









JOHN A. SEAVERNS











# OBSERVATIONS,

CHIEFLY PRACTICAL,

ON SOME OF THE MORE COMMON

# *DISEASES OF THE HORSE,*

TOGETHER WITH REMARKS UPON THE

## General Articles of Diet,

AND THE ORDINARY

STABLE MANAGEMENT OF THAT ANIMAL.

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BY THOMAS PEALL,

Veterinary Professor and Lecturer to the Right Hon. the Dublin Society,  
Honorary Member of the Cork Institution,  
and Veterinary Surgeon, in the  
Royal Artillery.

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*Arte non Vi.*  
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—CORK.—

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# Dedication.

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TO HIS EXCELLENCY,  
**CHARLES, VISCOUNT WHITWORTH,**  
*LORD LIEUTENANT GENERAL*  
AND GOVERNOR GENERAL OF IRELAND  
*&c. &c. &c.*

MY LORD,

IN presuming to dedicate this work to your Excellency, I have been influenced by a two-fold motive, namely, a desire of shewing my dutiful respect to the Viceregal Character, and of expressing, at the same time, through the medium of your Excellency, as President of the Dublin Society, the grateful sense I entertain of the honorable and distinguished marks of favor lately conferred upon me, by the Members of that great Institution, to which I have the honor of being Veterinary Professor.

*I am my Lord,*

*With all due submission and respect,*

*Your Excellency's*

*Most humble*

*And most obedient servant,*

THOMAS PEALL.

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CHARLES THE SECOND

IN HIS

LAST WILL AND TESTAMENT

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## PREFACE.

**I**N sending forth a Work of this kind, I feel it incumbent upon me to explain some of the motives which have induced me to lay before the Public, what I am very sensible has but little claim to novelty, and still less to the merit of discovery, in the Veterinary Art.

But, in consequence of the appointment which I hold under the Dublin Society, as their Veterinary Professor, I long ago discovered that a Publication of some sort was expected from me, by many of the most enlightened Members of that Institution, who had done me the honor of attending my lectures, and who were pleased to consider me capable of contributing somewhat, to the common stock of Veterinary knowledge.

The opinions of private individuals, therefore, being superinduced to the claims of public duty, I determined, as soon as facts and experience should have matured my judgment, to comply with the wishes of my friends.

Nevertheless, I had to encounter no small difficulty whilst I was casting in my mind the choice of my subject-matter, which presented, on all sides, a series of obstacles.

For, I felt conscious that to attempt a systematic Veterinary work upon a comprehensive scale, was a task too gigantic for my abilities, or, perhaps indeed, for those of any individual; and, after all, such a work, if executed, would, in all probability, be but little read, and still less generally understood.

On the other hand, I could not but be sensible that popular treatises on our art not only abound, but seem, in a manner, to have exhausted the public avidity, how great soever it may have formerly been, for whatever professed to contain information, on either the general management, or the medical treatment of the Horse.

Nor was I without feeling considerable embarrassment, as to the *mode* in which I ought to endeavour to communicate the information; I wished to lay before the Public.

For, had I attempted a style and manner correspondent altogether to what some might have been inclined to expect from me, as a public Lecturer on an important branch of science, it is certain that such a performance would have proved too abstract for the general reader, and, consequently, whatever might have been the intrinsic merit of the Work, it must have been impossible that it could have been rendered generally useful.

At the same time, an endeavour to treat my subject in a manner extremely familiar, might have hazarded the reputation of the work, in the opinion of the superior class of readers, and must have inevitably lessened it in the estimation, of the medical and philosophical world.

At length, however, after many scruples and much perplexity, I decided upon the plan of the present work, which will be found to be of a mixed and miscellaneous nature, and which I now venture to lay before the Public.

And this I do with that diffidence, indeed, which a consciousness of its imperfections naturally produces in me, yet hoping, nevertheless, that the experience of more than eighteen years in the diseases of Horses, and that experience gained upon a pretty large scale, may justify me in expecting a candid examination of the opinions I have maintained, and entitle me to request a fair trial of the practice which I have recommended.

For, though I have felt it incumbent upon me to disclaim the merit of any positive discovery in Veterinary science, yet, I cannot help aspiring to the hope that some views which I have given both of the diseases which I have treated on, and also of the general management of the Horse, will not only be sufficient to secure me against the imputation of plagiarism, but will enable the reader to profit, in some degree, from the perusal of the work.

As to the style, I may remark, that I have chiefly aimed at perspicuity and precision ; and though some of my readers may be of opinion that I have occasionally indulged more in philosophical and chemical disquisition, than can be considered strictly reconcileable to a work, avowed to be *chiefly* of a practical kind, yet, the liberal and reflecting, will readily perceive the kind of dilemma in which an

author is placed, who writes upon a popular subject, under the circumstances which apply to my public character. Nor can I help indulging a reasonable expectation, that the rapid advance and general dissemination of chemical knowledge, of late years, amongst the higher and middle classes of society, will shield me, in some degree at least, from the charge of having blended too much reasoning drawn from this source, with the body of the work. Such as it is, I submit the work to the tribunal of public opinion.

I have endeavoured to render the work as plain and unobscured as possible, and to render it as interesting and useful as the nature of the subject would admit of. I have endeavoured to render it as plain and unobscured as possible, and to render it as interesting and useful as the nature of the subject would admit of.

For though I have felt it incumbent upon me to describe the nature of my subject in a popular manner, yet I cannot help referring to the books that some of the most distinguished of the chemists have treated on, and also of the general arrangement of the subject, in order to render it more interesting and useful. I have endeavoured to render it as plain and unobscured as possible, and to render it as interesting and useful as the nature of the subject would admit of.

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# Practical Observations

ON SOME OF THE MORE COMMON

## DISEASES OF THE HORSE,

&c. &c. &c.

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### *On the Use and Abuse of Purgatives.*

**N**O subject connected with the Veterinary Art hath given rise to a greater contrariety of opinion, than that which respects the use of Purgings Physic for Horses.

For whilst some have maintained the necessity of frequently and regularly Physicking Horses, others have asserted the propriety of refraining altogether from the use of Purgatives. The truth, however, I apprehend, will be found to lay (as it commonly does in points of controversy) in the mean between these discordant opinions. I am inclined nevertheless, to believe that the latter of these opinions has done the least mischief, not indeed so much on account of the danger necessarily attendant on the use of Physic, as of the injudicious composition of the Purgative, but more especially of the preposterous methods of treating the animal under the operation of the medicines, which are commonly had recourse to.

To deny however that Physic is both proper and necessary for certain descriptions of Horses, such (for instance) as Racers and Hunters, at certain seasons of the year, would be to deny the value of every day's experience, and to impeach the understanding of all who have an interest in the treatment of such Horses.

Nevertheless the practise of Physicking Horses of this description is (in general) by no means conducted with all the attention due to many minute circumstances, that are necessary to be taken into account, in order to insure the full amount of those advantages which are sought to be obtained from it.

And here it may not be improper for me to remark, that as I am entering in some measure upon a new field, so am I perfectly aware that I am treading upon tender ground; being well convinced that there is not a helper in the racing stables at Newmarket, who would not consider himself capable of giving advice to, rather than think of seeking it from a Veterinary Surgeon, on the subject of Physicking Horses.

For the treatment of Horses under Physic is usually looked upon so simple an affair, that every one fancies himself adequate to direct their management under all possible circumstances which may arise.

Notwithstanding this general presumption however, (arising from ignorance alone) I will not hesitate to assert that the proper management of Horses that are to undergo the operation of Aloetic Purgatives, including of course their treatment both before and after, as well as during the action of the medicine, is a subject not only of the greatest importance, but one which embraces also a greater variety of circumstances, than almost any other connected with the Veterinary Art.

Now that Horses may be carried through the operation of a Purgative with perfect safety, in all cases where it is proper to Physic them at all, I have no hesitation in admitting; and yet it is by no means uncommon to hear even Racing Grooms, and that description of people who are supposed to have the greatest skill in such matters, from the extent of their practice, speak with the greatest composure of Horses, being now and then (according to their own phrase) lost in Physic. And these fatal accidents they usually attribute to the badness of the Horse's constitution, the foulness of his inside, or to some other mysterious cause, which they express in their own peculiar unintelligible jargon, to which it is impossible they themselves can have any definite ideas affixed.

Whereas one seldom hears these fatal accidents attributed to their real cause, which is in all cases to be sought for, either in the injudicious ingredients of the purgative composition, or in the improper mode of treating the Horse under its operation. Sometimes indeed the death of the animal may have been occasioned by the joint co-operation of both these circumstances.

For it must be perfectly evident to the commonest understanding, that if a purging ball, made of coarse and injudicious materials, be sufficient of itself to overpurge and violently to debilitate a Horse, that is treated with care and judgment under its operation, the same dose given to the same horse, if treated in the common injudicious mode, would be sufficient to occasion his death.

Let it not, however, be supposed that I mean to insinuate, much less to admit, that Horses which die under the operation of Physic, sink in consequence of the mere exhaustion resulting from the action of the medicine, inasmuch as the cause of death, in all such cases, is uniformly owing to inflammation taking place, in some part of the alimentary canal.

But I have met with a great many persons of good sense and judgment, who have for years been accustomed to the management of Horses, and who nevertheless have a very inadequate and imperfect notion how easily, under certain circumstances, and in peculiar constitutions, inflammation may be excited in the intestinal canal, and how many cases of apparently slight indisposition there are, which utterly forbid the use of Purging Physic, unless at the risque of the greatest danger.

Hence the astonishment which is always expressed by such people when a Horse is found dead in 48 or 56 hours, after the administration of what was considered a proper dose of Physic.

Then are the family receipts carefully examined, books are handed down from the shelves of the library, one author is compared with another, and the memories of the parties (who stand amazed at the fatal event) are ransacked in order to recollect, how many instances they have known of the same dose having been given to different Horses, with perfect impunity.

In all such cases it is fortunate for the apothecary, if he escape without some share of censure. For if the groom have given plenty of mashes, and refrained from the use of cold water, it is considered that he has performed his duty most correctly, and the poor Pharmacoplist is thought to be alone in fault.

Some years ago I knew an instance of a gentleman of a whimsical character, who, having lost a Horse in this way, wrote to a Veterinary Surgeon who had (at his desire) examined the animal after death, requesting to have a consultation with him respecting the dead Horse and the apothecary. Indeed I should be almost afraid of having my veracity impeached, were I to state the number of cases in which

I have been applied to, in order to account for the death of Horses, which happened in consequence of Physicking them.

No man, in short, but he who has had a regular education fitting him for the investigation of such subjects, can have a conception of the mischiefs resulting from the injudicious purging of horses. No argument however, drawn from the abuse of a thing, can apply to its use, and therefore let it not be inferred from these remarks, that I consider the Purging of Horses attended with danger, at all times, or as improper on most occasions; my only intention being to caution my readers against having recourse to the practice indiscriminately, and to impress on their minds the necessity of attending to several minutiae respecting the management of physic, which books (as far as I know) are either totally silent upon, or concerning which they give but very inadequate and imperfect directions.

The seasons of the year which have been considered most proper for Physicking Horses, are the Spring and Autumn. And there may be, perhaps, good reasons for continuing the practice with moderation. Certain it is that the practice of Purging Horses in very hot weather is always attended with risque, and frequently with danger, on account of the vehement rapidity with which inflammation is carried on and propagated in all the organs of the Horse that are essential to life, but more especially in every part of the alimentary canal, during the heat of summer.

Hence when that morbid action is once set up in the body of a Horse labouring under debility, arising from severe exercise in very sultry weather (especially if the heat have come on suddenly) it not uncommonly ends in death in the course of a few hours. And it is a fact sufficiently familiar to every one, that Mail and Stage-Coach

Horses which have started in good health, have been known to drop down dead suddenly, after a few hours hard driving in extremely hot weather.

Now if it be true, (and no one competent to decide upon it will deny the fact) that Aloes, the chief ingredient of Purging Physic; has at all times a tendency to excite inflammation in the stomach and bowels, how much more readily must that property be exerted at a time when the powers of life are considerably exhausted by the debilitating effects of the atmosphere, during the hottest weather of our summers.

If it were only on this account therefore, there would be good policy in refraining from giving Physic to Horses during the prevalence of very hot weather.

Some stress has been laid heretofore, on the number of doses which ought to be given, and one finds many persons still strongly attached, through prejudice, to the number three.

No good reason; however, can be given for adhering to this custom, though it is extremely difficult to satisfy Grooms on this head, without permitting them to exhibit their favourite number.

A Veterinary Surgeon of my acquaintance finding a Groom very importunate on this subject, requested him to give his reasons for being so urgent to exhibit three doses, and received for answer, that the first dose merely stirred up the humours, the second set them afloat, and the third carried them all off.

No Student of the Mathematics (I dare say) was ever better satisfied of the truth of any proposition in Euclid, than was this man of the propriety of his own mode of reasoning.



In most cases it is certain, that one or two mild doses will be sufficient for any purpose of practical good.

Nevertheless there may undoubtedly be cases, where three or four may not only be admissable but really necessary, especially in those of inordinate fatness, or where symptoms of Hide-bound have been decidedly relieved, though not cured by one or two doses.

In all cases of periodical Physicking, it will be proper to give a clear week between each dose; that is to say, from the period of one dose ceasing to operate to the time of giving another. For though the ultimate effect of Physicking, if it be judiciously conducted, is to promote the appetite, spirits and condition of the Horse, yet it is impossible that these important ends can be answered, unless sufficient time be allowed between the doses, for the animal to recover from the temporary debility in the constitution, with which smart purging is always more or less attended.

The necessity of properly preparing Horses for Physic is a point of the utmost consequence, and is too frequently overlooked by those, who have the management of them.

For it is commonly considered, if a Horse get one, or at most two or three Bran Mashs, that he is sufficiently prepared for the Physic. But it is impossible to decide upon this important point without noticing accurately the state of the Fœces, which alone can decide the question. Horses ought therefore to be rode frequently and gently during the time of preparation, and two hours walking exercise is proper on the day they get the physic. For they are frequently mashed without being moved out of the stable, and in this way it is supposed, that they are duly prepared for the exhibition of the physic; the consequence of which absurd treatment is (more espe-

cially in all cases of habitual costiveness) that the contents of the anterior intestines, are rendered soft by the bran, whilst the posterior bowels, and especially the Rectum, are plugged up by hardened Fœces. And as the first effects of the Purgative are exerted upon the stomach and anterior bowels, a violent and partially diffused stimulus is consequently applied to these organs, which become thereby subjected to the operation of an unnecessary and (if I may use the phrase) an unfair proportion of the medicine—Nor does the mischief end here, for on account of the mechanical impediment which the state of the posterior bowels thus presents to the equable, mild, and gentle operation of the Physic, the Groom frequently takes the alarm, lest the efficacy of a favourite prescription, or his own skill in management, should be called in question. He therefore thinks it essentially necessary, to expedite the operation of the Physic, by giving the Horse such kind of severe exercise, as in the highly-distended state of his stomach and bowels, accompanied with extreme languor and sickness, he is not capable of bearing with impunity.

True it is that galloping or hard trotting does indeed, under these circumstances, usually bring on the Purgative effects of the Physic; but it sometimes happens that it is the last gallop or trot which the animal can be made to perform; for inflammation of some part of the immense tract of the alimentary canal occasionally takes place, and death closes the scene in a few hours.

I have heard these fatal accidents explained and got over by the Students and Doctors of the University of Newmarket, with infinite composure and self-complacency.

The Horse's Physic say they, did not work, his body took to swelling at night, and in the morning he died.

Now although it be indeed true, that the actual death of Horses, from mismanagement under Physic, is not extremely common, yet it very often happens that they are left in a state of the utmost debility, for several days, and sometimes weeks, from this cause alone. The debilitating effects which I have described, are indeed sometimes produced by the improper quantity or quality of the Purgative employed, yet it is nevertheless true, that judgment and care in the subsequent treatment of the animal would, in all such instances, mitigate, and, in many, prevent the deplorable consequences which must result from the employment of these injudicious materials under the ordinary mode of treatment.

For the great and capital error which commonly prevails upon this subject, and particularly amongst those who esteem themselves the most competent judges of it, is, that the Physic has not done its duty, unless its operation be so severe as to produce, inevitably, some of the ill effects which I have deprecated, as a consequence of the great number of evacuations, which they ever make it a point to solicit. I have known many people who are not satisfied unless a Horse be purged from twenty to thirty, or even forty times, whereas it is the safest and prudentest plan to desist from giving the Horse exercise, and from all other means calculated to excite further evacuations, as soon as he has been purged eight or ten, or at most a dozen times. Commonly it will happen that walking the Horse, or, at most, gentle trotting, will be sufficient to promote the operation of the Physic, especially if due attention have been paid to ensure a loose state of the bowels, previously to its administration. Now and then however it may be necessary to give a Horse smart trotting for a few minutes at a time, in order to effect this purpose ;

but galloping or very hard trotting ought, in all cases, to be avoided. If a Horse obstinately refuse to take warm water, which is always preferable to cold, he may be permitted to take the latter, provided he get only two or three quarts at a time, with gentle exercise between the intervals of drinking. But it is worth while remarking here, that Horses will sometimes refuse to drink water, solely on account of its being too warm, whereas merely taking the extreme cold off it, is all that is necessary to be done on such occasions. By this mode of managing Physic, not only all fatal consequences may be certainly avoided, but the usual distressing symptoms of extreme langour, violent debility, and long-continued sickness, will be either totally prevented, or mitigated in a very great degree. This mode of treatment too will be found to recommend itself in an especial manner to those who are advocates for the practice of giving several doses of Physic, as the Horse will be found able to bear the repetition of the Purgative, at shorter and more frequent intervals. I have laid the greater stress upon the mode of managing Horses under the operation of Physic, because I have long been convinced that more mischief has resulted from mal-treatment in this particular, than from want of judgment either as to the quantity or quality, of the Purgative composition that has been employed. As soon as the proper number of evacuations have been promoted by gentle exercise, continued at intervals for fifteen or twenty minutes at a time, the Horse may be allowed a handful or two of corn, or a lock of sweet fresh Hay, which should be removed immediately if he refuse to eat, and be offered to him again at the expiration of an hour or two; and in this way his appetite ought to be tickled, until it return to its ordinary state. For it is the height of absurdity to

let a Horse stand for hours over food which he loaths, (as the ordinary custom is) in consequence of the sickness which the medicine has produced.

The different kinds of Aloes which are employed for Physicking Horses are five in number, viz. the Cabaline, the Barbadoes, the Hepatic, the Soccotorine, and the Cape.

The Cabaline is a strong coarse kind of Aloes, which fortunately is but seldom brought to market. The Barbadoes is the sort most commonly in use for Horses, is more speedy and rather more certain in its operation than the three latter kinds, but objectionable nevertheless, on account of its griping nauseating qualities. The Hepatic is extremely mild, inert, and so uncertain in its operation, as to be rendered ineligible as a purgative for Horses. The Soccotorine and the Cape are both equally mild and proper. The latter sort is indeed most commonly sold and substituted for the former, and not unfrequently so by some Apothecaries who are not aware of the difference. All Horses may be certainly and safely purged by means of the Soccotorine or Cape Aloes, but the imperfect and injudicious means which are commonly adopted of preparing the bowels of the Horse for the operation of the Physic, joined to the usual impatience of the Attendants on such occasions, often frustrate the intended purpose of the medicine—And it happens now and then that the Groom despairing of the Physic doing its duty, desists from giving the Horse exercise, and all further attempts to assist its operation, under the impression of the medicine, being too mild to produce the proper effect—Whereas a persistence in gentle exercise, repeated at intervals, would, in most cases, ensure the proper operation of the Purgative. Sometimes too, it must

be observed, that disappointment with respect to the Purgative effect of an Aloetic ball, arises from the circumstance of the medicine acting upon the Kidnies, instead of the Bowels, and therefore it becomes necessary, in all such cases, to notice the colour of the Urine, which will be found always deeply tinged with the Aloes.

The average time requisite for the production of the Purgative effect of Aloes on the bowels of the Horse, is twenty-four hours; but great latitude must be allowed in this particular, if it were only on account of the difference in the constitutions of Horses, and more especially when this circumstance is coupled with the great variety of treatment which they get, both before and after the exhibition of the medicine. And therefore in some instances it happens that Horses will be purged in twelve hours after the Physic is given, in others thirty-six hours, or even a longer space of time may elapse before the medicine operates. But if the Horse have been treated in the way of preparation, upon the plan which I have recommended, and should shew no disposition to be purged at the expiration of thirty hours after the Physic is given, it will uniformly be found safe and proper practice, to give one-fourth part of the original dose every six or eight hours, continuing the Mashies with warm water and gentle exercise at intervals, frequently repeated, until the desired effect be produced.

A practice this, far more safe and preferable to that which is commonly had recourse to, viz. that of giving the Horse a much stronger dose at the end of two or three days, which is done with a view to insure the certain and complete operation of the medicine.

But should it so happen, that from some peculiarity of constitution, the medicine should not operate, and that the Horse should

appear to be griped, or extremely sick and languid, and more especially if his belly be swollen, it would be prudent to assist the action of the medicine, by means of Injections, and therefore in such cases, four quarts of warm thin gruel, in which two table spoonfuls of Salt have been dissolved, should be given as a Glyster every two hours, until the desired effect be produced.

There are moreover a few instances (but these indeed are rare) of Horses apparently of a robust constitution, which cannot bear the exhibition of a full dose of an Aloetic Purge at once, without experiencing the most distressing symptoms.—When therefore this peculiarity of constitution has been ascertained, the Ball should be divided into four parts, one of which should be given every Six hours, until the whole be taken. I have already declared the preference which the Cape and Soccorine have over the Barbadoes Aloes, but if any one, nevertheless, should be inclined to prefer the Barbadoes Aloes on account of its greater activity, and more certain operation, I am decidedly of opinion that Cream of Tartar should be added to it. But whether the good effects resulting from the addition of Cream of Tartar to Barbadoes Aloes, are produced through mechanical or chemical means, I do not pretend to determine, nor (so long as the fact be established) is it, perhaps, worth while enquiring. The custom of giving Physic to Hunters and other Horses whilst at grass, is still adhered to by many excellent Practical Judges, and in those cases where time becomes an object to the proprietor, a good deal may be saved by adopting this practice.—Now it almost never happens that Horses die in consequence of the administration of Grass Physic, a pretty convincing proof this, of the truth and propriety of the preceding remarks, so

far as respects the necessity of preparing their bowels properly, before the Physic be given.

For the uniformly loose and open state of the whole of the intestinal canal, which takes place whilst the Horse is at grass, allows of the complete diffusion of the Aloetic, through the entire track, and hence, no partially local stimulus being applied, the usual symptoms of nausea, gripings, and the debility which arises from over purging, are either prevented altogether, or mitigated in a very great degree. No further directions as to the quantity or quality of grass Physic are necessary, than merely to give three fourths of the ordinary dose, which is given to the Horse in the Stable. But there are peculiar and extreme cases, certainly, where we cannot wait for this desirable preparation of the Bowels, previously to the administration of a Purgative.

Particularly, where extensive mischief has been inflicted upon the animal in consequence of large wounds, blows, kicks, or external injuries, from which we have good reason to dread so much high active inflammation, as may probably terminate in Sphacelus or even in death. In all which cases, I consider purging to be our Sheet-Anchor, and far more to be depended upon than Blood-letting, as a preventative both of the local Inflammation of the injured part, and of the Symptomatic Fever, which may be looked for on the second or third day after such accidents.—I must remark however, that it would be proper, to take away from three to six quarts of Blood according to the age, size and strength of the animal, in the instance of all such serious injuries as have been alluded to. And as too much time would be lost, in case we were to wait to accomplish the preparation of the Horse's Bowels, for the Physic, by the usual



means, (more especially as in such instances, exercise cannot be had recourse to,) the Physic should be given in an hour or two after the Blood has been taken away, and if there be reason to apprehend a costive state of the Bowels, the Rectum should be emptied by that manual operation called by the Farriers Raking;—an operation which if it be executed with a mixture of gentleness and firmness, may at all times be readily performed, without either pain or alarm to the Horse.—It will also be proper, in order to expedite the operation of the Physic, besides mashing the Horse frequently, to give a Glyster, consisting of four quarts of warm thin Gruel with salt, which must be repeated every four hours, until the effects of the Purgative begin evidently to be perceived. When Physic is given to Horses at grass, the weather ought to be warm and dry, and should have the appearance of steadiness;—and if any sudden change should take place to cold or wet, the Horse should be housed and kept loose in some roomy airy out-house, where he should be soiled with fresh-cut grass, through the operation of the Physic.—But whether Horses be Physicked at grass, or after they are brought into the Stable, the same scrupulous attention ought to be paid to keep the Stable cool and well ventilated, when they are first housed, and their green food ought to be gradually withdrawn from them. If the latter direction however be impracticable, they should be mashed morning and evening, they should get water very frequently through the day, and Corn should be given to them at first, in small quantities, which may be increased daily, until the full allowance be arrived at. From want of attention to these circumstances, Horses that are taken up from grass are frequently attacked with what I call the Stable Fever, which comes on in consequence of

the sudden change of their diet, and of the hot and foul air which they breathe in Stables. Common sense therefore, apart from all Theory, would seem to point out the necessity of gradually seasoning Horses, in order to enable them to bear such prodigious changes as they are frequently exposed to, instead of expecting that they shall be suddenly able to endure them with impunity. The same remarks will apply equally to the System, which ought to be observed previously to turning Horses out to grass from the Stable.

The complaint called Broken Wind too, frequently results, I apprehend, from inattention to the particulars which have been detailed.

Having thus insisted upon all the circumstances of moment which are necessary to be attended to, in order to ensure the safe and certain operation of Aloes upon the Horse's Bowels, it becomes nevertheless incumbent upon me to point out the mode of treatment, which ought to be adopted in those cases where Horses have been overpurged, either from mismanagement or the improper composition of the Physic,

In these two instances the effect upon the Horse and the more urgent symptoms are the same. We may consider that the Physic has been of too rough a kind; or the treatment of the Horse improper, if the evacuations have much exceeded the number which have been already mentioned, or if the Purgative effect of the Physic be protracted much beyond the period of twenty-four hours.

In such cases the animal betrays excessive sickness, his eye is dull and languid, his breathing is hurried, he continues to purge frequently without exercise, and obstinately refuses food of every

kind though offered to him in the most inviting form. Tenesmus too, frequently attends the symptoms which have been enumerated, as the animal may sometimes be observed to strain violently, without evacuating much Fœces.

Occasionally too, there is voided along with the Fœces, a substance of a fatty stringy appearance, which has obtained the name of Molten Grease; and is to this day considered by Farriers and other unscientific persons, as the fat of the body, which has by some means or other, (but they do not tell us how) found its way into the bowels, and is thus thrown off with their contents.

But the plain and simple explanation of this phænomenon is, that it arises from inflammation of the mucous membrane of the bowels, and is furnished by the coagulable lymph of the blood. This portion of the blood it is, which exhibits the appearance of buff or size in blood newly drawn, and furnishes an almost infallible criterion of the presence of inflammation.

When this appearance is exhibited, along with very frequent long-continued Purgings, it adds considerably to the difficulty of the treatment and the embarrassment of the Practitioner, inasmuch as it precludes the safe administration of such astringent or tonic Medicines, as we might otherwise have recourse to with advantage. If, therefore, the symptoms that I have described, exist without any, or but little of this fatty stringy substance called Molten Grease mixed with the Fœces, the Horse may get a drink made by boiling for five minutes in a pint of Port Wine, one ounce of fine Cinnamon bruised, (not Cassia) to which may be added a table spoonful of Laudanum. This drink may be repeated in six or eight hours, provided the symptoms continue to be urgent. A Glyster should be injected

every four or six hours, made of starch, which ought to be boiled pretty thick, the quantity of the Glyster should not exceed a quart, and the warmth of it should be rather under that of the blood.— The utmost care and gentleness should be attended to in its administration, especially with regard both to the introduction and withdrawing of the pipe; for if the latter especially, be done in a rude and hasty manner, it will frequently prove the means of preventing the retention of the Glyster.

In case there be no abatement of the urgency of the symptoms after two starch injections have been used, it may be proper to add to each successive Glyster, one drachm of solid Opium, which should be carefully rubbed down in the composition. The limbs of the animal should be examined, and, if they prove to be cold, strong frictions with the hand should be applied to them, until they come to be of a comfortable warmth; and in this state they should be judiciously covered with hay bands. The Horse may be carefully drenched twice or thrice a day with warm thick gruel or rice milk; but this operation of drenching should be performed with the utmost caution and tenderness, for (as I have elsewhere observed) it too often happens that Horses are injured when in a state of great weakness, in consequence of the over-solicitude of the attendants on the subject of nourishment, which is poured down their throats at the expence of infinite resistance and struggling of the animals; and thus, too frequently, the small remains of their strength being in this way exhausted, they may be said to die of the drenching horn. In many cases it will be found that Horses which have been brought into a state of excessive weakness from injudicious Physicking, will eat grass altho' they refuse every thing else that can be offered to them.

In such instances, if the weather be fine, they may be permitted to graze for a few hours in the middle of the day, and afterwards on being brought into the stable, a little clean sweet corn may be put before them, which if it be refused, should be immediately removed.

If the weather be cold they should be cloathed before they are turned out, or if accustomed to cloathing, some additional cloaths should be put upon them. In all cases where much of the substance called Molten Grease, (which I have already described) is voided, the belly ought to be fomented every four hours, for twenty minutes at a time, with flannel cloths dipped into hot decoctions of Chamomile, Rue or Rosemary; but if these herbs are not at hand, in order to save time, hot water may be substituted.

The Fomentation should be used as hot as the hands can be borne in it, and the flannel cloths should be applied close to the skin, and be ample enough to cover the entire of the belly.

It will be adviseable to rub the Belly dry, as soon as the operation of Fomenting is over, and a large bed composed entirely of fresh dry straw, should be put under the Horse. Fresh-cut grass may be given to the Horse in the stable, and the same internal treatment will be proper as in the former case, except with respect to the use of the Port Wine and Cinnamon, which in this must be omitted. The symptoms which more immediately call for the use of Purgatives are either the presence or suspicion of Worms, the appearance of hide-bound, yellowness of the mouth or eyes, the gradual falling off of the appetite, and loss of flesh; especially if the latter symptom be unconnected with that luxuriance of the palate called Lampas. But all cases of sudden indisposition connected with Fever, and heat in the skin; more especially if the Horse have a

cough attended with laborious breathing, forbid the use of Purgatives. For though in these cases the Inflammation is commonly confined at first to the chest, or to the mucous membrane of the throat or trachea, there is an astonishing tendency in the inflammatory diseases of the chest to be propagated to some part of the intestinal canal, and whenever this happens to be the case, the effects of an Aloetic Purgative will operate like poison upon the inflamed Bowels.

In every case after physic, the Horse should be used very moderately for three or four days; lest in the weakened state of his bowels, the Purgative effect should be reproduced, which would be attended with danger.

I have thus detailed all the circumstance which appear to me to be of moment on this important subject.—To many I may seem to have treated it with more attention to minuteness, than the nature of it required, and some of my observations will perhaps be deemed superfluous, if not altogether unnecessary,—but I am not conscious of having justly laid myself open to this charge, and I would rather prefer that I should be subjected to it, than to the opposite one of having omitted any thing, which long experience has convinced me is really of importance, although it may have been altogether overlooked, or considered as of no moment by those whose exclusive province it has thitherto been to direct the medical, as well the general treatment of the Horse.

## Strangles.

**T**HIS disease attacks Horses of different ages, though most commonly those from one to five years old.

It seems, like some diseases which affect the human species, (for instance, Small Pox, Measles, and Hooping Cough) to attack the animal only once; and it would appear that few, if any Horses, escape the disorder at some period or other of their lives, though when it attacks aged Horses, the disease appears in a mitigated form, and is called Vives. The Strangles rarely or ever proves fatal, but many Horses are reduced by the complaint, to a state of excessive weakness, from which they are with great difficulty recovered. The nature and local situation of the disease, are quite sufficient of themselves to account for the emaciation and dispiritedness which take place, but these symptoms are often aggravated by the injudicious treatment which the animal is subjected to. The first attack of the Strangles is commonly attended with a Cough, Soreness of the Throat, accompanied with external swelling about the swallow, and an enlargement of the Glands under the Jaw.

There is commonly a good deal of heat in the skin and feverish indisposition; the Eyes are dull and languid, the Head is thrust out, and the Animal seems disinclined, or is unable to eat the food which is presented to him. Commonly there is evinced a desire to drink, but after a gulp or two, the Horse stops as if unable to gratify his thirst, yet reluctant to part with the fluid which he craves.—By the attempt to drink, Coughing is excited, the Animal seems evidently distressed by the act of swallowing, and a convulsive wheezing is brought on, attended with a considerable discharge of Saliva and Mucus, from the mouth and throat. There is commonly a very large discharge from both nostrils, of a yellowish colour, and a purulent kind, which however rarely if ever, has any offensive smell. If a Horse is known not to have had the Strangles, and is attacked with the symptoms which I have described, there can be little doubt respecting the nature of the disorder. In some Horses the progress of the disease is very rapid, and the urgency of the symptoms very great; the cough being frequent, the fits of wheezing violent, and the slabbering from the mouth, and discharge from the nostrils very copious. It happens now and then too, that the Lungs are much oppressed, and the Horse labours violently in the Flanks;—nevertheless, Bleeding is scarcely ever necessary, or admissable, unless the laborious breathing be indeed very urgent. Now as the grand efforts of nature in this disease, are evidently directed to bring on Suppuration in the Glands under the Jaw, or those about the Throat, so it should be our business to assist her in the accomplishment of the purpose which she aims at.

But the means which are commonly had recourse to, with a view to promote this salutary end, are generally of a feeble or nugatory



kind; being confined to the application of Poultices or Fomentations, to the swollen glands.

Now, that Poultices and Fomentations, if applied amply and with judgment, for a sufficient space of time, are calculated to mitigate the sufferings of the animal, and in some degree to expedite the process of Suppuration, I am very ready to admit; but in the way which they are commonly used, they are likely to do more harm than good. For as to Fomentations, they are seldom applied hot enough, or for a sufficient space of time, and the skin is frequently left wet, and unprotected from the action of the cold air, after the part has been fomented.

And with regard to Poultices, less advantage is (I apprehend) in general derived from their use, than from that of Fomentations. For they are seldom made ample enough, applied sufficiently hot, or renewed often enough, to produce the intended effect. And even in many cases, where they are properly enough applied, so far as concerns these particulars, yet from not being exactly adapted to the skin, or from the impossibility of retaining them in the situation where they were first applied, they speedily become cold, and thus, they do not merely defeat the purpose of their application, but, by actually lessening the energies of nature, they procrastinate instead of expediting the process of suppuration in the inflamed tumour. But with whatsoever care and caution they may be applied, these remedies are not to be put into competition with blistering; which ought in no case to be dispensed with—For Blisters do not only expedite the process of suppuration in the inflamed Glands, in an incredibly small space of time, but they do a great deal more, by relieving the internal inflammation and sore-

ness of the throat; and in this way it is, that they abate the cough and wheezing, which are oftentimes so very distressing to the animal-- But blistering, (in order to derive from it all the advantages which it is capable of effecting in Strangles) should be applied more extensively than is commonly advised. For it is not merely necessary to confine the application of the Blister to the tumours or swellings which may appear, as it ought to be rubbed well into the skin, not only under the hollow of the jaw, but round the swallow, on the bend of the neck, as high as the roots of the ears, and also about three inches down the gullet—In the course of twenty-four hours after the application of the Blister, in case the animal appear to labour *very violently* in the flanks, and the cough should be very frequent and distressing, *but not otherwise*, it may be adviseable to take away from three to five quarts of blood according to the size and strength of the patient. I must again repeat, however, that bleeding in this disease is hardly ever to be ventured upon, but in the extremest cases of oppression of the lungs. The state of the Bowels ought to be attended to, and costiveness should be guarded against, by injections composed of four quarts of warm thin Gruel, in which two table spoonfuls of Salt have been dissolved. These should be repeated every four hours until the Fœces are thrown off in a state evidently loose. Commonly, one finds much unnecessary solicitude in the attendants, on the subject of nourishment for Horses labouring under Strangles, especially as in general, they obstinately refuse eating the food which is presented to them; at least this is the case from the time the inflammation has become very high, until suppuration has actually taken place in the inflamed part.

But it happens now and then, that although Horses will refuse dry Food of every kind, or even Bran Mashcs, they will nevertheless eat fresh-cut Grass with avidity.

And this, whenever it can be procured, they ought to be supplied with liberally; as it will afford sufficient Nourishment, and at the same time will contribute to keep the Bowels open. Water which has had the extreme cold taken off it, should be offered frequently; and as some Horses will drink thin Gruel, it may be given in preference to water—The tumour under the jaw, ought to be examined from time to time, and as soon as the formation of matter is distinctly ascertained, by its fluctuation under the fingers, the Abscess ought to be opened, without waiting for its bursting—It is the best practice to open the tumour pretty freely, and deeply, as a small opening frequently occasions the formation of a second Abscess.

Sometimes, but rarely, from the large size of the tumour, its hardness, and slowness in advancing to suppuration, it becomes necessary to apply a second Blister; but if the blistering composition be properly prepared and diligently rubbed in, it will hardly ever be necessary to make a second application to the swelling. But though it is of the greatest consequence to open the tumour, the instant we are satisfied that suppuration has taken place; it is a point of no less importance, to avoid puncturing it before that process has been accomplished, inasmuch as a premature attempt of this kind, made with a view to relieve the Horse, is uniformly found to interfere with the salutary efforts of Nature, always to retard, and frequently to prevent altogether, the suppurative action in the part, and thus become the means of subjecting the Horse, to the suspicion of Glanders; in consequence of the hardened knotty feel, which

remains in the Glands under the jaw, during the life-time of the animal. After the tumour has been freely opened, and its contents discharged, by pretty forcible pressure with the fingers around it, the skin should be cleansed with a sponge and warm water; and a little tincture of Myrrh, or compound tincture of Benjamin, should be injected into the wound. This operation should be repeated daily, but the practice of the Farriers of cramming tents into the wound, cannot be too much reprobated; as it keeps up unnecessary irritation in the part, and retards the healing of the sore.

Provided however, that some external application to the wound be insisted upon, or thought necessary, a large Poultice of Bread and Milk is the best that can be made; and in those cases, where there is considerable hardness remaining in the part, after the abscess has been opened, it may be productive of considerable advantage. The Poultice should be applied warm, and renewed night and morning, after the sore has been syringed with Tincture of Myrrh.

In three or four days after the opening of the abscess, in case the Horse eat his food well, and have not been much reduced by the disease, it would be right to give him a very mild dose of Physic, paying strict attention to the Rules which are laid down under the head of the Use and Abuse of Purgatives.—But if the Horse have been extremely reduced in condition and spirits, by the disease, and more especially if his appetite be defective, it will be adviseable, instead of Purging him, to give him one of the following balls, for six successive nights.

Take of Winter's Bark in Powder, . . . . . 2 Drachms,  
 Sulphate of Iron, . . . . . 3 Drachms,  
 Extract of Gentain, . . . . . 1 Drachm.  
 Honey sufficient to make a Ball.

In those cases where the Horse has been brought to a mere skeleton by the disease, Mashcs made of ground malt, will be found exceedingly restorative and fattening, and if he will drink thin gruel instead of water, it will materially contribute to promote his recovery. In fine weather the Horse should be led out twice or thrice a day for twenty minutes at a time. He should be extremely well groomed, get strong frictions to his limbs, and be soiled in the Stable; or if the weather will admit of it, he may be turned out to graze daily, for the space of two or three hours in the middle of the day. If the use of the Balls be found to promote his spirits and appetite, he may get a mild dose of Physic on the second morning after taking six of them, unless the lowness of his condition, should forbid the use of Purgative Medicines; in which case it may be advisable to continue the use of the Tonic Balls for some time longer. This method of treating Horses under Strangles, will be found not merely to shorten the disease, and to mitigate the sufferings of the animal, but to prevent also in a great measure that emaciation, which so commonly results from a long protracted struggle in the system, when the suppurative process in the inflamed Glands, becomes slow and torpid.

## Sprain, or Clap,

### IN THE BACK-SINEW.

**T**HE complaint called a Sprain or Clap in the back-sinew, is one extremely common amongst Horses, for reasons which are too evident to need being insisted upon here. There is hardly any-disease which is more egregiously mal-treated by Farriers and other un-scientific persons.—Indeed some people of superior information who have of late years undertaken to instruct the Public in the cure of the diseases of Horses, and who have happened to labour under the defect of a professional education, and consequently of first principles, have directed the treatment of this complaint upon very erroneous grounds.—For contrary to what is usually presumed and maintained upon this subject, it almost never happens, let the quantity of violence be what it may, that the back-sinew in Horses is ruptured, notwithstanding this accident occurs not unfrequently to the Tendo Achilles in the human subject, from dancing or in consequence of any other great or sudden exertion, of the muscle of the tendon.—For although it be indeed true, as Professor Carlisle has very judiciously remarked, that “ When muscles act more powerfully or more rapidly than is equal to the strength of the sustain-

ing parts, they do not usually rupture their fleshy fibres, but break their tendons, or even an intervening bone, as in the instance of ruptured Tendo Achilles or fractured knee pan," yet I am strongly inclined to believe that the rupture of the back-sinew in Horses, is a very rare occurrence indeed; although I am far from denying the possibility of such a circumstance taking place. About ten years ago I saw an instance of the fracture of both Pastern Bones, and also of the coffin bone, (which latter was crushed into three or four pieces,) in consequence of leaping a Horse, in the Phoenix Park near Dublin.

In this instance, although three bones were fractured, the Tendon was not ruptured. In fact, the ordinary case of what is called a Clap or Sprain in the back-sinew of Horses, is attended neither with a rupture of the Tendon, nor its sheath, even with a partial rupture of any fibres of the Tendon. For the mischief which is inflicted is usually confined to the strong Fibres, which tie the tendons firmly down to their proper situations, and which in consequence of too rapid or too powerful actions of the muscles are not only torn by the violence; but the tearing of these, is sometimes accompanied with a noise so loud as to be distinctly heard by the by-standers.—In Horses after severe injuries of this kind, the part becomes violently and suddenly swelled, the skin is extremely hot and painful to the touch on pressure, and the animal in those instances, stands instinctively in that posture which he finds most easy to the injured limb; in other words he elevates the heel through fear of encountering the pain, which he finds attends every attempt to bring it to the ground. In cases where the pain and inflammation are very violent, he merely rests the weight of the

limb passively on the point of the toe, and in extreme cases, he scarcely permits even the toe, to come in contact with the ground,— Where such extensive mischief has been inflicted, attended with excruciating pain ; not only is the injured part exquisitely sensible to the touch, and violently hot and swollen ; but sympathetic Fever comes on, in the course of a few hours, and the Horse exhibits great derangement of his general system, by the heat of his skin, the quickness of his pulse, the rapid heaving of his flanks, and the languid expression of his eye. In such cases, from four to six quarts of Blood, according to the strength and size of the animal, should be taken from him without delay. A dose of Physic should be given in two or three hours after the blood-letting, without waiting for that desirable condition of the Bowels, which Mashing would effect ; and in order to expedite the operation of the Purgative, an Injection of four quarts of thin gruel or warm water, should be thrown into the Bowels every four hours, until the effects of the Medicine are evidently perceived in the Fæces.

The Limbs should be fomented with a hot Decoction of Chamomile, or any Herb usually employed for Fomentations, night and morning, for twenty minutes at a time ; and the swollen part afterwards enveloped in a large ample Poultice, made of Oatmeal and Vinegar, or coarse Bread and Milk. It is to be regretted, that, in this Complaint, we are not able to have recourse to Topical Bleeding, in such a way as would be effectual. But in every instance where the inflammation is propagated into the Foot, and where the hoof feels very hot, it is good practice, to have recourse to that operation, which is called by the Farriers, opening the Toe-vein. For if a quart, or even a pint of Blood, can be obtained from the Foot



under those circumstances, it will be found to be attended with more decisively good effects, than Bleeding from the general system; nevertheless, both topical and general Bleeding, must be had recourse to, in all cases attended with extreme pain, and much general Fever.

In order to encourage the Bleeding from the divided vessel at the toe, as soon as the blood begins to cease flowing, the foot ought to be put into hot water, and retained in it for twenty minutes or half an hour.—If the symptoms of pain and general fever are extremely urgent, it may be necessary to repeat the bleeding from the neck vein on the second day and the physic on the fourth, provided the bowels have nearly resumed their ordinary condition. In slight injuries of this kind, bleeding may be omitted with great propriety. This mode of treating Claps or Sprains in the back-sinew, will be found to effect the grand object, we have or ought to have in view, namely that of lessening the inflammation in the part diseased.

But so long as there remains violent heat and swelling of the part, and more especially whilst the animal appears to suffer exquisite pain on pressing it, the use of a bandage would exasperate the symptoms.

As soon however, as the heat and swelling begin to subside, and moderate pressure with the fingers is borne without much flinching, I consider the use of bandages, not merely proper but as indispensably necessary to the perfect restoration of the injured parts.

Before the application of the bandage the puffy distended portion of the skin which lies over the Sinew, should be pretty forcibly chafed with equal parts of strong camphorated spirits and soap lina-

ment for a quarter of an hour every night and morning; a thick linen compress wetted with the same should be applied smoothly over the part, and a calico bandage of three fingers breadth and four or five yards in length, should be rolled over the compress, being first thoroughly soaked with the following mixture.

Take of Acetated Ceruss 2 Drachms,

Strong Vinegar,

British or Irish Spirits, each one pint, mix.

The bandage should be applied smoothly and moderately tight; it should extend from about two inches above the coronet, to within two or three inches of the knee, and should be secured by a few stitches rather than by pins, or by any thin material tied over it, which would occasion unequal pressure on the part. The bandage should be wetted with the above composition as often as it grows dry, by means of a sponge, and at every fresh application its tightness may be increased, unless this should be forbid by a greater degree of tenderness of the part on pressure, or by any considerable swelling above or below the bandage.—A loose stall or out-house, will be found to be attended with the most decided advantage, during the inflammatory symptoms of this complaint, and when the parts have so far recovered their tone, that the Horse walks with little perceptible lameness, he may be led out for twenty minutes at a time, with the bandage on, two or three times a day. After this plan has been persisted in for a fortnight or three weeks, in case any swelling or lameness remain, it may be adviseable to blister the part; and on the second day after the blister, the Horse should be turned out to grass for a month, at the expiration of which time a second blister may possibly be necessary; in case the weather forbid turning him out, he should get two

hours walking exercise daily.—But the usual practice of Farriers and Grooms, of blistering the part immediately after the sprain has been inflicted, cannot be too much reprobated.—One is astonished, indeed, that any proprietor of Horses who is gifted with common sense, should ever permit the adoption of such a preposterous mode of treatment. The only reason which I have ever heard given, to justify the practice, was the following, namely, that inasmuch as it generally becomes necessary, to blister a Horse before he get rid of the effects of a Clap in the sinew, so the sooner the blister is applied, the better.

The fallaciousness or rather absurdity of such reasoning, it is not worth while to combat. The fact is, that the practice of blistering, during the time that the inflammation is high and active, the pain acute, and whilst the Horse's whole system sympathizes strongly with the affected part, has been the means, not only of aggravating beyond all belief, the sufferings of the animal, but of converting slight injuries into incurable lamenesses; and thus many valuable Horses have in consequence of this practice, been utterly lost to the community.

For the effect of a blister under the above circumstances, is to increase most vehemently, the inflammation and swelling of the skin of the part injured, which latter condition, continuing to remain, is supposed to be the consequence of the violence of the original injury; and therefore the blister is repeated again and again, until from the long continued inflammation which is kept up in it, its primitive structure is destroyed, and its thickness extremely increased.

But the mischief ends not here, for the absorbents lose their energy so completely, that they can be but imperfectly roused into

action, even by the stimulus of the actual cautery; and thus firing is in these cases too frequently found to be ineffectual, although nothing but this operation, succeeded by a three months run at grass, can possibly hold out any rational prospect of a cure.

The swelling and hardness of the part however, does not depend entirely, upon the altered condition of the skin alone, but of the Cellular Membrane also, underneath it, as well as of the fibres, which tie down the tendon, both of which being torn and inflamed by the original violence, have had the inflammation kept up in them by the subsequent mal-treatment that has been adopted.—Now the change which takes place in the Cellular Membrane, in consequence of this high active inflammation so long continued in it, is the same that takes place in the skin, that is to say, it becomes thickened and altered in its structure, and thus presents a mechanical impediment to the free and perfect motion of the tendon, which in such cases cannot be pressed down into its proper situation, by any bandage that can possibly be applied to the part. It is nevertheless wonderful, how many instances of mal-treated Sprains do recover ultimately, in consequence of judicious Firing. Much stress has heretofore been laid upon the external use of Astringents in these cases; for instance, Verjuice, Forge-Water, Solutions of Alum, and such like applications, which have been recommended upon the principle of bracing the Tendon, which was supposed to have lost its elasticity. Now it cannot be denied that remedies of this kind, have their use in slight Windgalls, and swellings about the Joints, unattended with pain or lameness, especially if applied through the medium of bandages; but I have never seen any permanent good result from their application, in the kind of case under our present consideration.

