might be produced in the human subject by the matter of grease. The only points of apparent dif-

ference between them being, that in the latter the matter contained in the vesicle seemed more purulent, and the surrounding areola somewhat more livid." (See the 'Dublin Journal of Med. Science.')

I utterly disbelieve all stories of its infection or contagion among horses. In certain seasons and situations the disease may undoubtedly affect several individuals: but then the cause will be found too manifestly uniform, and the circumstances too similar, to attribute its prevalence to infection or contagion.

The TREATMENT of grease may be a simple affair, or a complicated one, depending on its duration, and virulence.

Professor Coleman lays stress on a theory he has framed, that, since moisture is the cause of grease, water cannot, without harm, be employed in the treatment of the malady: though this axiom seems to admit of qualifications which will tend almost or quite to subvert it. We are not warranted in laying it down as a rule, that what gives rise to a disease, is not to be employed by way of remedy: else, why do ice and snow-water prove remedial for chilblains?—cold affusion for fever, &c.?

In a case of grease, in which the skin manifests any inflammation, a bran poultice is the best application; this ought to be renewed morning and evening, the heels being prepared for its application by being perfectly sponged, and by trimming with sharp scissors—or what is better—shears. At the same time, the horse should be put on good diet; and be walked out twice in the course of the day. After the inflammation has begun to decline, we may commence with astringents; employing them first in a mild form, afterwards augmenting their strength. The substances commonly used, are charcoal, calamine, bark, sugar of lead, alum, white vitriol, blue vitriol, and best of all, chloride of zinc. Most may be employed either as powder, solution, or ointment. Alum, combined with bole or charcoal, according as it is wanted for a red or a black heel, was a favorite remedy.

For a bay or chestnut heel:

Take of Powdered Alum, ʒj;

Bole Armenian, ʒj.

Levigate to an impalpable Powder.

For a black heel :

Take of Powdered Alum, ʒj;
 Powdered Charcoal, ʒj.
 Levigate the same.

For a white heel, oxide of zinc alone may be used : its astringent strength may be augmented by the addition of alum, beginning with the proportions of 1 to 8. Those who prefer an aqueous solution, may employ sugar of lead, or sulphate of zinc. The ointments I recommend for common use are the following :

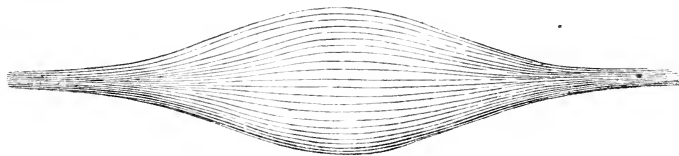
Take of Alum finely powdered, ʒj;
 Hogs' Lard, ʒj;
 Sulphuric Acid, gutt. x.
 Melt the lard, and stir in the other ingredients.

Take of Citrine Ointment, 1 part ;
 Hogs' Lard, 2 parts.
 Melt together.

The decline of inflammation rendering poultices unnecessary, I sprinkle the heels with astringent powder, using it once or twice a day. As soon as the greasy issue is arrested, and the skin is becoming dry, I substitute an astringent ointment for the powder ; this last corrects any disposition in the heel to crack, by supplying an artificial lubricator.

Where the inflammation is violent, and is combined with tumefaction, give a purge and pursue the poulticing : after which, follow the astringent treatment.

In chronic cases with a profuse discharge, which is rotting the horn of the foot, and polluting the atmosphere of the stable, proceed as follows : Trim the heels close, thoroughly cleanse them with warm water and a sponge, then rub them dry. A pledget of tow, with two long ends, of this shape—

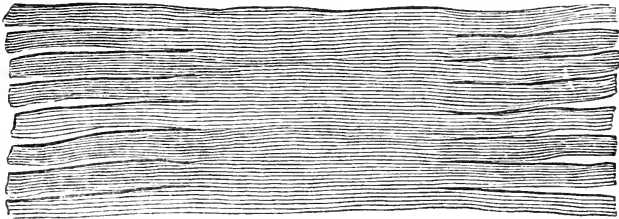


is to be prepared ; upon the broad or middle part is to be spread one of the following :

Take of Chloride of Zinc, ℥ss ;
Charcoal in Powder, ℥ij ;
Chalk in Powder, ℥j.
Sprinkle upon the tow.

Take of Chloride of Lime, ℥j ;
Fresh Yeast, ℥ij ;
Bole Armenian, ℥ij.
Make into a paste, and use as directed.

Apply the pledget so that it lies close to the diseased surfaces, and maintain it there by tying its ends around the pastern. Should one pledget not be sufficient for this purpose, apply a second, and even a third. As a farther security to the dressings, it is advisable to envelop the whole in an eight-tailed bandage, of a size suitable to the dimensions



of the leg and pastern ; the tails being tied in front, and two of them encircling the leg above the joint, in order that no displacement may happen.

By the third or fourth day, the legs will have become much improved. This is the time for the removal of the dressings. We shall find the heels better and sweeter ; so much so, perhaps, as to require nothing further than daily sprinklings with the powder. And as for any swelling, that will speedily disappear on exercise.

Malignant grease is now-a-days but rarely met in any establishment where veterinary aid is sought ; for it is only the grossest neglect that could possibly lead to its production. As a record of what used to happen, I will relate a

case of this description; and one that will serve to show in what the cure consisted.

On the 19th June, 1821, was placed under my father's care for treatment, a chestnut mare that had suffered from malignant grease for upwards of two years. The disease had arrived at its present height from neglect, and occasional bad treatment. All the heels were studded with prominent grapes, thinly clad with bristled hairs, through which their bare surfaces appeared intensely reddened, and were issuing blood. In places where there were no grapes the skin exhibits an elephantiasical aspect. The ulcerated grapes extend several inches above the fetlock; but they were all at the posterior of the legs. An offensive matter issues from the surface, which lodges in the crevices. On the afternoon, my father submitted the animal to the following operation: Having properly secured it, he commenced with a sharp scalpel paring off the grapes to the level of the skin. He had heated irons near him to stanch the hemorrhage as he proceeded; which, owing to the vascularity, was very considerable. All the larger grapes having been removed, the diseased surface was lightly seared, the mare returned to the stable, and the heels dressed with the following liniment, spread upon pledgets of tow:

Take of Powdered Blue Vitriol, ℥j;
Powdered Alum, ℥iv;
Linseed Oil, lbij. Mix.

24th.—The diseased parts were covered with sloughs; which being wiped off, the surface presented a highly vascular appearance, and disclosed many smaller grapes. The mare was again cast, and the legs were, by the knife and cautery, deprived of many grapes, which before were concealed. The parts were afterwards dressed as on the first occasion; and some of the *unguent. ferri acetatis* was applied to the frogs, in which thrushes had made their appearance.

27th.—Since the 24th some little fever has been hanging about the animal; it has evidently suffered from pain; and the appetite has been impaired. Walked out, and was dressed as before.

30th.—A pretty free raw surface now presented itself. The legs were simply smeared over with the ointment, and the mare was afterwards turned into a grass paddock.

July 4th.—An ichorous discharge, which is not very offensive, issues from the ulcerated surfaces. Ointment repeated.

9th.—The surface looking florid and healthy. What grapes remained were to-day touched, by means of a feather, with nitric acid. The surface was washed with solution of sulphate of copper ℥j to ℥j of water.

11th.—The sloughs caused by the acid separated and left deep excavations. The solution repeated.

15th.—The heels have begun to granulate, and are showing signs of cicatrization. Alum ointment.

30th.—Since the 15th the dressings have been mild, and such as promote granulations. The heels are making progress towards health.

After this, nothing worth mentioning was done. The mare was ultimately restored to the master perfectly sound, with only some trifling induration of the parts which had so long been the seat of disease.

CRACKED HEELS.

During wet and cold weather, *cracks* are often discovered in the heels of the hind legs of horses, and very rarely in the fore ones. They consist in extended ulcerations, running in a transverse direction, and in their incipient state strike us with a notion that the skin has really *cracked*: a notion not without foundation, since they often owe their origin to extension of the skin when its oily secretion is defective. This is more likely to happen when the legs are swollen, and are of that coarse description well-known under the epithet "*fleshy*." This seems to be the history in stabled horses:—the legs become filled; the secretion is disordered; the skin is stretched and cracked. But, with regard to horses that are turned out during the winter, and whose legs are constantly exposed, ulceration seems to arise from loss of vital energy. The skin in these animals sloughs and ulcerates. Horses whose heels are naturally clothed with long hair, become, from having them trimmed, more susceptible to diseased influences. Stopping thrushes will, at times, cause the heels to crack and break out in pimples or eruptions, particularly the hind heels. This is best counteracted by aperient and diuretic medicine.