I am now speaking to facts as they apply to practice, and not arguing on a point of theory, otherwise it would be very easy to shew, that no opinion can be less tenable than that which inculcates the elasticity of Tendons, which are well known by Physiologists, to be inelastic cords, possessing when in health, little or no sensibility.

The principle therefore, upon which firing acts is not by constringing or bracing the Tendon, but by stimulating the absorbents, and rousing up in them such increased action and energy, as enables them to remove the thickened morbid condition of the skin and cellular membrane. Nevertheless, but small advantage can be expected to be derived from this operation, unless the animal be enabled to use a good deal of slow voluntary motion, for a very considerable space of time after it. But it happens now and then, that the impatience of the parties concerned, precludes entirely, or in part at least, the advantage which would otherwise result from the operation.

For I have known several instances where Horses have been put to work in a month or five weeks after firing, in which cases the swelled and thickened state of the parts, instead of being lessened was increased by the effect of the Cautery. Indeed, the length of time that the process of absorption continues to go on in diseased parts, after the application of the actual Cautery, can hardly be believed, except by those who have had an opportunity of noticing facts upon a very large scale, and are qualified at the same time to draw the proper inferences, from the observation of those facts. And although the moderate exercise which a Horse voluntarily takes whilst at grass, be admirably calculated to assist the curative inten-

tion after Firing, by gently and regularly stimulating the action of the absorbents, yet if the Animal be subjected to hard work or rapid motion for a continuance, whilst the new active inflammation excited by the Cautery, is going on in the part, then will the same effect follow, which has been already described as taking place in consequence of blistering immediately, after the injury has been inflicted. I consider therefore, that a period of at least two or three months, is the smallest space of time that ought to be allowed for a Horse to remain at grass after Firing, especially if the operation has been performed with severity, or upon a large surface of skin. It will not, I hope, be inferred from the preceding remarks, that I am an advocate for the indiscriminate use of the Cautery, in cases of this or any other sort. For this would be exposing myself to the charge of unnecessary cruelty or great absurdity. Nevertheless, I cannot help considering a good deal that has been written upon this subject of late years, as proceeding from a mere affectation of humanity, and as a sort of clap-trap for popular applause; because my experience has long ago convinced me, and therefore now enables me to pronounce decisively, that not only several diseases of the Bones, but also many of the stubborn Chronic Diseases of other parts, admit of no other remedy than the actual Cautery.

I am further of opinion, that the operation should be performed by drawing longitudinal lines only, on the skin, from one third to one-half an inch asunder, and that the old practice of Firing in the form of diamonds, has nothing but its fancifulness and antiquity, to recommend it,

Certain it is, that it adds very materially to the eventual deformity, by the unnecessary sloughs which it occasions in the skin. It is

usually considered absolutely necessary to blister a part that has been fired, in order to insure the full amount of the advantage which is expected to arise from the operation. And certainly, in cases of old Lamenesses of very long standing, there may be use in Blistering in the course of six or seven weeks after firing, provided at the expiration of this time, the fired surface have little or no remains of heat or inflammation in it.

But in all cases where it becomes necessary to have recourse to the Cautey, in order to effect that object which it is not in the power of Blistering to accomplish, it is far better to apply the former remedy, with a degree of severity sufficient to preclude the necessity of resorting to Blistering, after the use of it has been adopted.

## Worms.

THE Worms which are found in the Stomach or Bowels of the Horse, are of four different kinds: viz. The Ascaris or Needle Worm, the Teres or Round Worm, the Tœnia or Tape Worm, and the Bot. I have included the latter, however, purely in deference to custom, which is so arbitrary that it is not always safe to deviate from it, although the Bot cannot be considered by the Naturalist as a Worm, but as a Larva or Caterpillar; a fact this, which was established many years ago by that scientific Veterinarian.

MR FRIDELA CLARKE, of *London*, in a most ingenious paper of his, published in the 5th Volume of the transactions of the Linnæan Society.

The origin and mode of propagation of the three first, (which in strict propriety of language can alone be called Worms) are involved in such great obscurity, that neither writers on Natural History, nor Medical Philosophers, have been able to investigate satisfactorily, all the Phænomena connected with them; but Mr Clarke's indefatigable diligence, joined to enlarged and Philosophical views, has enabled him to trace most clearly, the Natural History and origin of the Bot. And by this investigation Mr Clarke has not only completely removed the veil which had hung over this mysterious subject for ages, but has at the same time conferred a dignity upon the Art which he professes, and an honor upon the Veterinary School of England. For such enlarged and scientific investigations of Nature, must inevitably stimulate the industry and exertions of other Veterinarians, and thus not merely tend, to raise the importance of our Art, in the estimation of the liberal-minded; but at the same time contribute most essentially, to the advancement of general Science.

The morbid appearances in the constitution, which are exhibited in consequence of the presence of the Round Worm and Tape Worm, in the bowels of the Horse, have been by no means accurately observed or defined, by Veterinary Writers.

The Tape Worm is in fact so very rarely seen, that, but for the circumstance of the possibility of its being met with, it would scarcely deserve to be noticed, as an enemy to the Horse. The Teres, which has the form, though not the colour, of the Earth Worm,



(being white) is, however, frequently seen on dissection; and occasionally also, mixed with the Fæces of Horses, apparently healthy.

I have frequently seen this Worm from eight to ten inches in length. When such Worms are voided by the Horse, their size and appearance are so formidable, that one cannot wonder at the alarm which is excited, in the minds of Grooms and Stable-Men; who always maintain that the Animal's inside must be foul, which could furnish food and habitation for such inhabitants:

That these Worms do, however, sometimes exist in the Bowels of Horses, without exciting any derangement, or visibly affecting their health, cannot be denied, and in these cases, there can be no necessity for the use of Medicine. But if the Horse decline in health or spirits, or become what is called hide-bound, he may get a Worm Powder mixed in a small quantity of Mash, or in his corn (previously damped) for six successive nights, and on the morning of the seventh day, a dose of Purgive Physic. Four days after that on which he gets the Physic, if it appears to be necessary, he may enter on another course of Worm Powders, and get a second dose of Physic on the morning of the seventh day:

This plan of treatment will commonly be found effectual, but if the Horse's appetite continue to be indifferent, and his spirits dull, it would be right to give him a Tonic Ball for six successive nights, beginning on the fourth night after the second dose of Physic.— It will be proper, however, to join to this medical Regimen, good grooming, and a good deal of gentle exercise. Many Nostrums and Specifics have been recommended for Worms in Horses, and so many infallible as well as cheap receipts, that a man would run the hazard of being accused of ignorance, were he not to recommend the use of some of them, or propose, at least, some new Me-

dicine ; so great is the avidity in the public mind to grasp at novelty, and to be delighted with mystery. But as I have never seen any decided, or permanently good effects, from any of these popular remedies, I think it useless to take up the time of my Readers by any comments upon them. There is one celebrated Specific, however, which it behoves me to give my sentiments upon, in the discussion of this subject. The Medicine I allude to is Calomel, the promiscuous use of which has proved fatal to many Horses, especially when mixed with Aloetic Purgatives ; and particularly so, when joined to *Barbadoes Aloes*. Nor, does the credit which Calomel has obtained for its specific powers as a Vermifuge in Horses, rest upon any other foundation, at best, than that of analogy.

For if given largely, by itself, to the quantity of even half an ounce, it exerts little or no influence upon the Bowels ; but if repeated frequently in Doses of a Drachm, it will very readily be absorbed, and the Animal will be salivated. But this is an effect of Mercury, which ought in all cases to be sedulously guarded against ; for the Animal not having reason, will sooner submit to starvation, than to the pain of masticating his food, when his Gums are made sore by the Mercury. And in consequence of this absurd mode of administering Calomel as an Alterative, I have seen some instances of Horses that were reduced almost to skeletons, and which were with difficulty brought about, by means of gruel and the drenching horn. If, however, it be determined to consider Calomel as essentially necessary, in cases of Worms, it is certainly the safest practice, to give it, joined with some mild aromatic, over night ; or in other words, about twelve hours before the Aloetic Purge, which should be given on the following morning. In this way, certainly,

Calomel may be administered with the greatest safety, provided scrupulous attention be paid to those circumstances, which are amply detailed, under the head of *The Use and Abuse of Purgatives*.

But whether Calomel be given as an Alterative, or dependance be placed upon Box Wood, Savin, Tobacco, or any other of the Vegetable productions, which have been much relied upon heretofore, for the cure of Worms, it will be found, *in all cases*, that the use of Purging Physic is indispensably necessary. And I am perfectly satisfied (inasmuch as it is the custom to physic Horses after a course of these celebrated Vermifuges) that in the greater part of those cases, where the cure has been attributed to their efficacy, it ought rather to have been placed to the account of the Purgative alone. For the circumstance which has been relied upon, as the infallible criterion of the efficacy of such remedies, namely, that of finding dead Worms mixed with the Fœces that are voided, is by no means a proof of the fact in question; as with the exception of the Bot, all the Worms found in the Stomach or Bowels of the Horse, die almost at the very instant they are exposed, to the temperature of the external atmosphere. Insomuch that it frequently happens, in cases where Horses void myriads of the Ascaris (Needle Worm) that it is extremely difficult to detect them in the Fœces, on account of their resemblance to the fibres of Hay, unless they be examined at the very moment they are discharged, when, in some instances, the Fœces of the Animal will appear almost alive, as it were, from their numbers. So that I should feel inclined to doubt the pretended efficacy, of these celebrated Specifics, in the cure of Worms, in all cases where the use of purging Physic had been dispensed with; unless I were to witness (what I never have been able

to observe) a visible decrease of those morbid symptoms, which are usually, though not constantly attendant, upon their presence.

The *Ascaris*, as it is by much the most common, so it is also by far the greatest enemy to the Horse. Usually too, its presence in the Bowels may be confidently predicted, by a peculiar appearance at the verge of the Anus, very much resembling that of dried cream.

I do not recollect that any writer has attempted to account for this very peculiar appearance, although I have heard it maintained that it is owing to some excrementitious discharge of the *Ascaris*. I am inclined, however, to suspect that it proceeds from a morbid secretion of the Mucous Coat of the Rectum, arising from the stimulus of the *Ascaris* near the Sphincter. It is but of little consequence however to ascertain this speculative point, in comparison of another of much greater importance in practice, which is, that the appearance I have alluded to, is by no means a constant one, in all cases of the Needle Worm. And therefore, although we should be perfectly safe, in laying it down as an axiom, that it is never observed unless the *Ascaris* exist in the Bowels; yet the converse of the proposition, will not necessarily hold good, for it is by no means uncommon, to find immense numbers of these Worms, voided by Horses, which exhibit none of the peculiar appearance that has been described. Commonly, however, Horses affected with Needle Worms, exhibit symptoms, though not so palpable, yet not much less decisive of their presence than that which I have described. For it mostly happens, that the Coat stares and looks unhealthy, that the Animal loses his appetite, becomes dull and dispirited, and in a more remarkable degree hide-bound, than I have ever observed to be the case, in instances of the Round Worm. For Horses labouring

under the symptoms I have detailed, the same plan of treatment which I have already laid down, for those affected with the Round Worm, may be had recourse to. And as it must be acknowledged that it is extremely difficult, in some cases, to keep the Bowels entirely free from the *Ascaris*, it may be admissible during the hot months of the year, to mix twenty grains of Calomel in each of the Worm Powders, especially if the weather be steadily warm and dry. In these cases however the use of the Aloetic Purgative must not be dispensed with.

Now as Calomel, if given to Horses in the manner and under the circumstances which I have described, may be administered with impunity, at least, I make this concession in favour of its safety, rather than of its efficacy; knowing well the popular prejudice that exists respecting it, and that even many well-informed Medical Men are determined advocates for its use.

I now proceed to the consideration of the subject of the Bot, for the following remarks upon which, I am chiefly indebted to the ingenious Mr. BRACEY CLARKE, of *London*.

Until the appearance of this Gentleman's Treatise, containing a very satisfactory investigation of the Natural History of the Bot, no subject connected with the Diseases of Horses, was involved in greater obscurity, or had given greater scope to the boldness of Empiricism, or the speculations of those who love to indulge in the visionary dreams of Hypothesis. Mr. Clarke has proved, that two kinds of Bots are commonly found in the stomach of the Horse, and thinks it probable, that a third may occasionally inhabit there. He has discovered that the Bot is a Larva or Caterpillar produced from the Egg of a particular species of the Genus *Cæstrus* or gad-fly which, like

the Larva called the Silk-Worm, passes first into the state of Chrysalis, and afterwards, at the expiration of about two months, into that of the Parent Fly. It would seem that no other Nidus in Nature, hath hitherto been discovered for the Larva of two species of the Genus *Æstrus*, except the Stomach of the Horse-Tribe; although the immortal Linnæus fell into the error of supposing, that the species found in the backs of horned Cattle, was the same that is met with in the stomach of Horses.

“Habitat (says the great Naturalist) in *Ventriculo Equi et Boum Dorso.*” But a reference to Mr. Clarke’s beautiful Plate, which exhibits in a most striking manner, the difference between the Larvæ, and especially between the Parent Flies, will satisfy every reasonable doubt upon this subject.

The Eggs of one of these species of *Æstrus*, may frequently be seen in great numbers, upon the inside of the knee, the side and back part of the shoulder, and on the extreme ends of the hairs of the mane; but always within the reach of the tongue of the Animal. And although it will rarely happen, that Horses which are not turned out to grass, will have Bots in their stomachs, yet, as Mr. Clarke observes, this may occasionally take place, from the circumstance of one Horse performing the friendly office, of licking another. Mr. Clarke informs us “he once supposed that the Eggs were loosened from the hairs, by the moisture of the Horse’s tongue, aided by its roughness, and were conveyed to the stomach, where they were hatched; but on a more minute search he did not find this to be the case, or at least only by accident. For when they have remained on the hairs four or five days, they become ripe, after which time, the slightest application of warmth and moisture, is

sufficient to bring forth, in an instant, the latent Larva. At this time, if the tongue of the Horse touches the Egg, its Operculum is thrown open, and a small active Worm is produced, which readily adheres to the moist surface of the tongue, and is from thence conveyed with the food into the stomach.

I have often (he adds) with a pair of Scissars, clipped off some hairs with the Eggs on them, from the Horse, and on placing them in the hand moistened with Saliva, they have hatched in a few seconds. At other times, when not perfectly ripe, the Larva would not appear, though held in the hand under the same circumstances for several hours, a sufficient proof that the Eggs themselves, are not conveyed to the Stomach."

The number of Bots found in the stomach of the Horse, sometimes exceeds a hundred, but Mr. Clarke is nevertheless inclined to think, that the quantity of sustenance which they consume must be comparatively small, both on account of the slowness of their growth, and the great purity of their food, which he supposes to be the Chyle. —Now as to the *extreme* purity of their food, this cannot at any rate be the case, with such Bots as are confined to the stomach, (and rarely indeed does it happen that they are found in the intestines) inasmuch as this peculiar fluid the Chyle, is not elaborated in that organ.

Nor can it even, by any means be satisfactorily proved, that the food of the Bot consists of that substance merely, which the food of the Horse is converted into, by the digestive powers of the stomach, namely the Chyme; although I am free to acknowledge the extreme probability of such a notion. Most of the facts and phœnomena indeed, which are known concerning Bots, militate strongly against

the absurd and vulgar prejudices, which exist respecting them.—The ignorant surprise of Farriers (observes Mr. Clarke) on finding Bots in the stomachs of Horses, has often occasioned the death of the animal to be attributed to them, although it is certain that but few Horses on our commons can escape them. Moreover I cannot help thinking that Mr. Clarke has himself invalidated the force of his own opinion, as to the extreme purity of the Bots' food, by acknowledging that on dissection its intestine is found to contain a yellow or greenish matter, which must be derived from the colour of the Horse's food.—If, therefore, the Bots be capable of converting any part of the food of the Horse, which has not been changed into Chyme, into their own nourishment, it will follow as a natural inference, that they ought not, in this point of view, to be considered such dangerous enemies to the Horse, as even Mr. Clarke himself seems inclined to allow them to be.—But the more common and plausible prejudice, respecting the noxiousness of Bots to the Horse, is founded, not so much on the opinion of the quantity of nutriment which they rob him of, as upon the notion of the irritation and fatal spasms, which they are supposed to be the occasional cause of, in the stomach of this Animal. An opinion, which I cannot help considering, not merely hypothetical, but also as in some degree at variance with most of the facts, connected with this very interesting subject, which have hitherto been investigated, upon truly Philosophical principles.—But whilst I assert thus much, I am free to confess, that even the Physiologist or Anatomist, might naturally enough (at first blush) feel inclined, to give into some of the popular erroneous notions, on this subject, particularly on finding immense clusters of the Bots near the Pylorus, and more especially on observ-



ing the deep impressions which are always made by the Tenticulæ (or Hooks) of the Bot, in the substance of the Stomach ; a fact which may be very strikingly seen, by plucking away the Bots forcibly from the Stomach, soon after death. The same appearance of deep indentations in this organ, may also be observed, as soon as the Bots begin to drop off, from such stomachs as have been preserved many years in spirits. There can be no doubt however, that this loss of substance in the Stomach, which is effected by the Tenticulæ of the Bot, through the process of absorption, must be brought about by inconceivably slow degrees, especially when the size of the Larva at its first arrival in the Stomach, (just after bursting the egg) together with its long continuance of many months, in its peculiar habitation, be taken into account. As little doubt also can there be, that these indentations in the Stomach made by the Bots, are, in the living Horse, eventually filled up, by the almost inexhaustible powers of nature, in the way of restoration.

Taking therefore, all these circumstances into account, I cannot for my own part, help going a great deal farther than Mr. Clarke has done, with respect to the general innoxiousness of Bots to Horses. For whilst I see no good reason for supposing, that their presence in the Stomach, is in the smallest degree unfriendly to the Animal, much less indeed can I discover any solid grounds for admitting, that they ever occasion the death of Horses. Nor is the admission of Mr. Clarke, that Bots do *sometimes* occasion the death of Horses, easily to be reconciled with the opinion, which he elsewhere strongly inculcates, of their probable utility in general, to the Animal. This latter notion he endeavours, indeed, to support, by many analogical arguments ; some of which I confess appear to me, to be but imper-

fectly applicable to the subject; and therefore, I cannot help considering his proposal of administering the Bots artificially, (as a Medicine to Horses) by means of their Ova, (qualified as that proposition is) as proceeding from ideas, much too visionary, for any purpose of practical utility. For although it be true, that the great Linnæus has said concerning the insect, which infests the heads of children “*Rodendo Caput exciit Ichores apud puerulos voraces, incarceratos indeque strumosos, sicque preservat a Coryza, tussi, cœcitate, epilepsia, &c.* yet, no one I believe, would seriously think of proposing, that the heads of Children should be purposely furnished with such loathsome vermin, by way of preventing the attack of these formidable complaints; unless indeed it could be *proved*, that the diseases in question, prevail less in the abodes of filth and poverty, than in the habitations of the cleanly and affluent.

Nor can I by any means agree with Mr. Clarke in his opinion, that the worms in children, are wholesome to them in a certain quantity, by constantly irritating the membranes of the intestines, and thus preventing the access of worse disorders; although I consider it exceedingly probable that the morbid secretions of the mucous coat of the intestines, which always more or less, accompany the existence of Worms, have effects infinitely more deleterious, than the Worms themselves have, on the system of the child. Further, I cannot help looking upon Mr. Clarke's comparison, of the effects of the stimulus of Bots in the Stomach, to that of a perpetual issue or blister, as carrying the argument of analogy, much too far. “We often see” (says he) a formidable disease quickly removed by blistering the skin, or by irritating the mucous membrane of the stomach or intestines, through a vomit or a purge.” Again “irritating the

membranes of the stomach in other Animals, would excite nausea and vomiting, but the Horse not possessing this power, his stomach is peculiarly fitted for the stimulus of such inhabitants." Now, if by this last sentence, Mr. Clarke wishes merely to have it understood, that the Horse does not possess the power of vomiting; no one I believe, will feel inclined to deny the truth of his assertion; but if it be also intended to imply, that nausea cannot be excited in his stomach, no opinion can possibly be more untenable, or more contrary to facts and every day's experience. For the uniform effect of Aloes, especially of all the coarser kinds on Horses, is, to excite more or less of nausea; and in some Horses indeed, this is carried to prodigious excess, as their obstinate refusal of food, joined to extreme languor and debility, sufficiently evince; and this too, for a considerable time, before the Physic begins to operate; consequently, before any effect of exhaustion, from the purgative quality of the medicine, can have any concern in the affair. And in confirmation of this fact I may add, that I remember to have witnessed repeatedly, at the Veterinary College in London, the most extreme and distressing nausea, which was excited by the administration of the Hyoscyamus (Henbane) on two Horses affected with glanders, which were set aside, for the purpose of trying the efficacy of this powerful simple, in the cure of that dreadful malady.

The experiment failed of success; but the palpable effects of the medicine, were of the most striking kind, such as great prostration of strength, copious perspiration, which might be said rather to rain than to flow from the pores of the skin, and *extreme nausea*, attended with frequent regurgitations of the stomach, so strong and manifest, that its contents were repeatedly pushed to the upper

part of the gullet, and coupled at the same time with such violent spasm, as to prepare the spectator to expect every instant, the completion of the act of vomiting.—So that the inference which Mr. Clarke draws from the presumed fact, that nausea cannot be excited in the stomach of Horses, must share the fate of all such inductions as proceed from false premises, in other words, it must fall to the ground. Nor do I imagine that more dependance can be placed upon this Gentleman's speculative notion, that the Bots may occasionally prevent the attack of contagious disorders, such as Farcy and Glanders; or of Moon-blindness, Inflammations of the Lungs, Spavins, Splents, &c. For the only incontrovertible fact connected with these suggestions, is, the unquestionable greater frequency of Farcy and Glanders amongst such Horses as are kept in Stables, which from not being turned out to grass, are therefore on that account, precluded from the attack of the Fly, whose egg produces the Bot. The presence or absence of Bots however, is, I apprehend in no degree or manner connected with these two diseases, which spring indisputably, from other and less equivocal sources.

Much less is it reasonable to suppose, that the formation of Splents or Spavins is likely to be prevented by the presence of Bots in the Stomach. Upon the whole then, I consider the arguments which Mr. Clarke has used to support the notion of the probable utility of Bots to the system, as resting upon a basis far too visionary. Nor can I help being of opinion that the bare admission (even) of the probability that they may now and then, occasion the death of the Animal, is likely (on such high authority as Mr. Clarke's) to lead to very mischievous effects in Veterinary practice. For by thus stamping currency on some of the old mysterious and superstitious

notions, which have long prevailed upon this subject, even the enlightened reader will find himself involved in a labyrinth of perplexity, whilst he is balancing the two opposite and discordant opinions which are maintained by this ingenious Philosopher.—But, laying aside conjecture and discarding hypothesis, let us determine to draw our inductions from facts alone, which cannot deceive us, and we shall in all likelihood arrive at just conclusions upon this interesting and intricate subject. And more especially, let us examine the probability of the notion, that the Bots do sometimes occasion the death of Horses.

Now, Mr. Clarke has himself satisfactorily explained to us, that the stomach of the Horse-tribe, is the only Nidus which nature has furnished, for the propagation of two species of flies, of the Genus *Æstrus*, and has admitted that but few Horses which are turned out to Grass in the summer time, can escape the attack of the fly which is the parent of the Bot.—There can, in fact, be no manner of question that in all situations where the *Æstrus* is met with, most Horses that are turned out to graze, will have more or less of these Larvæ in their stomachs.

But what *evidence* have we, that they ever excite fatal spasms in the stomach, or ever prevent the passage of the food into the bowels, and thus become the cause of the animal's death? I answer, none. True indeed it is, that on dissection, we frequently find Bots in the stomach, and it has been the custom with Farriers, and other ignorant people, who cannot possibly be considered as competent judges of morbid appearances, to be satisfied that the Bots alone, had in such cases, caused the death of the animal.

But let it be remembered, that Bots are frequently found in the stomach on dissection, along with a mass of such diseased appearance, of *other organs essential to life*, as to leave no doubt in the mind of the Veterinary Surgeon, of their being quite unconnected with the disorder, which proved fatal to the animal; more especially, when the urgency and decided character of the previous symptoms, have been properly taken into account,—I allude more particularly, to the cases of Horses that have died from inflammation of the Heart, Pleura, Lungs, or Kidnies, where Bots have been found in the stomach.—But, surely no one who would wish to obtain credit for arguing cautiously and justly on such subjects, would be inclined to maintain, that the Bots were the cause of these fatal disorders, more especially, if he gave himself time to reflect upon the *innumerable* instances of Horses which (having had the Bots nearly a year in their stomachs) have passed them in their full-grown state, without appearing to have suffered at any time during the entire period, the slightest inconvenience from them. Nor can I be readily persuaded that the Bots are really inimical to the Horse, even by robbing him of part of his nutriment, having seen them, in great numbers in several Horses that have been killed, either by design (as in the instance of Glanders) or by accident, and which have been found on dissection in a state of extreme fatness.—Now, this is a thing which could *never* happen, provided the Bots were so prejudicial in this respect, as Mr. Clarke seems inclined to admit.—It will not, therefore, I hope, be objected to me, (taking into account all the facts which have been enumerated,) that I do but substitute one speculative notion for another, if I maintain, in case the Bots by feeding on the Clyme, do rob the Horse of some portion of nutriment (a

point which it is impossible, utterly to disprove) that this disadvantage must be counterbalanced, by some new action or increased energy of the stomach, which is set up, in order to supply the deficiency that would otherwise result to the Animal, in all cases where the Bots were very numerous.

In fact, no good or solid reason can be advanced, to prove that Bots are either inimical or friendly, to the Constitution of the Horse; whose Stomach, the Great Author of Nature has destined, and without doubt, peculiarly fitted, to be the sole and proper Nidus of certain species of the Genus *Æstrus*. It is true indeed, so little do we see and know of the great scheme of the universe, that we cannot perceive why it should have been so ordered by Providence, any more than we are able to discern the use of the *Æstri*, in the œconomy of our Globe. But, certainly, were I obliged to make an election between the two opposite opinions, respecting the noxiousness or utility of Bots to Horses, I should be inclined to adopt the latter notion, on account of its being more easily reconcileable, to the acknowledged Beneficence of the Deity. A system of Optimism, says a celebrated Moralist, is not to be perceived, but one of general Benevolence, is easily discoverable by every candid mind, which thinks rightly upon the subject. But, even if the common notion of the noxiousness of Bots to Horses, were founded upon good grounds; still, we neither know the symptoms indicative of their presence in the stomach, nor, if we did, do we possess any Medicine (as Mr. Clarke has very candidly admitted) which will detach them from that organ; although, there are not wanting abundance of infallible nostrums for this purpose.

He goes on to remark, that the common Aloetic Purgatives do not destroy them, because if they did, we should frequently see them in the Fœces, as well as the Round-Worm and Needle-Worm. He further informs us, that he has found the Bots *vigorously alive*, on dissection of a Horse which died of a Locked Jaw, after having taken in the course of a week, a quantity of solid Opium, that was equal to five pints and an half of Liquid Laudanum. Tobacco too, he says, has been given in much larger quantities, and has been much longer continued in the same complaint, without destroying the Bots. Nor is there any thing in these facts, which ought in the smallest degree to surprise us, when we recollect that Goats will eat with impunity, such substances as will prove deleterious poisons to other classes of animals. I recollect many years ago an instance of a small Pig, which, having made its way into the Elaboratory of a Chymist in London, drank up several pints of Goulard's Extract of Lead, and was not in the smallest degree disordered by it. The Philosopher will always recollect, that different systems, are governed by different laws, and we know but little of the conditions, on which life and health are supported; in the inferior classes of Reptiles and Insects. If, however, notwithstanding the reasons I have advanced, I have failed to convince my readers of the harmlessness of Bots to Horses, then may Mr. Clarke's suggestions respecting the best methods of lessening their numbers, be considered as highly valuable.

He advises that all Horses which have been at grass the preceding summer, should be examined for the Bots, from the latter end of May to the middle of July, which is the period, when, having obtained their full growth, they are making their way from the stomach and intestines, in order to pass into their next stage of existence;



and about this time, they may be frequently found hanging to the extremity of the Rectum. After remaining in the Crysalis state, about two months, the fly appears; so that killing one Bot, may be the means of preventing the production of between four and five hundred Eggs, which, in its fly-state, it would be capable of depositing on Horses; and thus prove the almost certain prevention, of a numerous family.—And in order to accomplish the destruction of one of the species of *Æstrus*, namely that which Mr. Clarke has called the *Ostrus Equi*, which deposits its Eggs on the chest, shoulders and mane of the Horse; he has suggested that their Eggs might be got rid of, by means of a brush and warm water, or by clipping them off, along with a portion of the hair, with a pair of scissors.

The Eggs of the only other species, (concerning which any thing certain is as yet known,) being deposited on the lips of the Horse, would be by no means so easily observed or destroyed; and therefore, the method which has been already suggested, of destroying the Bot, when found sticking in the sphincter of the Anus, or voided with the Dung, is the only one that bids fair to extirpate, or lessen the number of, this species, which Mr. Clarke has denominated *Æstrus Hæmorrhoidalis*.

I have thus enumerated all the particulars which I consider to be of consequence on the subject of Bots; and in doing so, it will probably appear to some of my readers that I have occupied their time unnecessarily. But, a complete and dispassionate investigation of the subject, unconnected with any attempt to establish a new hypothesis) seemed to me of the utmost importance, as connected with the medical treatment of the Horse; inasmuch, as the philosophical and learned, as well as the ignorant and unlettered, have from time

immemorial, agreed in considering the Bot, not merely inimical to this animal, but, as laying the foundation of many incurable and fatal diseases.

So that it has heretofore been the fashion to suppose Bots to be the cause of half the intractable complaints to which Horses are liable.

Hence, Chronic Cough, Hide-bound, Loss of Appetite, Emaciation, Gripes, Fits of Kicking against the Stall, Vertigo or Megrim, and an endless variety of Disorders, have for ages been attributed to the presence of Bots in the Stomach.

Nay more, for until the Publication of Mr. Clarke's accurate and satisfactory Investigation, of the *Natural History* of the Bot, this subject remained involved, not only in fancifulness and ambiguity, but in mystery and absurdity; in consequence of one writer handing down, the erroneous and superstitious notions of another. If therefore, considering how much we owe to Mr. Clarke, I should appear to have used too great freedom, in discussing the speculative opinions of this ingenious Veterinarian, I trust I shall be acquitted of having done so, upon any illiberal principle, or from any unworthy motive. For to this Gentleman's industrious research, solely, is it owing, that I have been enabled to lay before my Readers, any thing that may appear to have either interest or importance attached to it, in the course of my discussion, of this very curious subject.

## Spasmodic Cholick,

CALLED

GRIPES OR FRET.

**T**HIS Disease is extremely common, and very frequently proves fatal, in the course of a few hours.

A costive state of the bowels, and drinking suddenly, a large quantity of cold water, especially when the Animal has been heated by exercise, or exhausted by hunger and fatigue, are the usual exciting causes, of this complaint amongst Horses. But there are instances of Horses, which are very liable to be attacked with the disorder, without being exposed to any palpable exciting cause. The extreme urgency and violence of the symptoms, in Spasmodic Cholick, are sufficiently characteristic of the nature of the Disease, and distinguish it most clearly and decidedly, from Idiopathic Inflammation of the Bowels, with which it has been frequently confounded, by some authors who have written on the Diseases of Horses.

In slight attacks, the Horse does not exhibit symptoms of very violent pain, but paws occasionally, lies down frequently, and rises

again suddenly, turning his head every now and then, to his flanks, yet appearing to enjoy intervals of ease. On the contrary, it sometimes happens, that the Disorder comes on with great vehemence, and proceeds with such rapidity, that in a few hours the Animal becomes delirious, and soon afterwards, unless very powerful measures be adopted, death closes the scene. In the latter case, the Animal becomes outrageous and unmanageable, breaking away from his attendants, beating himself about with great violence, and falling down in any place, indiscriminately, without appearing to be sensible of any thing, but the agony which he labours under. At this time, if his eye be examined, it will be found to be expressive, either, by its languor, of the torture he endures, or by its wildness, of evident delirium. His Nose will now, be pretty constantly directed towards his flanks, he will be found to roll almost incessantly, to make frequent endeavours to lie upon his back, and will appear to enjoy scarcely any respite from pain. In slight attacks, relief may commonly be obtained pretty readily, by the following drink.

Take of Camphire                    2 Drachms,

dissolve it by rubbing in

Tincture of Opium One Ounce,

Add to this, Essential Oil of Peppermint, 30 Drops,

Warm Gruel or Warm Water, 1 Pint.

In case the Oil of Mint be not at hand, increase the Dose of Camphire to three Drachms.

This Drink is to be given at one Dose, and the practice called by the Farriers Raking, should be had recourse to immediately; after which, let a Glyster consisting of six ounces of Epsom, or eight ounces of Glauber Salts, dissolved in four quarts of thin gruel, be

given warm without delay ; to be repeated every four or six hours, until the bowels are unloaded of their contents. It frequently happens, that this practice will *effectually* relieve Horses, in slight attacks of Gripes, but, if it appear to be necessary, the drink may be repeated in five or six hours. The Belly should be fomented with hot water, for the sake of expedition, by means of flannel cloths, wrung out of it, which should be, applied to the whole of the soft-part of it; as hot as the attendants can bear to handle them ; and the fomentation should be continued for twenty minutes at a time.

After the belly has been fomented, it should be rubbed perfectly dry, by means of coarse cloths.—It is of the greatest consequence, that the Horse should be put into some place, where he will have his liberty, and this should be well littered down, with plenty of fresh dry straw.

There is no part of the practice of the Farriers, which deserves greater reprehension, than that which they adopt in the treatment of this disorder ; especially, the custom of rubbing the Horse's belly with sticks and *more especially*, that of urging him by whipping, or other severe means, to perform rapid motion, whilst labouring under so much torture that he is scarcely able to support himself ; a barbarous custom, which has been the means of killing hundreds of Horses. In cases of *much* pain and distress, such as I have already described, the Horse should be bled largely, to the amount of six quarts, and if the violence of the animal's symptoms be extremely urgent, even eight quarts may be taken ; for, although these severe attacks begin with spasm only, in some part of the alimentary canal, yet, if relief be not very soon obtained, Inflammation speedily comes.

on, which too often terminates in mortification, in the course of a few hours. After the bleeding give the following drink:—

Take of Tincture of Opium.....1 oz. and half.

.....Volatile Oil of Turpentine...1 oz.

.....Do..... of Peppermint, 40 drops.

Warm Gruel one pint mix for one dose.

As, in the case of slighter attacks, the Rectum should be emptied by the hand, without delay, and the Glyster which has been already prescribed, should be administered every hour, until relief be obtained. It is useful in these cases, to throw the injection into the bowels, considerably warmer than that of the blood; but more circumspection is, at the same time, necessary to be observed in its administration, lest its warmth may occasion it, to be thrown off immediately.—For which reason, the greatest gentleness both in introducing the pipe, and in withdrawing it, after the Glyster has been injected, ought to be observed. Indeed, great skill and care combined, become necessary, in order to insure the successful application of a Glyster, in all cases of violent Cholera; for the Spasms in the posterior bowels become so violent and rigid, that no ordinary strength is sufficient to overcome their power, and therefore, all attempts to give the Glyster, whilst the animal forces strongly resist it, will prove fruitless.

Nevertheless, frequent attempts must be made, and a moderate degree of force used, from time to time, without withdrawing the pipe, until the operator is able to seize the favourable opportunity of accomplishing his purpose. The operation should be finished as speedily as possible, with a mixture of gentleness and firmness.—And, as soon as the pipe has been slowly and cautiously withdrawn

by the Operator, (who should strongly press against the Sphincter, with his fingers on each side of the Pipe, whilst in the act of withdrawing it,) an assistant should be ready to press down the tail strongly, and hold it in that situation, in case the Horse shew a disposition to force off the Glyster.

It is hardly necessary to add, that the Pipe must not be attempted to be withdrawn, at the time the Horse makes any efforts to force off the Glyster, although the operation may have been accomplished.

These Remarks may appear to some, to be either superfluous, or unnecessarily minute, whilst to others they may, perhaps, seem to be altogether needless. But it cannot be improper in this place, to explain, and lay stress upon such minutiae, as seem to be in general little understood, especially, as they appear to me, *absolutely* necessary to be attended to, in order to ensure the successful application, of the grand remedy in this formidable complaint.—For Glysters are essentially necessary, not only on account of the Spasm, and obstruction in the Bowels, but of another dangerous symptom, also, which is usually a concomitant in these cases; I mean spasm at the neck of the Bladder, attended with a suppression of urine. It becomes consequently, an important object, not merely to ensure the proper application of the Glyster, but in this case its retention likewise, where there is more than one enemy at the gate.

If, therefore, the urgency of the symptoms should continue, after the administration and retention, of two, or at most three Glysters, containing the Salts in solution, it will be adviseable to follow up this species of internal Fomentation to the Bowels, every hour or two, (especially, if the Belly appear to be much swelled,) encreasing

the quantity of warm gruel to six quarts; and omitting the Epsom or Glauber Salts.

Provided, however, that little or no relief should be obtained, after this plan has been persevered in, for several hours, the skin of the belly should be rubbed quite dry, and the following stimulating Blister be applied, over the whole soft part of its surface.—The Blister should be well rubbed in, with the palm of the hand, by two persons for the sake of expedition.

Take of Cantharides *in very fine powder*;

Hog's Lard, each one ounce and an half,

Volatile Oil of Turpentine, six Drachms, mix.

But whether this, or (for the sake of time,) any other Blistering composition that may be at hand be applied, the great point is, to take care, that it be most diligently rubbed in, for, if we do not succeed in exciting a great quantity of external inflammation in the skin, *in a very short space of time*, the internal inflammation, will proceed with great rapidity, and the conflict will be over in a few hours. Upon this principle it is, that I have been enabled in a few extreme cases, where the powers of life appeared to be ebbing fast, and there seemed little probability, that the Horse would hold out long enough, for Blistering to take effect, to snatch the animal from the jaws of death, by a proper application of the actual cautery to the belly. The Veterinary Surgeon will of course, use his own discretion, in having recourse to this powerful means, of exciting rapid and vehement external inflammation; lest, in case the owner of the Horse be not a person of sense and liberality, he lay himself open to the charge of adopting the cruel and ignorant practice of the Farriers. Perhaps, however, as the practice of Blistering the hu-



man subject, by means of boiling water, in extreme cases, is recommended by some Physicians and Surgeons of the greatest eminence, less obloquy may attend the use of the cautery, in such instances; when employed by the skilful Veterinarian.

In truth, there is more of the semblance than of the reality of cruelty in the judicious use of the cautery, when applied as a substitute for Blistering; in these fearful extremities.

For, it is by no means necessary, to apply the cautery with such severity, as to occasion deep sloughs, and consequently great blemishes in the skin.—In cases of this kind, the instrument should be broad and flat, or slightly concave, it should be passed over the skin of the Belly, rather lightly, and pretty rapidly, yet with a sufficient degree of pressure, to ensure the setting up of sufficient inflammation in that integument.—Provided the adoption of these measures, should be the means of gaining a truce only, and yet the Horse be not effectually relieved, a second drink may be given in four hours after the first, and, if a repetition of the medicine appear to be necessary, on account of considerable remains of pain, and frequent though slighter, returns of the spasms, it may be repeated occasionally, with only one half of the quantity, of the *active* ingredients that have been prescribed. As soon as the Horse appears to be effectually relieved, the whole surface of his skin, except the blistered part, should be rubbed quite dry; and, if his limbs are found to be cold, strong frictions should be applied to them, until they attain a proper degree of warmth, in which state they ought to be preserved, by means of twisted hay-bands, judiciously rolled round them.

And, as it commonly happens, that the cloathing of the animal becomes wet with the perspiration, which rains from the pores of

his skin, whilst the agony of the conflict lasts, it will be necessary to put upon him dry cloathing, to remove from under him all the wet litter, and to make him an *ample* bed of dry straw, so that in case he lies down, he may not be subjected to the influence of cold upon his surface, which would most likely be the means of occasioning a relapse of the disorder.—The Horse ought to have water offered to him frequently, the chill being first taken off it, and it may be prudent to keep him chiefly upon Bran Mashs for two or three days, after being subjected to so much pain and such severe discipline.

I have already glanced at the cruelty of a part of the common treatment, of Horses affected with Cholera, namely, that of urging them by whipping and other such means, to perform rapid motion, whilst labouring under the excruciating agony, which always attends severe attacks of this complaint.—To the enlightened and liberal-minded, enough, perhaps, has been said already, to prove the inhumanity of the practice. It may not, however, be amiss to say a few words upon its impolicy, and absurdity.

And here again, is another case, where we may with equal safety and propriety, have recourse to the aid of analogy, without running any risque of being misled by its application. Let me ask the advocates for this mode of treatment, then, what would be said of a Physician who might be called upon to prescribe for a person rolling about under the anguish of a fit of Cholera, if he were to order the patient to rise, and cure himself by running?—Surely common sense would condemn both the advice and the giver of it.

But if, (to apply the analogy a little closer to the case) the Physician, (not content with being told by his patient, that, from the torture he was enduring, he was unable to support himself on his

legs), were nevertheless to order the attendants to flog the patient with the utmost severity, until he should rise and run, what would be thought of the skill or judgment of the practitioner—'Tis true indeed that the dread of the lash might, in an interval of ease, induce the patient to run, but surely no rational man would expect that relief would be obtained by the exertion. If, however, the practice were merely cruel, and only nugatory in its effects, the Veterinarian would be justified, perhaps, in slightly reprobating it; but this is by no means the case.—For (as has been already explained,) the parts affected with Spasm or Obstruction are in a condition that will readily be followed by Inflammation, (especially when much exhaustion and prostrations of strength have taken place, in consequence of the continuance of violent pain) and when once Inflammation takes place under those circumstances, it frequently terminates in mortification, in the course of a few hours.

Now, if only Spasm or Obstruction exist in the Bowels, we have, certainly, other and more decided means of relief in our power, but if inflammation have actually taken place, it would, most assuredly, puzzle us to devise more effectual means, to hurry on mortification and death.—There is another part of the ordinary treatment of this disease, which I consider to be highly prejudicial to the animal, and which cannot be too much reprobated—I mean the custom of giving ardent spirits, mixed with pepper, grains of paradise, and such like acrid, stimulating substances, which can rarely, if ever, be necessary and, in many cases, must be productive of infinite mischief.

For that class of medicines called Antispasmodics or Carminatives, (though in one sense they must be allowed to be stimulants) ought not be confounded with those, the use of which I have reprobated;

inasmuch, as the influence of the former is exerted upon the affected parts, chiefly as muscular organs; nor have they by any means the same tendency to, or property of stimulating the heart and arterial system, and, in this way, of exciting or encreasing inflammation.

In enumerating the exciting causes of Cholice, I have purposely omitted one which has been noticed by some authors who have treated on the Diseases of Horses, namely, that of sudden distension of the Stomach, arising from eating too great a quantity of succulent green food. This complaint, however, which is common amongst cattle, (and is called the Hove) I have never seen even a solitary instance of, amongst Horses. If it ever should occur, I apprehend the only *effectual* means of relief would be found in the use of the flexible hollow Tube, invented by Professor Monro, of Edinburgh, which has been found to answer the purpose very completely, in this disorder of cattle.

## Inflammation of the Eyes.

IT were much to be wished that the diseases to which the eye of the Horse is subject, were as much under the controul of our art, as some of those of the feet; but when we look at the number of blind Horses, and compare them with those that are permanently lame, the difference will be very manifest. And though this great disproportion may, in part, be accounted for, by the fact of blind Horses being frequently used, under a variety of circumstances which preclude the working of those that are lame, yet will the difference after all, be sufficiently striking. It must be admitted, that there seems to be a greater disposition to disease in the Horse's eye, than that of any other animal which we domesticate,—yet, as the Horse is treated in a manner far more artificial, (I should be warranted in saying more preposterously,) than most other animals, we ought not to wonder at meeting more frequent instances of disease in the eyes, particularly, when the extreme delicacy of structure in that organ is considered.—It is, however, of considerable importance, to discriminate between those complaints of the eyes, which are produced by dust, straws, insects, blows, or any external mechanical cause, and

such as are brought on by original defects in the organ, aided by the slow, gradual, imperceptible effects of the hot and foul air of stables: because the former will be found to yield to the usual remedies, that are employed for general inflammation, provided they be used with diligence and judgment.—For which reason, on the first appearance of inflammation it will be prudent to examine the inside of the eyelids with caution, and if any insect or mote be discovered, it should be carefully removed.—In all cases where the lids are much swelled, it is good practice to scarify the inner membrane freely with a small Lancet, and to foment them for ten or fifteen minutes, with a warm *weak* infusion of Chamomile flowers, or warm milk and water, in order to encourage the bleeding.—If the inflammation be very violent, four quarts of blood may be taken from the neck-vein.

Opening the small veins under the eye, or even the temporal Arteries, does not appear to be attended with any decisive advantage; and the prodigious swelling, which commonly results from the latter practice, is, to say the least of it, an unpleasant and an embarrassing circumstance to the operator. The fomentation should be repeated two or three times a day, and at night the inflamed organ should be covered with a large warm Poullice, of white bread and milk, made extremely smooth, in which a tea spoonful of sweet oil has been stirred, to prevent its growing hard and dry. After being properly mashed, the Horse should get a dose of mild physic, which may be repeated in five or six days if necessary. In case the stable he stands in, be hot and low, he should be removed to one that is lofty and airy, and if the inflamed eye be extremely susceptible of the stimulus of light, which may be known by the Horse keeping it nearly closed, it will be of use to darken the stable, or, at least, to shut

out the strong light of the sun. But darkness, however desirable in such cases, is certainly not worth purchasing, at the expence of cool pure air.

As soon as the violence of the symptoms begins to abate, and the Horse opens his eye pretty freely, the eye-water, No. 1, may be applied three or four times a day upon the corner of a soft sponge, or a little of it may be injected into the eye, night and morning, taking especial care, not to wound the eye with the point of the syringe.

But if the inflammation of the inner coat, called the Retina, be extremely violent, which is best known by the animal's keeping the eye constantly closed, even in a cool and shady situation; the bleeding at the neck-vein, the scarification of the eyelids, and the physic, must be repeated at the end of five or six days.

Each cheek may then be blistered to the extent of more than half the size of the palm of the hand; a mode of setting up external inflammation, which I consider far preferable to the insertion of Rowels or Setons, in the neighbourhood of the diseased organ. For whilst the practice must be allowed to be, at any rate, more cleanly, and free from the Fœtor arising from Rowels and Setons, it appears to me, to be attended with effects equally beneficial.—More especially, as the Blistering may be repeated from time to time, as soon as the scab falls off from the skin, without any fear of blemishing the cheek; provided only, that judicious materials be used for the blister, and that the precaution of tying up the Horse's head for three or four hours be taken, in order to prevent his rubbing his cheek, during the irritation of the blister. But there may be advantage, certainly, from having recourse to Rowels and Setons in very bad cases, at the same time that Blisters are applied—As Setons

are commonly inserted in, or near, the cheek, they always leave a small visible scar, but this objection does not apply to the use of Rowels, as they may be inserted under the hollow of the jaw. Gentle exercise should be had recourse to, for the space of two hours daily, divided into two or three portions; and in the summer time, exercise in a shady situation, will be attended with the greatest advantage.

When the violence of the inflammation has abated, there will be use in turning out the Horse, for two or three hours every day, to grass; for there can be no question, that the disadvantage of holding down his head to graze, will be more than counterbalanced to the animal, by the good which will result from the effects of the green food upon the Bowels, and, more especially by the application of the cool fresh air to the eye. And for this reason it is, that it becomes next to impossible, to ventilate stables where Horses are crowded together, so thoroughly, as to render the atmosphere sufficiently cool and pure, to be applied to the inflamed eye; on account of the immense quantity of volatile Alkali, which is constantly floating in them, arising from the putrefactive fermentation of the Litter, when mixed with the urine and fœces.

But, as I have more fully explained myself on this important particular, under the article of Air, it is unnecessary for me to enlarge upon it in this place. The mode of treatment which I have detailed, will most commonly be found effectual in all cases of inflammation of the Eyes of Horses, which have been brought on by any external mechanical cause, and is in fact all that can be done, even where hot and foul air has produced the disease, by slow and imperceptible degrees. But, in the latter case, though the eye will look clear for a time, it will again become inflamed and dull, and the Cornea losing its



transparency, will become opaque, having sometimes, a yellowish or muddy, at others, a dim and blue appearance. In the latter case, it is often erroneously supposed, that a film has grown over the eye. When the state and appearance of the eye thus fluctuates, the disease has obtained the name of moon-blindness, from an absurd and superstitious notion, that the moon had influenced over such eyes. Now, as I know of no remedy for Chronic Inflammation of the Eyes, called Moon-Blindness, which almost always ends in Cataract, I think it useless to recommend the trial of any application. But, as such eyes do sometimes become for a time sufficiently clear to pass for sound ones, even with Dealers, and others who pique themselves upon their judgment in those matters, it may be the best policy to part with the Horse. The mode and conditions of doing so, come not within my province to determine; I speak as a Veterinarian, not as a Casuist.