The TREATMENT of these ulcerations must be regulated by their origin, duration, and condition. Horses that have contracted them in a wet, should be removed to a dry situation. Animals that have generated them in the stable will be benefited by purging, to *cool* and *fine* their swollen

legs. Should the ulceration not have penetrated through the skin, little more will be required than bran poultices: dressings of a mild and simple kind, as astringent powder, weak solutions of blue vitriol, alum, tincture of myrrh, or benzoin, &c., will aid the healing process; but the principal thing to be attended to is continued *poulticing*. An excellent dressing for weakly sores, is a sprinkling of pulverized red precipitate. Where an ulceration has made its way through the skin it is likely to be an intractable affair. The borders of the skin appear red, and perhaps, everted; while the bottom of the crack is sloughy, and exudes an ichorous discharge. This carbuncular sore will require sloughing out: for which purpose some practitioners make use of lunar caustic, others of the actual cautery; though I prefer the butter of antimony; or, should that not succeed, the nitric acid. The object is to destroy the cellular substance, and produce an entire new surface to the ulcer. The caustic dressing is best dusted on with a little tow; previously to its application, the surface of the sore should be wiped dry; but not made to bleed. Afterwards, let the heel be enveloped in a bran poultice. This should be persisted in until the ulcer is nearly healed: the granulations being stimulated with dry tow alone, which often answers the purpose better than any medicament. The French cauterize sores of this description: using the budding iron lightly or heavily, and at a low or a high temperature, according to the effect desired to be produced. Hurtrel d'Arboval's mode is to sprinkle the surface of the sore with gunpowder, and then set light to it. What tends very much to retard the healing of these sores, is the motion of the pastern; and as exercise is, otherwise, very beneficial—indeed the legs would not endure absolute rest—it is difficult to steer between these evils. What will very much tend to diminish the effects of the extension, is the wearing of a very high-heeled shoe; providing due attention be paid, while it remains on, to the condition of the frog.

I have of late found great benefit from turning the horse

into a large *cool, dry*, loose box, daily dressing the heel with some escharotic or astringent lotion, and powdering afterwards with dry flour. The lotions I use are Sublimate, ℥j to ʒj, or Mur. Antimon., ʒj to ʒj, or Argent. Nitrat., ℥j to ʒj. I am persuaded that the foul atmosphere of some stables has an influence in keeping up cracked heels. Change of diet, from dry to green meat, will also have a good effect.

Ulcerations in the heels often turn out extremely intractable, troublesome, and difficult to cure. There appear three especial reasons for this,—their remoteness from the heart; the motion of the heel; the secreting nature of the surface. It would also appear that these difficulties are increased in old horses and white legs. When unhealthy-looking, the heels will sometimes require sloughing out with caustic, and subsequent poulticing. Sometimes, during the cicatrizing process, they do best covered with bandages over the dressings; sometimes, they seem to heal faster when left exposed.

SECTION VI.

DISEASES OF THE CELLULAR MEMBRANE.

EXTERNAL DROPSY ¹	SWELLED LEGS. WATER FARCY. SWELLED BELLY. " SHEATH. " BREAST. PUNCTURED BELLY.	ABSCESS { PURULENT. SEROUS.
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DROPSY.

SEROUS cavities, and the cells of the cellular membrane, have exhaled into them an aqueous vapour, which has no sooner moistened them by its condensation, than it is removed by the absorbents. The supply, however, being incessant, moisture is always present in these openings, though not to any amount unless under circumstances of disease. It is obvious, therefore, fluid may collect from augmented exhalation or diminished absorption; but so various are the causes which may occasion these changes, that it is not only difficult to determine to which of them the collection of fluid is owing, but more difficult to discover what other cause is operating. We learn from the best medical authorities, that dropsies may arise from general or local plethora; from obstructed circulation; from deficient absorption; from a thin or watery condition of blood.