Many writers have laid great stress upon the use of stimulating Eye-waters; and powders blown into the eyes, in those cases, where, on account of the blueness of the Cornea, (or outward coat) a film has been supposed to have grown over the eye,—but, as the eye will in many instances, partially recover its transparency, without any application, and as I have never seen any decided, permanently good effects, from any particular application whether mild or violent, I have, I confess, no faith in the many pretended cures which are said to have been effected by them. The truth seems to be, that there is some peculiarity of structure in the outer coat of the Horse's Eye, which, when it is attacked with Chronic Inflammation, precludes the successful application of our most powerful remedies.—Nevertheless, I have thought it necessary to subjoin two Formulæ for Eye powders, in:

such cases, a little of which may be blown into the eye, through a quill, two or three times a week, with as good prospect of success, as any that I have ever seen tried. Oftentimes however, a very considerable degree of blueness or dimness will remain in the outer coat of the eye, in consequence of Inflammation that has been brought on from blows, wounds, or external injuries; and it would be most prudent in these cases, to refrain from using any applications to such specks or opacities, especially, if they do not obstruct vision, as they will, ultimately, be nearly, if not wholly absorbed. The peculiar colour or appearance, however, of such opacities, (as contradistinguished from the opacity of Moon-blindness,) it would not be easy to describe. Commonly they are circumscribed, and are almost never seen diffusing themselves over the whole of the outer coat of the eye. The frequency of Moon-blindness amongst Horses, is indisputably owing chiefly, to the hot and foul air of stables; but, that there is an hereditary tendency, to Inflammation of the Eyes in some Horses, which no care or prudence can guard against, no candid man who is in possession of sufficient facts to guide his judgment, can for a moment hesitate to admit. Of late, however, it has become fashionable to deny and decry the existence of hereditary disease; which, to me, seems just as defensible, as it would be to deny, that of the Sun in the firmament. The eye of the Horse is provided with a partial membrane, called by Anatomists, *Membrana Nictitans*, the use of which may be seen exemplified in the day-time, by birds of prey, and even, during strong sun-shine, by our common poultry. Under ordinary circumstances, this membrane would seem to be but of small use to the Horse, but, in that fatal disease the locked jaw, its

use is most beautifully exemplified, especially in the last stage of the disorder.

For if the Horse be suddenly approached, in this highly irritable state of his nervous system, this membrane is instantly expanded to its full extent, (about one half of the globe) and the Eye being at the same moment turned inwards, towards the nose, the pupil is thus as completely covered, and the light as effectually shut out from the Retina, as if the Membrane were large enough to cover the whole of the globe. Now, after a long continuance of Moon-blindness, this Membrane frequently becomes reddened, and thickened, and the Farriers who call it the Haw, mistaking effect for cause, imagine that this occasions the recurrence or continuance of the complaint, and therefore (acting rightly upon wrong principles) they cut out the Membrane. It is almost unnecessary for me to add, that the practice is not only never to be defended, but that it is never attended with even any temporary advantage. In advancing this opinion however, some may imagine that I go rather too far, because a few instances may be produced, of the eye remaining sound after the Haw has been cut out; but my experience enables me to pronounce decidedly, that such were not cases of Moon-Eyes; which is all that I am at present contending for. Further, I have no hesitation in adding, that the operation of cutting out the Haw, as it is called, is in all cases nugatory, and, inasmuch as it robs the animal of a Membrane which certainly was not made in vain, and must perform some subordinate part, at least, in the beautiful apparatus of the Eye, it ought never to be sanctioned by the Veterinary Surgeon. In writing upon Inflammation of the Eyes, although I treat my subject avowedly in a popular way, I should be considered by my

medical readers, as guilty of a very great omission, were I to refrain from saying something upon Cataract, the common and almost uniform upshot of Moon Blindness; especially as the Cataract in the human Eye, is frequently treated successfully by Surgeons. But it does not appear that the subjects of this disease amongst Horses, have been operated upon, hitherto, by any Veterinarian with success; although the attempt has been made by several, and, if I am rightly informed, by one of the first operators in London, repeatedly.

This want of success in Cataract may be explained, in part at least, by the utter impossibility of steadying the Horse's Eye during the operation. For, the animal is provided with a Muscle, at the back of the globe, called the Retractor; which does not exist in the human Eye, and with which he acts powerfully when any thing offends the organ.

And hence arises a common observation of Grooms and Stable-Men, in cases of high active Inflammations, that the Horse's Eye seems sunk in his head, which is indeed literally the case---For, when the stimulus of light becomes painful to the highly inflamed Retina, the animal, acting instinctively with the Retractor Muscle, is enabled to withdraw the Eye into the socket, and thus avoid a considerable portion of that pain, which he would otherwise be exposed to. The effectual application of a speculum, therefore, is in this way precluded, and the operator's fingers alone, are inadequate to the desired purpose. After all, without the aid of glasses, the operation however successfully performed, would be nugatory in its effects to the animal.

I have thus brought together all the most material facts respecting the treatment of the common diseases of the Eye of the Horse.

What I have to add on the subject of their Prevention, may be comprised in a few words, provided I have been fortunate enough to convince my readers, that the far greater number of instances of these disorders, are produced by the hot and foul air of stables. For, if we compare the number of cases which occur amongst Horses kept in hot stables, with those that are met with amongst such as are kept in cool airy places, *though the diet of both be equally nutritious*, we shall cease to be sceptical upon this point,—and though it is commonly imagined, that high feeding is the chief cause of these frequent disorders in the eyes, it has, in fact, but little, or no concern in the affair. Much less, has any *slight* change in the diet of the animal any thing to do with the complaint; though this is often supposed to be the case, even by many people who appear to have good sense and discernment in other particulars. Thus it is, that one often hears disorders of the eyes attributed to new corn, or beans, or a slight must in the hay, and sometimes, even to the effects of bad water; so prone are people to investigate the latent causes of diseases in Horses, and so desirous to account for every deviation from health.—But, though I say thus much, I do not mean to deny that high feeding, by inducing a state of Plethora, may predispose the organ to inflammation, especially in the cases of such Horses, as do not get *regular* work or exercise.

Still however, I repeat, that the grand exciting cause of complaints in the eyes of Horses, is, most unquestionably, to be sought for, in the state of the air of stables. Nor is this indisputable fact to be referred, (as is commonly supposed) solely to the affair of heat in the air, (which is indeed notorious to every one,) but chiefly to the presence of volatile Alkali, which abounds in the air of stables, and

operates unceasingly, though imperceptibly, as a morbid stimulus to the outer coat of the eye.

So that we can scarcely expect success in inflammations of this organ, from the application of our most powerful remedies, so long as the animal remains exposed to the action of the original exciting cause of the disease.

And though I have more particularly explained and insisted upon this point, under the article of Stable Management, yet it may not be amiss to observe here, that the existence of so prodigious a quantity of volatile Alkali, as the air of stables abounds with, has been (if not entirely overlooked) but very little attended to, in comparison of its importance, by writers on the Veterinary art.

And as one striking proof of the fact I am insisting upon, among others which might be adduced, I may mention in this place, a curious circumstance which I have repeatedly witnesséd, and which, before my attention was called to the investigation of this subject, frequently puzzled me to account for, satisfactorily.—The circumstance I allude to, occurs to workmen who are employed to lime-wash the walls and ceilings of filthy stables, where this salutary and necessary operation, is rarely if ever resorted to.

On which occasions, I have observed that they were obliged to desist from their work frequently, and run out into the open air in order to escape from the pungent atmosphere of the stable, which affected the organs of sight and smell, as violently as if hartshorn had been sprinkled about the place. Now, the fact is, that volatile Alkali (called in the new chemical Nomenclature, Ammonia,) to the presence of which in hartshorn, its pungency is entirely owing, is deposited by the air in large quantities, on the ceilings and walls of

all stables, but especially of such as are low and ill ventilated, in consequence of the constant putrefactive fermentation of the litter; and under the ordinary circumstances this salt exists in the mild state, that is, the state of carbonate, but, as soon as the quick lime is applied to the walls, the carbonic acid, having a greater affinity to the lime, than to the Volatile Alkali, with which it is combined, quits the latter in order to unite itself with the former, and thus, at the same instant that the quick lime becomes chalk; the Volatile Alkali is disengaged in a caustic state, and mixing with the atmosphere renders it insufferably pungent to the nose and eyes of those who happen to be in the stable; nevertheless, it can admit of no question, that Volatile Alkali in its *mild* state, is highly prejudicial to the lungs and general system of the Horse, and especially so to the eye, even when that organ is in a healthy state.—How much, therefore, must the application of Volatile Alkali to an inflamed eye, through the medium of hot air, contribute to exasperate a disease, which is in many cases brought on by the slow and silent operation of this pernicious stimulus.

These facts may serve to shew the necessity of paying the strictest attention to the ventilation and cleanliness of stables. For there is no fact, of the truth of which I am more perfectly convinced, than the following; namely, that with the exception of the affair of vicissitudes of heat and cold, to which Horses are perpetually exposed, there is no one circumstance appertaining to their general treatment, which operates so constantly and uniformly to their disadvantage, as the Volatile Alkali which is diffused in the atmosphere which they breathe. Perhaps, indeed, if one were permitted to argue the point at full length, and with all the circumstances connected with it,

would not be difficult to prove, that it is even more inimical to Horses than the vicissitudes of temperature, which they are forever called upon to endure. And for this plain reason, that it is usual with all thinking people, to take every measure of prevention, in order to guard as much as possible, against the effect of such vicissitudes. Nay, is it not notorious that it is half the business of the lives of superior grooms, and managers of the stables of the great, to prevent their Horses (especially those of the most valuable description) from catching cold, as it is called, although it cannot be admitted that their general system of treatment is but ill calculated to produce the desired effect. Looking at the matter, however, in this point of view, and speaking in the ordinary acceptation of the word, cold may be considered a sort of open undisguised enemy, whose attacks are constantly suspected, and whose approaches every one is prepared to repel. But, Volatile Alkali is an enemy of a very different description, a foe that no one suspects, who silently and imperceptibly enters the citadel in the disguise of a friend, and gradually undermines the very foundations of the edifice.

Before I conclude the subject of moon-blindness, it is right that I should notice a few more circumstances, connected with the disease.

Now, it mostly happens that one eye only, is at first attacked with inflammation, and on the disease subsiding, the other eye immediately becomes affected. Thus, the disorder continues to fly from one eye to the other, alternately, until a cataract takes place in both, and the Horse becomes totally and incurably blind; but if the inflammation (how frequently soever it may fluctuate,) continue confined to one eye only, and end ultimately in a *hard* cataract, the probability



is, that the other eye will remain sound for many years, and perhaps even during the lifetime of the animal.

This fact is so commonly known, that it has given rise to a practice, at once both cruel and impolitic; that of thrusting a red-hot needle or awl into the diseased eye, with a view to the total destruction of the power of vision in the organ.

But the vehemence of the inflammation which is excited in the diseased eye by the operation, is sometimes so prodigious, that the sound eye becomes violently inflamed from sympathy, and the entire loss of both, has frequently been the consequence of the practice.

Having already declared my opinion respecting the insufficiency of our most powerful medicines, to remove such dense opacities of the Cornea, as are called Films, it is not necessary for me to enlarge upon this subject here,—but, if some application be insisted on, a little of the eye powder, No. 2, may be blown into the eye, once a week, by way of rousing up the deficient energy of the absorbents.

## Inflammation of the Lungs;

OR, PLEURISY.

**T**HIS disorder, as it is the most common, so also it is one of the most fatal, in the catalogue of the Diseases of the Horse.—Nor, shall we have the smallest ground for wonder, either at the frequency or the fatality of the complaint, if we consider for a moment, the circumstances to which such Horses are exposed, as are most liable to be attacked with it. For, upon attentive enquiry, it will be found, that those which are kept in hot and confined Stables, and, *more especially*, such as are accustomed to warm cloathing, are, most commonly, the subjects of this Disease.

The application of cold air to the surface of the skin, in consequence of the vicissitudes to which Horses of the above description are exposed, is the great exciting cause of this disease. The symptoms commonly observable on an attack of Inflammation of the Lungs, are the following, Dullness, general Languor, Loss of Appetite, Coldness of the Limbs and Ears, Heat in the Mouth, laborious breathing, (which may be known by the quick working of the Flanks) Inaptitude to Motion. Most commonly there is a Cough,

and the nostrils are widely expanded in the act of breathing; the animal hangs down his head, and stands in a kind of stupid, moping state.

It does not usually happen however, that all the symptoms which have been enumerated, are to be observed on the first attack of Inflammation of the Lungs. Now and then, the pulse is not only quick, but very weak, and the heart so much oppressed, that its motion is scarcely to be felt; though commonly, the pulse is increased in fulness, as well as quickness. One of the most fatal symptoms in this disorder, is, the continuance of that moping stupor, which I have alluded to, and which is commonly characteristic of extensive congestion, or deep-seated Inflammation, in the parenchymatous substance of the Lungs.—Bleeding to a great extent, is the grand remedy in these attacks upon the Lungs, or Pleura of Horses, which almost always prove fatal, if this indispensably necessary operation be delayed, for more than three or four days. Neither are we to omit our other important remedies for inflammation, in this alarming disease. Six quarts of blood, or in the case of a large coach or cart Horse, even eight quarts are to be taken without delay, and saved in the vessel it is received in. The limbs of the animal, if cold, should be hand-rubbed diligently and with perseverance, by two persons at least, and as soon as their natural warmth is restored, they should be preserved in that state, by hay-bands rolled round them, as high as they can be made to remain upon them. If the rest of the surface be cold, it should be rubbed until it becomes warm, and be well covered with woollen cloathing, especially in cold weather. But this practice must be adopted with moderation in summer, and omitted altogether if the weather be sultry. As soon as the bleeding has

been performed, a Glyster, consisting of five or six quarts of warm thin gruel, in which two or three spoonfuls of salt has been dissolved, should be injected into the bowels, and repeated night and morning.

The following Ball should be given every six or eight hours:—

Take of Camphire (rubbed into an impalpable Powder by means of a few drops of Spirit of Wine).....Two Drachms.

.....Tartarized Atimony....1 Drachm. & half.

..... Nitrate of Potash in }  
..... Powder.....} Half an Ounce.

Licorice Powder.....Half an Ounce.

Honey or Treacle—sufficient to make a Ball.

In case the Cough should be *very* frequent and distressing, a scruple of solid Opium may be added to each Ball, and in six or eight hours after the administration of the first, provided the skin, instead of being moist or soft, should feel hot and dry, but not otherwise, the second Ball may be washed down with the following drink, which may be repeated after every successive ball, if the heat and dryness of the skin continue.

Take of Water of Acetated Ammonia,....4 Ounces

Nitrous Spirit of Æther,.....6 Drachms.

Water,.....12 Ounces, mix.

In the course of twelve or, at farthest, sixteen hours, in case the animal does not appear to be *decidedly* relieved, (which must be judged of, chiefly, by the state of his pulse and breathing) from four to six quarts more Blood must be taken away, especially if the size or buffy coat, appear very thick on the top of that which was first drawn. In the space of an hour or two after the second

bleeding, the sides should be blistered, to the extent of a circle of twelve inches diameter, or more, in the instance of a large coach or cart Horse. Provided blisters are properly prepared, and effectually applied, I think them preferable to Rowels, but if a strong prejudice should exist in favour of Rowels, one may be inserted in the chest, and another between the fore legs of the Horse. The practice recommended by Osmer, nearly fifty years ago, is indeed, I think, far preferable to that of Rowelling, according to the ordinary method of Farriers, from which latter, I have seen most dreadful mischief arise, and in two cases, mortification and death were the consequence of the extensive inflammation, which took place in the Cellular Membrane. Osmer's practice was to make a number of small openings in the skin, and to introduce into them tents of tow, previously rubbed over with blistering ointment. This method is found to produce very speedy inflammation, and suppuration, in that integument, which is all that can be accomplished, by the introduction of those large extraneous substances, called Rowels. The experience however of many years, has completely satisfied my mind, that all the advantages that can be derived from Rowelling in this disease, may be obtained in a more cleanly and less offensive manner, through the medium of Blisters.

And, therefore, I would rather recommend the Blistering of the Chest and Brisket of the animal, as well as of the Sides, in preference to the insertion of Rowels in those parts.

As soon as, by the employment of these means, the more urgent symptoms of the disease begin to give way, that is to say, in case the animal breathe with greater freedom, seem brisker, and the pulse be reduced in frequency, and especially if he lie down, and

there be any moisture or even softness of the surface, we may commonly pronounce a favourable prognosis of the disease. If the cough, nevertheless, should be frequent and distressing, the quantity of opium in each ball may be increased to half a drachm. And, as it frequently happens, that the cough is kept up by inflammation of the Larynx, or top of the wind-pipe, which, is, on that account highly irritable and susceptible of the influence of cold air, a blister should be applied round the throat, as high up as the roots of the ears, and about three inches down the neck, in the course of the wind-pipe. A perspirable or even a soft state of the skin is certainly a great desideratum in this disease, and whether it take place spontaneously, or be the effect of measures taken to induce it, is always salutary to the animal. But, I cannot help considering some of the means recommended in books, with the view of promoting this desirable condition of the surface, as favouring either of mystery or superstition. Such, for instance, as covering the animal with the skins of sheep newly killed; which practice is always attended with a deceptive appearance of advantage, on account of the moisture that is found under the sheep-skin, and is supposed to arise from the perspiration of the living animal.—But a little reflection must shew, that no favourable inference ought to be drawn from the presence of this moisture, inasmuch, as a good deal will continue to ooze from the sheep-skin, in consequence of the temperature to which it is exposed, and its close adhesion to the skin of the Horse, after the living principal has forsaken it. This, however, is not all, for, it must be equally evident, that as no evaporation can take place of the fluid, which has been exuded, under the circumstances that have been stated, it must continue to remain upon the skin of the Horses, and thus

to support the notion, that it has been produced and kept up, by the salutary process of perspiration. The mischief, moreover ends not here, for in the course of a few hours, putrefaction begins to take place in the sheep-skin, and in the juices which exude from it, and, thus, the atmosphere of the stable becomes impregnated, not only with nauseous, but with noxious effluviæ. Now, that Ammonia (or Volatile Alkali) is plentifully detached from the sheep-skin, as soon as the putrefactive fermentation takes place in it, there can be no manner of question. If anyone be sceptical on this point, he may have his doubts effectually cleared up, by the evidence of two of his senses.—For its pungency may be smelt, and the effect of its acrimony may be seen on the skin of the Horse, which is always found to be more or less excoriated, by the adoption of this absurd practice. It is true, indeed, that those who recommend this practice, advise the repeated application of fresh skins; yet, when we consider how rarely it must happen, that a succession of warm skins from newly slaughtered sheep, can be procured, and, at the same time, take into account, the great disadvantages which must result, from their remaining on the Horse, for any considerable space of time, there will, I should think, be but little hesitation, in giving up a practice, against which so many solid objections have been shewn to lay. Besides, it must, I think, be pretty evident, that plenty of light woollen cloathing judiciously disposed upon the animal, (his extremities being made warm; and protected in the way I have recommended,) will be quite adequate, so far as the affair of warmth is concerned, to encourage the desirable state of perspiration, which is all, I presume, that the sheep-skins can be supposed to effect. I say, so far as the affair of warmth is concerned, be-

cause I do not see, how the good effects that are attributed to the use of sheep-skins, are to be accounted for satisfactorily, upon any other principle, than that of their adhering closely, to the skin of the Horse, and confining the heat of that integument. For if we be not satisfied with this easy and simple explanation of the fact, we are, I think, inevitably reduced to the dilemma of having recourse to some mysterious or superstitious mode of accounting for, the phœnomenon in question. But, though it is indispensably necessary in this disease, to cover the animal with plenty of light woollen cloathing, especially in cold weather, yet, the atmosphere of the stable ought not to be hot and confined, for, it should be recollected, that a great difference must result to the Horse, between the circumstance of breathing a foul and hot atmosphere, and that of having his skin kept warm, in order to induce perspiration, which will, eventually, be the means of lowering the internal heat of the animal.—In hot weather, however, too much air can scarcely be admitted into the stable, and at those seasons of the year, when we have the means of regulating the temperature, it ought not much to exceed fifty degrees of Fahrenheit's Thermometer. A loose stall is highly advantageous to Horses labouring under this disease, and their bed should be an ample one of dry straw. In those cases where the limbs are cold, it should reach nearly up to the belly. Water, which has had the extreme cold taken off it, or very thin tepid gruel, should be offered to the Horse frequently; but the practice of drenching Horses with what are considered nourishing compositions, lest they should die for want of sustenance, cannot be too much reprobated in this disease.

For, it cannot be desirable, that more blood should be added to the system of the animal, whilst labouring under inflammation of an



organ, so essential to life as the lungs, and, therefore, a rational mode of practice would suggest to us, the propriety of stinting the Horse with regard to food, were he ever so much inclined to take it, whilst affected with this dangerous disease. But, the truth is, that in this, and almost all the other inflammatory diseases of parts essential to life, in the Horse, the functions of the stomach are either very much impaired, or altogether suspended by all-provident and benevolent nature, who distinctly points to us her intentions, by the decisive and unequivocal symptom of want of appetite. But these, her salutary intentions, are too often frustrated by the officious zeal or folly, of those who act as nurses, and who are generally, either too much prejudiced, or too ignorant, to take a hint from her clearest indications. The effects of this common and egregious error, are indeed always inimical, and not unfrequently fatal, to the animal; as has been more distinctly pointed out in another part of this work. For, the stomach not possessing the powers adequate to convert into chyme, the substances which are thus forced into it, they will undergo the same chemical changes, which would take place in them under the like circumstances of heat and moisture, out of the living body. Thus, it will be perceived, that the practice of drenching Horses in this disease, with the view of nourishing them, can be proper in no case whatsoever. For, even were the stomach possessed of its ordinary powers of converting the food into chyme, and were the other stages of the Digestive Process to be perfected, all this by adding to the stock of blood, would only operate to the disadvantage of the animal, so long as high active inflammation were going on in the substance of the lungs, or in the pleura. A less deleterious consequence (which is nevertheless greatly to be deprecated) is,

it is true, the ordinary result of this practice. For, the articles thus conveyed into the stomach, are, usually, such as easily undergo the vinous Fermentation, after which, the Acetous readily follows, and thus, vinegar is actually formed in this organ, when deprived of its natural healthy powers. On dissection of the stomach of Horses, treated in this way, I have frequently been struck with a smell like that of vinegar, issuing from this viscus; and on enquiry have commonly found, that they had been drenched with gruel, mixed with Ale, Sugar, Treacle, and similar substances, which though they easily run into fermentation, in stomachs of weak powers, are commonly considered, both cordial and nutritive, to the animal. Now, I believe it scarcely ever happens, that a sick Horse is inclined to take food which would be injurious to him, but as the refusal of food frequently occasions unnecessary solicitude to the attendants, fresh-cut grass may be offered to Horses labouring under this complaint; for this they will frequently eat, although they continue to reject every thing else that can be put before them. But, at all events, the use of the drenching-horn, as the means of conveying nourishment, must be dispensed with. For, the cough often renders the employment of this instrument difficult to the operator and not unfrequently dangerous to the patient. For which reason, in all cases when the cough is very frequent and severe (unless a skilful person be at hand to administer the medicine,) it may be the prudentest plan, to omit the drink, which I have already prescribed, and give the balls, at somewhat shorter intervening periods.—It may happen, in the event of the cough, or the laborious breathing continuing, *especially if the pulse be not reduced in frequency*, that a third bleeding may be necessary, in the course of eighteen or twenty hours after the second;

but this will very rarely be the case, if two bleedings have been carried to the extent that has been recommended.—No practice is more common, amongst unscientific practitioners, (after taking away three or four pints of blood,) than the use of smart Aloetic Purgatives in Inflammations of the Lungs. But this practice cannot be too much condemned, as it is always attended with risque, and too frequently with danger. For, there is always under the best circumstances, an uniform tendency in the inflammatory diseases of the Viscera of the chest, to be propagated to those of the belly; and when the stimulus of the Aloes is exerted in full activity upon the bowels, some part of the intestinal canal frequently takes on the inflammatory action, which, in these cases, quickly runs on to mortification, and death speedily closes the scene.

Numberless, indeed, are the instances of Horses killed by aloetic purgatives, administered in inflammations of the lungs. This practice, however, joined to the frequent use of cordial balls is but too common in this disease which usually goes under the vague and indefinite name of a cold. But as I have amply discussed the danger of the promiscuous use of Aloes, in the chapter on the use and abuse of purgatives, I shall refer my reader for further information on this particular, to that part of my work. Whilst at the same time, it is but right that I should here enter my solemn protest against the use of cordial balls (the favourite medicine of the stable) in this disease; as they must, inevitably, have the effect of raising the pulse and of exasperating the inflammation, in consequence of the stimulating materials of which they are composed.

And there can be no manner of question that many slight attacks upon the lungs of Horses, have terminated fatally, entirely through

the means of cordial balls, and the drenching horn.—In fact, if the Veterinarian ever indulge solicitude on account of the animal's refusal of food, in this disease, it will always spring from a principle perfectly distinct from that, which usually distresses the attendants; who always fancy that the Horse must inevitably die, in all cases when he will not eat, unless he be nourished (as their phrase is,) in spite of himself. But the chief, or rather the only solicitude of the Veterinary Surgeon in this, and all other dangerous-inflammatory diseases of the Horse, arises, not from any apprehensions on the score of the animal's want of appetite, but, is confined to the state of the pulse:—For, if this much exceed eighty strokes in a minute, there is always danger, and if it rises to an hundred, the danger then becomes imminent. So that if the pulse be found gradually abating in frequency, we need not be under any concern about the animal's obstinate refusal of food, although this should continue for thirty-six or forty-eight hours, or even longer. And it may, perhaps, serve to abate the ordinary anxiety on the subject of nourishment, if it be recollected, that there are numberless instances of Horses dying, even with the food in their mouths,—as it is by no means uncommon, for a sort of depraved or morbid appetite to spring up on a sudden, in the latter stages of some diseases, (especially after delirium has come on,) and just as the attendants begin to congratulate themselves on the appearance of what *they* always consider the indisputable criterion of amendment, the animal puts an end to all further speculations on the subject, by dying suddenly, whilst in the act of eating.

Sometimes, indeed, it happens (though such cases are very rare) that Horses will continue to eat moderately, of their ordinary food,

through the whole course of severe inflammations of the lungs; and several years ago, I saw a remarkable instance of this kind in a Horse belonging to a person in Dublin.—Having been consulted at the beginning of this case, by the proprietor of the Horse, I advised that he should be sent to a veterinary hospital, of which I was then joint proprietor; but the fear of expence deterring the owner from taking my advice, he sent for a Farrier, who treated the animal in the ordinary mode.—In the course of five or six days, my business leading me near the spot, I was induced to enquire how the case went on.—The proprietor, hugging himself on the plan of œconomy which he had adopted, expressed himself perfectly satisfied with the treatment of the Farrier, and requested me in a kind of triumphant manner to go and witness the cure.—On first seeing the animal, I confess that his apparent sprightliness, joined to the account that was given to me of his appetite, led me to suppose the case might end favourably, tho' at the same time, I observed that his respiration was very quick and laborious. But, on placing my hand on the near side of the chest, in order to feel the pulsation of the heart, I immediately altered my opinion; finding from the state of the pulse, good reason for considering the case a hopeless one.

The upshot of it was afterwards detailed to me by the owner of the Horse, and, therefore, there can be no reason for disputing the truth or accuracy of his statement, which was as follows.—Three or four days after my second call, the doctor pronounced the animal completely out of danger; but in order to finish the cure, he recommended a wine posset, and a brisk trot afterwards. The Horse was therefore drenched with milk, and a bottle of port wine was afterwards poured down his throat, in order that the posset process might be effected

in the stomach of the animal; (on which circumstance great stress was laid) so that nothing now was wanting, but a smart trot which was to finish the cure, and place the laurel on the brow of the physician. But alas! there was another of the *Dramatis Personæ* ready take a part in the piece, (which was enacting before a crowd of admiring spectators) whom the doctor never dreamt of; for at the very moment that the animal was urged into a trot, death stepped upon the stage, and ordering the curtain to be dropt, the farce was over in an instant.

To return, however, more expressly, to the subject of nourishment—It must be acknowledged, that the obstinate refusal of food for a great length of time, is an alarming symptom, inasmuch, as it is, *almost always*, connected with the existence and progress of those diseases which are highly inflammatory, and which have, consequently, a dangerous tendency. And though, as I have before remarked, the Veterinarian will not be very solicitous about it, from any apprehension that the animal will die of starvation, he will, nevertheless, hail the return of appetite, as an almost certain harbinger of returning health. Nor need there be any great circumspection used, as to the *quantity* of nourishing food that is given to Horses, recovering from dangerous diseases, *so as they take it voluntarily*; more especially in the cases of such as have been largely and repeatedly bled, and have, moreover, been subjected to the other parts of the severe medical discipline, that has been recommended in this disease.

For it almost never happens, that the animal is inclined to eat more than will be proper for him, and I have never once witnessed an instance of a relapse, occurring in an inflammatory disease, that

could be fairly attributed to too great an indulgence in food, though of a quality ever so nutritious. But, even in the furtherance of this their favourite object, which Grooms are always so over-solicitous about, the means they use, generally defeats their own ends. For, they are never satisfied, unless they be permitted to place before the Horse, large quantities of the article which they wish him to eat, and which they will leave for hours under his nose, after he has shown his disinclination to take it.—Whereas, in all cases of this kind, the appetite of the animal requires to be tickled, with the smallest possible quantity of food at a time, and the surest and speediest mode of attaining the object we have in view, is, instantly to remove from his organs of sight and smell, whatever he seems to have an aversion to take; and to let him remain an hour or two, before it be offered to him again. But it often happens, instead of adopting this method, which common sense would seem to dictate, that the rack is crammed with hay, and the manger stuffed with large quantities of Bran mash, which frequently in the summer time remains so long untouched, that it becomes as sour as vinegar.

Whereas, too much care cannot be taken nor too scrupulous attention paid in these cases, to keep the rack and manger perfectly clean, and free from every smell of an offensive kind. I have been thus minute, in detailing the particulars necessary to be attended to with respect to the management of food for Horses, recovering from inflammations of the lungs; not only because it is by far the most common disorder that is met with amongst them, but because the same mode of treatment will be proper to be adopted for those recovering from all other inflammatory diseases.—As the strength and appetite

of the animal are found to encrease, it will be adviseable to lead him out into the open air, three or four times a day, for a few minutes at a time, unless the weather be very severe. And in very cold weather this will be the less necessary, if he have the advantage of being in a roomy situation, which will admit of his moving about, and lying down agreeably to his own inclinations. But, in good weather, no plan of treatment will be found so conducive to the animal's speedy recovery, as turning him into a paddock to graze for an hour or two in the middle of the day, during the cool seasons of the year; and in the morning and evening during the heat of summer, or early part of the autumn. In the space of ten or twelve days after the application of the blisters, provided any Cough should remain, a Rowel may be put into the chest, with advantage, provided that part have not been blistered as well as the sides.

It very commonly happens, after blistering, that there is considerable tumefaction of the skin in the neighbourhood, which puts on the appearance of what is called water-farcy. In this case, the parts should be freely scarified with a lancet, which operation will often occasion a very considerable discharge of bloody lymph from the orifices.

In a day or two afterwards, strong frictions to the part will generally disperse any remains of swelling. In those cases of inflammation of the Lungs, which terminate fatally, we find, most commonly, on dissection, Water in the Chest; in a few instances, deep-seated and extensive Congestion, and now and then the Bronchiæ (or Air Tubes) are full of purulent matter. In the two former cases the progress of the disease is commonly rapid.



In the latter, the animal becomes hectic, and frequently lingers a considerable time, wasting away gradually with a hollow cough, which has a peculiar sound; though sometimes, he is hurried off rapidly, in a manner similar to that of a person, who dies of what is called a Galloping Consumption.

## Grease.

**T**HE Grease is the great winter disease, of Horses that are kept in large crowded towns, and is seen but rarely, (in comparison) in the country, especially amongst such as are employed in Agricultural labour; and least of all, among those of the latter description, that perform work of a very regular kind. It may be fairly presumed, that this disease hath obtained its name, in consequence of the nature of the discharge furnished by the ulcers in the skin, which in a certain stage, has an oily or greasy appearance.

The Grease attacks the legs of Horses, Asses, and Mules, but never those of the ruminating class. No disease to which the Horse is liable, appears to me, to arise more decidedly, from the ordinary management of stables, or to be less a *necessary consequence*, of domesticating this animal.

The advocates for the humoral pathology, have, however, considered the phænomena of this disease, as highly and peculiarly illustrative of *their* opinions; and the theory of the great Boërhave, appears, in this instance, to be equally suitable to the principles of his disciples, as to the doctrine and practice of Grooms and Stablemen, who

are always ready to have recourse, to a vitiated, foul state, of the blood and humors, as a cover for their own negligence and idleness.

And, without meaning to detract, from the posthumous reputation of that very diligent and skilful Veterinarian, the late Professor St. Bell, I cannot refrain from observing, that I consider his essay on the Grease, (for which he obtained a Prize Medal in France,) as having contributed to strengthen this unphilosophical opinion, respecting the nature of this disease.—At the same time, it appears to me, to furnish an irrefragable proof, of our having made in these countries, further progress in physiological, at least, if not in anatomical researches, than our continental neighbours.—For, the only material point, of any practical moment, which Mr. St. Bell labours to maintain, is, that the Grease is a contagious disease. An opinion, than which, I apprehend, nothing can be more absurd, or, at least, no position more untenable. For does not every day's experience, show numberless instances of Horses, standing for weeks, and even months, not only in the same stable with, but close to others, that are badly affected with Grease, without being attacked with the disorder? A fact that could rarely, if ever, happen, provided the disease were communicable, either through the medium of the atmosphere, or any of the ordinary channels of infection. But, surely, no man can wonder, that amongst a number of animals, which are treated in the same way, and exposed to the same exciting causes of disease, a great many should be attacked, with similar morbid symptoms. Stripped, in fact, of all mystery, and all the technical language of the schools; the Grease may be considered, simply,

as an Inflammation of the skin of the fetlock joint. The Disease is, in truth, the Chilblain of the Horse.

Yet, no one, I believe, has ever ventured to maintain, that Chilblains were contagious, or curable by such internal medicines, as are capable of correcting a vitiated state of the blood and humors. Now, though I have more than once observed, that we ought to be exceedingly cautious, how we apply the argument of analogy ; lest we be led thereby, into irretrievable error ; yet, here, I apprehend, is a fair and safe case, for its application. For, if I mistake not, the more intimately we investigate the two diseases, and the more closely we sift their phœnomena, the greater similiarity shall we perceive, to exist between them, and the more resolutely shall we be confirmed in our opinion, that neither the one, nor the other, depends upon a morbid state of the blood or humors. I shall be excused, I hope, for being somewhat diffuse upon this point, because, upon it, consequences of the greatest practical moment, entirely hinge. For, if we be determined to adopt the notion, that the disease depends upon a vitiated state of the blood and humors, or, in other words, that it arises from a constitutional, and not a local cause, we must inevitably (provided our practice be consistent with our theory) exhibit such internal remedies, as are considered capable of rectifying these supposed defects, and place but small dependence, comparatively, upon external applications.—And hence, we shall be inevitably led to adopt a practice, at once feeble, tedious, and inefficacious.—Simple views of things, provided they accord with truth and nature, are of the utmost use to us, in all our speculations.

And there will, therefore, be great advantage, in considering the Grease, in the light of common inflammation, affecting the skin of the fetlock joint ; the structure of which, is extremely grandular.

For, as it was necessary that the skin of the Horse's fetlock, should be kept constantly soft and pliable, on account of its great and almost incessant motion, so we find from our anatomical injections, that a large apparatus of Glands is provided in the skin of this part, to serve this important purpose. But we shall cease to wonder, that the skin of the fetlock joints of Horses is liable to be attacked with inflammation, especially in the winter season ; if we consider the peculiar circumstances to which it is exposed. And a little reflection will convince us, that all the phœnomena of this loathsome, and too frequently, tedious disease, will admit of an easy and satisfactory explanation, without having recourse to the doctrine of foul blood or vitiated humors. In the first place, the seat of the disease, is remote from the great fountain of life, the heart ; a circumstance, which of itself is sufficient to account for many of the phœnomena. Again, the fetlocks are exposed to greater vicissitudes of heat and cold, than any other part of the animal. At one moment enveloped in a hot bed of litter and fœces at a temperature of, from fifty to sixty degrees, the next, exposed to a current of cold air, several degrees below the freezing point.

And not only so, but whilst in the unnatural heated situation, which has been described, the skin is frequently, not merely imbued with moisture, but with such as is of a peculiar and most deleterious kind, to a part susceptible of inflammation, namely the urine of the animal ; which (as has been proved under the head of stable management,) contains a great deal of volatile Alkali, even before that salt

can be engendered by the putrefactive fermentation of the litter. Hence, the fact of the hind legs being so much more frequently affected with Grease than the fore, will admit of a satisfactory explanation, without having recourse to other reasons which might be advanced to account for it.

So that the seat of the disease, has to struggle with disadvantages, to which no other part of the animal is exposed, especially after inflammation has once attacked it. We are not to wonder, therefore, that chops and cracks in the skin of the fetlocks, should frequently appear in the winter season, even in stables which are well regulated; much less ought we to be surprised, at seeing frequent instances of Grease in those, where there is nothing but filth and negligence.

Now, that this disease depends chiefly upon the circumstance of the affected part being exposed to great vicissitudes of heat and cold, (exasperated no doubt by the other exciting causes, which have been enumerated,) will, I think, satisfactorily appear, when we consider how rarely we see this disease, amongst Horses which are treated roughly, get a little or no dressing, and live either altogether out of doors, or are housed in such open airy buildings, as merely shelter them from wet, without much confining or heating the atmosphere. And what may serve to illustrate this point still more clearly, is, the following fact, viz. that we rarely, if ever, see this disease amongst Horses so treated, even though the food which they eat, and the labour which they perform, are precisely of the same kind, as those get, which are commonly attacked with this disease. Just as it is, indeed, with the subjects of chilblain; for how rarely do we see the children of the poorest peasants, who go bare-foot in frost and snow, and are exposed to the utmost inclemency of the weather

attacked with this complaint. Whereas, those of the upper and middle classes, that are warmly clad about the feet and legs, and (being occasionally exposed to severe wet and cold,) have access to heated apartments, where there are fires, will be found to be very commonly attacked with the disease. Again, how frequently does it happen, that a young healthy Horse which is blistered in frosty weather, on account of a sprain or any external injury about the fetlocks, shall be attacked with all the worst symptoms of confirmed Grease, in the course of forty-eight hours after the blistering, if he be suffered to stand without exercise; more especially, if the composition of the Blister contain injudicious materials, which unnecessarily aggravate the effects of the Cantharides; such as any of the mineral acids, corrosive sublimate, euphorbium, and the like. In fact, by this mode of treatment, with the addition of confinement in the stall of a hot stable, it would be very easy to bring on artificial Grease in the soundest Horse, during frosty weather, provided the blistered part were *occasionally* exposed to a current of cold air, for a period of two or three days. Now, surely, the most strenuous supporter of the doctrine of foul humors, would readily admit, that the complaint in such a case, was of a local kind, and was produced by external causes. merely, although none of its phænomena were to be distinguished, from those of Grease brought on, under the ordinary circumstances of the complaint.—These facts are so glaring; and, if I mistake not, so applicable to the point in question, that it is wonderful the doctrine of foul humors, as applied to the Grease in Horses, should have found so many advocates amongst people of sense and reflection, at this enlightened period. It is not, moreover, on account of any theoretical notion, of the analogy subsisting

between the Grease and chilblains, that I lay so much stress upon the facts which I have stated, but, because the inferences which necessarily flow from their being established, are of the greatest practical importance. For, if the views which I have taken of the Grease in Horses, be correct and just, then will such a plan of treatment suggest itself, to the candid and unprejudiced, as will prove, proverbially, better than any remedy, namely, a prevention of the disease. But, as long as Horses are kept crowded together, in hot, close, ill-ventilated Stables, with their limbs enveloped in a hotbed of litter, so long shall we see frequent instances of this complaint, especially during severe winters and springs. Further, it will pretty uniformly be found, that this disease will not only be more frequently met with, but will be more difficult of cure, when it occurs in Horses kept in large towns, than amongst those in other situations; especially if their labour be confined chiefly to the town, where the legs must, inevitably, be exposed to the acrimony of the putrid matters, that are constantly mixed with the dirt of the streets. In confirmation of which opinion, I may mention the common and notorious fact, of many stage-waggon Horses in England, continuing to perform regular work, on chalky soils, with confirmed Grease, and getting well, nevertheless, without the assistance of medicine of any kind. But, though I have endeavoured to prove, that the Grease is merely a local, and not a constitutional disease, and that it is brought on by external causes alone, yet, it is by no means to be inferred from thence, that internal remedies are never to be had recourse to.

For, it happens every now then, that the inflammation of the affected limbs is so prodigiously high, that the constitution is found to sympathize with the diseased parts, and general fever and de-



arrangement is the consequence. But, the chief reason why this complaint is frequently found so difficult of cure, is owing to the circumstance of considering it a primary disease of the constitution; which, it is supposed, must be altered or amended before the complaint can be cured. Hence, the farragos of Alteratives, and sweeteners of the Blood, (as such medicines are called) which abound in books, and in the receipts of nostrum-mongers; and which are frequently exhibited for weeks, and even months, in many cases, where a judicious application of simple external remedies, would be found capable of effecting a cure in as many days.

And here I must remark, that I cannot help considering the frequent, indiscriminate use of Diuretics, (the great panacea of the stable) as highly prejudicial in this disease. For, diuretics are very frequently exhibited to Horses, labouring under great debility, from standing in hot stables, and a long continuance of this complaint; being considered by the ignorant, excellent substitutes for pure air, good grooming, and regular exercise. True indeed it is, that their immediate action upon the kidneys and urinary passages, does, for a time, reduce the gorged and distended limbs of those miserably neglected animals; and this way, give a deceptive appearance of relief; but, the subsequent debility which ensues from this plan of treatment, is sure to exasperate, ultimately, the symptoms of the complaint. In slight and recent cases of this disorder, however, there certainly can be no objection to two or three mild diuretic balls, allowing an interval of three or four days between each dose. But, it may be laid down as a general rule, that where much heat, inflammation, and swelling of the limbs exist, a gentle purgative is the best *internal* medicine, that can be exhibited.—The propriety of

this advice, however, I am well aware will be liable to be disputed, by such as are wedded to old prejudices, and especially those who are anxious to have the *use* of Horses, whilst they are under cure for the Grease.—Because it is generally supposed, that Diuretics do not incapacitate Horses from labour, whereas, it is pretty well understood, that it would be dangerous to work such as are subjected to the operation of purging physic; but when it is considered, that this mode of treatment necessarily protracts the cure, and frequently occasions Chronic Grease, which is often attended with incurable swellings in the limbs, and a pen-feathered appearance of the hair, it will be found, uniformly, the best policy, to give mild Purgatives, rather than Diuretics, under the circumstances, which I have described. But, we must never lose sight of the simple idea of this complaint, which I have endeavoured to maintain; namely, that it is local, and merely the consequence of inflammation; inasmuch, as this notion will naturally direct our chief views, to the application of proper *external* remedies. And amongst these, warm mild poultices and fomentations, will be found the most efficacious. If poultices be applied, they may be made of three parts bran, and one part linseed meal, or of oatmeal boiled in water, with the addition of a little sweet oil, to prevent their growing hard upon the skin; or of the crumb of coarse Bread, and skimmed Milk, boiled up together. The indispensable requisites in the ingredients of poultices, are, not only that they should be mild, and innocent, but that they should be *soft* and *smooth*; for which reason, carrots and turnips, are not so applicable to the intended purpose, as the articles which I have mentioned, although it must be allowed, that carrot poultices will more speedily remove the fœtor of the discharge than any other application.

It is of the utmost consequence too, that poultices should be applied *ample*, and as hot as the hand can be conveniently borne in the composition, for if applied nearly cold, and in small quantity, instead of being useful, they are frequently hurtful in the complaint.

A worsted stocking makes, on account of its elasticity, an excellent bag for a poultice, and permits its uniform application, to the swollen and inflamed parts. If the affected limb be violently inflamed, there will be great use in fomenting the parts with a hot decoction of Chamomile, Marsh-Mallows, or any mild garden herb. If there cannot be procured, milk and water, or plain water may be substituted. But, it is absolutely necessary, that the fomentation should be applied hot, and for the space of ten or fifteen minutes at a time. If the ulcers in the skin be large and deep, the hair should be cut away *scrupulously*, from the edges of the sores, which may be filled with a little of the astringent liniment, after the parts have been fomented, and before the application of the poultice. All ointments and greasy applications, appear to me, not only unnecessary, but frequently prejudicial in this disease; even when the Ulcers are large and deep. And I am of opinion, that if they ever do any good, it is in consequence of the stimulating and detergent materials that are mixed with them, which may always be applied, through a more eligible and efficacious medium. When fungous flesh is perceived to arise, it must be kept down by blue Vitriol, in powder, or if very luxuriant, by the use of the actual cautery.

Poultices and fomentations are best applied at night, but in extreme and violent cases, they may be had recourse to, two or three times a day.—When poultices are removed in the morning, the skin should be cleansed with plain warm water, without soap, and after-

wards rubbed perfectly dry, with the hands, especially in frosty weather; lest the exposure of the moist and diseased surface, to a current of cold air whilst the Horse is standing still, may undo in an hour, all the advantages derived from the applications of the poultices and fomentations, through the night.—If the chops and ulcers in the skin, are slight and superficial, it will be sufficient to dust them twice a day, with a little of the astringent powder, but if large and deep, they may be dressed with a little astringent liniment, spread on a piece of tow, and a large poultice applied over the dressing. Gentle exercise is indispensably necessary in this disease, and in dry weather, too, hours daily, will be found useful. In all cases where the limbs are much swelled, the Horse should be kept loose in an out-house, properly littered down at night. In very severe weather, (in case he has been accustomed to be kept in a warm stable) some additional cloathing may be necessary, before he be put into a colder situation. But, if such a convenience cannot be obtained, the Horse should stand through the day-time, on the pavement, which ought to be swept accurately clean, for that purpose.

After the ulcers, or chops in the skin are healed, it sometimes happens, that the legs remain obstinately swelled, for a considerable length of time, and spring grass is looked forward to, as the only permanent remedy for this eye-sore.

In a few cases, however, it happens, that before the Horse can obtain this advantage, the skin becomes so thickened, and altered in its structure, from the continuance of the chronic inflammation, that nothing but a judicious application of the actual cautery, previously to a long run at grass, will remove the complaint. But such indolent swellings of the legs, which are the consequence of grease long-

continued, or injudiciously treated, may commonly be prevented by the application of flannel bandages, well wetted with a saturate solution of sulphat of Alumine, and applied every night. The bandage in those cases, ought to be at least four yards in length, and three fingers in breadth; and should be applied smoothly and pretty tightly, for the space of two or three inches above and below, as well as upon, the swelled part of the limb. It would be improper, were I not to notice in this place, a circumstance which happens now and then, tho' but rarely, in consequence of long-continued Grease; and which has heretofore, been, sometimes, confounded with true Farcy, even by some skilful Veterinarians. The appearance I allude to, arises unquestionably from the absorption of matter from the sores in the heels; in consequence of which, large ulcers arise suddenly, about the hocks, and sometimes high up, in the inside of the thighs, which spread rapidly, and are attended with extensive sloughing of the skin. But, these cases are unattended, with that thickened hardened condition of the larger absorbents of the thigh, called by the Farriers, Corded Veins; which, almost invariably, attends the true Farcy of the limbs.—Neither do the absorbent Glands of the skin, enlarge or inflame in these cases, exhibiting the appearance of what are called Buds or Buttons, as in the true Farcy. These are important circumstances of difference, which may serve to distinguish the disease, from the true Farcy; and when the morbid appearances which I have described, succeed to those of Grease of long standing, there can be but little difficulty, in distinguishing the two diseases. It is a matter indeed, of the utmost consequence in a practical point of view, to make this distinction.—For this spurious Farcy will be found to be much more easily, and certainly cured, than the true kind; yielding

very readily at generous diet, combined with pure air, green food, and gentle exercise. The sores may be washed twice a day, with a weak solution of blue Vitriol; and if the strength and spirits of the animal have been a good deal reduced, he may get one of the tonic balls every night, for six or eight successive nights.

After what has been advanced upon the subject of the *cure* of Grease, it will not be necessary to take up much of the time of my reader in detailing the means of prevention; but it behoves me, nevertheless, to bestow a few words upon the subject. For certain it is, that we shall rarely see any instance of this complaint, even during the severest weather, provided Horses be well groomed and regularly exercised; more especially, if they be kept in clean, cool, and well ventilated stables. Indeed, it is almost incredible, to what a certainty this disease may be prevented, by attention to these circumstances.—Facts, however, are stubborn things, and carry conviction to the minds of the most prejudiced; I will therefore mention in this place, one, which speaks volumes in favour of the arguments, I have advanced, and which came within my own knowledge.—In the winter of the year 1806, a Regiment of Light Dragoons, was quartered in the City of Dublin, and during the entire winter, and following spring, not a single case of Grease was found, in the whole regiment. Now, were we to take an account of eight hundred Horses, belonging to private persons, kept in a large town, through the winter season, we should in all probability find, at least one in ten, that is to say eighty out of this number, more or less affected with Grease; so little bad blood does there circulate in his Majesty's Cavalry Horses, and so clear from foulness are all *their* humors.