DIVISION.—Dropsies are either *external* or *internal*, *acute* or *chronic*. An external dropsy consists in an effusion of watery fluid into the interstices of the *cellular membrane*—underneath the skin. An internal dropsy is a collection of

¹ External Dropsy { Partial } Arise either from constitutional or local in-
 { Diffuse } creased action or inflammation: hence we have
 diffuse inflammation of the cellular membrane; or partial, producing serous,
 purulent, or solid effusion.

similar fluid within any one of the cavities of the body ; the chest, belly, head, &c. Our present concern is with—

EXTERNAL DROPSIES.

Sometimes less correctly called *local* dropsies. I have remarked, that, at the spring and fall of the year, when horses are shedding their coats, and this disposition to serous effusion is apparent ; any part which sustains injury, such as any slight contusion, or even more than ordinary pressure, is likely to become painfully swollen ; hence arise tumours under the belly near the girthing place, at these seasons. These are comprehended under the technical appellations of *anasarca* and *œdema* : terms which are indiscriminately applied ; the former, however, strictly means a sort of *general* dropsy, though generally used to imply effusion into a member only—as into a limb, or the head ; while the latter denotes effusion in some *particular* place or part, and commonly represents *anasarca* in a limited form, thus the limb is affected with *anasarca*, but the leg is swollen with *œdema*. The most common form of external dropsy in horses, is—

SWELLED LEGS.

When young horses first arrive, and are put into London stables, they generally will have swelled legs. The changes these animals have been suddenly subjected to, are such as to disturb the powers of assimilation, and *œdema* may be regarded as one of Nature's modes of relief. The disorder is clearly inflammatory : it proceeds from causes which in other cases produce colds, coughs, inflamed lungs, &c. At the same time, the action of the absorbent vessels may be diminished by the quiescent state of the animal. The legs are the common seat of effusion, for two reasons : 1st, being the most dependent parts of the body, whatever fluid collects in the cellular membrane will naturally gravitate into them. 2dly, being farthest removed from the heart, its influence is comparatively weak in them ; consequently,

when congestion has taken place, it requires a greater effort to propel the blood into the veins, against gravity, than to discharge it in the form of aqueous effusion. The same reasoning will account for the disposition there is in the *hind* legs to fill.

Turn the Horse out of the warm stable, and expose him to the open air, in a short time, all swelling will leave his legs. The cold air has operated as a bracer on his legs: it has allayed febrile irritation; at the same time, it has increased the power of the heart, and so removed all congestion. The exercise which the animal now takes, also tends to augment the secretions and excretions; and thus to incite the absorbents to greater action.

DEBILITY.—The circumstance of horses being attacked with swelled legs during spring and autumn, the seasons when they are shedding their coats, and of such horses being, from their tender age, their softness, or laxity of fibre, weaker than others, has induced veterinary writers to ascribe the disorder to debility. Specious as this doctrine appears, I cannot consider debility to be concerned otherwise than *indirectly*. Horses that are in a state of comparative debility, possess a watery blood, with diminished powers of circulation: I regard dropsy as the result of vascular disturbance; which, after all, must be the exciting, debility being only the predisposing, cause.

Degrees of intensity, present themselves in swelled legs, ascending from the simple form, or "*filled*" to the state termed "*round*." A horse accustomed to daily exercise, will, from standing without any, "*fill*" in his hind legs: those parts will become infiltrated, for want of the accustomed locomotion. In this respect, however, horses exhibit remarkable differences: some will stand for weeks, while others will hardly stand twenty-four hours, without swelling. As a general rule, horses in condition, possessing sinewy legs, and in the middle period of life, are least prone to exhibit œdema.

Mere *filling* of the legs can hardly be said to amount to disease. The case that calls for medical interference, is

where all four, or both hind legs, are, "like mill-posts:" they are swollen from the knee or the hock to the foot; they feel warm, and pit on pressure; but do not evince any remarkable sensibility. The horse may be off his feed, and feverish—pulse increased, skin warm, mouth dry, membranes of the nose and eyes reddened. This accessory disorder, however, is as often absent as present: oftentimes the swelling of the legs is the only derangement.

YOUNG HORSES—their management with respect to *air*, *food*, and *exercise*, when received from the breeders—occasionally constitutes an important duty of a veterinary surgeon; the main object is to avert certain ailments to which the change has predisposed them. The stable should be spacious. Their diet, for the first month, should consist of bran-mashes night and morning, and a feed of bruised oats, mingled with double the quantity of hay-chaff, at noon. During the second month, a feed of bruised corn and chaff may be given in the afternoon. During the third month, one mash may be withdrawn, and a third feed substituted. In regard to the withdrawal of the other mash, and giving whole oats instead of bruised corn, this change should not be made until the animal is taken into regular work. Should any disrelish for bran-mashes be manifested, as will frequently be the case with individual animals—let *scalded* corn, or oats steeped in boiling water, be substituted; but then, the bruised corn given with the chaff should be diminished, or entirely withdrawn. The custom of mingling bran with oats is a bad one: nothing disposes a horse so much to swallow his corn unmasticated as this mixture. The *exercise*, the first month, should consist of walking half an hour, morning and afternoon; for the second month, it must be increased to an hour morning and afternoon; for the third month, an hour and a half: during some part of which the horses may be trotted.

PHYSIC.—No sooner have young horses entered on their domestication, than it is usual "to put them into physic." I never, however, allow this step to be taken: I have had sufficient reason to repent of this imprudent custom. The

ordinary practice is for the whole lot, well or ill, to get physic the next morning after their arrival; and it occasionally turns out that one which happened to be "not quite right," "a little unwell," manifests an attack of inflammation of the lungs while purging. Profiting by this experience, I make it a rule to let the horses *settle* in their stables before I order any physic; and then I give from three to four drachms of aloes. Any one that is "off his feed," or in any manner evinces indisposition, I exempt from this general physicking, and put into a loose box. In a fortnight, the first dose of physic may be followed by a second; and this, from observation made on the first, we are prepared to better apportion. In another three weeks, a third dose may be administered.

Under this system of management, experience proves, young horses may be preserved in health, or have those maladies they are disposed to contract, either averted, or divested of their violence.

Should one among them have swelled legs, let him be removed into a loose box, and take daily, until he purges, No. 1 of the following balls:

No. 1.

Take of Purging Mass, ʒij;
 Venice Turpentine, ʒij;
 Nitre, powdered, ʒj.
 Mix, and make into a ball.

No. 2.

Take of Purging Mass, ʒj;
 Emetic Antimony, ʒj;
 Digitalis, ʒss.
 Treacle sufficient to form a ball.

No. 2 is the preferable medicine where the animal exhibits febrile symptoms.

Instead of twice, the horse should be walked out thrice a day, unless fever forbid it; in which case the exercise must be diminished, or it may be abstained from altogether.

WATER-FARCY.

According to our best writers, water-farcy is not farcy—"it is indeed," as Gibson says, "another disease, and has little or no resemblance to true farcy, either in its causes, symptoms, or effects; and has only obtained this name through ignorance or custom." This author gives the following description of the disorder:

"The water-farcy is of two kinds, one the product of a feverish disposition; the other is dropsical, and of that kind which in man resembles the *anasarca*, where the water is not confined to the belly and limbs, but shows itself in several parts of the body, with soft swellings which yield to the pressure of the fingers, as is usual in all dropsical habits. This last kind usually proceeds from foul feeding, or from the latter grass and fog, that often comes up in great plenty with long-continued rains, and breeds a sluggish viscid blood."

There is truth in these observations: they are the result of practice. Swelled legs, through neglect, often prove the forerunners of watery farcy; though the last is a disease of distinct origin. It commonly attacks one limb, sometimes both hind, occasionally all four legs. The member in a night becomes swollen from the thigh to the foot: the horse, when walked out, carries it stiffly, but does not halt upon it. The skin of the limb feels hot, and the animal manifests tenderness if it be pressed. The tumefaction increases, with the heat of the skin, and the tenderness becomes so acute, that the animal can hardly bear to have it touched, and should it be roughly handled, thrusts it out to one side, in the most awkward manner. At this time effusion takes place: masses of lymph are poured out underneath the skin, generally upon the inner and upper part of the thigh, in most abundance, which are plainly perceptible to the fingers, and pit when firmly pressed upon; frequently there appears upon the surface of the skin, drops of a transparent, yellow fluid, to which symptom the disorder

would seem to owe the epithet of "watery." From this period it appears the disease does not confine its progress to the skin ; for, if suffered to proceed, it is likely to end in genuine farcy, though now and then it will run into an attack of grease. The blood in this disease abounds in serum : on the second day after it is drawn, the clot will be found quite swimming in serum.