Now, the common practice of washing the limbs of Horses, after they have been exposed to the filth of the streets and roads in winter, (though originating in cleanliness) is, frequently, the means of bringing on Grease, unless they be rubbed dry immediately.—For, though usually, the heat which has been produced by exercise, (having diffused itself to the limbs of the animal) will be sufficient to evaporate the moisture, without cooling the skin to so great a degree, as to produce inflammation, in consequence of the re-action of its blood vessels; yet, when two or three buckets of cold water, have been applied to the legs, some time after the animal has been in a state of rest, and the warmth of the surface has gone off, it happens occasionally, that this re-action does not stop at the precise point of a healthy condition of the part, but going beyond it, inflammation is a necessary consequence; especially, if the Horse's limbs be left wet, and exposed to a current of cold air. Hence, heat and swelling of the part, are the first symptoms, to which succeed slight cracks or chops, and lastly, when from negligence, the inflammation passes into the second or suppurative stage, large ulcers are formed in the skin, which, now and then, become deep, and very extensive.—It may be right to notice here, that the peculiar mode of catching up the limbs, which is often observed in Horses affected with the Grease, and which serves in a great degree, to characterize the disease, depends upon the existence of ulcers or chops in the skin. For, in severe cases of this disease, the Horse will stand instinctively, for several hours together, without moving, on account of the pain attendant on motion; and thus a partial union of the lips of the ulcers is brought about, during the state of quiescence; but when he is made to move in his stall, the skin con-

sequently becoming stretched, the ulcers are torn open afresh, whereby excessive pain is inflicted upon the inflamed part; and, thus, he continues to hop for some seconds upon three legs, from the dread of setting the diseased limb upon the ground.

I have thus sketched all the circumstances, which are most material to be known, with respect to the cure as well as prevention, of this common winter disease. But the medical and philosophical reader, would probably tax me with a culpable omission were I to pass over in silence, the important fact of the Grease in Horses, having laid the foundation of one of the greatest public blessings in this or, perhaps, any other age.

I allude to Doctor Jenner's immortal discovery of the Cow-pock having the property of securing the human frame, against the infection of small Pox. For it is not only a fact, that the Cow-Pock originated from the conveyance of the matter of Grease, from the heels of diseased Horses, to the teat of the Cow, but it is also one equally well established, that the disease called Cow-Pock, may just as readily be communicated to the human constitution, by inoculating with the matter of Grease, as with that taken from the ulcerated teat of the cow. In this point of view, therefore, the disease ought to have been called the Horse, rather than the Cow-Pock; but, inasmuch, as names have great influence upon the multitude, there was, perhaps, policy in giving it the latter, in preference to the former designation.



## Farcy.

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**T**HE Farcy is one of the most formidable in the catalogue of diseases, to which the Horse becomes liable, in consequence of his being domesticated. It is also a disease which arises (more peculiarly, perhaps, than any other) from the ordinary injudicious management of stables. It is frequently epidemic, but never contagious; except where ulcers exist.—And this is a distinction well worthy of attention, because, whilst there are no open sores, and so long as the diseased lymphatic glands (which are called by the Farriers, Farcy Buds) remain indurated and unbroken, no sound Horse can be infected by coming in contact, with one that has the Farcy. If, therefore, it be inconvenient or impracticable, to place a Horse attacked with this disease, in a situation where he will be prevented from coming in contact with healthy Horses, the cure may be set about, under the circumstances just described, without running any risque of propagating the disease. In fact, the actual application of the Farcy matter, is the only medium of communicating the infection from an unsound to a sound Horse. Breathing the same atmosphere *never* produces this

effect. The Farcy may be properly enough divided, into two distinct forms of disease, namely, that in which it affects the lymphatic glands of the skin, (usually called by the Farriers the bud or button Farcy) and that, in which it shows itself, by attacking the limbs, and more especially the hind legs, with large, painful and, sometimes, sudden swellings; and this it does, frequently, in a manner so remarkable, that I have known a great many instances, where Horses have been left at night apparently in perfect health, and on the following morning have been found in a state of much general Fever, with considerable swellings of the limbs, occasioning such excessive lameness, that they could scarcely move out of their stalls.

Moreover, the burning heat and exquisite tenderness of the skin, which attend these latter swellings, are so remarkable, and so strongly characteristic of the disease, that no skilful Veterinarian will ever mistake their nature. So much so, indeed, that if a Horse be attacked in the manner I have described, we shall be safe in considering the disease, as an attack of Farcy, and in regulating our practice accordingly; provided, we have perfectly satisfied ourselves, that he has received no kick, blow, or external injury.

Under those circumstances, therefore, it will be advisable to take away immediately, four, five, (or in the case of a large coach or cart Horse) even six quarts of blood, from the immediate neighbourhood of the inflamed parts, if possible, or from the neck-vein, in case this be not practicable. The bowels ought speedily to be opened, by a dose of physic, and in order to expedite the operation, it will be advisable to throw into them, an injection every four hours (after the physic is given) until the fœces become loose.

The injection may consist of four quarts of thin gruel, in which two table spoonfuls of salt have been dissolved.

The Horse should be placed in a loose stall or any out-house, where he may have room to move about freely; and this circumstance it is of the utmost consequence to attend to, forasmuch as the application of all other means of cure, will prove of comparative insignificance, provided the animal have not the advantage, of gentle voluntary motion.

If the Horse be accustomed to be cloathed he should remain in that state; and in severe weather, even if unaccustomed to cloathing, it will be of advantage to him. But, most of all, is it necessary, that he should breathe a pure cool atmosphere, and, therefore, even in winter, but, more especially in summer, there should be a complete ventilation of the building he is placed in. Generally, it happens that after bleeding and opening the bowels, the symptoms are much relieved; but, if the burning heat of the skin, or excessive lameness should yet remain, it would be adviseable to foment the swollen inflamed parts, with flannels dipped in a strong hot decoction of Chammomile, Marshmallows, Rosemary, or any of the common garden herbs, (usually had recourse to for fomentations,) twice a day, for fifteen minutes at a time. Two days after the physic has done working, the Horse should begin a course of the following alterative balls, giving one every night.

Take of Sulphat of Mercury, . . . . . half a Drachm,

Powder of Gum Guaicum, . . . 1 Drachms,

of Cinnamon, (compound)

Liquorice,

Venice Turpentine, of each 2 Drachms,

Honey, sufficient to make a ball.

In the case of a large coach or cart Horse, this ball may be given night and morning, unless it appear to take the Horse off his food; in which case, once a day will be sufficient, and in the instance of a small, delicate, or emaciated Horse, every second day may suffice. The usual palpable effects of these balls, are exerted upon the kidneys, and a greater quantity of urine than natural, of a *reddish* colour is commonly voided. It is a favourable symptom, if the urine exhibit the colour I have described.

In some Horses, of a peculiar constitution, these balls speedily affect the powers of the stomach and digestive organs. The Horse loses his appetite, and falls away rapidly in flesh. Whenever this is found to be the case, the use of them should be omitted for a few days, and the following stomachic balls given instead of them.

Take of Powdered Cascarilla Bark, . . . . . 2 Drachms,

Soccorine Aloes, . . . . . 2 Scruples,

Sulphat of Iron, . . . . . 2 Drachms,

Extract of Gentain . . . . . 1 Drachm

Honey sufficient to make a ball.

In good weather the Horse should be turned out to grass in the middle of the day; but it sometimes happens, that fresh-cut grass can be procured, although it be not practicable to turn a Horse out to graze, in which case, it should be given to him daily, in an airy roomy out-house, or if such a convenience cannot be procured, the stable, at least, should be well ventilated, and he should get two hours walking exercise every day, divided into three equal portions. It will be adviseable, moreover, to give the Horse corn, from the time that the operation of the purging ball is over. The quantity of corn should be increased daily, until he arrives at his full allowance. This me-

thod of combining the nourishing stimulus of corn, along with the advantages of pure Air and Grass, will, frequently, enable many Horses to bear the operation of the balls first prescribed, and thereby, to struggle through the most severe attack of this formidable disease.

Great circumspection, however, becomes necessary, in watching the effects, which the alterative balls may have upon the appetite; for, if this be only in a slight degree impaired, it will be, perhaps, the prudentest plan, not to suspend them, even for a limited time, but to combine the use of them, with that of the Stomachic Balls, giving one of the former at night, and one of the latter, early in the morning.

Many writers have recommended the use of Corrosive Sublimate, in this disease; but, on giving this medicine a fair trial, I have found very few Horses, whose constitutions would permit the continuance of it, for any length of time, with advantage.

It, certainly, has prodigious powers in overtaking the diseases, but, it is very apt to destroy the tone of the stomach quickly, and like the once celebrated remedy for the gout (the Portland powder) if it cure the diseases, it kills the patient—Some of the French Veterinarians have exhibited a solution of Barytes in muriatic acid, in this disease, the medicine so strongly recommended by the late Dr. Crawford, in Scrophula. From the report of some of them, however, it would seem that many of the Horses, to which it had been given, died suddenly, after the Farcy appeared to be cured. A most admirable auxiliary, however, in the cure of Farcy, is sea-water. As an external application, it is infinitely superior to every other, for any open sores or ulcers.

Nor are its good effects confined to such cases merely, as it has decidedly good effects, upon Farcy-swellings of the limbs, and Farcy-buds, where no open sores exist.

Accordingly, I have found the Farcy more or less manageable, (especially deplorable cases of the disease,) in proportion to the facility of obtaining the advantage, of Sea-water.—Where the sea is at hand, therefore, the Horse's limbs should be washed in it, once or twice a day, and the servant who takes the Horse thither, should bring back with him daily, a quantity of sea-water, sufficient to wash any sores or swellings, which may be upon the surface, four or five times a day.—As soon as the Horse's appetite and spirits are restored, by perseverance in the mode of treatment, which has been laid down, it may be adviseable to have recourse to the use of blisters, especially if there should be any slight remains of inflammation in the part, enlargement of the lymphatic vessels, (usually denominated Corded Veins,) or general swelling, although, I consider *superficial* firing with a flat instrument, preferable to blistering, in this complaint.—Moreover, as this disease, notwithstanding all our care, is apt to terminate in Glanders, or to speak more correctly, as Glanders is very apt to supervene after an attack of Farcy, it will be prudent to examine the nose of the Horse, and the Glands under the jaw, with great care, *daily*; for, if any running at the nostrils should appear, and more especially, if any hardness or enlargement of the Glands under the jaw, (called Kernels,) should be felt, there will be no reason to doubt, an attack of Glanders. Now, this common upshot of the disorder, is one of the many facts which had been long known to Farriers, and others, who have had an opportunity of attending to the phenomena of disease in Horses, and were at the same time incapable

of drawing proper inferences from what they saw; for until the foundation of the Veterinary College in London, it never was satisfactorily explained. Experiments however, made at that institution many years ago, have proved decisively, that the virus of the Farcy and that of the Glanders is of the same kind. If its effects be exhibited in the constitution, in the way which has been described, the disease is called Farcy. If the poison attack the secreting membrane of the nose, it is called Glanders. In the year 1795, whilst assisting in the prosecution of several experiments, that were made at the Veterinary College of London, I took some matter with a lancet, from a bud of a farcied Horse, and smeared it with my finger upon, without inoculating, the mucous membrane of the nose of a sound Ass.—On the eighth day after the experiment, the animal was in, what might be termed, the last stage of Glanders. The Glands under the jaw were greatly enlarged, and hardened, the membrane of the nose much ulcerated, the head enormously swelled, and so rapid had been the progress of the disease, that the animal appeared to be dying, in consequence of the high inflammation which had taken place, in the mucous membrane of the lungs. And a similiar upshot (extremely like what happens in the disease called a Galloping Consumption,) I have, not unfrequently, observed to carry off suddenly, some Horses which had been, a long time previously, affected with Glanders or Farcy, but more especially the latter disease. For it is well worth while attending, to this material distinction, with respect to the specific effects of Farcy and Glanders, on the general constitution of the Horse; namely, that if the Glanders be the primary disease, it may, and frequently does, exist for months, or even years, without appearing to hurt the general health or vigour

of the Animal, whereas, the Farcy seldom or ever remains stationary, but, on the contrary, gradually spreads through the system, which it generally undermines slowly, but sometimes, suddenly breaks up, with a rapidity that is truly astonishing. In the latter case, there is little for the Veterinarian to do, except to look on; just as the Physician is too often obliged to do, during the progress of Pulmonary Consumption. Nevertheless, if the means which I have recommended, be had recourse to on the first attack of Farcy, we may frequently predict a successful issue of the disease. There is no complaint in Horses, which has given rise to more absurd nostrums, or a greater number of specifics, than this, of which we are treating. And the faith even of a man of science, might stand some chance of being staggered by the testimonies, which many respectable people have frequently borne to the efficacy, of some of these boasted remedies. But, all the mystery which hangs about this subject, may, I am confident, be completely and satisfactorily explained, by the circumstance of the true, being frequently confounded with the Water-Farcy, and some other diseases, to which, although, it has some resemblance, it may, nevertheless, be very easily distinguished from. Else, how will common sense help us to a solution of the alledged effects, with which the practice of sewing up garlic, or quicksilver, in the ears of Horses, supposed to be affected with Farcy, is said to be attended, or to explain the asserted efficacy, of certain charms and exorcisms, which, many persons far above the vulgar, profess to have faith in.

To the avowed believers, however, in such sort of miracles, I address no arguments, because their minds are of such a cast, as to be proof against the power of reasoning. But, as I have too fre-



quently met with people of sense and candour who (without giving implicit credit to such tales) have appeared to be staggered by the relation of astonishing cures, alledged to have been brought about by the use of such medicines, as could not possibly have any effect upon the disease, either from, or their nature the mode of their application ; it is but right that I should observe in this place, that no confidence ought to be placed in the accounts of such pretended cures.—For, I have no doubt, that the nature of the disease has, in most of these cases been misunderstood ; and, even, if we admit that, now and then, such remedies have been applied with apparent success, in the *true* Farcy, yet, in a great proportion, of those instances, the subjects of the disease, have been removed from hot and foul stables, where it was engendered, and turned out to graze, which circumstance, joined to the advantage of breathing a cool and pure atmosphere, has been found adequate to remove slight attacks of this complaint. Nevertheless, the recovery of the animal has been frequently, tho' absurdly, attributed, to the effect of the charm or nostrum, which has been had recourse to. Having already asserted, that the Farcy is *peculiarly* the offspring of our ordinary stable management, I must once for all observe, that too much stress cannot possibly be laid upon this position, the truth of which, indeed, may be easily supported, by the facts which every days experience affords to the man of observation and reflection. It is, indeed, very possible to hurry on an attack of Farcy or Glanders, solely through the medium of hot and foul air, in an incredibly small space of time.—During the former part of the present war, an expedition being undertaken to the Isle Dieu, on the coast of France, in the course of

the voyage a gale of wind came on, and the Master of one of the Horse transports, was under the necessity of securing the hatches, by (what the sailors call) battening them down. The Horses being, by this means, deprived of fresh air, soon felt the deplorable effects of such privation; for when the gale ceased, and the hatches were opened, several of the poor animals were found dead, and almost every one of those that survived, was attacked with either Farcy or Glanders. It is an undoubted fact too, that Horses which have been the subject of Farcy, are decidedly, more liable to attacks of the complaint than others; and old Horses more than young ones.— And this, I imagine, may be very satisfactorily explained, without having recourse to the common notion, of the complaint's lurking in the blood. For, I think it a much juster mode of reasoning upon such sort of facts, to say, that a peculiar condition of the living fibre may exist, in any animal, whereby, he may be liable to an attack or recurrence of certain diseases, than to suppose the presence of any specific virus, which has been lurking in the habit, or circulating with the blood, for a great length of time. A supposition, which, as it would utterly preclude the possibility of considering any Horse sound, that had once been the subject of Farcy, would be equally repugnant to truth, and to just philosophical principles. Nor do I rashly nor inconsiderately maintain this opinion, although I am well aware that many well authenticated instances of Hydrophobia and Syphilis, in the human subject, seem to militate against it. I have already remarked, that old Horses are more liable to be attacked with Farcy than young ones, or those of a middle age, especially if they have once been subjects of the disease. I remember an instance of a Horse, which, having been severely affected with

Farcy, was cured, and remained perfectly sound, for more than a year. At this period, being then about ten years old, he was castrated, and appeared to be going on remarkably well, after the operation; but, on the eighth day subsequent thereto, he broke out with the Button Farcy over the greater part of the surface, and though he struggled for a time, with this formidable disease, yet it proved eventually, to be a breaking up of the constitution; which, but for the operation alluded to, would, in all probability, have remained sound, for a considerable time longer. In fact, whatever destroys the tone and strength, of the general constitution of the Horse, does, unquestionably, lay him open to an attack of this disease. And, upon this principle, we may readily explain the reason, why Horses which have been a long time affected with Chronic Grease, are so frequently attacked with Farcy. Not, that there is necessarily, any connection between the two diseases, which I apprehend to be as distinct in their nature, as Small-pox and Measles, but, because debilitating powers have been for a long time operating upon the animal, which has been the subject of Grease; and foremost of these powers, we shall be safe in reckoning, the absurd and destructive medicines, which are usually exhibited in that complaint. It may not be improper to observe in this place, that in such obstinate and long-continued swellings of the limbs, as are frequently the consequence of Farcy, which has supervened Grease of long standing, no good is to be expected from internal medicines. Even blisters are, comparatively, inefficacious, and a cure is to be expected, only from having recourse to the operation of firing, and a run at grass for two or three months afterwards.—By some persons, the use of

Calomel has been strongly recommended in Farcy, but, as far as I am capable of judging, on no good grounds.

The advocates for its use have, in fact, commonly been those, who are too fond of applying analogy, to all possible cases. And it has been too much the fashion, to suppose, that all such medicines as appeared to be powerful in the diseases of the human body, were equally so in those of the Horse. To hear some people talk, indeed, one would imagine, that we had only to consider the Horse as a large four-legged man, and to proceed in the treatment of his diseases accordingly.

The absurdity of such reasoning, however, need not be much insisted upon, as, it must appear evident to every intelligent, and more especially to every philosophical mind, that different systems (as has been observed in another place,) are governed by different laws, and that analogy must consequently be, at best, but an imperfect, and will, too frequently, prove a deceptive guide.

Now, the mode of attack of the bud, or button Farcy, and the concomitant symptoms, are in a considerable degree different from those, which I have described as attendant on the inflammatory Farcy of the limbs.—For, in the former, we rarely find any great feverish indisposition, nor, does it commonly attack a Horse suddenly. On the contrary, the animal is usually dull and dispirited, and either refuses his corn altogether, or eats it with indifference for several days, and sometimes for many weeks, before any buds or swellings, appear upon the skin. His coat loses its usual healthy appearance, he falls off in flesh and spirits, and there is in many Horses, a great struggle in the constitution, before any decided symptoms of Farcy, make their appearance. Very frequently, Worms are suspected to

be the cause of the mischief, and such remedies as are supposed to have specific properties as vermifuges, are usually had recourse to. At length, the disease shows itself in small tumors, in various parts of the skin, but more especially about the trunk. It is not difficult to distinguish these buds or Farcy swellings, from such as arise suddenly, without previous indisposition, at all seasons of the year, but especially about spring and autumn, on the skin, (attended with increased heat of that integument,) and which I consider to be the Nettle-rash of the Horse. The latter are much broader, flatter, and, commonly, more thickly strewed over the surface, than the swellings of true Farcy, which are, not unaptly indeed, styled buds. These are hard, small, circumscribed, and usually much fewer in number, than the former.

Bleeding, on the attack of this species of Farcy, seems altogether unnecessary, and might indeed prove *very* prejudicial. It is not so however, with respect to mild, and moderate purging; for it is commonly adviseable, to give a *gentle* dose of physic, unless there be symptoms of very great debility. After the operation of the physic, the subsequent treatment of the animal, may be precisely of the same kind, as that, which has been already laid down, for the inflammatory Farcy of the limbs. This mode of treatment will commonly succeed, provided it be adopted before the disease has made great ravages in the constitution, and more especially, if it be combined with the important advantage of turning the Horse out to grass for a few hours every day. I have said that this disease is the peculiar offspring of our ordinary stable management, and nothing will, perhaps, prove the truth of this opinion more satisfactorily, than the notorious fact, of Farcy rarely shewing itself amongst such

Horses, as, being employed in agriculture, reap the combined advantages of breathing a pure atmosphere, and feeding more or less upon green food, or, at least, such as is of a fresh succulent kind. Some, indeed, have gone so far as to maintain that such Horses as constantly get green food, are never attacked with this disease. But, though I have seen several instances, which militate against this opinion, I am, nevertheless, fully sensible of the inestimable value of pure air, and green food, in the cure of Farcy.—I consider them, in fact, as indispensable auxiliaries to the plan of cure, already laid down.

Even in the winter, this method of treatment may be had recourse to with perfect safety, especially, if additional cloathing be put upon the animal whilst at grass, which should be taken off when he is housed. The use of Calomel, not only as an alterative, but also as an additional ingredient in Purgative Medicines, has been a good deal insisted upon in this disease, but in my opinion, with no great reason.—On the contrary, I am inclined to think that much mischief has, in both ways, being frequently occasioned by its use. As an additional article in Purgative compositions, notwithstanding its inertness on the bowels when given by itself, it has, assuredly, been the means of killing many Horses, and as an alterative, I am equally satisfied, that no advantage is to be expected from it in Farcy. For, if given to such a degree as to make the gums or mouth sore, the animal, not having reason, will sooner submit to starvation, than to the pain of masticating his food under those circumstances

What then is to be had recourse to ?

Alas! the only refuge is the drenching-horn, which, in the hands of the unfeeling and injudicious, has frequently put an end

both to the sufferings of the patient, and the absurd speculations of the Doctor.

In thus delivering my sentiments respecting the effects of Calomel upon Horses, as I am aware that they militate against generally received opinions, so I hope it will not appear that I am under the influence of prejudice; for having no hypothesis to serve, I consider that it would be a species of injustice to my reader, were I to withhold my experience of facts, which has produced a settled conviction in my mind, of the dangerous consequences resulting from the promiscuous use of Calomel in this, as well as many of the other diseases of Horses. Moreover, Calomel has a disposition when used as an alterative, to attack the salivary glands of the Horse, more easily than any other preparation of mercury, with which I am acquainted, which property depends, probably, upon its being more easily absorbed into the system.

Further, it does not appear to me, that mercury in any form, is a *specific* in any of the disorders of Horses; and I am most decidedly of opinion, that it is frequently had recourse to, both as an alterative, and as an additional ingredient in purgative medicines, where its use is productive of much mischief. But, the particular preparation of this mineral, which I have recommended the use of in Farcy, is rarely, if ever, found to attack the mouth or bowels. Its palpable effects seem to be confined, to the kidneys and urinary passages, and if be used with that caution, which I have all along recommended, it will not only be found a most powerful and useful remedy in Farcy, but by its ultimate effects, will tend to lessen the ravages of the Glanders; which, like the gout to physicians, hath hitherto remained a popular opprobrium to the Veterinary art.

Having already observed that the treatment of the Bud or Button Farcy may (with the exception of bleeding) be conducted in the same manner, as the inflammatory Farcy of the limbs, it may, nevertheless, be proper, that I should mention such external applications, as may become necessary, for the small tumors in the skin, called Buds.—If these remain hard or indolent, they should be blistered or slightly fired; and in case they suppurate, they should be opened, and afterwards filled with blue vitriol, finely powdered.

It will be proper to cleanse the sores once a day, with a sponge dipped in plain warm water, and it may be necessary to repeat the application of the blue Vitriol, every second or third day.

In all cases of Farcy, it is adviseable to let the Horse remain at grass, from one to three months, after he appears to be cured, or in the case of a very valuable Horse even six months; but if the appetite and strength of the animal be completely restored, moderate work will be highly serviceable to him, especially if he get an ample allowance of corn.

In all cases where it is practicable, Horses that have once been attacked with Farcy, should be prevented from being kept altogether in stables; but, at all events, if this mode of treatment cannot be adopted, they should get two or three mild doses of physic on first being brought into the stable, which ought to be kept cool and thoroughly ventilated.



## Glanders.

**T**HE Glanders, as has been fully explained under the head of Farcy, is very commonly the upshot of the latter disease, especially in those instances where it has been injudiciously treated, or has been neglected, from not being understood. And although little or nothing can be done in confirmed Glanders, with any rational prospect of success, yet, as the disorder is so frequently confounded with, and mistaken for, other diseases, it becomes an object of very great importance to point out the sources of these errors, and if such landmarks are to be found, as will enable us to distinguish it from the diseases to which it has considerable resemblance, to lay them down with accuracy and precision.

Nor is there any disease in Horses, the *prevention* of which is of equal importance to the community as that of Glanders. Its ravages and fatal effects are, indeed, well known, and it is generally understood, to be an incurable disease.

And though I may appear to many, to quit my proper department; when I glance at any thing which comes under the immediate province of the Legislature, yet, am I perfectly convinced that

instances of Glanders, (so long as the present system of stable management continues,) will never be materially diminished, except among the Horses in his Majesty's service, until the Statutes shall reach the delinquency of those offenders against the Moral Code, who shall expose to sale such Horses, as are *known* to be affected, with this deplorable malady.

A custom which is as notorious, as its effects are destructive. For, it is, in fact, impossible to calculate the extent of the mischief produced by this practice, especially at markets and fairs, where it is common to bring out Horses from, and return them into, public stables, repeatedly, before they be finally disposed of.

Hence, it follows that the effect of inoculation is most commonly secured, in one way or other. For, the Glanderous matter is frequently conveyed from the nose of a diseased Horse to one that is sound, in consequence of the common custom which Horses have of rubbing their noses against each other; or the same thing may as readily happen from the virus being left on any part of the Stall, Rack, or Manger, where it may chance to be deposited.

Further, if it be taken into account that at fairs, Horses are frequently put into stables without stalls, and that when one Horse is led out, another is usually brought to fill up his place immediately, we shall cease to wonder at the continual propagation and great frequency of the disease. Neither ought we to overlook the facts which have been advanced on the subject of Farcy, which may serve to convince us, that each individual of the species has the power of originating, or (to use the common mode of expression,) breeding the Glanders. Having premised thus much, I proceed to enumerate the

characteristic distinctions between this disease and some others, which resemble it in many of their symptoms.

The Glanders is more frequently confounded with Strangles, than any other disease. But, in general, it may readily enough be distinguished from the latter; the Glanders being rarely attended with any general fever, heat of the skin, or loss of appetite, all of which symptoms are, more or less, present in the Strangles. The swellings of the glands, too, under the jaw, are in Glanders, most commonly hard, small, indolent, circumscribed, and nearly immovable, appearing to grow, as it were, to the bone.

Whereas, in the Strangles, the Glandular swellings are large, attended with heat, and painful to the touch, and may be observed to encrease gradually, until they arrive at the state of suppuration, which never takes place in Glanders.

Moreover, there is seldom in Glanders, a cough of any consequence, much less any considerable wheezing, or obstruction in the act of swallowing. In the Strangles, all the last mentioned symptoms, are strongly characteristic of the disease. Again, in the Glanders, the discharge from the nose is most commonly confined to one nostril, and is small in quantity, exhibiting at the verge, a peculiar *glewy* appearance. In the Strangles, the discharge is purulent, usually very profuse, of a yellowish colour, and, for the most part, flows pretty equally, from both nostrils. Finally, in Glanders, ulcers are very often observed, on the internal membrane of the nose, which, rarely, exhibits any redness, or signs of inflammation; but, on the contrary, has usually, either a palish, duskish-brown, or livid colour. In the Strangles, we meet with considerable redness, and inflammation, but no ulceration, on the mucous membrane of the

nose. An ulcerated state, of the membrane of the nose, has, indeed, been usually deemed, completely decisive of the existence of Glanders; and little or no doubt can be entertained of the fact being established, whenever we meet with ulcers in the nose, joined to the other symptoms, which have been detailed. Nevertheless, we ought not to lay too much stress, upon the mere absence of ulcers, since, from the discoveries of the immortal John Hunter, it has been long ago ascertained, that blood vessels have the property of secreting matter from the blood, in cases, where no ulceration or loss of substance in a part, is found to exist. An important and invaluable fact this; in medical philosophy at large, and especially so, as it applies to the investigation, of this disease.—If, therefore, we find all the other symptoms of Glanders, without any ulceration in the nose, this latter circumstance ought not to abate our circumspection, or lull us into security; not merely, indeed, for the reason which has been adduced, but, because it very frequently happens, that ulcers do exist in the nose, in such situations, as preclude the possibility of our perceiving them, except on dissection, after death. Next to the Strangles, I have found common colds, likely to be confounded with Glanders. The running which takes place from the nose, in this complaint, is the chief cause of the error. But, in this disorder, which usually affects the Horse in the spring of the year, in the manner of an Influenza, and is frequently of an epidemic kind, the glands under the jaw are generally free from disease, and there is usually present, as in the Strangles, a good deal of heat in the skin, and general fever. Moreover, in the disorder termed a cold in Horses, it will almost always be found, that the animal labours under considerable soreness of the throat, which is

best evinced, by his apparent desire to drink, attended with inability to gratify his thirst, without stopping at every gulp of fluid, which he takes.

Further, I have, not unfrequently, found persons unnecessarily alarmed, on the score of Glanders, from observing a discharge that commonly takes place from the nose, when a Horse is becoming broken-winded. But, this discharge is unaccompanied with any enlargement of the Glands under the jaw, and has, besides, a specific appearance, resembling nothing so much, as thick soap-suds.

I have thus enumerated some common complaints, which have been usually confounded with the Glanders, from which, it will not be very difficult to distinguish them, provided the symptoms I have described, be carefully attended to. I come now, to treat on the means of prevention, and also of such as bid fairest to effect the cure of this malady. And it would be equally fortunate for the public, as honorable to the Veterinary art, if it were in my power, to speak as decisively on the subject of the latter, as I am enabled to do on the former topic. But, as prevention is better than remedy, so, I am not without hopes, that the following remarks may be found useful to the proprietors of Horses. As one of the most effectual means, of preventing the Glanders being generated in stables, it will be necessary to keep them constantly cool and well ventilated, as no fact is more certain, than that the hot and foul air of low and confined stables, is the chief exciting cause of the disease. It is perhaps, indeed, the only one, which is able singly and without the intervention of any other, to *originate* the disease in the system of a sound Horse. Next to hot and foul air, as exciting a disposition to Glanders, I consider the want of regular exercise, which is the com-

mon forerunner of this, as well as many other diseases. Yet, nothing is more common, than to hear people of good sense in other particulars, express their surprize at a Horse being attacked with this disease, remarking at the same time, that he has not *even* been out of the stable for several days; whereas, this circumstance, which is usually aduced, by way of strengthening the supposed mystery of the attack, is very frequently, the immediate, though not the *sole* cause of the complaint. But, as the subject of exercise is treated on, in another place, I shall not enlarge upon it here. The almost total privation of green and succulent food, which Horses kept in stables usually undergo, is another capital exciting cause of Glanders. And this fact, whilst it is an essential, is, at the same time, an unfortunate one, in the history and investigation of this disease, inasmuch, as little can be suggested, in the way of remedy for the evil, especially under the circumstances where it exists in full force, namely, in large and crowded towns. There can be no doubt, however, that if the great proprietors of Horses were but once convinced of the extreme salubrity of green and succulent food, and if their attention could be turned to the subject with zeal and earnestness, that much might be done, in the way of mitigating the ill effects, resulting from the want of it, even under the worst possible circumstances.

Lastly, the want of good and effectual grooming, especially in the case of such Horses as are highly fed, and do not get regular exercise, is another cause of the frequent appearance, of this disease in stables. For, strong frictions and thorough cleansing of the skin, although by no means a substitute for regular exercise, will, at any rate, tend to ward off some of the evils, which must otherwise follow, from the want of it. The advantages derived from the use

of the flesh brush, in several diseases of the human species, which preclude the possibility of the patient taking exercise, are too well known, to need being insisted on here.

And this is a sort of case, where we shall be perfectly safe in reasoning from analogy; for, it will not in this instance, prove the means of deceiving us. I have, thus, noticed the chief circumstances, which are the cause of the Glanders originating in stables, and suggested the best means, of preventing the disease. I proceed now, to mention the symptoms which usually precede and attend an attack of Glanders, (when unconnected with any indications of Farcy) and which I think necessary to be detailed, on account of the very imperfect information which books contain, and of the ordinary popular errors which prevail, on this interesting subject.

The symptoms antecedent to an attack of Glanders, sometimes resemble those which I have enumerated, as preceding the Bud or Button Farcy. In other words, the animal is observed to be dull, and dispirited, his coat stares, he falls away in condition, and loses his appetite. But these symptoms, though they are every now and then discernable, do not by any means, constantly precede the Glanders, which usually steals on imperceptibly, and exhibits itself without any previous indisposition.

And it is of the greatest consequence, that this circumstance should be clearly and distinctly understood; because, it is a commonly received opinion, that Glanders frequently results, from mere mismanagement or neglect of common colds, and some other diseases.

Now, this is a thing which never happens, unless there be a strong predisposition to this disease, in the habit of the Horse, from the

agency of the ordinary exciting causes, which have been enumerated in the preceding chapter.

The Glanders is, in fact, a disease which we have entailed upon the Horse, in consequence of the preposterous artificial methods we have adopted, in his general treatment. In Spanish America, this disease is totally unknown, as I have been credibly informed by a most intelligent gentleman (an officer of artillery) who being devoted to Horses, as a sportsman, took great pains to investigate this point, whilst on the spot at Buenos Ayres, and was not able to find the smallest trace of the disorder.

Unfortunately, his enquiries were not directed to Farcy; but, we may very safely infer, that those parts of the world, where Glanders is not to be met with, are equally free from Farcy.

And though I acknowledge, that this position is an assumption only, yet it may be supported by such a chain of indisputable facts, that no candid, unprejudiced mind, can have any doubt of its accuracy, as an inference.

Many of the facts which have been already brought forward, on the subject of Farcy, bear so strongly on this point, that I should think the most sceptical person would have all reasonable doubts removed, which could be entertained upon the subject. But, if further proof be insisted on, it may very readily be furnished, in consequence of experiments, which have proved that the Farcy may be as readily communicated to a sound Horse, by inoculating with glanderous, as with Farcy matter.

In fact, we are enabled to produce disease in either shape, according to the nature of the parts which we inoculate.



It has been found too, that the blood is capable of conveying the infection, by transfusion from a diseased to a healthy Horse.— So that, though the lymphatic system, (especially in Farcy) be primarily and more immediately affected, yet, ultimately, the blood itself, becomes contaminated with the Poison. In the inflammatory Farcy of the limbs, the action of the blood vessels is prodigiously increased, at the same time that the larger lymphatics are thickened to such a degree as to give some colour to the popular, though erroneous, notion, of the veins having become corded.

And this enlarged diseased condition of the lymphatics, is so prodigious, in some chronic cases of the Bud or Button Farcy, that in those instances where the skin becomes enormously thickened, some of the smaller ones of that integument, which, in its healthy state, are so minute as not to be discernable by the eye of the anatomist, may be readily injected with quick-silver; and, sometimes, appear to be nearly half the size of a crow's quill. In a practical point of view, however, it is not very material to enquire, whether the Farcy and Glanders originate in the arterial or lymphatic system.

And as I cannot help considering this question, both problematical in theory and useless in practice, I shall leave it to be determined by future Physiologists. It is enough for us to know, that we have plenty of practical facts to argue upon, without going into any nice and subtle distinctions about the original cause of these diseases. And it is upon this principle, I have ever lamented, that the painful and industrious researches of La Fosse, and others, who have followed him in the same line of enquiry, respecting the nature and seat of Glanders; should have been, in a great measure, thrown away.

For, I cannot help considering the distinctions, which he has endeavoured to establish in Glanders, from the varieties of colour which the nasal discharge may furnish, to be not merely frivolous in themselves, but, in a practical point of view, utterly useless. I must return, however, to the consideration of the invaluable fact which I have glanced at, respecting the absence of Glanders in the Spanish part of South America, because I consider it as coming strongly, and admirably, in support of all the arguments which have been advanced in this work, respecting the noxiousness of the atmosphere of our stables, and the great share which it has, either in producing or aggravating, several of the most formidable diseases of the Horse. For, on enquiry it will prove to be the case, that not only in the United States of America, but through great part of the Continent of India, and wherever the British System of Stable Management has been carried, and established, *there* also, will be found plentiful instances, of both Farcy and Glanders.

But, in Spanish America, the value of the Horse, being but small, art, fortunately for the animal, interferes but in a small degree in his treatment, and thus he is kept, pretty nearly, in what is called, the state of nature. For, the Horses of that country are neither cloathed, nor crowded together in confined buildings, nor do they lie upon such materials as are highly susceptible of the putrefactive fermentation.

These truisms, therefore, appear to me, to be inestimably important in every practical point of view.—They speak, in fact, volumes, to the enlightened and unprejudiced, for, they shew us how we may do a great deal more, than merely *cure* two of the most dreadful maladies of the Horse, by instructing us how to *prevent* them.

Having said thus much on the subject of prevention, before I proceed to consider the best means of attempting the cure of Glanders, I will take occasion to mention, that I have seen two or three solitary instances, where external injuries inflicted on the nose, were followed by an attack of Glanders. One of these instances occurred about sixteen years ago, in the city of Bristol, in the case of a Horse the property of a gentleman, who belonged to a troop of volunteer cavalry, of which I was then a member. In order to make the Horse steady in the field, the proprietor, Mr. Begg, was firing off his pistol in the stable, but, holding it too near the nose of the animal, the wadding penetrated the nostril, and inflicted a pretty large wound. He consulted me on the occasion, and I merely directed, that the wound should be kept clean, by washing it daily, with a sponge dipped in warm water.

And although, at that period, I had very inadequate notions respecting either the nature of Glanders, or the causes producing the disease, yet, I recollect, (reasoning on the point analogically, which in this instance, proved to be reasoning justly) I predicted that Glanders would *probably* ensue, in consequence of the wound.

The event proved that I was right in my conjecture, for, at the expiration of six or seven weeks, the Horse was brought for my inspection, in a state of confirmed Glanders.

Now, though it is impossible to say, how long a time might have elapsed before the disease would have manifested itself, in case no wound had been inflicted on the nose, yet, I have no hesitation in pronouncing positively, that in this instance, the wound did not produce the Glanders, though it most unquestionably hurried on the attack.

Just as it happens in the case of gouty persons, where a bruise or any external injury, is frequently known to occasion an immediate fit of the gout. But, inasmuch, as a blow or bruise, will not produce a fit of gout, in any other than a gouty habit, so, neither will a wound in the nose of a Horse, produce Glanders in the animal, unless, he have the glanderous poison in his blood, or (if this mode of explanation be objected to) unless there be a tendency in the living fibre, to take on the glanderous action. In both these cases (if I may be allowed to borrow a metaphor by way of illustrating my argument) the combustible must be ready, ere the spark can act, the train must be laid, before the explosion can take place.

Pursuing this chain of argument, I think there can be no manner of question, that in many instances of influenza, or common colds, the Glanders has been brought on prematurely, (at least) by the absurd and injurious practice, which some Farriers and conceited Grooms adopt, of injecting into the nostrils, liquids mixed with substances of a highly acrid, irritating nature, such as pepper, mustard, &c.

And this they frequently do, either by way of curing some disease which they imagine to be Glanders, or of preventing the access of this disorder. Nay, I know an instance of a presumptuous half-educated man, who sets up for a Veterinarian, and who actually piques himself, upon adopting this ridiculous practice; from which he fancies the animal derives great part of that advantage, which is obtained solely by a very long run at grass, which he uniformly prescribes, after the use of his injection. There is no one point indeed, on which I am better satisfied, nor one which

I should be more ready to commit my professional reputation upon, than of the utter inutility of injections, in Glanders.

For, if they be composed of mild and bland materials, they are inert and inefficacious; and if made of such as are acrid and stimulating, they must inevitably do mischief. The Glanders we must recollect is a constitutional, not a local disease, and, therefore, if it admit of a cure at all, that cure must be effected by such means as act upon the constitution of the animal.

Having premised thus much, I proceed now to the consideration of the measures which ought to be adopted, in our attempts to cure the Glanders.

From what is gone before, the reader is prepared to expect, that I should lay it down as a fundamental axiom that all our endeavours to cure the disease will prove abortive, unless the Horse have the advantage of being at grass, or, at least, of being placed in such a situation, as to be enabled to breathe a cool and pure atmosphere. For, although green food is unquestionably advantageous, in the cure of Glanders, yet, the grand desideratum is, an atmosphere that is cool; and free from any admixture of that highly pernicious salt, volatile alkali, which I consider to be one of the most noxious agents in the air of our stables, and the great predisposing cause of the disease.

Hence, there was some ingenuity, as well as novelty, in the notion which was taken up several years ago, by a gentleman of my acquaintance, who advised the operation of bronchotomy, and the introduction of a tube into the opening of the windpipe, with a view to the cure of Glanders; from a persuasion that the stimulus of the air, passing through the nose, might keep up the irritation in the nostrils, and thus prove the means of preventing, the healing of the

ulcers. It did not occur to this gentleman, that, even if his notion of the prejudicial effects of the air, on the ulcers in the nostrils, had been correct, the proposed operation must, if at all, have answered the purpose he had in view, very imperfectly at best. For, as long as the parts, above the artificial opening in the windpipe, retained their natural heat, so long, a fresh current of cool air, would continue to rush in, and displace that portion, which had become hotter than the external atmosphere.

Now, the reason why air that is cool and pure, acts so beneficially on Glandered Horses, is, not on account of its being merely a proper local application to the ulcers in the nostrils, by being free from the stimuli of heat and volatile Alkali, which do most unquestionably serve to keep up the irritation in the membrane of the nose, but, in consequence of its healthy restorative effects on the general frame and constitution, and thus, from the same cause, becoming, (what the air of stables under the present system of management never can become) the natural, healthy pabulum of life, to the diseased animal. And as the ulceration in the nostrils, is a mere local symptom of a constitutional disease, we must amend or alter the constitution, before we can restore the healthy condition, of the membrane of the nose. But, the exact mode in which pure air acts, in producing this healthy change in the blood, or on the living fibre, (or perhaps on both) as it comes not properly within the scope, of a practical work of this kind, to explain, I shall not attempt to discuss.

It might not, perhaps, be very difficult to frame an hypothesis to suit the occasion, but, as such an attempt would necessarily involve me, in a labyrinth of both chemical and physiological disquisition, which would prove in no degree satisfactory to the general reader,

I think it is best to content ourselves with the knowledge of the mere fact. For, after all, it seems to me, from our knowing so little concerning the *mode* in which the great operations and changes that are going on, in the bodies of living animals, are effected, that the splendid and fascinating theories which many ingenious philosophers (I will not dignify them with the name of philosophers) are ever ready to propound, by way of explaining these inexplicable mysteries of nature, are seldom, if ever, attended with any real practical good. I shall, therefore, bring the argument concerning the good effects of pure air, on Horses affected with Glanders, into a very narrow compass, by merely insisting on the fact of its utility, or rather of its indispensable necessity, in all our attempts to cure the disease. But, as I have said that the ulcers in the nostrils, are to be considered as proceeding from a constitutional, and not a local cause, I must qualify this general assertion, by admitting that there must undoubtedly be a point of time, in all those cases where the poison has been propagated from a diseased to a sound Horse, (and where consequently it has not originated in the individual) when the ulceration in the nostrils, must be strictly and truly a mere local disease. But, even this concession will avail but little in the argument; for, this precise point of time, it will be next to a miracle, if the Veterinarian ever hit. Thus, the doctrine of analogy, which one ever finds people so prone to have recourse to (as drawn from the frequently local nature of chancre in the human subject) ought to be applied in a very limited and cautious manner, in our enquiries, respecting the proper treatment of ulcers, in the nose of Glandered Horses. In truth, when all the circumstances belonging to the two cases, are

taken into account, it will be found that there is more of the semblance, than reality, of similitude between them.

For, we must not overlook this material point, as applying to the instance of chancre, that the patient's consciousness of the situation which he has previously placed himself in generally awakens his vigilance, and enables him to detect, the first appearance of the disease; so that in many instances, the proper application may be made to the part, before absorption of the poison has taken place.

But, no such favourable circumstance can take place with respect to beginning ulceration in the nose of the Horse, except by the purest accident, for reasons that are too evident to need being insisted on in this place.

Besides, we must not forget that in many cases of chancre, absorption of the poison takes place so rapidly, as to baffle both the vigilance of the patient, and the utmost skill and attention of the Surgeon. I have been more diffuse on this point, than some, perhaps, may think was necessary, partly from the desire of shewing the precariousness and fallaciousness of analogy which has heretofore led to the adoption of the most erroneous principles in Veterinary practice, and partly with the view of strengthening the caveat, which I have already entered, against the use of injections in Glanders.

Having already admitted that the Glanders has hitherto proved the opprobrium of the Veterinary art, and having no specific to propose as a cure, what remains further to be said upon the subject, will be brought into a very small compass.

The same alterative and Stomachic balls, which I have recommended the use of in Farcy, will, probably be the best remedies for Glanders, and they should be exhibited in the same manner and



with the most scrupulous attention to all the circumstances, which have been, so amply insisted on, in the chapter on the treatment of the former disease.

I have seen no instance of *Glanders*, in which bleeding, or the use of purging physic, were ever indicated. Much solicitude is, generally, evinced, by those unacquainted with the true cause of them, about the diseased Glands, or kernels, as they are called, under the jaw, and some have even gone so far as to propose the cutting of them out. But any expectation of advantage from such an operation, could have originated only from the most profound ignorance, of the real nature of the disease. Just as wise, indeed, would it be, (confining ourselves simply to this view of the subject) for a Surgeon to propose extirpating a bubo in the groin, in order to rid the patient of the syphilitic poison, as to expect the cure of *Glanders*, from the operation of cutting out the diseased glands, under the jaw. There is, moreover, some danger to be apprehended from the loss of blood attendant on the operation; and I have been informed of one well-authenticated case where the Horse died in consequence of the hæmorrhage, which took place from such an attempt.

But, as it is always expected that something should be done to these diseased Glands, in the way of external application, they may be repeatedly blistered, or (which is still better practice) slightly fired, in order to promote the process of absorption. Nevertheless, it is still right for us to keep in mind, that it is with these diseased tumours, as it is with ulcers in the nostrils; in other words, that they are but a symptom of the constitutional disease; and therefore we find in all cases where Horses recover from *Glanders*, that not only does the running from the nostrils cease, but, the diseased Gland-

derous swellings under the jaw, do in like manner, uniformly disappear, although no external application be made to them. Now, with respect to the time necessary to be allowed, in order to give, what may be termed, a fair trial to our attempt, to cure the disease, this must depend on such a variety of circumstances as it is almost impossible either to enumerate or take into account; and one's advice on this head, must of course, in every particular instance, be governed accordingly.

But, in every case, *without exception*, where the value of the Horse is but small, if a month, or, at most, six weeks, have been spent in endeavouring to cure the disease, with little or no alteration for the better, and more especially if the Horse have been in the open air, during that period, it will uniformly be the best policy to destroy the animal. In fact we must endeavour to balance the probability of recovery against the certainty of expence, and the risque of propagating the contagion, in the interval, to other Horses. If a man, for instance, have a field where sheep or oxen only are kept, (which are not susceptible of the contagion of Glanders, he may, in the instance of a very valuable or a very favourite Horse, take the chance of a run at grass for six, nine, or even twelve months. But though a few instances do occur of Horses recovering from Glanders, and remaining sound after these long runs at grass, yet, it must be confessed that they are so *very rare*, as to justify the attempt upon no other principle, than that of the forlorn hope. For, it has too frequently happened, in several cases, where all the morbid symptoms had disappeared, under this plan of treatment, that they have returned in a few weeks after bringing back the Horse to the stable, and it has become necessary to destroy the animal ultimately.—

I have already laid some stress on the gluey appearance of the discharge from the nose, and have remarked that it is also, usually small in quantity. These two circumstances combined, form, in my opinion, a strong characteristic symptom of the disease, especially if contrasted with the more copious discharge of purulent, yellowish matter, which takes place in Strangles or violent colds; in which latter cases, notwithstanding the vehemence of the inflammation in the mucous membrane of the nose, there is rarely any ulceration to be observed in the nostril.

It is but right, however, that I should observe in this place, that in some instances, and especially after a long struggle with the disease, or where it has supervened Farcy of long standing, the discharge becomes suddenly copious and purulent, and (particularly in the latter case,) the poison runs like wildfire; for, not unfrequently, the cartilage that divides the nostrils, or even the bones become diseased, and from the rapid spread of the inflammation to the mucous membrane of the lungs, the Horse becomes hectic, so that if he be not destroyed, he speedily dies suffocated.

A few words more would have comprized all I should have thought necessary to be added on this important subject; but, whilst occupied upon it, and several weeks after this work was put to press, I had an opportunity of perusing the third volume of a system of Veterinary Medicine, by Mr. James White, of Exeter, and I find that he is of opinion, not only that the Glanders scarcely ever originates in the individual, but, also, that the poison issuing from the nose of a diseased Horse, is swallowed by the sound Horse, either in his food or water, and in this way infects the system.