The French veterinarians confound grease, swelled legs, and water-farcy : instead of viewing grease as an idiopathic affection, they seem to regard it as a consequence of water-farcy, and an affection of the skin. From this doctrine, however, Hurtrel d'Arboval dissents : he considers grease to result from lesion of the bulbs of the hair.

Coleman appeared to regard water-farcy either as inflammatory, or as originating in functional disorder of the absorbent vessels. "There is a disease called *watery farcy*, which arises from an affection of the absorbents. The functions of these vessels become impaired from inflammation, and a deposition of serous fluid is the result. When this disease takes place in the winter months, it commonly proceeds through going from cold to heat : but at the summer season it cannot have such an origin. In the former instance, the action of the arteries is increased : but in other cases we prove its existence in the absorbents from its commonly ending in farcy."

REMARKS.—The value of Gibson's observations is enhanced by the striking confirmation they receive from Coleman. The "feverish disposition" is "increased arterial action ;" while "dropsy" will well bear comparison with the "affection of the absorbents." For my own part, I attribute this kind of water-farcy to *inflammatory action* of the capillaries—as an *inflammatory dropsy*, if I may be allowed the expression. I admit the existence of the disorder in another form in which there is disease of the absorbent vessels wherein the presence of fluid is ascribable to defective absorption. In addition, the first disorder may, and occasionally does, end in the last. I see no reason for disturbing the pathology of Coleman ; nor any fault to be found with Gibson.

CAUSES.—Though we have developed the nature of this disease so far as to affirm it consists in inflammation, we

have not yet investigated how this condition arises. Gibson's "feverish disposition," implies its febrile origin; and Coleman's mention of its origin by "going from cold to heat," convinces us that he ascribed it to the cause which gives rise to catarrh, and inflamed lungs.

The TERMINATION of water-farcy is very apt to be true farcy; though, when the disorder is properly opposed, this course is likely to be arrested. It may produce grease: it may end in resolution. The most probable termination of the disorder, however, particularly where the tumefaction has been excessive, is in callous and irreducible enlargement; not necessarily diminishing the utility of the member, though it is afterwards to be regarded as predisposed to disease, or to be attacked by farcy.

TREATMENT.—Gorged with blood, distended by internal effusion, hot, and tender, as the limb evidently is when first attacked, few can hesitate to draw blood—and that to an amount that will impress the system. Follow the bleeding by administration of the following ball:

Take of Purging Mass, ʒiʒ;
Calomel, ʒss.
Mix, and make into a ball.

Then turn the animal into a cool box, and feed on sloppy mashes. The limb will be benefited by being bathed with hot water, especially if serous exudation be present: in other cases the hair should be sponged with vinegar and water, which will abate the local heat and tenderness. Unless the physic forbid it, the animal should be walked out thrice a day, for an hour each time. Let it be understood here, that, when bleeding, no vein in the tumefied limb is to be opened: in the irritable condition of the part, any puncture would serve to exasperate the inflammation; and the wound might turn to something like a farcy ulcer—the very thing we want to guard against. Besides, it is the *system* which requires depressing, and not the limb; therefore bleeding from the jugular will answer every purpose. Rowelling the affected limb appears to be worse: in fact, rowels are not

needed at all—they do no good. As soon as the physic has set, let the horse daily take the following alterative ball, omitting it when it causes purgation. If all the fever has disappeared, and the limb is reduced by the bleeding, purging, and the alteratives, we may give the following tonic ball twice a day, and improve the diet; taking care, however, not on any account to remit the exercise.

The Alterative Ball.

Take of Purging Mass, ʒiiss;
 Calomel, ʒj;
 Digitalis, ʒss;
 Venice Turpentine, ʒj.
 Mix, and make a ball.

The Tonic Ball.

Take of Blue Vitriol (Powdered), ʒj;
 Gentian (Powdered), ʒij;
 Liquorice Powder, ʒiij.
 Syrup of Ginger, enough to form a ball.

SWELLED BELLY, SHEATH, BREAST, ETC.

ANASARCA.

An œdematous belly, sheath, breast, or swelled legs, is a frequent consequence of prolonged constitutional disease. When these effusions happen early, they may be viewed as omens of a favorable issue; when they supervene during the decline of inflammation, they are to be regarded as the indications of similar depositions taking place inwardly. Hydrothorax is denoted by dropsy of the breast, often extending to the belly, and by swelled legs. Ascites is strongly indicated by external dropsy on the belly and sheath, such as, if removed, speedily returns. Such swellings being the attendants on other disease, the treatment of them must form a part of that adopted for the original disorder. Occasionally, however, anasarca presents itself as an idiopathic affection. The cellular membrane becomes filled

with aqueous fluid, the result being diffused, puffy swellings, with no defined limits, but most prominent where dependent. These swellings have a soft feel, and pit on pressure.

The SYMPTOMS of an attack of anasarca are—Tumour of the belly, &c., and upon the loose skin between the arms and on the breast. These, with some others, are the ordinary situations of anasarca; though it does not always happen that these parts are simultaneously affected. In general, for instance, the legs are only secondarily attacked; or the tumour first appears on the body, the arms, and thighs, and thence gravitates to the legs. At times the tumefaction is rapid: I have known it spread in a few hours to an extent which rendered the animal incapable of locomotion. Although the horse, when first attacked, evinces no pain, and seems unconscious of what is going forward, yet—as though the presence of the fluid begat inflammation—the pulse and respiration become accelerated as the dropsy proceeds. A common accompaniment of the irritation now excited is a sympathetic inflammation of the air-passages: the animal coughs up a straw-coloured fluid; at the same time there is, probably, a bloody froth issuing from the nostrils. Where anasarca takes this turn, unless an immediate check be put to the disorder, it is likely to end in farcy or glanders. Now and then it happens that the serous, to the exclusion of the mucous membranes, will partake of this dropsical disposition; and the animal consequently be in great danger of perishing from water in the chest, or belly, or head.

CAUSES.—Horses that are turned out to strawyard are the frequent subjects of anasarca: they leave a warm atmosphere for a cold and humid one; a generous diet for poor food; and they drink *ad libitum* of water which may not be of a wholesome description.

The TREATMENT, early in the disorder, is of the anti-phlogistic character, however it may be necessary to modify it afterwards. I take away from four to six quarts of blood, and repeat the evacuation, to half that quantity, if required. After the bloodletting, I give an ounce of purging mass, combined with a drachm of calomel. I then insert rowels

in the chest and belly: though, should these parts be much swollen, I prefer puncturing them. Should the legs be cold, apply flannel bandages; also, clothe warmly. Turn the animal into a loose box; but have him led to exercise thrice daily. When the physic has set, let the alterative ball prescribed for water farcy be given, until all inflammation has departed; after which, the tonic ball before recommended may be exhibited twice a day: due attention being paid to exercise. A repetition of the scarifications will expedite the dispersion of the swellings, giving issue to much fluid: choose the prominent and dependent parts for puncture. In one case, by accident, when scarifying, I opened the spur-vein, whence blood flowed in a free stream: I at first thought it a trifling occurrence; but was subsequently compelled, from the bleeding continuing for three hours, to have recourse to compress.

There is another form of anasarca: or there is a disease of the belly, which originates in external injury, and is of consequence on account of the dropsical tumefaction it occasions. This circumstance has led me to introduce it among dropsies.

PUNCTURED BELLY.

Every now and then a horse receives a stab in the belly: a pair of scissors or a pitchfork are the common instruments inflicting the injury, and the situation of the wound is generally the lower and middle of the covering to the abdomen. Should we immediately see the case, we shall perceive a small wound dropping a serous fluid—unless the injury be so recent that blood is congealed about or issuing from it,—and on probing the orifice, it is rarely found to penetrate the abdomen. There is so little to be seen, that, were the practitioner not apprehensive of evil consequences, he would hardly take further notice of the injury. Instead of suffering it to go unheeded, I would advise him to immediately exhibit a strong dose of physic, and place the animal on a bran diet. Should no untoward results follow, all the in-