Now, as to the question of the sound Horse having the faculty of originating the Glanders in his own system, this is a point, which I have so fully discussed, and, I trust, so satisfactorily proved, by what I consider to be fair induction from a great body of facts, which appear to me, to carry conviction along with them, that I do not think it necessary to repeat the arguments, which have been already advanced upon this subject. But, I cannot help bestowing a few remarks upon some points of Mr. White's opinion, respecting the nature and origin of Farcy and Glanders, which seem to be somewhat irreconcilable with each other.

And I think it necessary first of all to premise, that I do this from no design either of merely inviting controversy, or of supporting a favorite hypothesis of my own; and much less from a wish to lessen the professional character of Mr. White, which stands too high in the public estimation to need any eulogium from my pen. It appears however, that Mr. White fully agrees with me in opinion on one essential point respecting the nature of the poison; admitting that in both diseases, (or to speak more correctly, perhaps,) both forms of the disease, it is precisely of the same kind.

But he maintains, at the same time, that in the form of Glanders it is always a constitutional, whilst in that of Farcy, it is frequently a local disease. Now, I would ask, how comes the affection in the skin in Farcy, or indeed in any other part of the system, ever to be purely local. For, even if we admit, that in all cases where Farcy Buds first arise, the skin has been previously wounded or abraded, and, also, that Farcy or glanderous matter has been applied to such sores, (two points by the bye, which are purely hypothetical, and which ought rather to be considered as postulata, than data, to argue

upon,) yet, would even this admission go but a small way, in establishing Mr. White's notion, respecting the frequent locality of Farcy in the Horse; especially, as it appears from this gentleman's 16th experiment, (his own corollary upon that experiment fully admitting the validity of my argument,) that the premeditated application of the infectious matter, to a *small* healthy looking sore, in a sound horse, merely retarded the healing of the sore, for a time, without producing either Farcy or Glanders. So that, I think, Mr. White is reduced to the dilemma of either maintaining that the infectious matter is frequently absorbed by being merely deposited on the cuticle, when no wound exists, or of admitting that Farcy, can, in no instance, any more than Glanders, be considered a mere local disease.

But, Mr. White has certainly rendered it highly probable that in all cases where Glanders is communicated from a diseased to a sound Horse, the poison is either swallowed in the food or water, or is licked up from the rack or manger, and is in this way carried into the system; instead of being applied to the membrane of the nose in the first instance, and being absorbed from thence by the lymphatics, which carry it ultimately into the blood. Now, though Mr. White's experiments do not decide this point positively, as he has himself, indeed, candidly admitted, yet, all doubt is completely removed from my mind, as to this being by far the most common mode, in which the infectious matter is carried into the system of a sound Horse.

Whilst at the same time, I think it highly probable, that the glanderous poison which is discharged from the nose of the diseased

Horse, may, now and then, find its way up the nostril of a sound one, and in this way infect the system.

Upon the whole, however, after the fullest and most candid consideration of all Mr. White's arguments, I see no good reason, for agreeing with him in opinion, that Farcy is frequently a local disease.

That it never is so, I am by no means prepared to assert, but, I am at the same time perfectly convinced, that cases of local Farcy are as rare, as those of local Glanders; and as the precise moment of their being so, can neither be fixed nor seized upon, so as to enable us to trust solely and implicitly to the use of external remedies, (unless in the instances of premeditated inoculation) it will, in all cases, be found the best and safest practice, to direct our views chiefly, to the use of such remedies as act upon the constitution, which must be amended or altered, before the disease can be cured.

Now, if any further proof were wanting, of these diseases being almost always constitutional, and of their springing from the causes which have been so much insisted upon, in this and the preceding chapter (and which are still more fully explained under the head of Stable Management) I think it may be furnished from the great susceptibility to the action of the infectious matter which has been proved by the experiments of Mr. White and other Veterinarians to exist in asses.

Now, when do we hear that these animals are subjects of either Farcy or Glanders? I have never seen or heard of a case of this kind, except in those instances merely, where they have been inoculated for the purpose of experiment.

Here then, is an animal of the Horse tribe, still more susceptible of the action of the infectious matter, than the Horse himself, and yet he never becomes the subject of Farcy or Glanders, unless he be inoculated, or the poison be applied to parts, favorable to its absorption.

In other words he never originates the disease in his own system.

And, if this be a true statement of the case, (which I believe few will be inclined to deny) the solution of the apparent paradox, will be a matter of no great difficulty. For, every one knows how this pitiable animal is, in general, treated.

Seldom, indeed, is he either housed or fed, much less clothed or cleaned; but, bathed in his own perspiration after hard labour, is frequently turned adrift, amidst the pelting of the pitiless storm, to pick up his scanty meal of nettles and thistles, on a bleak and open common. But, not to lay too much stress upon the case of asses, lest one of my own weapons be turned against me, and I be accused of drawing my conclusions merely from analogy, let us see how the question stands, as it applies solely to Horses. Now, I have no hesitation in pronouncing positively, that for one instance of Farcy or Glanders occurring amongst Horses of the peasantry and little farmers of this country, and England, which scarcely ever touch corn, twenty (I should be safe in saying fifty) cases occur amongst post, stage, and waggon Horses, {which, though they perform severe labour, are, nevertheless, highly fed, and rest on hot-beds made in stoves, that go under the title of warm comfortable stables. Nay more, for though I am far from meaning to maintain, that the want of nutritious diet does not lay the animal more open to the attack of

Farcy or Glanders, during the time he is exposed to the grand exciting cause of the disease, or that it may not hurry on an attack, when the poison has been generated in the blood, (having expressly asserted that all debilitating powers must have this effect) yet, that poor diet alone, will never prove adequate to the production of these diseases will, I think, admit of very satisfactory proof.

For, if we take into account the innumerable instances of Horses, that are turned out of these warm comfortable stables into straw yards, (where they get no oats and but little hay, through the entire of severe winters and springs, as is the common practice in most parts of England,) in order that they may recover from sprains, and lamenesses of various kinds, we shall surely feel convinced, that food deficient in nutriment, can have but little share (whilst the animal remains exposed to the elements) in bringing on an attack of Farcy or Glanders; unless in those instances where some symptoms of these disorders had manifested themselves, before they were placed in their new condition. On the contrary, I believe that hundreds and thousands of slight, or incipient cases of Farcy, have been cured by this plan of treatment; which is, however, too indiscriminately, and sometimes most absurdly, had recourse to, both as a cheap remedy and a dernier resort, in many of those crabbed, chronic cases, which the doctors have in vain exercised their skill upon, in the stable. Let it not, however, be supposed from these remarks, that I am an advocate for the plan of half-starving Horses affected with Farcy or Glanders.

For, even in the inflammatory Farcy of the limbs, after the violence of the symptoms has given way to the antiphlogistic treatment which has been recommended, it may be observed, that I have



scrupulously directed the attention, to the state of the appetite, and the tone and strength of the digestive organs.

It may be proper to remark in this place, having recommended the use of the same internal remedies in Glanders, as in Farcy, that I do not consider it necessary to continue them for more than two or three weeks, or at most a month.

For, it is certain that the good effects of medicine are less palpable and decisive in Glanders; than in Farcy; and in all mild and chronic cases of Glanders, the general constitution appears to suffer infinitely less inroad from the disease, than in the mildest cases of Farcy.

Now, though by far the greater number of instances of Glanders which we meet with, are those that occur in Horses which originate the disease in their own system; yet, very great ravages are often made in stables, by the contagion being spread from one diseased Horse, to many sound ones. And the losses which have frequently occurred in this way, have given rise to many exaggerated, groundless fears, and superstitious notions, respecting the nature and diffusiveness of the infectious matter. Indeed, many well-informed Persons have appeared to be fully impressed with the conviction that the contagion disseminated itself through the atmosphere, and might be communicated to a sound Horse through that medium. This opinion, however, has long been known to be erroneous by Veterinary Surgeons, and it is now pretty generally understood, and admitted, that nothing less than the actual application of the contagious matter, to some part of a sound Horse, that has the capacity of absorption, will prove the means of communicating the disease. But, I have known several instances of proprietors of Glandered Horses,

who were actuated by ill-grounded apprehensions respecting the nature of the contagion, and who thereby incurred very heavy and unnecessary expence, by pulling down and burning the racks, mangers, and the rest of the wood-work of the stable. Now, the contagious matter may be effectually got rid of, by the following cheap and efficacious means.

Let the whole of the wood-work, and especially every part that the Horse's nose could come in contact with, be well soaked with boiling water, and afterwards accurately scraped, and then scoured with a hard brush, sand, and potash. This operation being over, and the wood being dry, let two or three coats of limewash be laid on hot, taking care to use no other lime for the purpose, than such as has been obtained fresh-burnt from the kiln.

The walls and ceiling of the stable should also get a coat or two of hot limewash; not with the view of destroying the Glanderous infection, but, for the purpose of ridding the stable of one of the sources from which it springs.

The linings of saddles, all articles of cloathing, and every thing of that kind which may, by possibility, have come in contact with the infectious matter, should be washed two or three times over.—halters should be burnt, bridles and saddles scrupulously cleansed repeatedly, with potash and hot water, and bits, and all metallic implements should be put into the fire and heated red hot. The old litter should be completely removed, and it might be a useful precaution, to wash the pavement of the stable with a birch broom and several buckets of water. If these precautions be used, no fear need be entertained of any infection remaining in the stable, nor will fumigations of any sort be either useful, or necessary to be had recourse to.

ON THE

**General Treatment of the Feet.**

**I**T will naturally be expected, that in treating of the management of the Feet, I should say something on the principles and practice of Shoeing, concerning which, the public curiosity has of late been wrought up to a great pitch, and has become as it were insatiable. But, as I can lay claim to no discovery upon this subject, which Professor Coleman, has treated in a way that has done him the greatest honor, in spite of the cavillings of envy, ignorance, and prejudice, I must refer my readers for information on this head, to his very elegant and luminous work on the Horse's Foot.

Nevertheless, it is but right that I should remark in this place, that the unprejudiced experience of many years, made upon a very large scale, has convinced me, that no other principles of Shoeing, than those which Mr. Coleman has laid down, are capable of preserving the Foot of the Horse from disease, or are so well calculated to ward off to the latest possible period, that slow and gradual contrac-

tion, which the feet of all Horses that are shod are inevitably exposed to. Now, if the mere circumstance of only nailing an iron shoe to the Foot of a Horse, does dispose it to disease and contraction, (a fact which it is impossible to deny,) there can be no manner of question, that the various other disadvantageous circumstances, to which it is exposed in the Stable, must very much exasperate, the morbid condition of the hoof. Yet, it is a curious, and, at the same time, an almost incredible fact, that though every person conversant with Horses, appears to know the value of wide heels, a sound, tough, broad frog, and a cool state of the hoof, yet, few can be made sensible of the necessity, of adopting the best means to preserve the Foot in this desirable condition.

Now, the common practice of letting Horses stand through the day, upon litter, must materially contribute to accelerate this contraction, which is called Wire Heels, and which it is of so much importance to guard against. For, if the litter be wet, it will become positively hot, in consequence of the putrefactive fermentation which is engendered in it, and thus lay the foundation of many diseases, some of which, as they affect the bones and cartilages within the hoof, may produce lameness, and exist for a great length of time, before any external, palpable alteration of structure is visible. And, even if the litter be perfectly dry and fresh, it will do mischief, by presenting a soft and an unnatural cushion for the Foot; for though it be not indeed positively hot in itself, yet, by confining the heat of the Foot, it will, in this way, be the means of heating that organ.

I am therefore decidedly of opinion, that next to bad principles of Shoeing, the use of litter is the grand exciting cause of the production of running thrushes, which are generally connected with that

contraction of the heels and quarters, that no care or caution can completely guard against. Now, should any one be inclined to doubt, that the use of litter is capable of altering the healthy condition of the frog, and of producing running thrushes, yet surely no one will hesitate to admit, that the application of wet litter to a frog that has already become diseased, must, on account of its acrimony, contribute materially to exasperate the complaint. For which reason, Horses that are kept in stables, ought to stand through the day on the pavement, which should be flat, and ought to be swept accurately, clean. And, as the litter would by this means be less fitted for the purpose of manure, on account of its being less imbued with the animal's urine, (the admixture of which with the straw, is of more importance to the farmer than that of the fœces) stables ought to be so constructed, as to carry off the Horse's urine into a proper receptacle; as by this means, it might be appropriated to the purpose of any compost, instead of being permitted to mix itself with the litter, or run to waste. But, besides contributing to the slow and gradual contraction of the Feet, as well as to produce and exasperate running thrushes, the practice of letting Horses stand upon litter, through the day-time, lays them more open to the attack of that sudden inflammation in their Feet called a Founder, which I must here observe ought to be distinguished from that chronic species of Founder, that depends upon gradual contraction of the heels and quarters, is slow in its progress, and consequently so, in the exhibition of the lameness attendant upon it. For, the soft cushion which the litter affords to the feet, (independently of the affair of heat) must render them, less capable of bearing violent and sudden battering upon hard roads, during a long journey.

And, by way of illustrating this fact, I may remark that it is no very uncommon circumstance, even for Horses that have been a considerable time at grass, during which period they have of course trod upon a *cool* as well as an elastic surface, to be attacked with a Founder in all their feet, after being suddenly rode a great distance on hard roads, especially during hot and dry weather. For the elastic fibres, within the hoof, which are connected with the coffin bone and cartilages, and contribute chiefly to the support of the animal (as professor Coleman's simple, beautiful and decisive experiments clearly and satisfactorily evince) are scarcely ever stretched to their utmost extent, whilst a Horse is at grass, on account both of the gentle nature of the voluntary motion, which the animal usually takes in the act of grazing, and of the springiness of the surface upon which he treads. When, therefore, these elastic sensitive fibres within the hoof, are called upon under the circumstances which have been described, to perform such sudden and violent action; the frequent repetition of shocks, to which they have been for some time unaccustomed, produces that high active inflammation, which running on to suppuration, frequently occasions the hoofs to be cast, and, not uncommonly, ends in the mortification of the part and the death of the animal.

In fact, no part of the organized structure of animals, seems calculated to bear with impunity, such intense and violent changes as the absurdity and arbitrariness of custom, are perpetually exposing them to.

The common practice of oiling and stopping, is also productive of infinite mischief to the Feet of Horses. There can be no question, that it contributes materially to accelerate contraction

of the hoof, and by rendering it brittle to produce those fissures in it called Sand-cracks, which often prove very difficult to cure. Now, those who are advocates for the use of oil to the Feet of Horses, act in the very teeth of their own principles, when they apply it with a view of softening and nourishing, (as their phrase is) the horn of the Foot. The fact is, that oil has no power in the way of softening horn, in the smallest degree, and the practice of comb-makers', and all other artificers, who use that material in their business, is, to employ warm water, or the vapour of water, in order to produce the softening effect upon it. But it may be objected to me, perhaps, that the facts which I have adduced, supply at best but a negative proof, that the practice of oiling is injurious to the Feet of Horses, inasmuch, as none of a positive kind have been furnished, of its rendering the hoof either brittle or hot. And, as this subject hath given occasion to much controversy, and seems in general to be but very imperfectly understood, (whilst at the same time it appears to me, to be of the greatest importance in the treatment of the Feet of Horses,) I shall prefer subjecting myself to the charge of too much diffuseness, rather than that of too great conciseness, in the discussion of it. In answer therefore, to the latter objection, I will very readily admit that oil communicates neither heat nor brittleness by any positive quality of its own, whilst at the same time it becomes the means both of heating and hardening the hoof, by confining the heat of the living parts, that are within the horny box. For, all the coarser oils become converted into a kind of varnish, when applied to the Foot of the living Horse in the course of a few hours, in consequence of the speedy evaporation of the thinner parts of the oil, and its absorption of oxygen from the atmosphere. In this way, therefore,

the Horse is precluded the greatest part of the advantage, which would otherwise result from the cooling and refreshing effects of water applied to his hoofs as he travels on the road, and in all other situations where his Feet happen to be exposed to its action, unless, indeed, he were to remain with them immersed in that fluid, by which means his hoofs would certainly be cooled by its application though not softened by its absorption.—And we may be certain that this feeling of coolness, is highly grateful to the animal when his Feet are hot, from observing that Horses will of their own choice stand in pools of water, in the summer-time, for hours together, and also from the fact of their instinctively choosing to pass through puddles, which they meet with occasionally on the road, when travelling in very hot dry weather.

But, it is impossible that the water on the roads can have the effect of cooling a Horse's Foot, thus heated in its varnished case, except during the momentary space of time, which is occupied in it's trickling off the hoof; as no portion of the water, will be arrested by the varnished surface. The effects, therefore, of evaporation, which are so surprisingly great, in the production of cold, must be nearly, if not utterly, precluded; and will be manifest, that in this way, and upon this principle, the use of oil must inevitably contribute to heat the Foot. Now, if these facts be admitted (and I do not see how they can possibly be denied,) it will follow as a natural consequence, that the use of oil must be the means of rendering the hoof hard and brittle, as well as hot. For, if the oil, operating as a varnish, preclude the effectual application to the horny box, of the only substance in nature, which is calculated to soften it, the fact is clearly made out; and all wonder must cease at the frequent instances of contracted feet



and sand-cracks, which are to be met with in those stables, where the practice of oiling and stopping is still religiously adhered to. This practice of oiling therefore, ought to be laid aside entirely, a more rational mode of treating the Feet, should at once be generally adopted, and the use of such kinds of stopping as consist of Grease, Tar, Turpentine, and such like pernicious materials, be utterly discarded. Instead of oiling the hoofs of Horses, let them be washed night and morning, with plain water and a brush, after they have been first carefully cleaned out with a picker. And, if this operation be done at any time, when the fetlocks are dry, and it be peculiarly desirable to preserve them so, it may be performed with a piece of sponge, instead of the water brush, in order to ensure the accurate application of the water to the hoof alone. In hot weather, and, indeed, after very severe journies at all seasons of the year, the animal will derive great advantage and refreshment from soaking his feet and legs, in warm water, especially, if the skin be rubbed dry after the operation; and in case some sort of stopping for the Feet be insisted upon, a mixture of equal parts of clay and cow-dung, is as good as any thing that can be applied.

If this mode of treating the Feet were generally adopted, along with good principles of shoeing, we would seldom see running thrushes which, though they rarely are the cause of lameness, are, nevertheless, generally a concomitant of contracted heels and quarters. And, although no application to a thrush can be of use, unless the frog get pressure upon the ground, without which, it cannot long remain healthy, yet, as people are generally anxious about some dressing for a thrush, a little of the Oxy-mel of Verdigrease, formerly called Mel *Ægyptiacum*, may be applied on a piece of tow, every

night, after the Foot has been washed and picked out. This application not only removes the fetor of the thrush, but by its moderately drying and gently stimulating property, it induces that condition of the sensible frog, which is favorable to the production of fresh and sound horn. Whereas tar, turpentine, and all greasy applications, although they may correct the fetor for a time, will eventually exasperate the disease, by encreasing the inflammation, and encouraging the suppurative action of the sensible frog; by which means, the possibility of that organ's resuming its original healthy action, of forming horn, instead of matter, will be effectually precluded. I must here remark that the use of blue vitriol, and such violent astringents, though they may stop the running of a thrush, do this too suddenly; and, not unfrequently, the eyes of Horses become affected, in consequence of the application of such sort of medicines to running thrushes.

But, it must be acknowledged, that in spite of the adoption of the best principles of Shoeing, and the most judicious treatment of the Feet, that there is in some Horses, and especially in those which have much blood (as the phrase is) so great a propensity to contraction of the feet, that they begin very early, to exhibit symptoms of tenderness on the pavement, or hard roads. In these cases, the crust of the Foot, is generally very strong, and the heels high.

At every time of Shoeing, therefore, the quarters should get a *very slight* application of the Rasp, and the heels should be lowered gradually, and moderately, always bearing in mind Mr. Coleman's grand cardinal point, in the practice of Shoeing, namely, that the shoe is to rest on the wall and the bars alone, and is to bear on no part of the sole, which it cannot touch any where, without producing

mischief sooner or later. Care should be taken that ample room be left for the picker to pass all round the shoe, from the toe to the extreme angle of the heel. During the summer months, in case such strong-footed Horses have not the advantage of a paddock to run in, they should stand three or four hours, daily, with their Feet enveloped in clay, which will be the means not only of keeping the Feet cool, and preventing rapid contraction of the heels, and quarters, but, will also preserve the horn, in a tough, elastic state, so that the crust will be less liable to splinter from the driving of the nails; which is a circumstance of very considerable importance, in the practice of Shoeing. Now, how the practice of oiling the Feet of Horses originated, it would be extremely difficult to discover; and still more so, perhaps, to explain why it has been continued, and is still adhered to with such general pertinacity, on the mistaken principle of benefitting the hoof. For oil instead of softening, actually hardens horn, as any one may be convinced, who will be at the pains to macerate horn in warm oil for a considerable space of time. And if the horn be boiled in the oil only for a few minutes, it immediately loses its toughness altogether, and becomes quite brittle.

Whereas, water even if it be cold, will be found gradually to soften horn; if the water be warm, this effect will take place more speedily, and if horn be put into water that is strongly heated in a Papin's Digester, it may be converted into a gelatinous mass, which possesses the properties of gelatine. The common notion, however, of the hoof being porous, and of its admitting the transmission of a perspirable fluid, is at once both hypothetical and unphilosophical.

And, even if it were true, still, the practice of oiling the hoof, by confining the fluid intended to be thrown off, would interfere with

the intentions of nature, and consequently be absurd. Further, it has long been well and generally understood, that when the Hoofs of Horses become hot, dry, and flinty, and when the crust has so far lost its natural toughness as that the driving of the nails occasions it to splinter, then, turning such Horses out to grass, is the only remedy for these capital evils. But, it must be evident to every one, who will take the trouble to consider the subject, that nearly all the benefit resulting from the application of grass to Feet so diseased, must arise from the water with which it is moistened; although, something, no doubt, must be placed to the account of the elasticity and coolness of the cushion which it furnishes, to the inflamed sensible laminæ of the coffin bone.

It is true, indeed, that many of the parts of animals which possess the property of elasticity in a high degree, are but sparingly supplied with blood vessels, as for instance the Cartilages and Ligaments, and more especially, that highly elastic Ligament which is found in the neck of Graminivorous Animals, and which contributes in so remarkable a manner, to support the weight of the head, in the act of grazing. But the two thousand elastic fibres, called sensible Laminæ, which are attached to the Coffin Bones and Cartilages of the Horse's Feet (there being about five hundred to each Foot) are supplied with millions of blood-vessels, which are spread upon them, for the purpose of furnishing from the blood, the horny fibres, with which the sensible fibres are strongly united.

When, therefore, we consider the structure of the beautiful mechanism, which is exhibited within the hoof, all wonder must cease at the effects which long-continued and severe exercise has upon these elastic sensible fibres, which are attached to the coffin bone. We see

at once, moreover, how it happens that Horses which frequently exhibit no lameness on the turf, are hardly able to bear the gentlest trotting, upon the pavement, or upon hard roads.

And though this very common fact, has sometimes been attempted to be accounted for, upon other principles, such as the stiffness of the muscles and tendons, and the thickening of the ligaments of the joints, from chronic inflammation, yet, I am perfectly satisfied that the cause of the evil, is, in most cases, to be sought for in the Feet alone; though, I am far from denying that the circumstances which have been mentioned, may, sometimes, have a share in the production of the lameness. It happens every now and then, that Horses which have very thin crusts, and whose sensible elastic Laminæ attached to the coffin bone, are consequently very weak, go unsafely, and become incapable of bearing the effects of hard roads, long before any material alteration of structure, in the way of contraction, is exhibited in the Feet. Sometimes, indeed, this apparently inexplicable lameness, in well formed Feet, depends upon the circumstance of the shoe, resting upon some part of the sole, and now and then (especially when it arises suddenly and immediately after shoeing) upon the careless or injudicious mode in which the nails are driven. This latter circumstance, however, is usually called pinching a Horse, or shoeing him too tight. But, many of the Smiths who use this term, are perfectly well aware of its absurdity, and employ it only as a cover for their own negligence. For, it is impossible that the nails can pinch any part of the quick, and produce *sudden* lameness by pressure only, which is the way in which they wish the phrase of pinching to be understood. For, either the nail must be buried altogether in the dead insensible horn,

which can produce no pain, or it must pierce and wound the sensitive elastic fibres which are called the quick. It will be recollected, I have already admitted, that the application of an iron shoe to the foot of a Horse does of itself alone, necessarily produce that gradual, slow contraction of the hoof, which all Horses that are shod, are inevitably exposed to; and, therefore, the nails, however carefully and judiciously they may be driven, may, in this point of view, and in the literal sense of the expression, as far as respects the ultimate effects of the practice of Shoeing, be said to bind or pinch the foot; but, I am now speaking of that *sudden* lameness which is so commonly observed to result from fresh Shoeing (in contradistinction to Chronic lameness proceeding from wire heels) and which the Smiths always explain, and excuse, by the phrase of a Horse being bound or shod too tight. The fact is, that in all these cases of sudden lameness, with the exception of such as are produced by the Shoe pressing or lying dead, (as the term is) upon some part of the sole, the mischief is occasioned by the nails; which do not merely press upon, but actually puncture and wound the quick. Sometimes, however, it may happen, in constitutions peculiarly irritable, or when a Horse thus pricked, performs a severe journey immediately after being shod, that the puncture inflicted by a single nail, may produce general inflammation of the whole Foot, sufficiently high, to occasion the casting of the hoof, or even the death of the animal. But, we are by no means to infer, because the sudden lameness produced by a shoe lately put on, shall happen to be removed, in two or three days, by taking it off, and applying it afresh with more caution, that therefore, the nails have occasioned the mischief, by merely pressing upon, without wounding the quick. For, how often does it occur, that a

horn or other sharp substance, which happens to penetrate under the nail of the finger, and wound the quick, shall remain there, for some time, without exciting any violent pain or inflammation; and that when the thorn or splinter is removed, the slight inflammation which it had excited shall soon disappear also.—On the other hand, have there not been instances, of the loss of the nail, and even of locked jaw and other fatal symptoms accruing, in delicate females, from slight punctures, inflicted under the nails of the fingers. And, in the instance of the human nail, provided any pointed substance were sufficiently thin and hard, to penetrate and remain buried in the horn, without at all wounding the quick, surely no one would be inclined to maintain, that it would produce any pain, by its mere pressure upon the living parts underneath.

Now, let any person look at the striated structure of the inner surface, of a Horse's hoof, that has been recently stripped from the elastic laminated fibres, called the Quick, to which it is attached; let him also recollect, that there are about five hundred of these latter fibres in each foot, which are connected with the horny fibres, in the manner of a sliding folded fan; and I think it will appear evidently impossible, that any great degree of pressure can be made upon the Quick, provided the nail be buried solely in the horn, except that sort of pressure which arises from, and is connected with, a wound of the sensible elastic fibres.

For, I cannot conceive that the outer edge of the living sensitive fibres, which are not only connected with, but also form, from the blood, the inner layer of soft horn of the Wall or Crust, can be so much pressed upon, or pinched, in consequence of the nails displacing or forcing inwards, the new yielding layer, as to have inflammation and pain sud-

denly excited in them, from this cause alone. Let it not, however, be inferred, that I mean to deny the possibility of a nail being driven in such a manner as to press upon the quick, which would be a position too absurd to be maintained, as all I contend for, is, that such pressure can only follow as a consequence of puncturing; in other words, that the puncture must first be inflicted before the pressure can take place upon the quick.

The reader will perceive that the argument which I am maintaining, applies only to the affair of *sudden* lameness produced by the nails, under the *ordinary circumstances* of shoeing; whilst at the same time I acknowledge the *possibility*, of making the nails the medium of pressure, upon the living sensible parts of the Foot, in such a way, as to produce sudden lameness without puncturing the quick. Suppose, for instance, that the hoof attached to a living Horse, were put into a vice, and (the horn and quick being both compressible by mechanical force) that its diameter, from the toe to the heel, were increased at the expence of that of the quarters, by the power of the vice, on the opposite sides of the crust; if, in this unnatural shape and situation of the Foot, a shoe were fitted, and nailed upon it, in such a manner, that no one nail should wound the quick, yet would the hoof when taken out of the vice, be incapable, in consequence of the resistance furnished by the nails, of resuming its former shape, and proportion; and thus the nails might be said, in such a possible case indeed, but in no other that I can conceive, to press upon, without wounding the quick. I have been, thus, incidentally, and in a manner involuntarily, led to make these remarks, from a wish to correct the common erroneous notions, that are connected with this subject; whilst at the same time, I am



sensible that the discussion of such a point, would have appeared with more propriety, in a regular treatise on Shoeing, than in one professing to embrace the general treatment merely, of the Feet.

Nevertheless, I must here again repeat, that as I am well aware the nails are the cause of that slow and gradual contraction, which the practice of shoeing inevitably produce in the Feet of Horses, so, in this sense, they may be said to press or bind the Feet. A fact this, which Mr. Coleman was so struck with, that, many years ago, after insisting upon the conical form of the hoof, and its growth from the coronet downwards, he mentions by way of illustrating these positions, the curious instance of the overbearing influence of the crust, (in cases where the shoes are left on too long a time) carrying the nails, out of the direction they were originally driven in, in the course of its growth downwards. It will scarcely be necessary to add that this incontrovertible fact proves that the nails must have presented a strong, mechanical impediment, to the spring and expansion of the internal, elastic sensitive fibres, of the coffin bone and cartilages of the Foot.

I am willing to flatter myself that in case I have succeeded in establishing the point which I have endeavoured to maintain, (namely of proving) that no binding or pinching of the foot can be effected through the medium of the nails, in the ordinary mode of driving them so as to produce *sudden* lameness without an accompanying wound of the quick, it may be the means of producing more circumspection in those who practice the art of shoeing, especially when they are convinced that the plea of pinching will not avail, and consequently that the charge of pricking the Horse will be brought against them.

At the same time I cannot help indulging a hope, that the arguments I have advanced upon this subject, may operate so as to produce a stronger conviction in the public mind of the necessity of keeping the horn of the Feet of Horses cool and pliable, with a view of preserving the internal mechanism from inflammation, and as much as possible from the effects of that pressure, which arises from the gradual contraction of the heels and quarters, and which the custom of Shoeing with whatever skill and care it may be executed, or upon whatsoever principles it may be practised, is sure, sooner or later, to bring along with it. Nor do I conceive it will be utterly inapplicable to my subject, if I here say a few words in favor of those, who exercise the trade of Shoeing Smiths, which I do the more readily, on account of having unequivocally laid to their charge, one offence more, than usually appears against them in their criminal calendar, already sufficiently heavy. But, justice obliges me to say, that I know not any mechanics, that are subject to more indiscriminate censure and abuse, and who are therefore on that account more to be pitied, than those who follow the occupation of Shoeing Smiths.

For a slight irregularity or blunder which in the lock-smith, or jobbing smith, would be considered a mere venial fault, is in the case of the Shoeing Smith, converted into a crime of the deepest dye. On some accounts, indeed, it is natural that it should be so, for, a sober half hour will often remedy the mischief produced by either of the former artificers, whereas days and weeks, nay months, may be required to counteract the evil consequences of one unskilful, or careless stroke of the hammer of the latter. Or, it may happen, that the evil produced will admit of no remedy, and that the Horse shall either die of a locked jaw, or become incurably lame. Now,

though I am far from meaning to palliate the fault of negligence and far less the crime of drunkenness, yet it ought to be recollected, that the shoeing smith has an intricate and complicated part, of a valuable animal, the internal mechanism of which, he is but little acquainted with, to keep in order; and that accidents are inseparable from the practice of his as well as every other mechanical art. Instead, therefore, of vilifying and abusing a sober industrious smith, when such a misfortune occurs, as laming a Horse in shoeing: let it be the endeavour of the proprietor, to convince that man, that what has happened, has accrued from *pricking* the quick, and not from *binding* the Foot. For, this, by alarming him more seriously on the score of the probable consequence of future negligence, will have the effect of increasing his caution. And I am perfectly satisfied, that if it were once generally understood by practical smiths, that the stale excuse of binding or pinching the Foot, would no longer avail them, this conviction alone, would produce greater circumspection on their part, and fewer Horses would be lamed, from a hasty or careless mode of driving the nails. But, so long as there exists such a strong feeling of hostility in the public mind, against these people as a body, it must not only be productive of great injustice towards, and much indiscriminate abuse of, individuals, but, must inevitably perpetuate the evils so commonly laid to their charge; and, thus utterly preclude all hope of amendment, in their morals and conduct.— For, how often have I witnessed a stern austere employer accost a humble, sober, diligent smith, just about to enter upon his labour, in such a way as if he conceived the latter were intent upon wilfully injuring or laming his Horse. Now, is this the way, let me ask, to encourage the industrious mechanic, or to raise him from that de-

graded condition, which the arbitrariness of custom, and the effects of vulgar prejudice, have reduced him to? Or rather, would not a humane and enlightened policy suggest a mode of treatment diametrically opposite to this?

Let shoeing smiths, therefore, that are sober men and good workmen, be duly encouraged, and like other good mechanics let them be enabled, by the exercise of their trade, to earn as much as jobbing smiths, and the other lower kind of artists are able to do; and we shall soon see a different race of these men arise, to wipe away the odium, which their craft has been indiscriminately exposed to, for ages. For, may we not see daily instances of people giving cheerfully to a lock-smith or jobbing smith, in fact, to the vilest and most worthless mechanic, especially if he have the character of being clever, for the employment of one half hour, such a sum as they would pay grudgingly to a shoeing smith for five or six hours hard labour.

In this respect, indeed, there is an absurdity in the public mind, not easily to be accounted for. For, few are so ignorant, as not to be fully sensible, and readily to admit, that the shoeing smith has a very valuable piece of mechanism entrusted to his care, which he is expected to keep in order; whilst he is refused, at the same time, the greatest of all human incentives to industry, a proper reward for his labour.

I throw out these hints the more freely and readily, because I have no interest in the advice contained in them. At the same time, I am perfectly well aware, that the subject is, on many accounts, one of a very delicate kind, and which would require to be treated upon a plan more profound, and comprehensive, than I have either the de-

sign or ability to discuss it upon. Like many other evils in society, it is, in fact, much easier felt and perceived, than remedied.— Nevertheless, I am not without hopes, that what I have loosely suggested, may be acted upon by the humane and enlightened, in such a way as to be productive of some partial good at least, to the community.

Before I proceed to enumerate any further particulars, respecting the management of the Feet, I feel myself called upon to notice a work lately published by Mr. Bracy Clark, of London, containing a series of experiments on the Foot of the living Horse, in the course of which performance, Mr. Clark has evinced the same profound sagacity and unwearied diligence, which have distinguished the former productions of this gentleman's pen. It is to be regretted, however, that the plan upon which he has treated his subject, (which was, perhaps, in a great measure inseparable from the nature of the intricate objects of his research) should have rendered the intrinsic merit of the work, not very easy to be perceived, or appreciated by the general reader.

But, this ought not to lessen the value of the performance, in the estimation of the scientific Veterinarian. For, Mr. Clark has undoubtedly shewn us much more distinctly, and unequivocally, than any preceding author has done, that the nails of the shoe, are the great exciting cause of the mischief and derangement, which take place, in the internal mechanism of the Horse's Foot. And, although some be inclined to assert that this gentleman's researches have only led to a more complete delopement and discovery of a melancholy evil, which we were partly aware of before, and for which he has not ventured to suggest a remedy, yet to have rendered this essential

point relative to shoeing, no longer doubtful, and thus to have cleared away one difficulty which lay in the path of improvement, for his contemporaries, is certainly in my humble opinion to have rendered, an invaluable piece of service to the Veterinary art. Whilst Mr. Clark's industrious researches however, must necessarily abate the sanguine expectations which we were formerly in the habit of indulging, as to our ability to give permanent relief in cases of contraction of the Feet, they do at the same time, most forcibly direct our attention, to the employment of the means of preventing this disease, as far as the power of our art can go. For, my own part, I profess myself so perfectly satisfied with Mr. Clark's inductions, from the facts which he has stated, that I consider his arguments, in the main, to be unanswerable. Nevertheless, I cannot help being of opinion, that this ingenious Veterinarian, has either overlooked, or unintentionally underrated some of the means of preventing or rather procrastinating this contraction, so inseparable from the present system of shoeing.

Living in the heart of a great metropolis, and witnessing every day, the unfeeling manner in which Horses are employed, in an unceasing round of labour, and constant battering of their Feet upon the hard pavement, (which, to use his own expression, occasions very rapid usings-up) he is, I think, scarcely aware of the infinite number of cases, of Horses that are employed in agriculture, and even of many Saddle Horses, which are kept in small country towns, where they have frequently the advantage of being turned into fields or paddocks, whose Feet are, in consequence of this mode of treatment, preserved to a great age, without any violent contraction, or permanent lameness accruing.

For, it is an indisputable fact, that the hardness and inequality, alone, of the surface upon which Horses labour, (except in those instances where they perform the slow motion of walking only,) will in a few years, and in some instances in a few months, have a great effect, in producing disease, and derangement of the Feet. A fact, which seems to me, to be not generally understood, or at least pretty nearly overlooked. But, it is a fact, at the same time, when looked at on the large scale, and in another point of view, which dealers in Horses know how to profit by, for, it is by no means uncommon for them, to buy up such Horses as have become nearly foundered, in some of the rocky and stony districts of England, and send them into the fens of Cambridgeshire and Lincolnshire, where they are frequently found to last some years longer. Now, though Mr. Clark has most satisfactorily proved, that contraction does not take place in the stable, so long as the Feet remain without shoes; it is, nevertheless, I think, hardly safe to infer, that the practice of shoeing is the sole cause of all the mischief, which takes place in the Feet of Horses. At the same time I am ready to admit, that the new condition in which the organ is put, in consequence of the single circumstance of nailing iron almost round the hoof, not only places it, in the inevitable predicament of undergoing great alteration in its internal structure and mechanism, but, at the same time, renders it more obnoxious to other causes of mischief, which, but for the practice of Shoeing, would operate but in a small degree, to its disadvantage. Indeed, Mr. Clark has not denied that contraction may be increased and exasperated, by the inflammatory agents of the stable, which I am decidedly of opinion are constantly operating in a much greater degree, to the disadvantage of the Feet, than this author seems inclined

to admit. If we look at the state of the Feet of Horses, in His Majesty's service, and compare them with those of many other Horses that are also kept in stables, the difference will be very manifest to every unprejudiced man. But, it is right to observe in the first place, that no oil is ever applied to *their* Feet, with a view of supplying the horn, and secondly, that they stand through the daytime on the pavement, (on account of the small allowance of straw for litter,) thirdly, that the Feet are ordered to be picked out and washed night and morning; in consequence of which plan of treatment, we hardly ever see a sandcrack, and but seldom a running thrush. Something, no doubt, too, ought to be placed to the account of the plan on which our military Horses are shod.

But, as the two grand principles of the Veterinary College of London, (namely, the preservation of the frog and bars) have pretty generally made their way throughout Great Britain and Ireland, I do not feel inclined to lay any material stress upon this circumstance. Now, though a cool and expansive state of the hoof is at all times so highly desirable, and though this condition will almost always be precluded by the use of oil, for reasons which have been already detailed, yet the principle of softening the horn by the use of water may undoubtedly be carried too far. And the apparently good effects which moisture has upon hoofs that are contracted, has been the chief cause of exciting too sanguine expectations of relief, and consequently of occasioning the most severe disappointment to many, who have tried the experiment. For though the greater part of this deceptive appearance of advantage, (in all cases where Horses have been turned out to graze without shoes, or with tips, only, on their Feet,) arises from the circumstance of the actual expansion of



the horn at the heels and quarters, and the greater degree of width which takes place at this part, (which may be proved indisputably by measuring from the inner edge of the transverse diameter of the hoof on each side;) yet, no small source of this seeming good depends upon the actual swelling of every part of the crust; which takes place in consequence of the absorption of water, whilst the hoofs are enveloped in the grass of low lands or swampy places, which situations are generally chosen as the most proper, for turning such Horses into. But, notwithstanding the expansion of the heels and quarters, and the other external favorable appearances, yet, we find such Feet soon begin to contract again, when the Horse is brought back into the stable,—which circumstance depends partly, upon the previous disposition to contraction, which the use of the shoe has induced upon the living parts, within the hoof, as Mr. Clark has very judiciously pointed out, and partly, upon the drying and shrinking which takes place in the horn, and the consequent loss of its elasticity at the quarters.

Though coolness of the Feet, therefore, is one of the best external symptoms of all being right within the hoof, especially if it be accompanied with a proper degree of elasticity of the horn, yet we can by no means always secure this grand object by much soaking of the Feet in water, any more than we can obtain it by keeping the hoof thinly rasped at the quarters.

The external condition of the hoof then, though the best criterion that we have for forming our judgment upon the state of the internal structure, is by no means an infallible guide to enable us to pronounce upon the real condition of the parts within it. For it is not by any means clearly proved, that one of the causes of

lameness in the Feet, and which has, indeed, been insisted upon by some teachers of the Veterinary art, as a frequent one ; namely, ossification of the sensitive elastic fibres which connect the hoof to the coffin bone, may not take place, without those external signs of heat with which common inflammation of the part is always attended. For we know that the basis of bone is Cartilage, or, (as it is called in common language) Gristle ; and that it is that part of bone which is first formed, and afterwards becomes hardened by the gradual deposit of Phosphat of Lime ; the fat and gelatine, especially the latter, communicating the requisite toughness and strength to the bone.

And, therefore, not only in the infancy of all animals, that is at the time of the first formation of the bones, but even during the lifetime of the full grown animal, this deposit of the earthy parts of bone, is constantly going on, in order to make up for the deficiency which is constantly accruing, from the action of the absorbents, in these, the solidest parts of our bodies.

Now, the main fact connected with these important phænomena, was proved, though not discovered, about forty years ago, by Professor *Monro*, the elder, who purposely reddened the bones of young living pigs, by mixing a dye-stuff, called *Madder*, in their food ; but it was reserved for *Dr. Rutherford's* philosophical ingenuity, to shew us, upon chemical principles, how this very curious circumstance takes place. If, therefore, it be indisputable, that Cartilage, the ordinary basis of bone, is rendered solid by the deposition of Phosphat of Lime, without any feverish or morbid action, may not the conversion of other parts into bone take place occasionally without any external signs of inflammation.

For, our dissections and morbid specimens exhibit innumerable, convincing proofs, that tendons and ligaments, are frequently converted into bone. And we know that instances are now and then met with, in the human subject, where the coats of the arteries have become ossified, whilst at the same time, it has by no means been proved that this change of structure is always attended with inflammation. And as we know that these morbid changes do frequently take place, in many animals, especially in old age, it can excite but little surprize, that they should frequently happen in the Horse, when we take into account, the prodigious quantity of Phosphat of Lime which circulates in his system; as it has been proved from the chemical analysis of the bones of this animal, by Merat-Guillot, that they consist of more than 57 parts out of an hundred of this interesting salt; which constitutes almost entirely that scurfy excretion of the skin in Horses, called Dandrill.

But, Veterinary Surgeons have hitherto been led to associate the notion of inflammation, with this conversion of such parts into bone, as appear from their palpable uses to be intended to preserve their original property of elasticity; as if inflammation and this morbid change were always inseparable, and must necessarily be accompanying circumstances.

Hence, one hears the term ossific inflammation, perpetually had recourse to, in order to account for a phænomenon, which it has been supposed would admit of no other explanation.

Now, as I have not subjected the elastic sensitive fibres of the Foot, to chemical analysis, I cannot venture to pronounce positively, upon their nature, but I am strongly inclined to suspect with Mr. Clark, that they are cartilaginous. If, however, it should be found that they

partake more of the nature of ligament than of Cartilage, they may, nevertheless, undergo the change in question, though perhaps not quite so readily, as if they were cartilaginous. Of their occasional ossification, in fact, there can be no doubt; as I have seen hundreds of instances of diseased coffin bones, where the projecting ossified points of the previously elastic fibres, completely studded the bone.

The only doubt, therefore, in my mind, which attaches to the affair of the ossification of these fibres, is, whether this change in their structure be or be not, uniformly attended with inflammation.

For, if it should turn out, (as I strongly suspect to be the case,) that the process of ossification in them, is not necessarily attended with inflammation, then shall we obtain a clue which will enable us to solve one of the most embarrassing difficulties that occasionally hang over the subject of the seat of lameness, inasmuch, as we now and then find instances, of Horses being lame in the feet, without any considerable contraction of the heels and quarters, or any perceptible increase of heat in the hoofs.

But, it is time that I quit this track of investigation, which some may think foreign to the title and avowed nature of my work, in order to hasten to the conclusions which I consider fairly deducible from the foregoing arguments.

The practical inference, therefore, which I am inclined to draw from what has been advanced, is the following, namely, that there is a species of Founder, which so far as relates to the time occupied in its approach and development, holds a sort of mean between acute inflammation of the feet, which sometimes proves fatal in a day or two, and that chronic inflammation which always accompanies, more or less, contraction of the heels and quarters.

And this kind of Founder is from its nature incurable, as it is not in the power of art, to restore to their original elasticity, parts which have become converted into bone.

Moreover, Mr. Clark has shewn us what (I believe) was not so much as suspected before his profound investigation of this interesting and intricate subject was made public, that the coffin bone itself undergoes a very material alteration in its structure, in consequence of the imprisonment which the living parts within the hoof suffer, from the permanent pressure of the nails.

If the coffin bone, therefore, can be proved to undergo a sensible diminution in its size, and alteration in its structure, from this source alone, we ought to be the less surprized at the change which takes place in the condition of the soft elastic parts within the hoof, from the operation of the same cause. Having already insisted upon the great advantages which arise from preserving the hoofs in a cool expansive state, it may naturally be expected that I should give directions about paring and preparing the feet, when a long run at grass is determined upon, either for the express purpose of restoring the feet, or of benefitting the general constitution of the animal. And here, unfortunately, I feel myself under the necessity of disappointing in a great degree, the expectation of the reader, by candidly admitting that our sanguine hopes of advantage, from the practice of turning out Horses, without shoes, or with tips only on their feet, both in cases of violent contraction, and of lesser derangements of the feet, have been most grievously disappointed. For, experience, which, after all, can alone decide the truth or falsehood of our speculative opinions, has long since convinced me that no decisive, permanent advantage is to be obtained from this practice, *in any*

case where the animal has been shod for a considerable period of time. On the contrary, I cannot help agreeing with Mr. Clark, and reluctantly adding the testimony of my dear-bought experience to his, that this practice is frequently productive of infinite mischief, by inducing fresh derangements of the living parts, which did not exist in such feet, before they were placed in their new predicament.

But, lest it may be supposed that I reprobate altogether, the plan of turning Horses out to grass without shoes, I must observe that I perfectly coincide in opinion with this gentleman, in admitting that it may be had recourse to occasionally, with advantage, when it is intended to keep them out for a few days only, or at most a few weeks.

But, even in this case, provided they be turned into grass which is very luxuriant, or into ground that is low and swampy, I confess I am by no means quite satisfied, whether it would not, upon the whole, be more politic to let the shoes remain on during the time they are out, taking care to remove them often enough to prevent their getting into the interior edge of the crust, or (as the Farrier's phrase is) eating into the Feet. If, however, the popular prejudice which exists on this point, and which long established custom too often gives rise to, in the most candid minds, should lead to a perseverance in the practice of stripping the Feet of Horses, that are intended to be kept a long time at grass, yet, some may, perhaps, be induced to refrain from having them shod for eight or ten days after they are taken into the stable, which will be one means of mitigating the evils which too commonly result from the ordinary practice.

But, the chief means of warding off to old age a great portion, of the inevitable evil effects of the shoe and the nails upon the Foot, is, to permit the full growth and development of the organ, before the practice of Shoeing be had recourse to, which development is not perfected before the end of the fifth year.—Whereas in England, and more especially in this country, Horses are shod at the beginning of their third year, and sometimes much sooner, by which means disease in many shapes is brought on, long before the Foot has attained its perfection and symmetry ; and in consequence of this absurd practice, thousands of Horses annually, finish their career of pain and misery, before they have arrived at one-third of the natural period of life assigned them by Providence.

Mr. Clark, however, I perceive, holds out hopes that a better and more politic system is beginning to prevail amongst some of the opulent and enlightened in England, who do not shoe their valuable Horses before they are four or five years old, but use them with Tips only on their Feet, until that period.

I have already disclaimed the idea of writing a regular treatise on Shoeing—But, having recommended Mr. Coleman's work and the principles of Shoeing, which he has laid down in preference to any others, it would be improper for me to close this subject, without informing my readers that the use of the thin-heeled Shoe, formerly recommended by the ingenious Professor, has been laid aside for some time at the London Veterinary College, from the experience of its inutility.

I am of opinion that the Shoe ought to be of equal thickness at Toe and Heel.

Nevertheless, in cases of very low and weak heels, it may be made a little thicker at the heel than at the toe, with great advantage. Though, however, it must be admitted, that the use of the thin-heeled Shoe did not produce all the advantages which were expected from it, but, on the contrary, that it was found to be decidedly detrimental to several Horses, yet, on the other hand, I am quite satisfied that the evils which it produced have been much exaggerated.

For, if it failed in preventing contraction of the heels and quarters, to the extent which was sanguinely predicted of it, or, even, if some Horses were found to be decidedly injured by its use, yet that it served to procrastinate contraction, and to prevent Corns, running Thrushes, and Canker, in conjunction with the rules which were laid down for its application, I think there can be no manner of question. The amount of the argument, I apprehend to be this, that a principle, good in itself, was carried to an extreme, and thus the frog having more duty assigned to it than nature intended it to perform, some evils followed as an inevitable consequence of the practice.—But, most of the cardinal axioms which Mr. Coleman has laid down as principles of Shoeing, remain in full and undiminished force, not to be shaken by any speculative opinions, having stood the test of nearly twenty years experience. They may be comprised chiefly, I imagine, under the following heads, namely, that the Frog and Bars shall be scrupulously preserved—that the Shoe shall rest on the under edge of the crust and bars alone, and touch the sole at no single point,—that the sole shall be carefully removed with the drawing knife, and hollowed out sufficiently to allow the picker to pass all round from the point of the toe to the extreme angle of the heel, where the concavity ought to be greater than at any other part,



—that there shall be no superfluous weight of iron in the Shoe, and that the nails shall be driven as little backward in the quarters as is compatible with the secure fastening of the Shoe. And I am perfectly satisfied that the enforcement of these few rules amongst Shoeing Smiths, in general, will be the means of preventing many, and mitigating most of the evils which notoriously spring from the old system of Shoeing.

## Inflammation of the Bowels.

**I**NFLAMMATION of the Bowels of Horses, though not quite so common as Inflammation of the Lungs, is, nevertheless, a disease of a more dangerous kind, and very frequently ends fatally.—This disease, which, in many books of Farriery, is called the Red Cholic, in contradistinction to the Spasmodic Cholic or Gripes, is, nevertheless, too frequently confounded with it; and this circumstance has occasioned a plan of treatment to be adopted, more calculated to exasperate than to mitigate the symptoms of the disease. The Horse's Bowels, moreover, are subject to two distinct species of inflammation. One of these is comparatively mild in its nature, being confined to the villous or internal coat, and is generally attended with purging, accompanied with a discharge of a slimy offensive matter, and sometimes also with the presence of a stringy fat-like substance, which is voided along with the fœces. The other affects the peritoneal coat of the intestines, is highly dangerous in its nature, and is almost always attended with a costive state of the Bowels. Inflammation of the villous or internal coat of the Bowels, which I propose first to treat of, is frequently brought on by exposure to extreme vicissitudes of heat

and cold, especially after fatigue, and appears to me during some of our springs, to be now and then epidemic. It is also frequently produced by the use of coarse, drastic, aloetic purgatives, or by injudicious treatment of the animal under the operation such as are the mildest and most proper. Having already detailed the mode of treating this species of Inflammation when it is produced by either of the last-mentioned causes, I proceed to the consideration of the means which are to be used, when it attacks Horses which have not been subjected to the action of purgatives. The violence of the symptoms in this species of Inflammation, is, by no means, equal to that which takes place in peritoneal Inflammation of the Bowels; and when it terminates fatally, it almost always does so in consequence of ending in the latter. In Inflammation of the villous coat of the Bowels, the pulse becomes materially quickened, rising frequently to sixty or seventy, but it is never so quick, hard, small or thready, as in peritoneal Inflammation. The skin is hot and dry, the breathing is quickened, the Horse is dull and refuses his food, but his legs and ears are usually warm, contrary to what takes place in peritoneal Inflammation, the mouth is also hot, and the animal appears restless, but does not scrape or paw with his feet, and when he lies down he makes no attempt to roll. More or less purging attends this disorder, and the fœces are not only loose but generally offensive and slimy, being sometimes mixed with a fat-like substance, which has obtained the name of Molten Grease. But, though the danger to be apprehended from inflammation of the villous coat of the intestines, is small, when compared to that attendant on peritoneal Inflammation, yet, it becomes necessary to use proper means of relief for the animal, and, more especially, to guard against the administration of

astrigent medicines, opiates or cordials, which have been but too often recommended in books, as remedies in this disease. Bleeding must be had recourse to moderately;—from four to six quarts of blood, according to the size of the Horse, must be taken away. If the smell of the fœces be exceedingly offensive, from a pint to a quart of castor oil, made warm for the purpose of being more readily and effectually swallowed, should be given for a dose.

For, notwithstanding the loose state of the Bowels, there is commonly in this disease some morbid acrid matters which require to be evacuated; and not unfrequently, indeed, hardened knobs of dung coated with the fat-like substance I have described, are voided along with the thin slimy fœces. By way of internal fomentation to the inflamed Bowels, six quarts of warm thin gruel, should be given as a Glyster every three or four hours, and the belly should be fomented for fifteen or twenty minutes at a time, every two or three hours with cloths dipped in water as hot as the hands can be borne in it. In twenty-four hours after the Horse has been bled, in case the pulse be not reduced in frequency, and especially if the skin remain hot and dry, a second bleeding may be had recourse to, and the whole of the soft part of the belly should be blistered after the hair has been rubbed perfectly dry. In cold weather the animal's skin should be protected by cloathing, whether he may have been accustomed to the use of it or not. The stable, nevertheless, should be well ventilated, especially during summer and autumn. The Horse's bed should be perfectly dry and ample. It rarely happens that the purging attendant on this species of Inflammation, goes the length of occasioning great debility, but, even if this should be the case, the use of astringents or opiates, except the disorder has been produced by aloetic purgatives, would be highly improper.

But, if the purging continue violent after the offensive smell of the fœces has nearly disappeared, it will be proper to check it, by means of decoctions of starch. Mr. White is of opinion that the preparation called Arrow-root, which (as he has properly remarked) is nothing more than a pure kind of starch, is decidedly superior to every other, and strongly recommends its use in this disease.

Perhaps as the starch of commerce is seldom properlyedulcorated by a sufficient number of washings, and on that account generally contains some acetous acid, which is generated in the process of its manufacture, the Arrow-root powder may, for this reason, be preferable. This gentleman advises that eight ounces of the Powder should be mixed with a little cold water, and afterwards added to a gallon of boiling water: the whole to be well stirred, and after boiling a minute or two, to be removed from the fire. A quart of this mixture to be given every hour until the purging be checked. There need not be much solicitude about the food of the animal. As soon as the inflammation is subdued, and the acrimonious matters in the Bowels are evacuated, his appetite will return, and he will be able to digest what he eats. A small quantity of fresh-made Bran Mash may be offered to him from time to time, and if he decline eating, should be immediately removed. In this, as in most other diseases, instinct prompts the animal to prefer grass to every other kind of food—if it can be procured, therefore, it should be offered to him. Tepid thin gruel, white water, or (as some Horses will not touch these) plain water not too warm, should be presented to him in small quantities, every hour or two. But, he ought not to be permitted to distend his stomach by drinking too much at a time. As the Fever goes off and the Bowels return to their ordinary state,

the Horse may be led out in good weather two or three times a day for a few minutes at a time, and where there is the opportunity of so doing, he may be turned out to graze for an hour in the middle of the day. By degrees he may be brought to his ordinary diet.

Inflammation of the peritoneal coat of the Bowels of the Horse, is generally brought on by the grand exciting cause of most other inflammatory affections of parts essential to life in this animal, namely, by exposure to great vicissitudes of heat and cold, and especially if those changes have taken place after great fatigue and inanition. Hence, we find more instances of this fatal disease amongst such Horses as are highly fed, carefully groomed, clothed and kept in warm stables, than amongst such as are kept nearer to what is called the state of nature. If, therefore, a Horse of the former description, remain many hours without food, and be subjected in the mean time to rapid motion, or severe labour, and if in this state of exhaustion, he have his limbs and belly washed with cold water, or be permitted to drink copiously with that fluid, or, if after severe fatigue and long fasting, he be completely drenched with rain, and remain any length of time without motion, exposed to a current of cold air, we are not to wonder at his being attacked with Inflammation of the peritoneal coat of the Bowels. For, as has been well observed by that ingenious anatomist Mr. Blaine, it is indisputable from the smallness of the Horse's stomach, compared with the size of this organ in the purely graminivorous class, that the Author of Nature designed not only that this animal's food should be highly nutritious, but that he should eat often, in order to be enabled to support the great fatigue and prodigious exertions which he is frequently called upon to endure. When therefore the frame has been violently debilitated by inanition and

fatigue, the animal is rendered peculiarly susceptible of inflammatory attacks of the organs essential to life, and more especially of the intestinal canal, some part of which is frequently cooled down considerably below the healthy standard, in consequence of exposure to the circumstances which have been enumerated. Let it not, however, be inferred from these remarks, that severe exercise can be supported much longer with impunity, when the stomach is full and distended with food, than in the opposite state. On the contrary, there can be no doubt (for reasons which are more fully detailed in another place) when Horses are called upon for rapid and long-protracted exertions, especially in sultry weather, that the chance of mischief, likely to accrue from such exertions, is less when they have fasted a few hours, than when they have just eaten largely of their ordinary food. Insomuch, that it is by no means uncommon for Horses that are ridden or driven very hard soon after feeding, at a time when Farenheirt's Thermometer stands as high as 70 in the shade, to die of Inflammation of the Stomach or Bowels in the course of a few hours, although they were previously in the most perfect state of health; so inconceivably fast does Inflammation, when it once attacks any part of the alimentary canal, run on to mortification in these animals. I am well aware it may be said that prodigious muscular exertion, joined to the circumstance of excessive heat, are, of themselves, sufficient to account for the death of the animal, without seeking for any other cause to account for it; but this I have good reason for believing is hardly ever the case. This disease is almost always preceded by shivering, after which the Horse becomes dull, and refuses his food. The skin is hot and dry, the breathing is quickened, the animal ap-

pears restless, and shifts his limbs frequently, the tongue is white, and in the latter stages of the disease, is without moisture.

The pulse is quick and weak, rising often as high as 70, or even 80, in a few hours after the attack, and if proper measures be not speedily adopted, soon runs on to an hundred or upwards, in which case it is always small, thready and feeble, and the utmost danger is then to be apprehended. The animal lies down and rises again frequently, but does not start or spring up in that peculiar sudden manner which may be observed in a fit of Gripes. His ears and limbs are commonly cold, he scrapes or paws with his fore feet, but does so in a dullish, slow kind of manner, when contrasted with the vehemence of this mode of expressing pain, which is exhibited in a fit of Spasmodic Cholick. Further, when he lies down he hardly ever attempts to roll upon his back, as is the case in a fit of Spasmodic Cholick, which circumstance serves strongly to characterize the latter disease.

But the opposite states of the pulse in the two diseases, is certainly the chief, and perhaps the only infallible criterion of their respective natures. For whereas, in Spasmodic Cholick it is but little altered either as to strength or quickness, (except when the Spasmodic character of the disease has disappeared and Inflammation has actually taken place) so in peritoneal Inflammation it speedily becomes quick and weak as has been already explained. It is unfortunate for us, that we cannot have recourse to topical bleeding in this disorder, to any extent that would be advantageous. Were we able to cover the belly with leeches, there is no doubt but that this formidable disease would be robbed of half its danger. Bleeding therefore, from the system, must be had recourse to, and must be carried to greater extent than



what has been recommended in Inflammation of the villous Coat of the Intestines. In the case of a saddle Horse, let nine or ten quarts of blood be taken away at once, and if the disease have existed for some time, and the pulse exceed eighty, continue the bleeding until the animal staggers or seems likely to faint. After this, let the operation of raking be performed in a quiet gentle manner, and give a quart of castor oil, previously warmed, at one dose. This is the only medicine that can with safety be exhibited by the mouth in this disease. For, it is certain that aloetic and cordial medicines operate as poison on the inflamed Bowels; nor is there any reason to suppose that it would be safe to attempt the removal of their constipation by the use of any of the neutral Salts, however largely diluted.

This great desideratum must, therefore, be attempted through other means better calculated to assist the mild, gentle operation, of the castor oil. For which purpose, Glysters composed of the blandest materials, such as thin warm gruel, or warm water, without any other addition, should be given every two or three hours, partly on the principle of internal fomentation, and partly with the view, by moderate distention of the Bowels, of soliciting them to discharge the indurated fœces with which they are commonly obstructed. Each Glyster ought to consist of six or seven quarts of fluid, and as it is desirable to throw up the entire quantity by one introduction of the pipe, an Ox's bladder large enough to effect this purpose, should always be in the possession of every proprietor of Horses. The warmth of the fluid ought not to exceed that of the blood. The whole of the belly should be fomented every two or three hours, with large flannel cloths dipped into water as hot as the hands can be

borne in it, for fifteen or twenty minutes at a time, and be gently rubbed dry afterwards. Friction should be applied to the limbs, and as fast as they can be brought to their natural warmth they should be protected in that state by woollen cloths or soft hay-bands.

If the symptoms be not decidedly relieved in the course of six or eight hours, take away from four to six quarts more blood, according to the size of the Horse and the urgency of the case, and this operation, it may become necessary to repeat in five or six hours more, unless decided relief be obtained. But, if in the course of two or three hours after the first bleeding, the pawing and quickness of breathing should encrease, and more especially, if the pulse be not somewhat slower, softer or fuller, a second bleeding should be had recourse to immediately, and instead of continuing the hot fomentations, the skin of the belly should be rubbed perfectly dry, and the entire surface of it should be either blistered or fired without delay. When the symptoms are extremely urgent, the latter mode of setting up vehement external inflammation, which is the object we have in view, as it is by far the most expeditious, so for this reason it is most to be depended upon. If the operation be performed with judgment, it may be done readily enough, without occasioning the smallest eventual blemish.

The firing instrument should be broad and flat or slightly concave, and should be passed over the skin of the belly with a degree of pressure sufficient to excite considerable inflammation without producing sloughs in that integument.

In recommending this severe and apparently coarse remedy, I am well aware that I lay myself open to the charge of cruelty, but as in all extreme cases I have been convinced of its superiority over

blistering, I have recommended its adoption in this disease upon the same principle that I have advised it to be had recourse to in the last stages of Spasmodic Cholera. In four or five hours after blistering or firing the Belly, in case the pawing and uneasiness continue, three or four quarts more blood may be taken away.—Rowels have been recommended in this disease, but the rapidity with which the inflammation usually runs on to mortification, unless more active means of relief be had recourse to, precludes any rational expectation of advantage from their use. As, in the disease last treated on, so, more especially in this, care should be taken that the animal's bed be dry and ample. Except in hot weather the Horse should be clothed, especially if he have been accustomed to cloathing; but in sultry weather, or if the thermometer much exceed sixty in the shade, air cannot be admitted too freely into the stable, and cloathing would be prejudicial. On the other hand, during cold weather the stable ought to be kept warm, and the animal should be covered with plenty of light woollen cloathing. The state of the Horse's limbs should be particularly attended to, and if cold they should be well hand-rubbed and afterwards covered with woollen cloths or hay-bands. I have as yet said nothing on the subject of nourishment, because it is comparatively of no moment. Fortunately for the animal, during the conflict there is no disposition to eat at all. For, the digestive process being in all such extreme cases suspended, whatever the animal might be induced to eat, could not be digested, and even if it were converted into nutriment, it could only operate to the disadvantage of the Horse, by adding to the stock of blood which it is our great object to diminish. But, as it would be considered by most people to be ignorant practice, and by some to be little short of criminal, purposely to

withhold food from the animal ; a small lock of sweet hay, or a little fresh-made Bran-Mash, may be offered to him from time to time ; and if he decline eating it ought not to be suffered to remain in the manger. It almost always happens however, (as has been repeatedly observed in the course of this work) that Horses instinctively prefer grass to every other sort of food, and on this account it may be offered to him, as in this feeble condition of the stomach it will be more readily digested than any other kind of food. In three or four days after the urgency of the symptoms has abated, he may get a handful or two of corn three or four times a day ; and if the weather be mild and there be the convenience of a paddock, he may be permitted to graze for an hour or two in the middle of the day, increasing the time of his remaining out, according to the evidence he may exhibit of returning strength. If he seem desirous to eat his corn freely, there will be no danger in indulging him with a liberal allowance ; but he should be supplied with it a little at a time and often. At all seasons of the year, but more especially in the winter, and in the early part of the spring, strong frictions to his limbs will materially expedite his recovery ; and if he be too weak to be led out, a barn or out-house where he can move about agreeably to his feelings, will essentially assist in the attainment of this object. If the stable he has been accustomed to be kept in be very warm, it will be proper to put on additional cloathing before he be placed in his new situation

It will be prudent to continue the use of a Glyster night and morning for a few days, although there will be little to apprehend from costiveness, in case the animal have the advantage of a little grass every day. But if grass cannot be procured, mashes made of equal

parts of bran and crushed oats, by means of boiling water, will be found highly nutritive, and be the means at the same time of keeping the Bowels open. Provided the Horse be excessively weakened from the discipline which he has undergone, ground malt may be substituted for the crushed oats with great advantage. But no method of exhibiting nourishment can be suggested, which combines all the advantages of grass and corn to Horses labouring under excessive debility after severe diseases—and I cannot help observing, once for all, that rare indeed must be the case, where there can ever be a necessity for having recourse to the use of the drenching-horn, where fresh grass and good corn are at hand.

## STABLE MANAGEMENT.

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### Air.

**I**N the Management of Stables, the first consideration ought to be the temperature and purity of the air, as there can be no question that under the ordinary circumstances it is one of the most fruitful sources of disease in Horses. And on this subject we shall be perfectly safe in applying the argument of analogy, although I have in another place cautioned my readers against its too indiscriminate application. But the matter of heat (which chemists have very properly distinguished from the perception of its effects which our feelings afford us) is so universally diffused, and acts so great a part in the grand phænomena of the universe; affecting all bodies, as well those inanimate as those endued with life and consciousness, that we may safely affirm all nature to be in a great measure subject to the controul of its mighty influence. Nevertheless, as if the Horse in the state of domestication were necessarily to be proof against the operation of this powerful element, and was expected to furnish an exception to the established laws of nature; we construct

and manage our stables upon the most absurd and preposterous principles; yielding the regulation of their temperature, upon which the health of the animal must inevitably so much depend, to illiterate Grooms and Stable-men, whose prejudices; conceit and ignorance, generally go hand in hand. Yet nothing is more common every day, than to hear men of liberal education appealing to people of the above description, not only on this particular, but on other important subjects equally connected with the well-being of this noble and useful animal; men who would consider their understandings offended, were they supposed weak enough to seek advice from such a source, on any other the most common subject in the world.

The truth is, that to the defect in properly regulating the temperature of our stables, may be fairly attributed the greater number of fatal diseases, but especially Pleurisies and Inflammations of the Lungs, which prevail so much amongst Horses during our winters and springs. Nor will this be any matter of surprize if we take into account the sudden and prodigious alteration of temperature to which Horses are frequently exposed during the above periods. For I have frequently found, on measuring the heat of low and confined stables in winter, that the thermometer would stand as high as 60, at a time when the external atmosphere was two degrees below the freezing point. Here then is the prodigious difference of 30 degrees of heat, ascertained by the only invariable standard, (which cannot like our feelings be liable to deceive us,) and yet this amazing change, Horses are not only suddenly called upon to endure, but are expected to suffer with impunity.

Nor is this all, for it most commonly happens that whilst standing in these hot stables, they are covered with woollen clothing, which

is stripped off them, just before they are brought out into the cold external atmosphere. In the latter respect, therefore, we treat these animals in a mode diametrically opposite to that which we adopt with regard to ourselves, under similiar circumstances. For, in winter before we quit our warm apartments, we enable our system to withstand the effects of the sudden change of temperature, by putting on what is called warm cloathing. But in strict philosophical language, this expression is incorrect, as the heat of such cloathing, if measured by the thermometer, is found to be no hotter than that of the surrounding atmosphere, but being made of such materials as are slow conductors of the matter of heat, it prevents the escape of that principle from our bodies, and thereby enables us to sustain the sudden change of temperature, without injury to our healths.

Can we wonder then that under the circumstances which have been described, Horses should suffer the most lamentable ill effects; or will the shivering and staring of the coat which always take place, more or less, upon such occasions, be matter of surprize to any person of common sense or reflection? surely not. It is commonly supposed however, that as the immediate ill consequences of this monstrous mode of treatment (which are too evident indeed to be totally overlooked) may be speedily obviated by brisk exercise, so may any ultimate ill effects also. But nothing can be more erroneous than this mode of reasoning. For the attainment of this desirable end, will commonly depend upon a variety of circumstances not within our power to command. For instance, how shall we be enabled to proportion the exercise in such a manner, as to counteract exactly the sudden propulsion of so great a portion of the blood from the capillary vessels of the skin, upon the lungs and other internal organs that



are essential to life and health; to say nothing of other prejudicial effects resulting to the general system from such treatment? For though the resources of nature in warding off disease under such circumstances, are in many cases incalculable, yet are they not interminable. And therefore we frequently find Horses that have been exposed to such severe and sudden vicissitudes, attacked with Inflammations of the Lungs and Pleura, Sore Throats, Locked Jaw, and other fatal diseases.

But instead of wondering (as people are apt to do) that Horses should be liable to be attacked with such kinds of complaints, our surprise (provided we reasoned upon just and rational principles) ought rather to be excited at the astonishing powers which the benevolent Author of Nature has bestowed upon these animals in order to preserve their bodies in health, in spite of the violence which the arbitrariness of custom, and the combined effects of ignorance and superstition, are perpetually offering to their frames. Nor are the ill effects of hot air confined to the production of such diseases as have been glanced at, for the air of stables is almost always foul in proportion to its heat; and consequently it will be perpetually operating in the production of diseases which do not depend solely upon the affair of temperature. The mischief therefore does not end here, for along with this hot air so deficient in the vital principle, the animal necessarily enhales also a great quantity of Ammonia or Volatile Alkali which is generated largely by the putrefactive fermentation of the litter.

And that this is really the fact, and not merely an hypothetical notion of mine, may be satisfactorily proved by recollecting the extreme pungency of the atmosphere in stables at the time of cleaning.

them out, which is very similar in its effects upon the organs of smell and sight to the application of hartshorn to the nostrils. Now, this violent impression made upon the nerves of the nose by the atmosphere of the stable, is, in fact, produced by the very same salt which gives pungency to the fluid called hartshorn, and which is perpetually, though imperceptibly, diffusing itself through the atmosphere of even the best-ventilated stables. For we are not to suppose that the act of disturbing the litter is the sole means of diffusing the Volatile Alkali, much less of generating it in the atmosphere of the stable; inasmuch as the production of this peculiar salt is the inevitable consequence of the putrefactive fermentation of the litter, which in these countries is composed of such materials as readily undergo this chemical change, and more especially when the urine and fæces of the animal are mixed with it. But, the immense quantity of Ammonia or Hartshorn which is diffused in the atmosphere of stables is produced in a space of time which must appear inconceivably small, even to those who have made chemistry an object of their study, provided no other source for its production besides the fermentation of the litter could be discovered. For, if we suddenly enter the cleanest and best-ventilated stable (especially if we do so on quitting the fresh external air) we shall immediately be sensible of the presence of somewhat in the atmosphere similar in its effects to hartshorn, and this too at all times, and by no means at the particular period of the removal of the litter. This circumstance I had frequently been struck with, without being able to account for the fact in a manner that was sufficiently satisfactory to my own mind. For though in the course of very frequent considerations of this subject I made every reasonable allowance for the known

susceptibility of the putrefactive fermentation in the materials of which litter is composed, and was, moreover, aware that this chemical change must be materially expedited by the heat of the stable, as well as by the admixture of the urine and fæces of the Horse (which are peculiarly fitted for giving the first impulse to the process) yet, was I never able to satisfy my mind completely, respecting the sudden and immense generation of Volatile Alkali in stables. But, in a conversation which I fortunately had with Dr. Egan of Dublin, about eight years ago, when he did me the honor to attend my annual course of Lectures to the Dublin Society, he very obligingly removed all the difficulty which I had encountered upon this subject, by informing me that the urine of the Horse begins to generate Volatile Alkali in prodigious quantities very soon after it is voided. Dr. Egan was led to suspect this to be the case, by the pungent smell which was exhaled by Horse's urine in a few hours after it was voided, which he had set aside for examination with other views, and on applying the usual tests for discovering Volatile Alkali, its presence in very large quantity was satisfactorily detected.

And although any testimony of mine can add but little to the well-merited reputation of this ingenious Chemist and Medical Philosopher; yet feeling that it would be an act of injustice to Dr. Egan, were I to withhold from him the credit of this discovery, it gives me the greatest pleasure to express in this public manner the great obligation I feel myself under to him for the communication of this curious invaluable fact. For curious it certainly must be esteemed in the eye of the Chemical Philosopher, invaluable to the Veterinary Surgeon, by convincing him more than ever of the necessity of the most scrupulous attention to the thorough ventilation of stables.

the frequent removal of the litter and fœces, and above all to the speedy carrying-off of the urine, which is of itself almost sufficient to saturate the air with Volatile Alkali, without the aid of the putrefactive fermentation of the litter.

Thus it is evident from what has been premised, that Horses kept in stables not properly ventilated, must be constantly subject to the influence of noxious causes through the medium of the atmosphere alone.

For, in the first place its superabundance of heat (apart from every other consideration) must necessarily enervate and exhaust the animal, rendering his system far less capable of withstanding the vicissitudes which the external atmosphere in all countries is subject to, and especially that of these northern climates.

Again, its deficiency in the due proportion of oxygen, which is the vital principle, must contribute to aggravate the pernicious consequences of the too great quantity of heat; and lastly, the Volatile Alkali which is diffused in it, must be the means of further exasperating the ill effects of both the former sources of disease. To their united co-operation we shall be safe in attributing most of the fatal diseases that attack Horses kept in low, crowded, ill-ventilated stables. If any one will reflect upon the superior hardihood and energy of constitution which such Horses enjoy, as are kept in paddocks or other situations where they reap the combined advantages of breathing a cool pure atmosphere and voluntary exercise of their limbs, together with a full allowance of nutritious food; he will be convinced that the arguments which I have adduced, are not those of theory or declamation, but of truth and soberness. For, although something must, no doubt, be placed

to the account of the exercise which the animal takes in the field, yet I have no hesitation in affirming that this circumstance is but of small comparative moment, if set against the beneficial consequences resulting to his general system from breathing a cool pure atmosphere, which enables him to bear with impunity the vicissitudes of heat and cold. Indeed the want of voluntary motion may pretty readily be in a great measure compensated for; whereas, for cool pure air, no one hath yet dreamt of finding a substitute.

Accordingly, we find that Horses which are treated upon this cool plan, will endure labour with infinitely less fatigue than such as are kept in hot close stables; and it is a notorious fact amongst sportsmen that (other things being equal) such hunters as are kept abroad, are more frequently in at the death of the game, than those whose treatment is more artificial.

It may not be improper to observe in this place, with respect to the prejudicial effects of hot air in stables, that some dawning of common sense after a long night of ignorance, begins at length to shew itself at Newmarket and other places where racing stables are kept, where it was formerly the custom to keep their Horses in a sort of half-stove, half-hotbed from the apprehension that a breath of cool pure air was to undo all that physicking, cloathing and training, were supposed to have accomplished.

Nevertheless, I am quite convinced that much yet remains, and will for ever remain, to be done in this particular, until the well-informed proprietors of such Horses will exert their proper authority, and acting upon the same principle in this, as in the other common affairs of life, determine to direct instead of being directed.

In fact, during the whole of the Summer and Autumn, air can

scarcely be admitted into stables too freely, provided it does not enter in partial currents, and blow upon a Horse in that mode. And therefore I consider the common ventilators, which are made upon the principle of a smoke-jack, and are fixed in windows, to be perfectly futile and almost entirely useless. If the situation of the windows be such as to admit the air freely without the objections which have been pointed out, the upper part of the sash may be constructed so as to draw down with a line and pulley; but if the windows be too low to obtain fresh air, except in currents which will be directed partially, I would recommend that air-holes should be opened at least ten feet from the ground in such stables as are lofty enough to admit of it, and that they should be placed behind rather than before the stalls.

By means of a flap or shutter these apertures might be contrived so as to admit more or less air according to circumstances, but except during very intense frosts it would not be advisable to close them altogether.

The size and number of such air-holes must, of course, vary according to the size and loftiness of stables, and the number of Horses which are kept in them. Their dimensions should not be less than two square feet, and one such might be sufficient for a stable that does not contain more than two Horses.

In no particular is the Horse apt to suffer greater ill effects from the influence of hot and foul air, than with respect to his eyes.

Nor will this opinion be matter of surprise to any one who has an opportunity of comparing the number of diseased eyes which are found amongst Horses that are kept in hot confined stables, with the

instances of the complaint which occur among such Horses as are fed equally high, yet are kept out chiefly or altogether in the open air. I am well aware that costiveness is commonly considered to be a very frequent cause of these disorders of the eyes, and the advantage arising from turning out Horses to grass under those circumstances, has been usually attributed to the cooling, opening effect of the grass upon the bowels.

Now, though I am far from being prepared to maintain that costiveness may not occasionally be concerned in the aggravation of these complaints, yet, there is no fact of which I am more perfectly satisfied than that the hot and foul air of stables is the prime and capital cause of them all; with the exception only of those that are hereditary, and such as are occasioned by external injuries.

But this opinion on account of its having considerable novelty, may, perhaps, startle many, and produce some scepticism. It will not however, I presume, be difficult to convince every one that the hot and foul air of stables is at least capable of aggravating diseases of the eyes. For, if Volatile Alkali which has been proved to exist so largely in the air of stables be capable of painfully stimulating a sound and healthy eye, surely its effects upon one that is inflamed and consequently extremely irritable, must be both highly painful and prejudicial to the organ. In the human species we often find when the eyes are violently inflamed that the natural stimulus of light alone, becomes insufferably painful to the patient.

But, were we under those circumstances to sprinkle his apartment frequently with hartshorn, we should certainly add to his sufferings, and materially aggravate the disease.

In vain would be the use of Bleeding, Purging, Eye-Waters, Blisters, Cupping or Setons; for the disease would unquestionably make head and total blindness would commonly ensue. Just so it is with Horses that are treated for inflamed eyes in hot stables; for the constant application of the Volatile Alkali which abounds in the atmosphere, to the diseased organ, will be perpetually undoing all that medicine can be expected to accomplish, even in the hands of the most skilful.

But, in order to remove all possibility of doubt upon this subject, I have frequently made the following experiments.

When a Horse has been attacked with that particular affection of the outer coat of the eye, called Moon-Blindness, I have ordered him to be removed from the stable (where I have observed he kept both eyes constantly shut) into the open air, or to a very cool situation, and have watched the effects of the change. In the course of half an hour I have commonly found him begin to open his eyes gradually, and in the space of two or three hours, to keep them open boldly, and for a continuance, even though the situation he was placed in was not darkened or shady. For, it cannot be denied that strong light is very prejudicial in such cases.

Now, in order to prove that the stimulus of the Volatile Alkali was more offensive to the inflamed organ than that of light, I have placed the animal again in a hot stable which did not admit much light, and in the course of a few minutes, have observed him begin to close the eyelids gradually, and after an hour or two, to keep them constantly shut. Not satisfied, however, with these experiments, which seemed pretty conclusive on the point; I have removed the Horse



back again to the cool situation, and have observed the same effects to be produced as have been already detailed.

Now, were it only on account of preserving the Horse's eye in a healthy state, the subject of the air of stables would deserve the most serious consideration; but what has been already advanced, will, I hope, be sufficient to satisfy my reader that not only the animal's eye, but his general frame and constitution, will be rendered less susceptible of disease and derangement, provided attention be paid to their cleanliness and ventilation, which will of course ensure a greater degree of purity and coolness of the atmosphere.

## Cloathing.

**T**HOUGH the article of Cloathing be less concerned in the production of the diseases of the Horse, than the hot and foul air of stables, yet it is has a great share in rendering the animal less capable of enduring cold and fatigue, and consequently more liable to the attack of inflammatory complaints, especially those of the Lungs and Pleura. But, so long as a fine coat is considered to be so decisive a proof of good health in the Horse, and as furnishing at the same time no very inconclusive evidence of the skill and diligence of the Groom, it is not very probable that the use of Cloathing will be laid aside. And yet it cannot be denied that the practice of cloathing Horses (according to the usual mode) militates against every principle of common sense, to say nothing of philosophy.

For, as has been observed in the chapter on Air, we treat the Horse (in this particular) diametrically opposite to the plan on which we treat ourselves. In winter before we quit our warm apartments, we put on additional coverings, and thus, by confining the heat of our bodies, are secured against the effects of the sudden cold of the external atmosphere.

But, the Horse is taken out of his warm apartment, (the stable) and instead of being protected by additional Cloathing, is stripped of that which covers him, and is expected to bear this violent and monstrous change with impunity.

The system is thus suddenly called upon to resist the united effects of the cold air which is taken into the Lungs, and of that which is applied to the surface of the body. Its powers are, it is true, prodigious, but not always adequate to the prevention of the consequences which may reasonably be expected to result, from such a preposterous mode of treatment. Hence, the staring of the coat which follows from the sudden application of the cold to the surface, which depends upon the corrugation of the skin, and a necessarily diminished diameter of the blood vessels of that integument.

Now, it must be evident to the most common capacity, and cannot require much anatomical or philosophical knowledge to perceive, that in this corrugated contracted state of the skin, less blood must be sent to it than in its previously relaxed state, and, consequently, more will be thrown upon the internal parts; and thus Inflammations of the Lungs and Pleura, Sore Throats, and Glandular Swellings, will frequently be the consequence of such treatment.

If Cloathing, therefore, be used for Horses at all, it certainly ought to be used upon the same principle which we use it for ourselves, (so far I mean as concerns the affair of temperature) namely, by increasing the quantity of it, when the animal is about to be exposed to the action of an atmosphere, colder than that which he is usually subjected to.

But, people are apt to imagine that the additional heat produced by the exercise which the animal undergoes, will compensate for the

loss of that which his previously warm-clad skin is robbed of, by the sudden action of a frosty atmosphere. Now, that this is sometimes the case cannot be denied. That it is often inadequate to produce the desired effect, is equally certain, and this may be reasonably inferred from the shivering fits which commonly follow this mode of treating Horses, although previously to those fits of shivering they may have undergone brisk exercise. Nor need we be surprised that brisk exercise should frequently be inadequate to prevent the ill consequences of the sudden application of cold air to the surface, which the practise of stripping Horses of their Cloathing in winter, just before they leave the stable, inevitably exposes them to.

For, the greater part of Horses, treated in this way, are either blood Horses, or such as are nearly thorough-bred, whose coats are short by nature, and are rendered more so in consequence of the high temperature of the stable, and the use of warm Cloathing. When, therefore, exercise is pushed so as that the coats of such Horses are moistened by perspiration, the degree of cold which will be produced on the skin, will be infinitely greater than that to which Horses with longer coats are subjected.

For cold (or to speak more correctly, consumption of heat) is now well understood to arise from the conversion of fluids into vapour; and this may readily enough be admitted by any one who will recollect the cool refreshing effect which follows in summer from sprinkling water on hot roads or pavements, which is immediately converted into vapour, and in this way cools the surrounding atmosphere. And that the effect of evaporation in the production of cold is immense, may be further exemplified by the practice which prevails in hot countries, of cooling their wines by hanging the bottles, covered

with wet cloths in the sun, and taking care to keep them well moistened.

No sooner, therefore, does the sweat begin to flow from the pores of a Horse's skin, accustomed to Cloathing, than a great portion of it is almost immediately converted into vapour, on account of the shortness of his coat, which can absorb but a small quantity of that fluid.

And here I cannot refrain from observing, that in no instance, perhaps, is the wisdom and benevolence of the Deity more satisfactorily evinced than by the different kinds of the external coverings of animals in different parts of the Globe, so admirably suited to the individual in every climate. The resources of Nature seem, in fact, to be unlimited, with respect to the provisions for regulating the temperature of animals. For, not only do we see this admirable variety in the coats of animals inhabiting different parts of the world, exactly suited to the climate, mode of life, and habits of the species, but, we also find that a great change takes place in the coat of the same animal, as the weather alters from hot to cold, or from cold to hot, in the same countries. Some of these changes are so palpable and manifest, indeed, as to strike the most inattentive observer, and that a multitude of others are effected which have hitherto escaped the eagle-eye of philosophy, no man who thinks justly on the subject can for a moment possibly doubt.

If the hairy sheep from the Tropics be brought to these Northern climates, its coat soon loses its original structure, and a species of coarse wool succeeds to the primeval hair of the animal.

On the contrary, if the sheep of these countries be transported to regions under the Tropics, a kind of hair will succeed to the

soft silky covering which its skin produces in the climate in which it is indigenous.

Again, in summer the hair of all Horses is short and sleek ; it gradually lengthens at the end of Autumn, and finally becomes very long and rough in the course of the winter, especially upon such as are not housed. At the approach of Spring another change commences, and when the heat of Summer would render the long coat not only useless, but oppressive to the animal, it is cast off, and the skin is again protected by a sleek and short covering.

Here then, the finger of Providence is not only clearly visible to the peasant as well as the philosopher, but may be seen most distinctly pointed to the object, which these changes are calculated to attain.

But, the absurdity of the human mind, when under the guidance of fashion and custom, seems to be limited by no bounds.

For, people are not content with keeping Horses in an atmosphere of such a high degree of temperature as would of itself, in a great measure, frustrate the attempts of Nature to effect this salutary change in their coats against the approach of winter ; but whilst exposed to the influence of this hot air, they are, nevertheless, covered with woollen cloathing, which must necessarily operate as an increased impediment to the change in question.

But this is not all, for they are frequently in winter exposed suddenly to the action of an atmosphere of full thirty degrees lower temperature than that of the stable, a few minutes after they have been stripped of their Cloathing. And it is this custom of stripping them which occasions such frequent derangements in the health of Horses, rather than that of previously exposing them to the influ-

ence of hot air on the Lungs, so far as the circumstance of its mere heat is concerned in the question. For, in Canada and Russia, where the cold in winter is so intense, the superior classes of inhabitants heat their apartments by means of stoves, so highly, that the mercury rises to 70 degrees, or even higher, and yet they have no hesitation in encountering the prodigious difference of temperature subsisting between the air of their apartments and the external atmosphere; after they have first taken the precaution to confine the heat of their bodies by means of furs, feathery skins, woollen cloths, and such other materials as are slow conductors of heat. But, if instead of putting on a great quantity of such sort of Cloathing, they were to strip themselves of that which they wear in their houses, and in that state expose themselves to the external air, the powers of life would be found unequal to endure a change so enormous, in spite of rapid exercise, and even death would, in some cases, consequently ensue. All wonder, therefore, on account of the superior hardihood of Horses that are kept without Cloathing, must cease when these circumstances are taken into consideration. For, the state of their coats in winter (more especially if they have been kept in the open air, or in cool well-ventilated stables) will effectually prevent their being subjected to such extreme vicissitudes of heat and cold as Horses which are cloathed must be so frequently exposed to. In fact, Horses with long and rough coats, will have little or no call upon the powers of life to resist any change of temperature at the outset of their exercise. And even if they be rode so as to perspire pretty profusely, yet, their coats will absorb a great quantity of sweat, and the conversion of that fluid into vapour, will, on this account, be tardily effected.

Nay more, for that portion of the sweat which is carried off, will be chiefly evaporated from the extreme ends of the hairs, which on account of their length, will act as syphons to convey the perspired fluid to their extremities. The skin itself therefore, will be protected from the effects of extreme cold, in two distinct ways; first, by the great quantity of the coat which will confine the heat of the body, and secondly, in consequence of the process of evaporation chiefly going on at so great a distance from its surface.

It must be evident from what has been advanced, that Horses kept in hot stables, and covered with warm cloathing, have great disadvantages to struggle against, on the score of those diseases that arise more immediately from vicissitudes of heat and cold, which those that are kept abroad, or in well ventilated stables, without cloathing, are but in a small degree exposed to.

But, there is another disadvantage which they labour under, of a still more serious kind, and of a nature which precludes the possibility of remedy, namely, the want of that general energy of the frame and hardihood of constitution which is to be met with only amongst such as breathe a cool and pure atmosphere. For, enough I hope has been already said to convince my readers, that it is the circumstance of sudden vicissitudes of temperature rather than the exposure of the animal to a continuance of the extreme degree of either heat or cold, which operates so much to the prejudice of Horses that are kept in hot stables. Surely, then, the advocates for the Cloathing system must abandon their arguments altogether, or be content to have recourse to the use of it on the principles of common sense; which will direct its application in such a way as to



preserve instead of destroying the equilibrium of the animal's temperature.

But, it may be thought by some who pique themselves upon being considered good managers of Horses, that I write rather like a Theorist than one who has looked into the subject practically, were I not to admit, that instances are now and then to be met with, (especially amongst the young and delicate) of Horses which thrive better when cloathed, than when they are not cloathed; a fact which it is impossible to deny.

It must be recollected, however, that I am now contending for a broad general principle, to which in all cases some exceptions are to be found. Besides, if the instances which appear to furnish an exception to the general rule in this case, were we to be scrutinized closely, we should find that they could scarcely be said to invalidate it, except in the slightest degree. For, these Horses would uniformly be found either to have weak digestive organs, or to be naturally of a tender irritable frame, apt to sweat on the least motion, throwing off their food in a loose half-digested state, incapable of supporting hunger or fatigue, and of that description which is called washy, in the cant language of dealers. But, the Cloathing system, instead of remedying these original or acquired defects, is calculated only to encrease them by contributing to perpetuate that morbid irritability, which under a more rational system of management, might be more successfully combated. For, at the period which may be termed the infancy of Horses, compared with that of the natural life of the animal, we begin our absurd, monstrous system of Stable Management, which is of itself calculated to undermine slowly, the most robust constitution, and consequently to exasperate the defects of the

weakly. After all, let it not be inferred from these remarks that I recommend that any Horses, much less the tender and delicate, should be *suddenly* stripped of their cloathing, in order to render them more hardy.

Prudence, indeed, would seem to dictate that all great changes with respect to heat and cold, over which we have any command, should be brought about by gradual means. For, notwithstanding what has been advanced by the late ingenious Doctor Beddoes on this subject, it is an indisputable fact that sudden vicissitudes from heat to cold are highly detrimental to Horses.

Indeed, had that great chemical Philosopher had the opportunity of seeing one hundredth part of the instances of inflammatory attacks, locked jaw, and other fatal diseases in Horses, springing most unequivocally from exposure to sudden vicissitudes from heat to cold, which it has fallen to my lot to witness, he would not have ventured to reason hypothetically, from a few solitary facts, which appear, at best, to militate as much against the principles of common sense, as the established laws of Nature. Fully alive to the merits and ingenuity of Doctor Beddoes, I am aware that this will appear to many to be strong language, but in proportion to the weight which his opinion on this vital point of my subject, may be likely to carry, in the medical or philosophical world, do I feel myself called upon to reprobate notions which I know to be unfounded, and thus fearlessly to encounter the censure of his indiscriminate admirers. Thus far, however, I am willing to agree with Doctor Beddoes, by readily admitting that sudden changes from heat to cold do by no means produce evil consequences of such magnitude to Horses, as vicissitudes from cold to heat. To revert, however, to the subject of Cloathing

as applied to delicate Horses, I must observe that during cold weather it will be prudent to discontinue the practice gradually, and if the weather be very severe, rather let the animal be cloathed when he goes out, than be stripped of his Cloathing previously to leaving the stable. In such sort of cases, too, it will frequently be found that two or three doses of very mild, warm aloetic physic, together with the intermediate use of the Tonic Balls in the intervals between each dose, will materially contribute to improve the appetite and general constitution of the Horse. But, it must not be inferred from these remarks, that good grooming may be dispensed with, when the use of Cloathing is laid aside, on account of any apprehension that the pores of the skin may be too much opened. For, the friction which is given to the skin, from the diligent use of the curry-comb and brush, cannot but be salutary to the general constitution of the animal, though certainly not so necessary to his health, as when he is cloathed; as there can be no question that relinquishing this part of the artificial system of stable management, will materially contribute to the general hardihood of the animal's frame. Now, how far the custom of cloathing Horses, may contribute to increase or diminish that singular excretion of the skin, called Dandrill, which consists chiefly (as has already been observed) of Phosphate of Lime, is a point I am not prepared to speak to, but which certainly deserves to be enquired into by the scientific Veterinarian. Before I finish my remarks on the effects of Cloathing, it may be right that I should endeavour to meet some popular plausible objections, which, on a superficial view, appear to militate somewhat, against the opinions which I have advanced on this subject. For, by way of rebutting or invalidating the arguments I have adduced, I have

frequently been called upon, by people who have either been ignorant of, or desirous of overlooking many of the acts that have been mentioned, to account for the healthy appearance and prodigious exertions of hunters and racers, though it is well known that *Cloathing* is reckoned an indispensable part of the system of *their* management.

To enquiries of this kind I answer, that no man but he who is enabled from his previous studies and habits to reason upon the phænomena of health and disease, can possibly form a correct estimate of the number of complaints amongst Horses which spring solely from the injudicious methods in which they are commonly treated. Neither ought we to overlook the effect which custom has, in enabling the bodies of men and animals to resist for a time, the influence of the most noxious sources of disease. With Horses moreover, it very commonly happens, that there is the appearance of health, when the foundation of disease is laid, and the astonishing rapidity with which the inflammatory diseases of pampered Horses run their course, is to be attributed, beyond all doubt, in great measure to the prevalence of the custom of cloathing them. Hence, one's ears are for ever dinned with complaints of the conduct of dealers, who are frequently charged with having sold Horses that were rotten, whose grease became melted in a few days after the purchase, with a great deal more of such kind of senseless jargon, upon which the changes are for ever rung, in order to account for the sudden death of such as have been put to severe work, or exposed to great vicissitudes of temperature, soon after they have been made up for sale.

In fact I consider, the health of cloathed and pampered Horses, notwithstanding the regularity of their exercise, (which constitutes indeed their chief barrier against disease) to be somewhat of that precarious artificial kind, which hard livers who take a great deal of strong out-door exercise, are sometimes enabled to keep up for a considerable length of time; in whose case, however, it commonly happens, either that some of the vital organs become impaired and thus a premature old age, is induced, or, that the springs of life are suddenly snapped, as if to mock the folly of the specious reasoning of the sensualist, and to justify the maxims of virtue and temperance.

But, the fact is, that there lies at the very threshold of the argument, a stumbling block which requires to be removed, before the reasonableness of what I have advanced respecting the effects of our stable system, upon the health of Horses, can be fairly appreciated. And this stumblingblock is, the common, though erroneous notion which prevails respecting the natural period of the Horse's life. For, how commonly do we hear a Horse that has arrived at the age of fourteen or fifteen years, called a very old Horse? and so indeed such a Horse may be considered to be, in one sense of the word, as, besides the innumerable instances of those which die before they have performed much labour, we have the authority of Mr. Bracy Clark, (who has looked into this subject with that philosophical penetration, which distinguishes all the productions of his pen) that, for one Horse which is sold in London so old as fourteen years, for the purpose of being killed, six find a final period to their miseries at the slaughterhouses of that metropolis, before they have arrived even at that age. Whereas the Horse is not naturally a short-lived animal, attaining to the period of nearly forty, or, as some old writers have

asserted, fifty years. From these facts it must be evident, I think that there must be something radically wrong in the general system of our treatment of this animal, independently of the hard labour which we oblige him to perform, and of the many cruelties to which he is subjected, as well as of the various incurable diseases of the feet, which are produced by the practice of nailing iron shoes to his hoofs.

## Litter.

**H**AVING already shewn in the chapter on Air, the great share which Litter has in contributing to the vitiation of the atmosphere of stables, and in this way producing some and aggravating many of the diseases of Horses, it may be thought there cannot be much necessity for me to go minutely, into a detail of it's effects under this head. But as I am of opinion that the subject of Litter, though not entirely overlooked, has, in comparison of its vast importance, been but superficially enquired into, even by scientific writers on our art, I shall rather prefer exposing myself to the charge of tautology in the discussion of it, than omit any point which may appear likely to elucidate the effects of its agency on the health of the Horse. For, I have long been impressed with the conviction, that the materials which are commonly used for litter in these countries, are, on account of their being so extremely susceptible of the putrefactive fermentation, the chief cause of curtailing the natural period of the life of Horses, by silently and slowly undermining the very principles of their frames.—I have already furnished pretty satisfactory

proofs that the Volatile Alkali which is generated in litter, is at least capable of *aggravating* the disease called moon-blindness, and the more we consider the phenomena of this disorder, the more we shall be justified, I think, in concluding that the use of litter is the grand cause of this singular affection of the eye. For, though it must be admitted that some inexplicable peculiarity of structure does certainly exist in the outer coat of the eye of the Horse, which lays him more open to derangements in its functions, than any other animal which we domesticate, yet, there can be no question that this primeval susceptibility of disease, is called into action, chiefly by means of the Volatile Alkali which has been proved to exist so abundantly in the air of stables. To this notion, however, of mine, of the hurtfulness of Volatile Alkali, which I have long been endeavouring to obtain converts to, I have heard it objected, that dogs which are crowded together in kennels, and which must, consequently, be subjected to the influence of a fouler atmosphere than that of stables, are not peculiarly subject to disorders of the eyes, and rarely become blind until the arrival of old age.