convenience the purge can occasion, is to keep the horse a week or less from work: but should swelling supervene—which is almost certain to occur—then we have gained an important step: we have procured purgation twelve or twenty-four hours sooner than we otherwise should have done. In case the swelling rapidly increases, and grows hot, hard, and painful, we must abstract blood, and, after that, set a man to foment the part with flannels dipped in hot water placed under the body. The fomentations must steadily be persisted in. Should fever have developed itself, and the swelling become larger, we had better draw more blood: and, if the physic be setting, exhibit daily two drachms of purging mass in combination with four drachms of diuretic mass, until the purgation is renewed. Where the swelling acquires a large volume, and the skin is exceedingly distended, I have experienced the best effects from punctures, an inch in depth. I am not friendly to the introduction of any rowel or seton, during the progress of inflammation; though I have found them serviceable when it has began to decline. Walking exercise will prove beneficial: the animal may be led about for half an hour between the intervals of the fomentations. After a free drain from the bowels has been instituted, we may exhibit some diuretic medicine daily. As for the wound, that is of but secondary import: it may be dressed with any digestive.

Should the wound have penetrated the abdomen, danger of peritoneal inflammation will be added to that arising from tumefaction: our most efficient remedies, however, will still consist in bleeding, purging, and fomentation; though now, as far as the wound is concerned, it will be desirable to close it. The hair may be shorn off, and a plaster or compress applied, confined by a broad roller or surcingle.

SEROUS ABSCESS.

We meet with two kinds of abscess—the *purulent* and the *serous*. Of the former I have already spoken: in this place I shall make some observations upon the latter, it being a kind of dropsical affection.

The ordinary situation of these swellings is upon the outer side of the thigh, in front of the stifle: likewise upon the breast, the shoulder, and the arm. Though circumscribed, they are occasionally of considerable volume. Their shape is ovoid, flattened upon the surface. They have a soft, fluctuating feel; and, when punctured, emit a jet of straw-coloured fluid, very like the serum of the blood.

The CAUSES producing these swellings are not obvious to me at present. C. Percivall told me they arose from blows,¹ or other external injuries.

I feel convinced serous abscess often has its origin in external injury. A young troop-mare received a kick upon her stifle. Next morning I saw the animal: there was the mark of the injury plain enough, the place being bare and abraded; it was also accompanied with a swelling all around the place, and was evidently nothing more than a serous abscess: it felt precisely like a bag half filled with water. This is, then, certainly, one kind of serous abscess, which follows external injury; but is there not another kind—a sort that arises spontaneously, or without any traceable injury whatever?

TREATMENT.—It is time lost to attempt dispersing these tumours. The most summary mode of getting rid of them is to plunge a lancet in and evacuate the contents. Were we, however, to do nothing beyond this, in a day or two the tumour would become as large as ever. Evacuate it a second time, and the fluid will still re-collect. In fine, to make a cure, we must follow up the evacuation by throwing

¹ May, 1842.—I have now under my care a remarkable proof of this origin. A troop-mare slipped down upon her side in the stable, at the Horse Guards, and fell against her stirrup. The consequence was a tumour upon her ninth and tenth ribs, which was fluctuating, and evidently full of fluid. Some days afterwards it had grown as large as an orange, and, being opened, about half a pint of yellow watery (serous) fluid escaped.

February, 1843.—A mare (C 31), three years old, was brought to me with a *large* serous abscess upon the stifle, rather more inclined to the inner than to the outer side. The fluid evacuated was of the common character, showing albuminous deposit on the addition of a solution of corrosive sublimate, and measured twenty ounces.

into the cavity one of the following injections, or else pass a seton through the enlargement.

Take of White Vitriol, ℥j;
Distilled Water, ℥j. Mix.

Take of Lunar Caustic, ℥j;
Distilled Water, ℥j. Mix.

After the injection or after the withdrawal of the seton—which last should only be retained until laudable pus is produced—a compress and roller will be found to agglutinate the sides of the cavity.

In some cases, particularly in situations where no bandages can be kept on, and where a seton cannot be inserted, sloughing out the sac by some sharp escharotic, such as powdered blue vitriol, is the best means of cure. (C. Percivall.)

CONCLUSION OF THE FIRST VOLUME.

2382