But, if this argument be closely investigated it will be found rather to strengthen, than to invalidate, that which I am endeavouring to support. For, we must not suppose that the putrefactive fermentation (the parent of Volatile Alkali) goes on in kennels, notwithstanding the nauseousness of their stench, in any thing like the degree that it does in stables. We must distinguish in fact between the effects of odour and those of the putrefactive process. The smell of kennels, it is true, is often loathsome to a great degree, from a variety of causes, and chiefly, perhaps, from a concentration of the effluviæ which exhale from the skins of the dogs, by which means the atmosphere be-



comes no doubt in a considerable degree vitiated. But, it must be recollected that dogs (except in extreme cases) instinctively avoid contaminating their beds, with their urine or fœces, which would be the means of exciting the fermentative process in the straw, and thus, as little or no putrefactive fermentation goes on in *their* beds so, little or no Volatile Alkali will be generated from this source. If any one will take the trouble of comparing the pungent effects which are produced upon the eyes and nose, by the air of stables, with the merely nauseous smell produced by that of kennels, he will have no hesitation in admitting the validity of these remarks. Now, the facts that have been already adduced on the authority of Doctor Egan, may serve to convince us that the urine alone, would be capable of diffusing an abundant quantity of Volatile Alkali in the air of stables, independently of any other source. Not having had an opportunity of making a set of experiments on the urine of different animals, which would enable me to speak positively on the subject, I cannot venture to assert that the urine of the Horse contains more urea or gelatine than that of other animals, but I think we may reasonably presume one or other of these circumstances to be the case. For, Fourcroy and Vauquelin have ascertained that the difference which exists in different urines, as to their susceptibility of the putrefactive process, depends on the relative quantity of urea which they contain, and has been proved that the *rapid* putrefaction of urine is owing to the action of gelatine on that singular substance.

And further, we know from the experiments of these celebrated chemists, that urea is the great source of the Volatile Alkali, which is generated during the putrefaction of urine, inasmuch, as 288 parts of urea were found to yield by distillation 200 parts of carbo-

nate of ammonia and according to Dr Thomson 100 parts of urea are composed of 39.5 parts oxygen, 32.5 azote, 14.7 carbon, 13.3 hydrogen. We see then, most satisfactorily, by the chemical analysis of urea, that this substance contains all the elements of carbonate of ammonia, which is the state, I apprehend, this salt exists in, so largely, in the air of stables.

Now and then, however, it is found in stables in a caustic state. For, I have been frequently struck with a fact that takes place when lime-washers are employed in whitening the walls of stables, which illustrates the phenomenon called by Chemists single elective attraction, and proves at the same time the presence of this salt in immense quantities. For, as the Volatile Alkali which is deposited largely on the walls and ceiling of the stable, exists in the state of carbonate, no sooner is the lime applied, than the carbonic acid quits the ammonia, to unite itself to the lime, for which it has a greater affinity, and, thus, at the same instant that the lime is converted into chalk, and becomes mild, by the union of the carbonic acid, the ammonia becomes caustic by the loss of it.

The difference with respect to its pungency is instantly manifest. For, I have always observed that the workmen (especially if they were occupied in lime-washing filthy and ill-ventilated stables) became unable to bear the effects of the *caustic* Volatile Alkali upon their organs of sight and smell, which, in these cases, proves so insufferably pungent, as to oblige them to desist from their work, and run out into the open air, from time to time, in order to escape from its influence. These facts may serve to fortify others that have been already adduced, by way of proving the great quantity of Volatile Alkali which is mixed with the air of stables, as it cannot be

doubted that such portion of it as is deposited upon the walls and ceilings must have had its origin from the urine and litter, and have been previously mixed with the atmosphere. In the chapter on Farcy and Glanders I have endeavoured to shew that these formidable diseases are the offspring of our ordinary Stable Management, and that they are more commonly originated by the system of the individuals that are the subjects of them, than propagated (as is usually supposed to be the case) from one Horse to another, by contagion. And I am strongly impressed with the conviction that the use of fermentable materials as Litter, when they come to be acted upon by the urine and fœces of the Horse, chiefly gives rise to these maladies, which so commonly baffle the utmost efforts of our art. For, though I have adduced facts to prove that hot and vitiated air has been found sufficient to excite these diseases, *in the course of a few hours*, in the instance of several Horses which were cooped in the hold of a Transport, the hatches of which were battened down, yet, we are not to infer from this circumstance, that air so spoiled, would be capable of producing either of these forms of disease, in so short a space of time, except in the frames of such Horses as had been previously rendered susceptible of Farcy or Glandrous action, in consequence of having been subjected for a considerable time, to the grand exciting cause of these disorders. Whilst at the same time, I think it admits almost of demonstration, that it is not the mere superabundance of heat in the air of stables (whatever may be imputed to the affair of its deficiency in oxygen) that is sufficient to generate Farcy and Glanders amongst Horses; especially if we contrast the circumstance of the non-existence of those diseases on the continent of South America, with that of their very great fre-

quency, in that part of the continent of India, where the British system of Stable Management has made its way. Now, although it be true, that in our Indian Possessions, Horses are not stabled, but stand under linnies or open sheds, yet, their litter consists of such substances as are readily-susceptible of the putrefactive fermentation, and the consequence of this is, that moon-blindness, Farcy and Glanders, are just as commonly met with there, as in the British Islands. For, the free circulation of air in the open sheds, which must of course sweep off a great deal of the Volatile Alkali that is generated, is not sufficient to counterbalance the immense quantity of that salt which is evolved from the putrefaction of the urine and litter; so prodigious is the rapidity with which that process runs on, in a climate where the heat is so intense, that the Thermometer is known to stand commonly, as high as ninety in the shade.

Whereas, in some parts of South America, where the heat, although not altogether so great, is yet sufficient to expedite the putrefaction of animal and vegetable matter with great celerity, Horses are, on account of their small value, not only not stabled, but neither are they subjected to the pernicious effects of fermentable Litter, the use of which is comparatively unknown, in that part of the world. These are strong, and, I believe, incontrovertible facts. Nevertheless, so impossible is it to extricate altogether, even liberal minds from the trammels which custom imposes, that I have frequently found it difficult to convince the enlightened, that my opinions were not rather the dreams of hypothesis than the result of many years practice and calm consideration of the subjects on which they are founded. And as to people in general, they are so much

in the habit of associating the notion of what is called a *comfortable* stable, with the conviction of the propriety of our ordinary established discipline, which they deem essential to the well being of their Horses that a man who should propose the free circulation of air, the laying aside the use of cloathing, and that Horses should stand through the day time upon the pavement, and all this with the sole view of securing them against disease, would run the hazard, rather, of being considered a fit Inhabitant for St. Luke's or Bethlehem Hospital, than as having pretensions to the possession of his rational faculties. Not unfrequently indeed, it has been objected to me, that if my notions on these points were not too hypothetical, we should certainly find a much greater number of instances of moon-blindness, Farcy and Glanders than we do; inasmuch, as the stable system which I decry is avowedly that which is general, throughout Great Britain and Ireland. To which I answer, that all Glass-blowers do not die consumptive, all Plumbers do not become paralytic, nor are all chimney sweepers affected with cancer in the scrotum; but, it will be readily admitted by every man who is a competent judge of the facts, that the occupations which these respective persons follow, occasion the diseases to which they are peculiarly liable. And though I have repeatedly insisted upon the prejudicial effects, of a superabundance of heat in the air of stables, as the means of subjecting Horses to rapid vicissitudes of temperature, which occasion so many fatal inflammatory diseases, yet I do not consider that the heat of the air operates so much to their disadvantage, upon the large scale, as the Volatile Alkali, with which it is in a manner saturated, in low confined stables. And this is, in fact, the sole reason why glandered Horses that have been a long time at grass, and appear, on account

of the ceasing of the running from the nose, to be cured of the disorder, have the discharge excited afresh; when they are brought back into the stable, although this circumstance is commonly attributed either to the heat of the atmosphere of the stable, or to the loss of the green food, which they had been previously accustomed to. For, in this instance, the Volatile Alkali operates as a morbid external stimulus to the membrane of the nose, just as it does in that of moonblindness, upon the outer membrane of the eye. I have thus glanced at some of the more prominent inimical effects of Litter, on the general health of the Horse. It remains for me to speak more particularly of its effects on the feet and legs.

Now, though the facts which Mr. Bracy Clark has adduced on this subject, must be quite sufficient to satisfy the mind of every unprejudiced person, that contraction of the feet of such Horses as stand upon litter, does not proceed faster in the stable, *provided they be not shod*, than it does whilst they are at grass; in other words, though this Gentleman has proved that the use of iron shoes, be their form or mode of application what it may, is the great source of mischief to the feet, yet, I cannot help thinking that he has somewhat underrated the influence which the inflammatory agents of the stable, must have, in accelerating contraction when it has once begun. For though I am far from doubting the accuracy of Mr. Clark's inductions as to the shoe and nails, being the occasion of most of the evils in the feet, yet I do not think it follows by any means, that, because these instruments are the original cause of the mischief, it may not, nevertheless, be materially exasperated by the litter and the other inflammatory agents of the stable. For, if it can be proved that the shod feet of such Horses as are kept abroad, do not contract so rapidly as

the shod feet of those that stand constantly on litter (a fact I think not easily controvertible) it must be pretty plain, that the use of litter is highly inimical to the feet. I am of opinion, moreover, that the practice of letting Horses stand upon Litter is injurious to their feet, for other reasons than merely this of accelerating contraction. For, I cannot but consider that the soft cushion which the straw furnishes to the feet, must render the elastic fibres that connect the hoof to the coffin-bone, less capable of bearing the shocks which they are necessarily subjected to, when the Horse is galloped or trotted on our artificial roads.

Thus, it sometimes happens, that Horses which are just taken up from grass, and immediately rode fast upon hard roads, are affected with acute inflammation in these fibres, (which is denominated a sudden founder in their feet) in consequence of the very gentle and gradual nature of the extension, previously given to them, whilst the animal was in the field. The chief means however, by which Litter becomes prejudicial to the foot of the Horse, is by heating it; and this it does, not by communicating heat to, but by confining it in, that organ. For, the materials of which Litter is composed, being slow conductors of heat, will prevent the hoof from ever becoming so cool, and by consequence so pliable, as it would otherwise be, in case the Horse stood upon the pavement, the materials of which, being better conductors of heat, than straw, though actually not much colder, will more rapidly carry off the heat from the hoof.

But, we are misled by our feelings on this important point, and obeying their immediate impulse, our language (philosophically speaking) becomes incorrect. For, if cotton, wool or fur, which

we call very warm articles, be exposed to a frosty atmosphere, and their heat be afterwards measured by the Thermometer, they will be found to be as cold as marble or stone, that has been exposed to the same temperature, although, if we feel the former, we say they are warm and comfortable, because they carry off the heat of our skin slowly, and if we touch the latter, we pronounce them extremely cold, because they conduct it very rapidly, from the surface of our bodies. The use of Litter, therefore, must be prejudicial to the feet by confining their heat; and by rendering the hoofs harder, drier and less elastic, it must inevitably exasperate the evils which the practice of shoeing brings along with it. The use of oil too, (as has been fully explained under the head of the General Treatment of the Feet) must undoubtedly aggravate the pernicious effects which Litter has upon the hoofs, by rendering them incapable of being acted upon, and softened by water. In that disease of the frog called a running thrush, which proceeds from inflammation and ulceration of the sensitive frog, wet Litter must inevitably increase the complaint, in consequence of the acrimony of the putrid urine, which sometimes occasions an extensive thrush to end in canker.

Further, the use of Litter is highly inimical to the limbs, and the chief cause of the great winter disease of Horses, called Grease, which has already been proved to proceed, not from vitiated blood, or foul humours, but, merely from inflammation of the skin of the fetlocks, in consequence of the rapid vicissitudes of temperature, to which this part of the animal, is frequently exposed. For, even if Litter be thoroughly dry, by enveloping the fetlocks, it will confine the heat of the skin, and thus render it very ill calculated to bear the effects of a frosty atmosphere; and if it be wet, it will prove a sort



of two-edged sword ; as it will not only keep the skin in an unnatural state of heat, so long as the Horse continues to stand upon it, but will be the means of exposing them to a more intense degree of cold when he leaves the stable, than would otherwise follow, in consequence of the rapid evaporation that will take place from the surface, when subjected to the action of the external air. And when once the inflamed skin cracks, and small ulcers (or chops as they are called) are formed in it, the acrimony of the putrid urine must prove a highly irritating application to the sores. After all, however, unless I were able to point out some article, not of a fermentable kind, which might be brought into general use, as a substitute for the materials commonly employed for litter, in these countries, and which I acknowledge myself incapable of suggesting, it may be thought to be little better than declamation, to inveigh against the mischiefs which they produce. But, it must be recollected that there are many evils, both in the natural and moral world, which, though they do not admit of being entirely prevented or remedied, may nevertheless, be mitigated in a great degree ; and this I apprehend to be the case, with regard to the use of litter. From what has been premised, it will be seen, that the mischiefs resulting from the use of litter, are produced by the agency of two great causes, viz. the heat of the atmosphere, and the urine of the Horse. But strict attention to cleanliness, and a thorough ventilation of stables, will enable us to keep the atmosphere as cool as we can desire, during the greater part of the year ; and it should be our great object, to prevent the urine from being absorbed by the litter, by every means in our power. For this reason, Horses should stand through the day time, upon the pavement, which should be so constructed, as to carry off the urine into a reservoir, purposely

made for its reception, on the outside of the stable. For, though this excretion operates so much to the disadvantage of the health of Horses, when it comes to be mixed with the litter, yet it is of too much value in rural economy, and too precious a material to the practical farmer, not to be husbanded with the most scrupulous care. Though it behoves me, therefore, as a Veterinarian, to point out the evils which it occasions in stables, yet, I consider it to be scarcely less incumbent upon me, to advert to its prodigious importance as an article of manure. In fact, I consider the urine of the Horse to be of more value as manure, than the dung of the animal. And though this subject has of late excited the attention of chemical Philosophers, still, I suspect, we are, as yet, but in the infancy of rightly appreciating the value of urine, as applicable to the purposes of practical agriculture. It is the very property, indeed, of urine which occasions it to be so hurtful to the health of Horses kept in stables, which renders it of such inestimable value as a manure, namely, that of being so readily susceptible of the putrefactive fermentation. The Farmer therefore ought, undoubtedly, to preserve it with as much care, as he would the apple of his eye. The contents of the reservoir, should be thrown from time to time, upon such heaps of dead vegetable matter as he wishes to encourage the process of putrefaction in; and in order to save and accumulate the greatest quantity of urine possible, the pavement of the stalls should be constructed of such materials as admit of very few interstices. For, these interstices occasioning the lodgement of the urine, it will readily give the first impulse to the fermentative process in the litter; especially, when assisted by the heat communicated to it, from the body of the animal, when he lies down. But, though the pavement should be

as smooth as possible, I disapprove, nevertheless, of wooden floorings, which I have now and then seen in Stables, because, as they must always be embued with urine, they must constantly exhale Volatile Alkali, unless they be washed daily.

For the reasons which have been stated, it must be pretty evident, that the pavement of Stables, when constructed of convex stones, (which form indeed, the ordinary kind of pavement,) must always contain a quantity of leaven, (if I may so speak) sufficient to communicate the putrefactive fermentation to the fresh litter that is laid over it.

And for this reason, it would greatly contribute to sweeten, and cool, the atmosphere of stables, if, during the summer time, the pavement of the stalls were washed once a day; and this operation might be managed in such a manner, as not to dilute the urine in the reservoir. The whole of the litter should be removed early in the morning, and the wet parts should be carefully selected from the rest, in order to be thrown upon the dunghill; the remainder, whenever the weather will permit, should be spread abroad, for some hours in the open air, and turned two or three times. No heaps of wet litter and fœces, should be suffered to remain in the stable, but should be instantly carried away. This plan of managing litter, will materially contribute to the purity of the air, and the health of Horses. But the mere saving of straw, would prove to be a bad species of economy, to every man, whom manure was an object to, under any circumstances, and more particularly if the utmost care were not taken, that no urine should run to waste, and that it should be thrown, from time to time, on the manure heap, which would be the means of salurating the whole of the straw with urine.

And though this method of managing the straw, when the saving of it becomes an object, by applying the urine to it out of the stable, will be found to render the mass of manure smaller in quantity, than what is produced by the usual mode, yet, the quality of it would be materially improved thereby; and the farmer might use it in the state of, what is called long dung, with much greater advantage. For, the equable application of the urine to the straw, will ensure the rapid putrefaction of the entire mass, and do away the necessity of waiting until the whole shall have become rotten, by which practice a prodigious loss ensues to the farmer. And as the use of long dung, on the principle of economy, has been strongly recommended by that illustrious chemist, Sir Humphrey Davy, and appears to be approved of by Mr. Coke of Norfolk, and many other enlightened practical agriculturists, solely on this account; it must be pretty evident to the advocates of this system of manuring, that the method of saving the urine, and applying it to the straw, which I have recommended, holds out incalculable advantages.

For, as long as urine and straw can be obtained, the process of manure-making may be constantly and regularly carried on. And if any urine should remain, after the straw is completely saturated, it might be advantageously employed, in forwarding putrefaction, in any other sort of dead vegetable matter, and, thus, materially contribute to serve the interests of the farmer. Indeed, many persons are so circumstanced, that the saving of straw, instead of proving in any degree economical, would be a positive loss to them; as it is by no means an uncommon practice, in some places, to supply Liverystable keepers with straw, for the sake of receiving the manure in return.

But, all proprietors of Horses, howsoever they may be circumstanced in this respect, will find it uniformly their interest, rather to encourage the putrefactive fermentation of the litter out of doors, than in their stables; which, judging from the pungency of the atmosphere and the heat of too many, one would imagine was the object meant to be obtained. At those times and in those places, however, where the value of straw becomes great, as food for Cattle, the dried haulm or potatoe-top may be substituted for it, as litter, and has been recommended for this purpose, on the highly respectable authority of Mr. Curwen, in his excellent treatise on the economy of feeding stock. But, though there can be no doubt that the haulm would be a very good substitute for straw, yet, the use of it as litter, would require still greater circumspection as to the cleanliness and ventilation of stables; for, as it contains a great deal more fermentable matter than straw, so, there can be no doubt, that it would be the means of diffusing more heat and Volatile Alkali in the atmosphere. A few individuals are so peculiarly circumstanced, that they might be able to find a supply of saw-dust for their stables, which would make excellent litter, especially that produced from the different species of firs, which would resist putrefaction very strongly, on account of the turpentine which they contain. In a few districts, heath might be obtained and would serve the purpose of litter. In some of the southern parts of Europe, they use sand, for their Horses and mules to lie on, and there are many parts of Great Britain and Ireland, where the same practice might be had recourse to with advantage, during the hot months of the year. However, notwithstanding the inimical effects which litter has upon the health of Horses, when composed of the ordinary materials, and managed in the usual way, it must, nevertheless, be admitted, that a con-

siderable portion of good springs to the community, from this very evil.

For, though the superiority of stable manure, over many other kinds of putrefied, vegetable and animal composts, has perhaps been considerably overrated, yet, it cannot be denied that it is of immense value in agriculture. And, therefore, though the first and grand object with me, undoubtedly, is, to point out and expose whatever I conceive to be prejudicial to the health of Horses, in our stable system, and to insist upon this point, as one of paramount consideration, yet, as I think there can be no doubt that urine is by far the most valuable material of stable manure, I have felt it not less incumbent upon me, to recommend the most scrupulous preservation of it, in reservoirs ; instead of suffering it to be partly diffused in puddles over the pavement, and partly permitted to run to waste out of the stable. I have endeavoured, in fact, to shew, not only that urine becomes the great means of heating and vitiating the atmosphere of stables, by exciting the putrefactive fermentation in the straw ; but, that this process, so necessary to the farmer, may be as effectually carried on, as far as the object of manure is concerned, out of doors, though perhaps, not quite so rapidly, as in the stable. And, as facts, and not theory, have long ago proved to me the inestimable value of urine, as an article of manure, I have laid considerable stress upon the necessity of carrying it off into reservoirs, for the purpose of being afterwards thrown from time to time, upon heaps of such materials as require to be fermented.

For, however strong my conviction may be of the impolicy of converting stables into storehouses and factories of manure, yet, I might probably have hesitated about urging this matter so strongly, if I did

not feel equally well assured that the quality, at least, of stable manure may be essentially improved, at the same time that the health of the Horse may be in a great degree secured, by attention to the hints, which I have thus loosely thrown out, upon this important subject.

After what has been said, it may seem almost superfluous to suggest, that dunghills should never be made in situations, where the unwholesome vapours which arise from them, can find their way into stables.

## Water.

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OF all the subjects connected with the management of Horses, there is none, I believe, with which more extravagant notions are associated, in the minds of many, than this which respects the article of Water. It is well known, that many of the diseases of Horses, are attributed to the quality of the water which they drink, from that proneness which exists in the minds of those who have the care of them, to account for all the derangements which take place in their health. Now, the fact is, that the quality of water, has but little to do either with the diseases of Horses, or their general condition, in comparison of the circumstance of its quantity, and the number of times at which it is given to them. Not that I mean it to be inferred from this remark, that there is no difference in the effects of different waters, upon the stomach and digestive organs of the Horse, which is by no means what I am prepared to maintain, but merely to have it implied that it is the management of water, both as to the quantity in which it is given, and the periods of giving it, which chiefly occasions diseases and derangements in the health of Horses.



The most prominent absurdity that commonly prevails, in regard to the management of water in stables, is the practice of letting Horses drink only once, or, at most, twice a day.

Now, when it is recollected that instinct prompts even such Horses as are kept at grass, to drink frequently, especially in the summer-time, how much more necessary must water be to those that are kept entirely on dry food, in the stable? The more we reflect upon the practice, which custom has established, in regard to this branch of stable management, the more, I think, its absurdity must become manifest. It is inconceivable indeed, upon what principle, or from what motive, unless from the view of saving trouble, this practice of giving water so seldom, to Horses in stables, could have originated. We hear people for ever talk, of taking Nature for their guide, and, yet, see them perpetually act in the teeth of her simplest and clearest dictates. For, to every unprejudiced person, it must surely be evident, that this practice is not merely unnatural and monstrous, but, at the same time, impolitic and cruel. Does any man imagine that a state of excessive thirst is not as insufferable to a brute animal as to himself? If he has any doubt upon this subject, let him but observe the countenance of a Post-Horse that has been for twelve or fourteen hours without water, and has been subjected, in the mean time, to severe exercise in very hot weather. For, if, under these circumstances, he be brought out of the stable to the water-trough, a species of temporary delirium may frequently be observed, in the expression of his wistful and anxious eye, while he is taking in the cool and grateful draught, so refreshing to his hot and feverish frame. And if the attendant, under the apprehension that the Horse will drink more than is pro-

per for him, attempt to stop him, how frequently may he be observed to exert his utmost strength, in the way of resistance, in order to gratify his thirst. Hence frequent fits of gripes or spasmodic cholera, and, sometimes, fatal inflammations, of parts essential to life, are the consequence of this absurd system of management.

If any one should be inclined to think, that the case which I have put, is an extreme one, yet, it must be admitted, that is by no means uncommon.

Unfortunately for the cause of humanity, the colouring here is not too high, nor is any thing overcharged. The picture is faithfully copied from nature. But, leaving out of our consideration, the case of Horses subjected to hard labour in very hot weather, let us look at the question as it stands, with respect to those that get only moderate work, at the other seasons of the year, and it will be evident, that instinct prompts them to drink more frequently, than they are permitted to do. I do not mean, however, to contend, that Horses kept in stables, should be indulged in drinking as often, and as much water as they might be inclined to do, because many Horses would not only drink more than would be necessary for their health, but some would take such a quantity, as would distend the stomach so much, as to preclude the possibility of obtaining from them, the full amount of their labour and services.

And I believe, it is the fear lest they should distend their stomachs too much, which induces many people, to persevere in the custom of watering Horses, only once, or twice a day. Now, it is a fact sufficiently curious, and not generally known, that if a Horse have water so placed in the stable, that he can gratify his thirst agreeably to his feelings, he will, after a time, drink less than if he were watered only once or twice a day.

A little reflection will enable us to explain satisfactorily this apparent paradox.

For, by this method of treatment, as he will never be subjected to extreme thirst, so, he will never be inclined to drink such a quantity of water as will violently distend his stomach. And it can require, I should think, but little argument, to shew that water taken into the stomach in small quantities, from time to time, must be much more favourable to the process of digestion, at all seasons, and under all circumstances, but especially in the case of Horses that are kept upon dry food, in the summer-time, than when the quantity of five or six gallons, is thrown into that organ, at one time.

And though the practice of letting Horses have access to water at pleasure, might not be found to be advisable, in the instance of such as are voracious drinkers, there can be no doubt, nevertheless, that it would be better to give them the quantity that is thought necessary for them, at four or five times, rather than at once or twice, in the day. And, if this method of managing water, were brought into general use, much less solicitude about its temperature, at any season of the year, would be necessary.

For, a state of extreme thirst, being by this means prevented, Horses would scarcely ever be induced to drink such a quantity of water at once, as would be detrimental to them, merely on the score of its coldness, a thing that very commonly happens to such as are thirsty and overheated, especially in wintertime. The stomach of the Horse, it must be admitted, is not possessed of such exquisite sensibility as the human stomach, which the great John Hunter, in his own emphatic language, used to call a sort of second brain, on

account of this property. For, it is a well known fact, that sudden death has often been the consequence of imprudently drinking a large quantity of cold water, when the body has been violently heated by exercise.

Now, though Horses which are permitted to drink their fill of cold water, when exhausted with heat and thirst, do not drop down dead suddenly, yet it is well known that they are frequently attacked with gripes, and, sometimes, with violent shivering fits, which are, but too often, the precursors of fatal Inflammations of some of the vital organs. To prevent these ill consequences of cold water in winter, grooms have often recourse to the practice of letting a bucketful stand in the stable, for an hour or two, under the persuasion that they may then more safely indulge the Horse, in the gratification of his thirst. But, notwithstanding the general temperature of stables, such a body of cold water, will be so slowly acted upon through the medium of the air, that the application of the thermometer will shew a very small encrease of heat to have taken place in the water. Whereas, in all such cases, if only two or three pints of boiling water, were added to the contents of the bucket, it would prove quite sufficient to obviate any mischief, which the extreme cold of the water, might otherwise produce. On journies, Horses are often kept in a state of excessive thirst, (a state by the bye nearly if not quite as debilitating as that of hunger,) from the ill-judged fears which people commonly entertain, respecting the consequence of indulging them in water. But, on journies, though it would be absurd to let them drink their fill, yet, as Mr. White has very properly directed, they should be allowed to sip frequently, especially when they travel with great speed, or in very sultry weather. And,

though the dictates of policy, as well as those of humanity, clearly suggest, that Horses should never be urged to exertions more severe than such as can be performed without injury to their frames, yet, as this is a circumstance more to be desired than expected, it becomes advisable to point out the means, best calculated, to mitigate some of the evils, produced by the contrary mode of treatment.

Now it is a fact sufficiently familiar, that when a Horse which is on a journey, that is performed rapidly, refuses to eat, it is no longer safe to urge him farther.

This hint, indeed, is generally taken by the most inconsiderate. But, business perhaps, or whim, or some case of supposed necessity, sometimes leave no time to make trial of this test, of a Horse's ability to proceed; for, if he be found to flag, a more speedy and certain remedy for his dulness is at hand. The whip and spur are known to be admirable stimulants, and every rider knows how to apply them with effect.

But it very frequently happens, that this debility of the Horse, depends not so much upon inanition, or a tired state of the muscles, as upon extreme thirst, and that feverish condition of the body, which always takes place more or less, in consequence of severe or long-continued muscular exertion. But, this condition of the frame might frequently be prevented from going to excess, if Horses were permitted to drink a little water, every now and then, instead of being pushed on by severe measures, to reach a particular stage. For, the consequence of this plan of treatment, frequently is, that instead of eating a double portion of corn, which the rider calculates upon allowing his Horse, the animal obstinately refuses to take nourishment, in whatsoever state it is put before him: and, this, for the best of all

possible reasons. For, fatigue and thirst having produced a temporary feverish indisposition, as food under these circumstances, would be rather prejudicial than salutary to the animal, he instinctively refuses to take it.

The powers and condition of the stomach, necessary to the processes of digestion, being suspended, the desire for food no longer exists. If there should be any apprehension, however, that water alone, although given in very small quantities, must prove inimical to a Horse, on a journey, if taken frequently; in this case, from one to two pounds of oatmeal, or barleymeal, may be mixed with three or four quarts of water, from which the extreme cold has been previously taken off, and given to the Horse as occasion may require. And, this mixture, a tired thirsty Horse will often be found to drink with avidity, though he refuse to take food in any other shape, so grateful to his parched palate, is the fluid which it contains. Two great ends, therefore, are gained by this plan of treatment. For, not only is the thirst of the animal assuaged, by the effects of the water, but, the state of comminution which the meal is in, renders it easily acted upon by the diminished energy of the stomach, and therefore, the Horse obtains the combined advantages of food and water, by this mode of exhibiting the latter. And, it is in some degree, upon the same principle, that two or three pints of ale or porter are found to invigorate Horses after excessive fatigue, or rapid exercise, though, no doubt, something must be put down to the cordial effect which fermented liquors have upon the stomach, on account of the ardent spirit which they contain. But, so long as Horses will readily drink a mixture, of meal and water, I consider it to be far preferable to malt liquor, and much more to spirits, both on account

of the simplicity of its materials, the greater quantity of actual nutriment contained in it, and, also, from its being free from that kind of unnatural stimulus, which the stomach of a brute animal, can never have occasion for, but in the most extreme cases. Now, as to the quantity of water, which it would be proper to allow Horses that perform regular work, I think it must be impossible to fix any standard. The size of the animal, the nature of his employment, the quality of his food, and his particular constitution, must all be taken into account. We see, from the high condition, and amazing performances of Hunters, and Racers, how much less quantity of water, than that which they would naturally be inclined to drink, is sufficient for the purpose of producing vast exertions and of supporting great fatigue. But, I glance at this fact, rather with the view of shewing how far custom may pervert some of the operations and instincts of nature, than of holding up the system of racing stables, as a model for general imitation. For, without pretending to a regular imitation, in the mysteries of the divan at Newmarket, I will venture to assert from many circumstances, that are too palpable to escape the observation of any man, of common sense, that notwithstanding the prodigious improvements introduced into it, within these few years, there yet remains blended with the body of their system, a great mass of prejudice and error. And this, indeed, is pretty much the case, with the system of hunting stables also, insomuch that some of the best sportsmen, and practical judges of Horses, which I have ever met with, have frequently assured me, that were it not for the supposed advantages accruing to their feet and limbs, they would never think of turning out their hunters, from experience of the prodigious trouble and difficulty, attendant on the process of recover-

ing their stable condition, after a long run at grass. Now, one of the obstacles to this recovery may, most assuredly, be placed to the account, of the management of water.

For, if, as I have before observed, Horses that are kept out at grass, are found to drink frequently during hot weather; is it reasonably to be expected, that the digestive process can go on well, when the animal is suddenly deprived of that soft succulent food, which he naturally delights in, and which makes comparatively small demands upon the powers of the stomach, and being brought into a hot stable, is not only put all at once upon dry food, but is permitted to drink, at most, only twice a day? Ignorance and prejudice, I am aware, will probably smile at the question, but common sense and candour, will answer in the negative.

We all know that it is a common thing for persons who go to reside in hot climates, to express the sensations they experience, from the conflict, which their systems endure, by the phrase of undergoing a seasoning, which seasoning, though confined almost entirely to the effects of heat alone, is often known to shake even the strongest constitution, to its very foundation. But, Horses are expected to bear with impunity, such a complicated kind of seasoning, as compared with this which relates to the affair of temperature alone, may be called a seasoning with a vengeance. For, is not theirs, a seasoning of hot air, a seasoning of foul air, a seasoning of diet, of water, of cloathing, of confinement, a seasoning, in fact, of every thing which relates to the functions, and the health of the animal. So, that we ought not to wonder at frequent attacks, of (what I call) the stable fever, when Horses, just taken up from grass, are suddenly put upon the ordinary diet, and system of stables, or that they



should require a considerable time, before they recover their stable constitution.

I shall not venture, however, for the reasons which have been stated, to lay down any precise rules either respecting the quantity of water that should be allowed to Horses, or the periods at which it should be given. But will content myself with observing, that we shall be safe in adhering to the general directions which have been given, or rather the suggestions that have been thrown out, upon both these points.

After these observations, I proceed to make some remarks upon the quality of waters. And as I know of no better authority on the qualities of common water, than that of Dr. Thomson, I shall venture to quote freely some remarks of that Philosopher, on this important branch of my subject.

Good water, as this ingenious Chemist has observed, is as transparent as crystal and entirely colourless. It has no smell, and scarcely any taste, and, in general, the lighter it is, so much the better. The waters used for the common purposes of life may be reduced under four heads, namely 1st rain water, 2nd spring and river water, 3rd well water, and 4th lake water. Rain water, unless when near a town or collected at the commencement of the rain, possesses the properties of good water in perfection, and is as free from foreign ingredients, as any native water whatever. And I can add from my own experience, that, even though it be caught under the disadvantage of falling in a large city, if it be collected in a cistern, where after a time it will deposit its impurities, it has considerable superiority over most of the waters of springs, in forwarding the condition of Horses. For, though the water of springs is, in fact,

rain water which gradually filters through the earth, collects at the bottom of declivities, and, thus, makes its way to the surface, yet, as it almost always meets in its passage through the soil, with some body which it is capable of dissolving, so, we generally find even in the purest spring water, a little carbonate of lime, and common salt, besides the usual proportion of air, and carbonic acid gas. River waters may be considered as merely a collection of spring and rain water and, therefore, are usually possessed of a degree of purity, at least equal to these. Indeed, when their motion is rapid, and their bed siliceous sand, they are generally purer than spring water, depositing, during their motion, every thing which was mechanically suspended in them, and retaining nothing more than the usual proportion of air, carbonic acid gas, and a very minute quantity of carbonated lime, and common salt. When their bed is clayey, they are usually opal-coloured, in consequence of the particles of clay which they hold in a state of suspension. I think there can be no doubt, that, next to rain water, river water, is the most eligible for Horses. Well water is essentially the same as spring water, being derived from the same source, but, it is, more liable to be impregnated with foreign bodies, from the soil, in consequence of its stagnation or slow filtration. Hence, the reason that well water is often of that kind, which is distinguished by the name of hard water; because it does not dissolve soap, and cannot be used for dressing several kinds of food. These properties are owing to the great proportion of earthy salts which it holds in solution, and when well water is found to be so hard as to be unfit for the purposes of washing with, it will always be prudent to reject it for Horses, provided either rain water, river water, or the water of springs, can be

had recourse to. The water of lakes is merely a collection of rain, spring, and river water, and, of course, contains the same heterogeneous salts. But it is seldom so transparent as river water; being usually contaminated, with the remains of animal and vegetable bodies, which have undergone putrefaction in it. For, as lake water, is often nearly stagnant, it does not oppose the putrefaction of these bodies, but rather promotes it, whereas, in river water, which is constantly in motion, but little putrefaction takes place. Hence, the reason of the slimy appearance, and the brownish colour, which commonly distinguishes lake water. However, with these disadvantages, it will generally be found preferable to well water, for Horses. Marsh water contains, a still greater proportion of animal and vegetable remains, than lake water, because it is altogether stagnant, and for this reason it must be more unfit for Horses, than the water of lakes. Moss water, is strongly impregnated with those vegetable bodies, which constitute mosses, and usually, also, contains iron; for these reasons, moss water cannot be proper for Horses.

## Light.

**H**AVING laid such stress, upon the necessity of the free admission of air into stables, there will be the less occasion for being diffuse on the subject of light; as it will almost always happen, that if air be freely admitted, so will light also. But, I have now and then had occasion to remark, that some stables are built, as if with the intention, of purposely excluding the light, which ought, undoubtedly, to visit stables freely. And though the saving of the expence of windows, is, no doubt, the main object with most people, who construct dark stables, yet, I have been led to suspect, on recollecting the great number of livery stables, in cities and large towns, which the light of heaven, seems to be purposely shut out from, that some other motive besides economy, must have occasioned people to construct their stables, upon this principle. Now, there can be no doubt, that animals kept in a state of darkness fatten faster, than in those places, where light is freely admitted.

This fact is well known to poulterers, who are known to avail themselves of the circumstance, in order to expedite the fattening process, through the medium of the state of sleep.

And, it is a custom, also, with some dealers, when they wish to make up Horses for sale, especially if they have been much reduced in flesh, in consequence of severe work, or food deficient in nutriment, to keep them in stables purposely darkened. For, though it must be allowed that Horses, in comparison of dogs, and many other animals, can scarcely be said to sleep at all, yet, a state of quiescence amounting to one of extreme torpor, will be induced upon such, as are kept in a dark situation, and thus, to use a stable technical, they are found to throw up flesh, faster on this account. But, it ought to be recollected, that the fat which they gain under these circumstances, is the fat of disease, and not of health. Because though no animal can fatten, unless the digestive, and assimilating processes, be perfectly completed, and therefore, so far, animals which do fatten, must be considered in a healthy state, yet, in those which are fed on nutritious diet, and purposely kept from using exercise, the fat is laid up, without bringing at all into play, a power of the system, the most necessary of all the functions, to the state of perfect health, namely that of the voluntary muscles. So that in this sense, fat animals may be considered to be in a state of disease, for if they be subjected to great exertions they are frequently known to die, in the course of a few hours.

And it is notorious that obesity, in the human subject, seems to be incompatible with robust health, for, fat people who live luxuriously, are able to bear but little exercise, much less to endure fatigue, or the vicissitudes of the weather. But besides being kept in a state of darkness, with the view of inducing fatness, such Horses not only get little or no exercise, but they are fed upon oatmeal drinks, scalded bran, malt mashes, and such sorts of food, as are

easily converted into the immediate matter of nutrition, in consequence of being readily acted upon by the digestive organs. Thus, a state of plethora, is speedily induced, and the purchasers of such Horses, too often find, to their cost, that this plumpness, so agreeable to the eye, is, in fact, in the sense I have described it, disease under the mask of health. For, if they be put to severe labour, they either fall away suddenly, from this deceptive state of fatness, to that of mere skeletons, or rapidly become victims, of some fatal inflammatory disorder. Nevertheless, it is certain that many proprietors of dark stables, have no such object in view, as this of dealers; but rather persist in excluding light, from ignorance of the ill consequences which must result to the animals, that are kept in them.

Certain it is, that many Horses have been set down as being stumblers and starters, from no other cause than being kept in dark stables. Nor is this, a thing at all to be wondered at. It is, in fact, nothing more than the effect following the cause. And we shall cease to be surprized at it, if we give ourselves time to reflect, upon what takes place with ourselves, if, at any time, we emerge suddenly from a dark vault or cellar, into the strong light of the sun.

For a time, objects are either not seen at all, or, at most, indistinctly, and, consequently, we are liable to fall over some, and to mistake the form, and nature of others. I remember many years ago, that a gentleman who had consulted me professionally, on some other points, told me he had a favourite Horse, which had no other fault, but that of starting. On enquiry, I found that the animal stood in a very dark stable, and I suggested the propriety of the

free admission of light. My advice was accordingly taken, and in a few months afterwards, he called to thank me for curing his Horse of starting. And a little reflection, I should think, would easily convince every man, that there is a species of inhumanity in purposely condemning a Horse, unnecessarily, to a state of darkness; so long as it remains incontestable, that in common with other animals, he is capable of receiving enjoyment from the exercise of the faculty of sight. But, setting aside the plea of humanity, which some may think too frequently alluded to in a work of this kind, the impolicy of keeping Horses in a state of darkness, must be manifest to every unprejudiced mind. For, besides producing the evils already glanced at, it is indisputable that dark stables must materially aggravate the pernicious effects of hot vitiated air upon the eye, and thus prove an additional means of laying that organ open, to the attack of moon-blindness. For, though a dark stable that is cool and well ventilated, is, undoubtedly, favourable to the recovery of a moon-eye, when the inflammation is high, and when, consequently, the stimulus of light becomes painful to the organ, yet, the darkness of stables under other circumstances, will not only pave the way for the first attack, but render the eye more liable to a recurrence of this complaint, by exposing it to great and rapid vicissitudes of light. Again, we may lay it down as a general rule, that the air of stables will always be foul and hot, in proportion to their darkness, not only for the reasons which have been already adduced, but, because of the impossibility of detecting the negligence of Grooms and stablemen and of perceiving the bulk of those hot-beds, which are left constantly fermenting under the nostrils of Horses. Let the light of heaven, therefore, be admitted into stables, as freely as it is given. It is a natural and health-

ful stimulus to the eye. It will contribute to the enjoyment of an animal whose natural gratifications, it will be allowed on all hands, we tax sufficiently, without exposing him to the monstrous and absurd privation, which a state of darkness must necessarily subject him to. Nevertheless, what Mr. White has suggested on the subject of the colour of stable walls, deserves to be attended to; especially in all cases where the light is freely admitted.

This Gentleman has recommended that the wall or wood-work which is before the Horse's head, should be of a lead or dove colour in order to prevent the ill effects which the glare of white walls might have upon the eyes.

But, though this hint is worthy of being attended to, it need not prevent the salutary and necessary practice of frequently lime-washing stables. For, in case it should be thought too troublesome to lay a coat of dove colour over a coat of lime-wash, a little ivory black may be mixed with the lime-wash in the first instance, and, thus, two objects may be obtained by one operation.



## Grooming.

**I**T will probably be expected, as I have all along been advocating, a natural and simple mode of treating Horses, in opposition to the artificial established stable discipline of these Islands, and have strongly reprobated, in an especial manner, the practice of cloathing; that I should lay but little stress, upon the necessity of good grooming, especially; for such as are treated, upon the plan which I have recommended. If any of my readers, however, have formed such an opinion, I must beg to point out to them, the error into which they have fallen. It shall be my endeavour, at least, to shew them, that such an inference is not fairly deducible, from any of the premises, which have been laid down, in the course of this work. For, nothing can be more erroneous, than the notion commonly entertained, about the danger of opening the pores, of a Horse's skin, that is exposed to the rough and the smooth of our inconstant clime. But, in this, as in all other cases of dispute, before we can argue fairly, it becomes necessary that we should define our terms. What then, let me ask, is this opening of the pores, which many people lay so much stress upon, and entertain such a dread of? To such a degree indeed, is this

notion carried by some people, that they interdict the use of the currycomb and brush, in the case of all such Horses, as are kept on a plan of simplicity, by being permitted to breathe the fresh air, to move about as they please, and to eat and drink, when it is agreeable to them. I shall take upon me, to answer this question for my readers. It is a mere bugbear of the imagination, a phantom, conjured up by ignorance and superstition. For, if the phrase have any intelligible meaning at all, it must imply, either that the diameters, of the excretories of the skin, are actually enlarged, by the operation of grooming, or, that the orifices in the cuticle, through which the perspired fluid exhales, being previously closed, are opened by the use of the currycomb and brush; and hence it is inferred, that the Horse will be liable to catch cold. But this is purely begging the question, and the whole argument proceeds upon a mere assumption. I should say therefore, in the language of the logicians, that the datum in this case, ought rather to be a postulate. Nor indeed, even if it could be proved, that the pores are actually opened by grooming, would it by any means follow, that harm must necessarily accrue to the animal, from this circumstance.

The truth is, that both notions are purely hypothetical, and ought therefore to be discarded. Let us turn, then, from this unsafe mode of considering the subject, and look at the great body of facts, which bear upon the case, both directly and indirectly. Now, it will readily be admitted, even by those who are the greatest alarmists as to the evils to be apprehended from opening the pores of such Horses, as are exposed to the elements; that good grooming is of the greatest possible advantage to those which are highly fed, stand in hot stables, and are also warmly clothed. No fears seem to be entertained of opening the

pores of *their* skins too much, by superfluous grooming ; but, on the contrary, it is a kind of axiom in the master's mouth, that good grooming, both on the score of their condition and appearance, is second to nothing but good feeding.

If, therefore, no fears are ever entertained, about opening the pores, in the instance of cloathed and pampered Horses, whose skins are exposed to such prodigious vicissitudes of temperature ; whence this unnecessary alarm on the subject of grooming those which, comparatively speaking, are subject to none. But, though I feel it incumbent upon me, to expose the absurdity of the ordinary notions on this subject, because, as it seems to me, they are decidedly founded in error, yet, I have no hesitation in admitting, most readily, that grooming is by no means *so necessary on the score of health* to such Horses as are kept abroad, as to those which are stoved and cloathed. For, I think it cannot be denied that that curious excretion of the skin of Horses called dandriff (the chemical properties of which shew that it is thrown off from the blood in order to effect some great salutary purpose to the system) will be prodigiously increased by the use of the currycomb and brush. And if I be right in this conjecture, it follows as a matter of course, that it cannot but be advisable to encourage this natural excretion in all cases, but especially in the instance of those Horses which are treated in the most artificial manner. But, in order that I may not assume too much, and lest I should get entangled, myself, in the mazes of hypothesis which, I have so frequently reprobated, I will not insist too strongly upon a notion, which though highly probable, I confess myself unable to prove the truth of.

At any rate, it will be allowed on all hands, that the quantity of dandriff which the groom gets out of the Horse's coat, furnishes no very inconclusive evidence of the labour bestowed upon it. But, there is the less necessity that I should take up untenable ground on this occasion; when so many fastnesses and strong holds surrounding me on all sides, enable me to support the main point of the position I wish to maintain; in other words, to prove the general utility of grooming; for all sorts of Horses, howsoever they may be kept, fed, or treated. I feel myself called upon, however, in a more especial manner, to make out the reasonableness and propriety of my opinion as to the policy of grooming Horses that are kept abroad; as this notion, I am well aware, runs counter to the generally established popular one, upon this subject. But, I suspect the more we scrutinize the popular notion on this head, the more clearly it will appear to be founded in error; inasmuch, as it proceeds solely on the assumption, that Horses so circumstanced, will be more liable to catch cold after grooming, than such as are kept in warm stables. Now, I apprehend that just the contrary of this is the case. But, as I never argue against facts, so, if it had been my lot ever to have met with any man of intelligence and candour, who felt inclined to support the commonly received opinion on this subject, from observation of what had passed under his own eye, I should probably have paused before I ventured to attack so popular an error, sensible that an attempt of the kind, will certainly expose me to the censure of some, and probably, to the derision of many. But I think it becomes an object of some importance, to rectify (if I am able,) this error in the public mind, because I have met with some persons of the superior class, so far under its influence, as to be impressed with the conviction, that it is better to turn out such Horses as are accustomed to be kept abroad,

even with their coats caked with perspiration and filth, and their limbs cased with mud, (provided they have only been allowed an hour or two to cool after hard riding,) than to groom them before they are turned abroad. Now, nothing can be more preposterous than this mode of treatment. For, even in winter, they ought to be groomed under the above circumstances, before they be turned out, and the more severe the weather is, the more necessary, indeed, does the operation of grooming become.

I am generally reluctant in bringing forward the argument of analogy; because I am aware it often proves a deceptive guide to us in many of our researches; but I will for once have recourse to it, in order to support my opinion. Suppose I meet in winter, a half-naked wretch, shivering with cold, his swollen limbs nearly benumbed with the frost, and without taking him to a fire, or administering food to him, I order his skin to be rubbed or brushed until the surface glows all over from the friction; will he be less able to proceed on his journey; or more liable to catch cold after the operation, than if such friction had not been performed upon his skin? The question answers itself. Frictions to the skin are, in fact, salutary to animals, under almost every possible circumstance. To human invalids the use of the flesh-brush often proves a tolerable substitute for exercise; and it is well known that strong frictions to the skin are found to aid in promoting condition, not only in Horses, but other animals, in consequence of the prodigious sympathy existing between the stomach, and this integument. For, prize cattle that are carried and brushed, not only look sleeker, and more agreeable to the eye, but are found to fatten faster, for the care bestowed upon their skins. Hence, when the powers of the stomach fail in a Horse,

from any derangement in that organ, the skin rarely fails to exhibit proofs of that astonishing sympathy, which mutually exists between them. And although the superior energy of frame, which Horses that are kept abroad, enjoy, secures them against many evils, that stabled Horses are exposed to, yet, it is by no means to be inferred from this circumstance, that grooming is altogether unnecessary for them, much less that it can ever be prejudicial to them; by opening the pores of the skin, and, thus, rendering them more susceptible of catching cold.

For, if friction applied to the skin, can be proved to be salutary to animals, even in the summertime, upon the principle of being a healthful stimulus to the system at large, how much more must this be the case in winter, when the cold operates so unpropitiously on the powers of life; that food, the same in quantity and quality given to a Horse through this period of the year, that he has been accustomed to get in the summer, is, almost always, found inadequate to keep up the same condition and spirits; the animal was in the habit of preserving, during the continuance of warm weather. In the instance, therefore, of Hunters and the more valuable kinds of Horses that are treated upon the natural and simple plan which I have recommended, it will be found that good grooming, so proper for them at all seasons of the year, will be peculiarly beneficial to them in winter, and especially after hard exercise. For, although no apprehension need be entertained of any ill consequences ensuing to them, from the omission of this salutary practice, on the score, or in the shape, of positive disease; yet, the powers of the system, perfectly competent as they usually are, to ward off any mischief of this kind, may, (to use a figure of speech) unquestionably be turned into another channel and employed to better purposes.

I should be sorry to appear inclined to split hairs, in this argument, but if I have fortunately been able to carry my readers along with me, in the course of my reasoning on this subject, I shall (I am willing to hope,) have succeeded in establishing the two great points I am contending for, namely, that grooming is not merely a safe practice for Horses that are kept abroad, but that it is also highly beneficial and salutary to them.

## Exercise.

**T**HAT exercise is essential to the attainment and enjoyment of perfect health both to man and animals, is an axiom so much in every one's mouth, that it would seem almost superfluous to use any arguments in order to prove the necessity of having recourse to it in the case of the Horse; but this animal appears to me, to be the victim of absurdity as much in this particular, as in many others which regard his ordinary treatment. And though perhaps, it may appear a sort of solecism, to include the article of exercise, under the head of stable management, yet I apprehend, in the enlarged interpretation of the phrase, I shall stand excused for so doing. It must be evident, I think to every man of a reflecting mind, who has turned his attention to the consideration of the subject; that the want of regular exercise must lay the foundation of many diseases in Horses. It is unquestionable that it does so, at all seasons of the year, but more especially does it occasion grease and swellings in the limbs in winter, and farcy and feverish complaints, in the summer.

Every Horse, therefore, that is kept in a stable, and highly fed, ought to get at least two hours exercise daily; if we would secure him



against the diseases, which spring, more immediately, from a state of inaction. Exercise managed with judgment, and regularity, seems, indeed, to be absolutely indispensable to the stabled Horse, not merely on the score of his health alone, but, to the acquirement of the capacity of enduring fatigue, the attainment of great speed, and the full development of his muscular powers. Hence, the practice of training, as it is called at Newmarket, and other places, where racing stables are kept; in the extensive meaning of which phrase, however, is included, not merely the article of exercise, but the whole system of treatment, to which the animal is subjected, preparatory to his running. And the same phrase is applied to the discipline practiced by prize-fighters, pedestrians and others, who undertake such kinds of performances, where vast exertions of the muscles are made; in some of which mere strength, in others skill, chiefly, but more commonly in all, a mixture of strength and skill becomes necessary, in order to arrive at perfection. But in all these sorts of cases, the utmost power of the muscles is attained, almost entirely, through the medium of long continued, regular exercise; without which, all the other measures that are had recourse to, would prove entirely useless. It is this which gives tone and energy to the whole system, and without exercise, the utmost powers of any animal, can never either be arrived at, or calculated upon. The intelligent reader will, I fear, be inclined to smile at all this, and to say, perhaps, with great truth, that so far from there being any thing new in these remarks, they are merely commonplace. In answer to this charge, I shall without hesitation, plead guilty, throwing myself on the indulgence of my judges. But before sentence be irrevocably passed upon me, let us enquire, if the introduction of mere commonplace observations, in

this instance, may not be rendered subservient to some useful ends. Let us, in fact, apply some of these common familiar circumstances, to the case of Horses kept in stables ; and, if I mistake not, some important practical inferences, may be safely drawn from their application.

For, though the sum and substance of these remarks, are in every one's mouth, almost indeed, in the shape of proverbs, it is, nevertheless, equally certain, that people in general, do not seem capable of drawing proper inferences, from every-day facts.

For instance, who is there that would not readily admit the truth of the following proposition, viz. that the same degree of exertion of the muscles which would be performed with ease, and would contribute to the health of an animal accustomed to daily regular exercise, would not only suddenly occasion fatigue, but probably end in death, if made by another which had for a long time previously remained in a state of indolence and inactivity ?

No man would be found to express any surprise, if he were informed that a pugilist of first celebrity, had been worsted in combat by a mere tyro in the art of boxing, provided he was informed, that the former had been for a long time out of practice, had been living an indolent life, and indulging in the use of gross food ; whilst the latter had been living sparingly on nutritious diet, and subjecting himself to that regular daily discipline, which prize-fighters are known to submit to. Nothing, however, is more common, than to meet among the same description of persons who would think and argue justly on the two cases which I have put, many who would not hesitate to take a Horse out of a stable where he had been standing, perhaps, for a week, comparatively without motion, and ride him thirty or

forty miles in the space of a few hours, and, yet appear to be astonished if the animal should be in a state of fever, and refuse his food, at the end of the journey, as he would in this case, to use the unfeeling cant language of the jockies, be said to be quite knocked up. Nay more, for in case a Horse so treated, should have been in the proprietor's possession but a few days it would, then, very probably, be inferred, that there had been some collusion on the part of the seller, and that the Horse was not sound, at the time of the purchase. The truth is, as has been more than once observed, in the course of this work, that the resources of nature in warding off disease, are so prodigious, as to be incalculable, and people having either heard of, or witnessed many astonishing performances of Horses, that have not been followed, by any palpable ill effects, seem, in general, to expect the animal shall be proof against every sort of absurdity, in the mode of treating him. And the consequence of this is, that they act as if they considered his frame to be exempt, from the operation and effects, of the common laws of nature.

It is from such injudicious modes of using Horses, coupled with the usual after-treatment, that they are frequently attacked with the most formidable diseases, but more especially with inflammations of the lungs and bowels. For it rarely happens, that the indisposition which takes place after severe exercise, is looked upon in the true and simple light, it ought to be viewed in, namely, that of a feverish affection of the whole frame, arising from the severity and long continuance of muscular exertion; which derangement, a proper method of treatment would speedily remove; but, on the contrary, the Horse's dispiritedness and want of appetite are, almost always, attributed to mere faintness and debility. He is said to be weak and

low, (which indeed is truly, though imperfectly, describing the facts of the case;) and it is presumed in consequence of this notion, that the way to remove this feebleness and debility, is, to give him something that is considered of a cheering and nourishing kind. Thus, in consequence of this erroneous idea, concerning the true cause of the animal's indisposition, attempts to relieve him, are made upon a principle calculated to exasperate, instead of mitigating, the evil. For, either the suffering animal is crammed night and morning with a cordial ball, the sovereign and universal medicine of the ignorant, or he is drenched with some vile composition, usually consisting of malt-liquor, boiled up with sugar and spices, to which, not unfrequently, ardent spirits are added. For, next to the name of a cordial ball, there is something irresistably fascinating to the ignorant, in the term of a warm comfortable drink; one or other of which stimulants is usually deemed indispensably necessary to be administered, in order to remove that lassitude, and falling-off of the appetite, which are the natural effects of excessive exertion and fatigue. But, the consequence of these unwise prescriptions frequently is, that a disease slight in its origin, which would readily have yielded to blood-letting, a loose stall, tepid water, or thin gruel, and the voluntary abstinence which the animal's instinct would naturally prompt, is soon converted into a vehement inflammatory attack of some of the vital organs, which afterwards proves too formidable to be combated by any of the weapons that science (notwithstanding the multitude of her resources,) can possibly furnish, even to the man of extensive experience. But these great Doctors who venture to prescribe for sick Horses, uniformly solacé themselves

in the event of the animal's death, with this consoling reflection, (and a very comfortable one it is) that, at any rate, he did not die for want of nourishment.

Now, without by any means meaning to assert that there may not be many cases in which the use of a cordial ball, or drink, may be proper after great fatigue, especially after long exposure to wet and cold, unattended with vehement muscular exertion, I cannot but reprobate the frequent and indiscriminate use of these unnatural stimulants in stables.

And I think the practice of giving cordial Balls to Horses on every slight occasion may be aptly compared to the nefarious custom of dram-drinking in men, and is attended with pretty much the same effects ultimately. In other words, the frequent use of these strong stimulants, precludes the stomach from exerting its due action and efficacy upon the ordinary articles of food, which are simple and natural ones, and therefore, in order to rouse up the proper degree of excitement in this organ, it becomes more and more necessary, to fly frequently, to the use of such substances, as possess higher stimulating powers.

If one were to endeavour, however, to estimate the quantity of mischief resulting to both animals from these practices, the balance would be found greatly on the side of the Horse. For, whereas, spirit-drinking not only undermines the corporeal frame, but ultimately extinguishes the divine faculty, and sinks the man into the brute; so, it must be admitted, that the frequent use of cordial balls is confined, almost solely, to the effect of palling the appetite, and destroying the tone and energy of the digestive organs of the Horse. I would say therefore of the practice of giving cordial balls, (when I consider

the materials of which they are composed,) what the late Dr. Wm. Hunter used to say of the custom of taking red lavender drops, which the ladies of his day that were nervous and low-spirited, used perpetually to have recourse to; that it is but a sort of fashionable apology or substitute for dram-drinking:

For, both these compositions are nearly of the same kind, each containing either a large quantity of spices, or volatile oil of spices, (the small quantity of Alcohol, in the tincture of lavender, serving no other purpose, than that of blending the oil in the mixture,) and these diffusive stimulants, being frequently thrown into the stomach, must, for the reasons which have been adduced, eventually render it incapable of converting the food into chyme. Thus, as it is with spirit drinkers, (who are proverbially little eaters,) so it is with Horses that are accustomed to get cordial balls at the discretion of grooms; they become languid, faint, and disinclined to eat after smart exercise, and after severe labour, they refuse their food altogether; and then it is, that these inveterate doctors, who generally sleep with Taplin under their pillow, fly to their favourite remedy, and, thinking to dislodge the enemy by means of it, they keep up a sort of running fire, until, as I have before said, some organ essential to life becomes inflamed, and the contest between death and the physician, is speedily decided in favour of the former.

It is a fact, however, that Horses may not only become passive, involuntary debauchees, by the custom of having cordials, thrust or poured down their throats, but may actually be brought to be fond of ardent spirits.

For, I have heard of a well authenticated instance, in the north of Ireland, of a Horse belonging to a common carrier, who goes daily

from Belfast to Carrickfergus, a distance of about twelve english miles, and is in the habit of stopping at a half-way house, where he constantly takes a glass of whiskey, and thinking his Horse (of which he is exceedingly careful and fond,) entitled to the same indulgence, he as regularly pours a glass of spirits upon a roll of bread, which the animal eats with the greatest apparent delight. Nay, so devoted is the Horse become to his dram, that neither gentle means nor severity will ever prevail upon him to quit the place without it; and my informant, saw the carrier flog him severely, in order to induce him to proceed without the whiskey, but all in vain, for he persevered in refusing to budge an inch, until it was given to him. What an admirable fact for the moralist, as to the effect of good or bad habits!

But, to return to the affair of exercise: it must be perceived that the greater part of the foregoing remarks, apply but in a very small degree, or not at all, to the case of racers, hunters, or the pleasure Horses of the great, which, it is well known, are exercised with the utmost regularity. Nor scarcely indeed, to the draft Horses, of either the higher or lower orders, but chiefly to the saddle and pleasure Horses of the middling classes, who cannot afford to keep servants for the sole purpose of attending to them. For, as to such as are employed in agriculture, in factories, mail, stage, and hackney coaches, as well as all those belonging to common carriers, very few diseases, it is well known, are found to arise amongst them from too little exercise. Now, and then, however, they suffer from injudicious management in this particular. For, it sometimes happens, especially in the case of stage-coach or post-Horses, that when their work has been unusually severe, and they fall off in condition in consequence of it, the proprietor orders their labour to be sus-

pended, in order to give them time to recover their flesh. But there is seldom much judgment shewn, as to the choice of the means proper to accomplish this end ; or any medium chosen, between one or other of the following modes of treatment : inasmuch as they are either suffered to remain pent up in a narrow stall, breathing the pestilential atmosphere of a crowded stable for a week or two, without any thing like that quantity of motion, which can deserve the name of exercise ; or, they are suddenly turned abroad, if the proprietor happen to have a field, with the view, as it is said, of letting them stretch their limbs, without much regard, however, to the state of the weather, or, to what is of still far greater consequence, that of the thermometer, at the time they are turned out of the stable. So that in the first instance, if the animal's appetite fail not, he continues to gorge his stomach, and by so doing, along with the additional aid of rest, he recovers his flesh in part. But, for want of motion, the vessels of the extremities become languid, the muscles from disuse refuse to perform their proper functions, the animal's limbs become stiff and swollen, and thus, the advantage he gains in one way, he loses in another.

In the second instance, unless the weather happen to be warm, the vivifying refreshing effects of the external air, upon the system at large, (contrasted with the enervating atmosphere of the stable,) together with the advantage of voluntary motion to the limbs, are, in a great measure, counterbalanced, by what I have formerly defined and described as a sort of seasoning, which the animal undergoes. So that it is no uncommon thing to hear people say, when they wish to explain this fact, that the Horse did not do well abroad on account of the cold pinching him too much. Whereas, if stables



were less of hothouses, and the great proprietors of Horses, who wish to recruit them and bring them about after unusually severe work, would indulge them with voluntary motion, and give them the opportunity of breathing pure air; sheltering them, in very severe weather, from the inclemency of the elements, in spacious roomy out-houses, and allowing them, at the same time, plenty of nutritious food; the greater part of the evils which I have described, would be avoided, and the object which they have in view would, not only be more effectually, but, more speedily obtained.

Now, of all the different kinds of exercise, or rather labour, which Horses undergo; that from an excess of which, they are most apt to die, is hunting. For as to racing, though whilst the race lasts, the muscular exertions are more severe, than from hunting, yet, they are, comparatively, soon over; and therefore the most violently-contested races, are hardly ever known to be attended with fatal effects. Not so, however, with hunting; for, chases of extraordinary length and swiftness, have not only proved immediately fatal to many Horses, which have been known to drop down dead in the field, but, it has often happened that several have been attacked with inflammations so formidable, that they did not eventually recover, or at best, they never completely got rid of the effects of these prodigious exertions. But, it happens, too often, that the fatal consequences which succeed these severe runs, deserve rather to be attributed to the after-management of the Horse, than to the severity of the chase. For, if he be treated upon the plan which I have so much reprobated, under the notion that he is to be cheered and nourished thereby, he will, almost to a certainty, fall a sacrifice to the endeavours, that are made to relieve him. In all cases, therefore, after severe exercise,

but especially in these more urgent instances, the Horse should be put into a loose stall, or out-house, well littered down; he should be offered tepid water frequently, or rather, he should have access to it at pleasure. His food should be bran mashies, or, what is better, fresh-cut soil.

In hot weather the place he is in cannot be too airy. In winter, it should be as warm, or nearly so, as the stable he is accustomed to stand in. If he pants much, or seems to be oppressed in the flanks, from four to six quarts of blood, should be taken away. But, if he labour very hard in his flanks, and especially if his nostrils are widely extended, in the act of breathing, the bleeding may be carried to seven or eight quarts, or even more, in the case of a very large powerful Horse: for in this case, there will be too much reason to apprehend, that the animal's lungs are inflamed. If the Horse therefore, be not decidedly relieved, in the course of eight or ten hours, the bleeding should be repeated, and he should be treated in the manner recommended, under the head of inflammation of the lungs.

In ordinary cases of fatigue, a loose stall with tepid water, mashies, or soiling, will generally be adequate to the recovery of the animal, without any other help. In summer time, though the Horse may have been accustomed to cloathing, he should be stripped, but in winter his cloathing ought rather to be increased than diminished. Particular attention should be paid to the state of his limbs. If cold, strong frictions should be applied to them, and they should be protected with soft hay-bands, or coarse flannel cloths. It may be proper to remark, in this place, that the advantage of loose stalls for Horses, is not confined to the case of such only, as have been

subjected to very severe exercise; for experience has shewn, that all Horses will lay down and rest themselves more readily in loose stalls, than in the ordinary narrow ones, which cramp the motions of all their limbs. And if it be the fact, that loose stalls are so advantageous to Horses that are in health, how much more so must this be the case, to such as labour under that feverish lassitude, which uniformly takes place, more or less, after severe exercise of every kind. And as I am now discussing the effects of severe exercise upon Horses, I will venture upon a little digression from the main point, in order to glance at a popular error, connected with this subject. For, nothing is more common, than to hear people attempt to account for the issue, of the vast muscular exertions which Horses are often obliged to perform, by placing it to the account of the superiority, or inferiority of the animal's wind; and I have heard many well informed people speak as if they considered, that the state or structure of the lungs alone, decided the point. But the truth is, the lungs are by no means actively concerned in the affair, unless, indeed, they be in a state of positive disease. For it is the tired and debilitated state of the diaphragm, and of those muscles, which lying between the ribs, expand and contract the chest, that occasions a Horse to be blown, as the phrase is, and sometimes to stop suddenly. Now though this exhausted state of the diaphragm, and intercostals, is in some instances peculiar to these muscles, yet, very often, they merely participate in the generally exhausted condition, of all the other muscles of the body.

If we examine the lungs of a blood, or thorough-bred Horse, we find their structure the same as those of an ordinary Horse.

But this is not the case with any other part of his frame; for his muscles are firmer and more compact, the texture of the general

fibre stronger, and even that of the bones, so much more solid and hard, that, in comparison of the bones of a common Cart-horse, they may be said to resemble ivory. To the strength and compactness of his general frame, therefore, and not to any peculiarity of structure in the lungs, must be attributed the superiority of the wind, (to use the common expression) of the blood or bred Horse.

For, as to the vast superiority of his speed, this undoubtedly depends primarily and chiefly, on the geometrical proportions of his frame. We may say, therefore, that geometrical proportion and muscular energy, are the grand constituents of a bred Horse. The first is called symmetry, the latter strength; these fundamental properties, are variously modified in different Horses, and it is the business of the breeder, and trainer, to find out, to blend, and improve these qualities, so as to produce the most perfect animal. It is almost superfluous to add, that no difference is found, in the quality of the blood of the bred Horse, when analyzed and compared with that of one of the coarsest kind, though some superstitious notion of this sort, was not only formerly entertained, but, actually gave origin to the term of a blood Horse. These remarks I have been led into, in consequence of speaking of the effects of exercise on the muscles; for, the natural history of the Horse, makes no part of the plan of this work. I have already observed, how necessary regular exercise is to the stabled Horse, in order to ward off disease; and what has been advanced under the head of some of the disorders, that have been treated of, may serve to remove any scepticism on this subject. But, as I conceive that next to the hot and foul air of stables, the want of regular exercise, is the chief cause of the attacks of our perpetually-harrassing enemies, farcy and glanders, I shall take leave to extend my

remarks, upon this important branch of my subject. And I do this the more readily, or rather I feel it more incumbent upon me so to do, because I am perfectly satisfied that the state of inaction, in close stables, which many proprietors enjoin their managers or agents, to subject Horses to, in order to bring them about after very severe work, becomes the very means of engendering these formidable complaints. For, this method of treatment quickly and inevitably induces that condition of the frame, which the disciples of the late Dr. Brown, call, in the language of their master, the state of indirect debility. A state peculiarly propitious, to the production of farcy or glanderous matter, in the system of Horses. So that if people were intent upon manufacturing (if I may use the phrase) a quantity of this poison, in order to inoculate sound and healthy Horses with, they could not take means more effectual for the accomplishment of their object, than by keeping such as are feeble and worn-down, in hot stables, feeding them on nutritious food, and confining them at the same time, to a state of inaction.

And it is owing, chiefly, beyond all question, to the circumstance of the extreme regularity with which it is carried on, that worn-down hunters and Blood-Horses frequently last for many years in mail and Stage-coaches, and sustain that prodigious quantity of labour, which but for this regularity, diet however nutritious, and grooming however complete, would be found perfectly inadequate to enable them to go through. For, besides that the mere muscular exertion alone, (speaking in a mere abstract view of the effects of exercise) undoubtedly does a great deal in keeping up a generally healthful state of the system, we ought not to overlook some of the more striking effects, with which it is, almost always, attended; especially the circumstance of

the discharge by the emunctories of the skin, in the form of sensible perspiration, nor that, perhaps equally important one, of the regular state of the bowels, which it is commonly the means of preserving. For, the aptitude which these vessels of the skin have, to give out the sweat readily, (provided they be not too easily excited, to an over-profuse discharge) seems to be one great means of enabling Horses, that are highly fed and regularly worked, to go through their labour with more ease, than they otherwise could do.

And this, the sweating effects, partly by preventing the growth of superfluous fat, partly by throwing off a good deal of recrementitious matter from the system, and partly by cooling the animal, in consequence of the evaporation it produces from the surface. So that it is by no means uncommon, to hear ignorant people who put a Horse, on a sudden, to the performance of some great efforts which he has been unaccustomed to, express their surprize that the animal became blown, that is, unable to breathe and to proceed, even before he began to sweat. But, these advantages, important as they are, which Horses derive from regular exercise, are but as a feather in the scale, compared to the incalculable benefits they derive from the pure, sweet, external atmosphere.

For, most certain it is, that if the same quantity of labour were to be performed in an atmosphere similar to that of stables, in a like space of time, the same beneficial consequences would not arise, nor would Horses be found long able to support it. At the same time, it cannot be denied, that regular exercise, even under this heavy disadvantage, would be found to mitigate, in a very great degree, the evils which spring from the combination of a state of inaction, with that of being constantly obliged to inspire foul air. If we look at

the effects of a completely inactive state, amongst the most indolent, and most incorrigible mendicants of this country; who herd together in filthy apartments, like mere animals, their squalid countenances, and generally diseased frames, are at once both loathsome to the senses, and afflicting to humanity. Again, if we investigate the case of those mechanics who follow sedentary employments and are crowded together in ill-ventilated places; their languid eyes, and pallid complexions, prove to us, that they do little more than merely exist. Such, however, as labour hard, and, who, from the nature of their employment, bring all their muscles into play, though under the same disadvantage of breathing a vitiated atmosphere, do, nevertheless, rise considerably higher, in the scale of health and vigour, than the former; but, in vain shall we look, even amongst the latter description of persons, for the ruddy cheeks, and wiry sinews of the ploughman.

And if any farther proof were needed, of the astonishingly beneficial effects of pure air on Horses, it is only necessary to recollect various instances in which, many, that were supposed to be dying, have been turned out of hot stables, to grass, (merely upon the principle of the forlorn hope,) and have, nevertheless, been known to struggle through the disorder. For, though something, no doubt, must in these cases, be put down to the restorative effects of the grass upon the system, at a time when the powers of the stomach were, perhaps, not adequate to the digestion of any other kind of food, yet, certainly, much more ought to be attributed, to the salutary action of the external air, for which, thousands and tens of thousands of stoved Horses, languish and pant, even as the hart panteth for the water springs.

So prodigious, indeed, is the effect of pure air upon the enervated frames of stabled Horses, that it seems to be the chief means, of counterbalancing the various disadvantages which they frequently have to encounter, especially when they are turned out, as they too often are, on a sudden, in severe weather, and are by the change, reduced to a diet far less nutritious, than that which they have been accustomed to in the stable. So that were it not for the fortunate circumstance which has just been glanced at, namely, that of the grass making but small calls upon the powers of the stomach, few Horses would be found able to bear up, under such accumulated evils. Though it is but right, however, to mention these facts, in order to strengthen and illustrate, the great principle for which I am contending, I think it no less proper, to caution the young Veterinarian, against adopting the new-fangled notion, that would seem to support the propriety of turning Horses, labouring under high inflammation of the lungs, out of warm stables, into the external air, even in winter; a practice which I consider to be absurd, and have known to be attended with fatal consequences.

I have found, however, from the conversation of such young practitioners, as seemed inclined to adopt this method of treatment, that they did not think it safe to have recourse to it, until the patient had been largely and repeatedly bled, and had been blistered also; so that I think it fair to infer that such cases would have recovered to as great a certainty, and more speedily too, if kept in a stable of a proper temperature. For, common sense must tell us, that the circumstance of exposing a Horse, in such a state, to the action of a frosty atmosphere, must be the means of throwing more blood upon the lungs, on account of the rigidly corrugated state of the skin,



which will take place, necessarily, from the action of the cold air upon it. And it is well known how favourable, in these cases, a soft relaxed state of the skin is, as well as how unpropitious a tight and dry one always proves, to recovery. Further, I presume, that no one ever thought of recommending this practice, in the stage of the disease which I have described, on the score of the *exercise* which the Horse would voluntarily take in the field; because motion, under these circumstances, must undoubtedly be highly prejudicial to him. I conceive therefore, that this practice can only be safe during the hottest weather of our summers, and, even then, a shady thoroughly ventilated out-house, has great advantages (all things considered) over this plan of treatment; for Horses labouring under high inflammation of the lungs. I make these remarks the more freely, and with the greater confidence, because, after what I have already advanced, on the subject of the importance of pure, cool air, no one, I think, will feel inclined to accuse me of wishing to undervalue its inestimable advantages; but, I shall never lend my aid, in countenancing the illusions of theory, whilst I am supported in my present opinion by the evidence of facts, which I consider to be far better, and more securely to be relied upon.

From the above remarks, it will be seen, that many evils arise to Horses, from adopting extremes with regard to the affair of exercise, which I have occasionally blended with the article of labour, from the almost impossibility of separating the two considerations. But, I cannot close this chapter, without making a strong appeal to the good sense of my reader, on this part of my subject; which constitutes so important a branch of the general treatment of Horses. Especially, as it can admit of no dispute, that true policy and

humanity are equally concerned, in the adoption of a mode of using and managing them, very different from, and more rational than, that, which one sees every day practiced. For, though one of the most glaring and prime evils, connected with this consideration, is, the practice of begining to work Horses at the period of, what may be termed, their infancy, that is, long before they have attained either the height or the bulk which they would naturally arrive at, yet, to this important error in the outset, must be super-added a long list of absurdities, which are to be found in the catalogue, of our ordinary stable regulations. Our conduct, indeed, in this view of the subject, may be aptly, and fairly enough, compared to that of a man, who, having employed an architect to build him a house, and appearing anxious to possess all the advantages which the original design seemed to hold out; should begin to dilapidate and destroy the materials, before the building was completed.

Having already noticed the evil consequences of working very young Horses, so far as their feet alone are concerned in the question; and fully agreeing with Mr. Bracy Clark, in his enlarged views of, and important inductions upon, this subject; I have no hesitation in affirming, that to him the honour chiefly belongs, of removing the thick and apparently impenetrable veil of mystery, which had, for ages, hung over this branch, of the Veterinary art.

Great and manifold, however, as are the evils, which the practice of shoeing brings along with it, to the feet of very young Horses, I cannot help being of opinion, that the total amount of the mischief arising from this source, (whatever it may do on the score of pain and suffering) goes but a little way, in producing the vast sum of premature mortality, which annually takes place amongst these animals in these Islands.

At the same time, it is equally clear to me, that, in order to lessen this enormous mortality, we have not, by any means, so much to learn, as we have to unlearn.

For, the lessons of instinct are plain and simple. To enable us to understand *these*, no learning is necessary to be obtained; in order to decipher them, no midnight oil need to be expended; they are written in broad and legible characters, in the great book of nature, by the finger of the Deity.

But, the grand difficulty in the way of improvement, is, that thick mist of prejudice, which obscures the mental optics, and prevents most people from discerning, not only what is merciful and just, but, even, that which is œconomical and politic.

If, however, we could but once be prevailed upon, to shake off the trammels of custom, to forsake the beaten track of fashion, and to tread in the path of nature and simplicity, not only would the great cause of humanity, be effectually served by the change, but, ere any great length of time could elapse, men would be led to discover, that their own interest is more intimately connected with mercy, in the treatment of these animals, than at first blush would seem to be the case. But as long as people of the higher classes shall continue to advocate, indirectly, the cause of folly and cruelty, by stickling for the present absurd system of treating Horses, the prospect of amendment seems, indeed, distant, and any rational expectation of seeing the thing accomplished, utterly hopeless.

Thus, how often may one person of the above description, be heard to say, I cannot bear to ride a Horse with a rough coat, and therefore I will not give up the plan of cloathing, nor that of maintaining a *comfortable* warmth in my stables?

A second,—I detest the look of a large belly, and accordingly I stint my Horse, even in summer, to less than one half the quantity of water, he would naturally be inclined to take. A third,—I think a Horse's hoofs look much better when glossy, than when dull, and, for this reason, I order my servant to oil them daily. A fourth,—my Horse's ears were not only too long, but stood much too wide, and, therefore, I ordered the greater part of them to be cut off.

Whilst, I say, in order to justify the absurdities of fashion, one hears people of the superior classes, have recourse to such arguments (I will not use the term reasons, for that would look like a desire to dignify nonsense) what rational hope can be indulged, respecting a change of system in the lower orders, who, it is well known, take the tone from their superiors.

In short, until the nominally great, shall prove themselves to be really so, by rising above vulgar prejudices, and instead of falling in with, and palliating, such monstrous infringements of the rules of common sense, and such gross violations of the laws of humanity, as have been glanced at; shall determine to make good sense and benevolence *fashionable*; the great mass of absurdity of which our stable system consists, will never be materially lessened. For, until this desirable change be effected, it can require no spirit of prophecy to be able to predict, that Divines may preach, and Moralists inveigh, that Philosophers may discover, and Legislators enact, but all in vain; for, neither the sermons of a Blair, nor the maxims of a Paley, nor the lectures of a Davey, nor solemn acts of Parliament will avail, in remedying these evils.

If, however, such a happy æra should ever arrive, the business might be said to be accomplished, and humanity would have cause to rejoice; for, a man might then, perhaps, without fear of being upbraided

with canting, venture, now and then, to reprove the unfeeling, by repeating this short but pithy sentence ;—the merciful man is merciful to his beast.

## Food.

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**BEFORE** I enter upon any practical observations on Food, I shall venture to travel a little out of the record, and to preface my remarks upon Horse Dietetics, by attempting a concise view of the process of digestion. It shall be my endeavour, however, not to lose sight of the main design of this work, but on the contrary, it shall be my study, in this section, as well as in the preceding ones, to make the great body of my opinions rest upon clear intelligible reasonings, to risque as few speculations as possible, and to apply such as I may venture to indulge in, to plain practical purposes. For, though it may be said, perhaps, that the Farmer or Breeder, can be but little concerned in what may be called (in one sense) the theory of digestion, yet, if I mistake not, it will appear in the sequel, that from the chemical and philosophical investigations which have lately taken place, in order to account for the phœnomena of this astonishing process, in the stomachs of living animals, many very curious and important facts have been discovered, that will prove to be strictly applicable to practical purposes.

Whilst, however, I enter upon this attempt, which I feel to be an arduous one, with great diffidence, chiefly, perhaps, because it carries with it the appearance of departing from the avowed design of the work, yet, I cannot help indulging a hope, (in case what I shall advance shall not prove too abstract for the general reader,) that it may be the means of bringing philosophers; and that description of people who choose to call themselves (by way of distinction,) merely-practical men, somewhat nearer to each other.

And, thus, by mitigating somewhat of that asperity and contempt, with which the latter are apt to think and speak of the opinions and views of the former, convince them that a rational and sound theory, is more intimately connected with successful practice, than it has ever entered into their imagination, to conceive. And, if the application of my humble abilities, towards the accomplishment of this, which I cannot but consider a great National object, shall not entirely fail of success, I shall venture to indulge a hope, that some good will eventually accrue to the community, from an attempt, which I consider to be, in a certain degree, novel. For, according to my apprehension of this matter, nothing seems to stand so much in the way of improvement, or to prove such an insuperable bar, to the advancement of any great discovery, as that prodigious chasm which lies between our merely scientific, and merely-practical men.

And, this chasm, neither party, unfortunately, seems desirous of either filling up, or passing over. Instead, indeed, of evincing a wish to meet, with a view of co-operating in the furtherance of public and private good, each party seems rather intent upon shewing it's strength, on opposite sides of the gap, in a sort of hostile attitude

regarding each others plans and opinions, at best, with indifference, and, too often, with the most profound contempt. But, as it happens in the affairs of ordinary life, so, I think there can be no doubt, that, in the case under our consideration, a good deal of this hostile spirit depends, upon the circumstance of the parties not knowing each other sufficiently, or, arises from the imperfect means which each possesses, of being able to ascertain the modes of reasoning and objects of the other.

Though, however, this has been too long, and, it will be allowed, is still too much the case, it must be admitted, nevertheless, that there has appeared of late, something like a disposition to yield on both sides; for, within these few years, a great number of practical men of liberal education, have brought forward their invaluable facts, which, such men as, Sir Humphrey Davey, Count Rumford, and other scientific men, have cautiously reasoned upon, with infinite labor, endeavouring to find out their bearings and dependencies, and to square them with a well-founded Theory. Nor can I refrain from adding, that to the first illustrious Chemist, in particular, the world is indebted in a twofold capacity, more, perhaps, than to any other modern Philosopher. For, whilst many of his laborious investigations, have been attended with the most brilliant discoveries, (any one of which would have been sufficient to immortalize an individual) he has not only conducted these intricate researches with an evident feeling of that humility, which true philosophy never fails to inspire, but has appeared, at the same time, intent (to use the words of the great Lord Verulam) upon bringing things home to men's business and bosoms; and, thus, by a judicious application of science, to its legitimate and proper purposes,



to exhibit the delightful picture of theory and practice going hand in hand. Now, this is as it should be ; and if both parties continue to pursue this course, they will not only meet at last, but, prejudices and antipathies will gradually give way on both sides, and it will eventually be seen that the great object of both parties is the same, though each takes different means to obtain it. But, though every friend to his country, and every well-wisher to its prosperity, must hail the present auspicious aspect of things, as an omen of much future National good ; yet, we must recollect that all great changes (more especially those that take place in the agriculture of a country, and the objects connected with it) are effected slowly, and in a very gradual way ; and, therefore, it cannot be amiss for every man who sees the thing in the light I have placed it, to labour sedulously in the attempt to approach the divided, and, apparently, hostile parties ; to endeavour to detach partizans from both sides, and to open communications of such a kind, and in such a spirit, as shall tend to bring about a mutual good understanding between them. And if I might venture to point out an individual, who seems to me peculiarly calculated to act in the capacity of an able and powerful mediator between the parties, and who possesses, at once, both the ability and inclination to reconcile existing differences, I should be enclined to turn my eye to the Rev. Dr. Richardson, who has within these few years favoured the public with several valuable dissertations, on the culture of the florin grass.

The zeal, the indefatigable labour, the enlarged information of this practical Philosopher, added to the perseverance, with which he has persisted, in maintaining the value of his important discovery

(though assailed most unmercifully at his outset, by the shafts of prejudice and ignorance, qualify him, in an especial manner, for the performancè of this important and difficult task, and entitle him, at the same time, to the warmest thanks of every enlightened patriot. Dr. Richardson appears, indeed, to have marked with eagle-eye, the aberrations of science, and, with infinite pénétration, to have discovered the reason why some of her most zealous votaries, and most devoted admirers, have contributed so little, to the general stock of public good; in consequencè of unprofitable attention to minutia; and, thus, whilst immersed in the depths of her profoundest reseaches, overlooking (almost entirely) the grand object of practical utility.

On the other hand, it has not escaped this Gentleman's keen observation, that the merely-practical man who is determined to listen to no innovations, to resist all change, to brand, indiscriminately, with the nickname of new-light, all projected improvements, resolving to plod on in the same beaten track which his father followed, and that for no other reason, but because his father pursued that path before him, deserves to be considered the enemy of himself, his family and his country.

After this exordium, which I offer as a sort of apology, for making this chapter the vehicle of more philosophical reasoning than I have ventured to introduce in any of the preceding sections, I proceed to sketch, what I would call, the outlines of the history of digestion.

It is very well known, that in man and most other animals, the food is reduced into a kind of pulp in the mouth, through the grinding powers of the teeth, assisted by the moisture of the saliva; though

There are animals that grind their food in another manner, as for instance, fowls, whose gizzards answer to them the purpose of teeth. After being ground, and reduced to a pulp, the food passes into the stomach, where it undergoes new changes, and is converted into a pappy mass called, by physiologists, chyme, which has no resemblance to the food when first introduced into the stomach.

This latter fact being so indisputably plain and evident, naturally excited attention, and it long ago became an object with philosophers, and physiologists to ascertain, not only the nature of these changes but, also, the cause producing them. And it is a curious proof of that proneness to frame hypotheses, which philosophers of all ages and countries have been so remarkable for, that the conversion of food into chyme, in other words digestion, (so far as that process is completed in this organ) continued for a long time to be attributed, solely to the trituration which the food was supposed to undergo, from the mechanical action of the stomach. Several of our English philosophers adopted this notion, and amongst others Dr. Pitcairn, whom, as well as Dr. Mead, I consider as one of the fathers of the mechanical philosophy, in the English school of Physic.

Cheselden, however, an ingenious Surgeon, and acute reasoner, long ago discovered, that the stomach exerted no such powers in the way of mechanical action on food, as Dr. Pitcairn had attributed to it, and successfully combated his reasonings on the subject, which, it is now well known, proceeded upon false premises.

For, if food were convertible into chyme by the mere grinding powers of the stomach, then it would follow as a matter of course, that by subjecting moist food to mechanical trituration, out of the body, at the same temperature that it is exposed to in the stomach,

the same results would follow, that is, in other words, we should be able to manufacture a pappy mass, resembling chyme in all particulars and qualities.

Now, this was found impossible to be done, and therefore this notion, like all others purely hypothetical, fell to the ground.

After the mechanical doctrines, which had been maintained, in order to account for the phenomena of digestion, were found to be untenable, Philosophers, amongst whom was Doctor Macbride, and several others of our own country, had recourse to fermentation, to explain this astonishing process, and to get rid of the difficulties, with which the subject seemed to be beset. But, at that time, (as Doctor Thomson, has very properly remarked) the nature of the process called fermentation, was almost unknown; no attempt having been made to explain the cause of it, or the changes which take place during its continuance.

If this notion, then, of food being converted into chyme, in consequence of undergoing fermentation in the stomach, meant any thing, it must necessarily imply, either, that the putrefactive, the vinous, or the acetous fermentation, was carried on in this organ of living animals, and not only so, but that the product of these different processes was precisely of the same kind. But, it is certain, that, except in cases where the stomach is diseased, no wine or vinegar is ever formed in it, and as to putrefaction going on in it, this is so far from ever being the case in healthy stomachs, that it is a well known indisputable fact, if putrid meat be swallowed, it is rendered perfectly sweet, in consequence of the action of the juices of the stomach upon it.

So that those savages who live, in great measure, upon the putrid flesh of whales or seals, and drink the stinking oil of these animals, are not so pitiable, in this point of view, as a partial and limited survey of their habits of life, and modes of existence, would seem to justify us in supposing them to be. And, although we have not, perhaps, advanced much farther in an intimate knowledge of what fermentation really is, and are yet, indeed, unable to define the precise mode in which it is effected, yet, we certainly have obtained more definite notions of its *effects*; and are better acquainted with the nature of its products, than those philosophers who endeavoured to explain the phenomena of digestion, on the principle of its being a fermentative process. Again, it follows (a fortiori) if the digestive process depended upon fermentation, that the stomach can be no further concerned in the affair, than by supplying the necessary heat and moisture, and that we should be able to produce chyme from the different articles of food, by subjecting them, *out of the body*, to the same degree of temperature and quantity of moisture, that they meet with in the stomach of living animals. But this can no more be effected by fermentation, than by mechanical trituration. We have however, still farther and more direct proof, that digestion is not a fermentative process, when we recollect the facts, which were noticed many years ago by several philosophers, who found on opening the stomachs of voracious fish, which had swallowed prey too large to be contained in the stomach, that, that part only which this organ contained, was converted into chyme; whilst that which remained in the gullet, though exposed to the same temperature, appeared to have undergone little or no alteration. And these facts, which apply also to the case of many amphibious animals, have again and again been noticed by physiologists, amply confirming the notion, that not only the

formation of chyme is owing to the stomach, but that the conversion of food into this pappy mass, is effected by means of a particular fluid which is separated from the blood, by the arteries of that organ, and has obtained the name of gastric juice. For, the experiments of Spallanzani, made about thirty years ago, which Doctor Stevens and other English philosophers, have since repeated with the same results, prove, beyond all dispute, that some substances, which would remain unaltered for weeks or months, though kept in a temperature equal to that of the living body, are digested in the course of a few hours, in the stomach of a dog, or any other carnivorous animal, by the action of the gastric juice alone. For, the first ingenious Philosopher, having enclosed pieces of solid bone, in hollow cylindrical tubes, that were perforated, and afterwards introduced into the stomach of a dog, found that the bone was completely dissolved, that is to say digested, whilst at the same time, the tubes on being voided, were found to have retained their cylindrical form. And if any one should be desirous of being furnished with proof still more convincing, that digestion is effected solely through the medium of a *fluid*, in the stomach, it is only necessary to add, that if the same substances which were found to be digested in tubes that were perforated, were inclosed in such as were imperforate, they were found, on the tubes being voided, to have undergone no other change, than that which would have taken place in the same temperature, out of the living body. Putting these facts together, it must be evident, therefore, that neither mechanical force, nor fermentation in the stomach, can have any thing to do with the digestive process. For, if the first were the cause of digestion, then the tubes must have been crushed to pieces, before the bone could have been ground,

and if the latter, then the contents of the stomach of every fresh-killed animal, in case the examination took place immediately after death, and, provided also, that the animal was in a state of perfect health at the time of it's being killed, would be found to contain either wine or vinegar or a mass of putrefying materials; in consequence of the vinous, acetous, or putrefactive fermentation. Whereas, neither of these three kinds of fermentation ever takes place in healthy stomachs, although, as I have more than once remarked, when the stomach is diseased, that is, when digestion goes on imperfectly, or when this process, as it may happen, is almost entirely suspended, then indeed, the food runs into the same chemical changes in this organ, that it would naturally undergo out of the body, under the like circumstances of heat and moisture.

And this is the reason why vinegar is often found in the stomachs of Horses, on dissection, that have been drenched, from the indiscriminate zeal of grooms and farriers, with great quantities of, what they call, nourishing compositions, consisting of gruel, treacle, beer sugar, and such other materials as are soon converted into acetous acid, in the stomach, when this organ being in a diseased state, has lost the digestive power, that is to say, the property (peculiar to its healthy condition) of converting them into chyme.

Now, this fact (which it must be allowed, more peculiarly belongs to the theory or chemical philosophy of digestion,) will be found to be one, not destitute of importance, in a practical point of view. For, not only may the scientific Veterinarian profit by being in possession of this circumstance, but all Horse proprietors, who are so situated as not to be able to avail themselves of proper professional aid, and

who may chuse, for that reason, to take their diseased Horses out of the clutches of ignorance and prejudice, may if I mistake not, turn the knowledge of it, to very good account. For, the result of the drenching system in these cases, is never by any means, of a negative kind; and it can in no instance be said of these kinds of compositions (as many are inclined to suppose) that if they do no good, at least they *can* do no harm.

So far, indeed, is this from ever being the case, that much positive evil, and that too of very great magnitude, very commonly results from this preposterous practice. For, it happens almost always, (even in the case of the human stomach) that the capacity of digestion and the desire for food correspond, and mutually keep pace with each other; and if this may be laid down as a general rule, with regard to the human species whose stomachs are, in most instances, so artificially educated, and in many so absurdly ill treated, how strongly must the principle apply to the case of brute animals, which obey the benevolent impulses of all-watchful nature, and are guided by her unerring instincts? If, therefore, this fundamental point be conceded, (and I do not see how it can possibly be denied) few, *indeed*, must be the cases where it can be proper to subject a Horse to a painful, distressing, unnatural mode of swallowing; what is absurdly termed nourishment, because, if left to himself, he will eat of his own accord, as much food as will be beneficial to him, in other words, that quantity which the powers of the stomach are capable of converting into chyme.

For, in most instances of disease, these powers are partially or totally suspended; and in either of these cases, the officious interference of art, or rather violence, by forcing down the throat such



compositions as have been described, cannot but be attended with the most deleterious consequences to the sick animal. And for this plain, incontrovertible reason, namely, that the substances which these compositions consist of, cannot remain stationary in the temperature of the stomach of a warm-blooded animal.

They must either be converted into chyme or something else, and if not into chyme, then they rapidly run into fermentation, a process which (though it never goes on in healthy stomachs) frequently takes place, as has been already shewn, in such as are diseased. If chyme, therefore, be not formed in the stomach, vinegar frequently is, when substances readily susceptible of fermentation are thrown into this organ, whilst it is in a state of diminished energy.

And, though I think it highly probable that the vinous fermentation first takes place, and passes rapidly on to the acetous, yet, as it has never been proved, that wine is formed in the stomach of animals, and as we know that there are many instances in which acetous acid, that is vinegar, is produced from substances, which have not previously undergone the vinous fermentation, it may happen, that this is the case with such materials, as are converted into acetous acid in diseased stomachs. And as to this latter acid being frequently formed in the stomach of diseased Horses; this is a fact which I have for many years been perfectly convinced of. For, not only have I found it, almost constantly, on dissection, in the stomachs of such Horses, as have been drenched with fermentative materials, but I have now and then, been struck with the smell of it, in some instances, when I have inspected the stomach *immediately after death*, and where no drenching had previously taken place. For, it happens now and then, though rarely, that one meets with an instance which is an exception

to the general rule, where the stomach has lost its powers, and yet, a sort of false or depraved appetite, will, exhibit itself under disease, so that a Horse shall eat voraciously for some time before he dies ; and this is more especially the case in those instances where delirium comes on, for, then, it is by no means unusual, for the animal to die in the act of eating. But, in all these cases, vinegar is found in great abundance in the stomach, which is commonly found to be enormously distended, the food having undergone but little change, and not exhibiting the smallest appearance of being converted into chyme. So that taking all these circumstances into account, I think I am justified in attributing a great part of the success of Veterinary surgeons, in their treatment of the diseases of Horses, to their passiveness with regard to the drenching system.

I might strengthen the foregoing remarks by analogical reasoning, (which I am not over-fond of having recourse to) for, it is a fact pretty well known, and will be readily admitted by all medical men, that the violent flatulences and acid eructations which human invalids often experience, who have weak digestive powers, are the effects of fermentation which takes place in the stomach, solely in consequence of its diseased actions and diminished energy. Again, in the disease called the Hove in cattle, fermentation proceeds with immense rapidity, from sudden and over-distention of the stomach with green food, and so much air is speedily generated, that if an exit be not made for it, the organ bursts, and the animal dies. In these cases it is true, no acetous acid is formed, because there is not time for its development in the stomach. It is by no means absolutely necessary, however, for the food (as in the case of the Hove in cattle) to be of a green or succulent nature, in order to run rapidly into fermentation,

and, thus, to produce sudden death; for, Mr. White has mentioned an instance that came under his own cognizance, where a Horse, that was a voracious feeder, got loose in the night, and making his way to the corn binn, he ate until the stomach burst. Now, this event must not be attributed so much to the mechanical distention of the stomach, that took place from the mere bulk of the oats which the animal swallowed, as to the quantity of gas that was extricated in consequence of the fermentation which took place in them. For, as soon as the mechanical distention which arose, in the first instance, from the mere quantity of oats that the animal swallowed, had passed the point that was compatible with the specific healthy actions of the stomach, then the gastric juice ceased to be capable of exerting its natural property of converting the food into chyme, and at the same instant fermentation would commence and proceed with such rapidity, that the carbonic acid gas, disengaged from the fermentative materials, not finding a ready exit, would be capable of bursting the stomach. I have gone pretty much at length, into the subject of fermentation, which occasionally takes place in the stomach of living animals, in order to prove that it is a diseased, and never a healthy process, and some of my readers, especially those who have made chemistry their study, will, I fear, be of opinion, that I have been unnecessarily prolix upon it; but it seems to me to be a point of such great practical moment, that I consider myself justifiable in having enlarged upon it. I have laid the greater stress upon it, also, on account of its being intimately connected with the drenching system which is too much recommended in books, and too frequently had recourse to, even by people of education and good sense; for, as to Farriers and Grooms, it is their very citadel, to which they are ever ready to

fly upon all occasions ; and more especially when they consider the enemy to be at the gates. Now, however trifling the consideration may seem to be to the ignorant, whether the stomach of a Horse, labouring under a dangerous acute disease, be left to itself, and to the kindly operations of nature, in order to recover its suspended powers, or be oppressed and distended with fermentative materials ; in other words, whether the organ be, or be not, converted into a temporary fermenting vat, it appears, nevertheless, to me, to be one of immense importance.

From this digression, I return to a further consideration of some of the properties of the gastric juice. This liquid is found not to act indiscriminately upon all substances, for though (as has been shewn) it is capable of dissolving solid bone, yet, if grains of corn are enclosed in a perforated tube, and a granivorous bird be made to swallow it, the corn will remain the usual time in the stomach, without alteration ; but, if the husk of the grain be removed, the whole will be converted into chyme. Here then the grinding powers and the use of the gizzard, are plainly and strongly exemplified.

So little, however, has the hardness or softness of bodies to do with rendering them more or less susceptible of the action of the gastric juice, that the seeds of apples or even ripe currants that have been swallowed whole, are known to pass unaltered through the human stomach and intestines (which are capable of digesting solid bone) and it is certain that every grain of corn that escapes being crushed by the teeth of a Horse, passes through the intestinal canal entire, and consequently cannot contribute in the smallest degree, to the nourishment of the animal. It seems, therefore, that skins and husks are capable of resisting the action of a fluid, which can dissolve

bone; and of this important fact, I mean to avail myself fully when I come to discuss the different articles of Horse-diet. Again, the gastric juice is not only not the same in all animals, but it varies in its properties in the same animal, according the circumstances in which the individual is placed.

To illustrate the first proposition, I need do no more than mention the case of goats, which not only browse with impunity upon hemlock which is a poison to man, but convert it into nourishment. To prove the second, we have only to state the fact that many animals live solely upon vegetable, some entirely upon animal food, and others, again, upon a mixture of both. But, if in the instance of the two first classes, the food which the animal has been uniformly accustomed to, whether vegetable or animal, be suddenly withdrawn, and other food substituted, the creature not having the power of digesting the new kind of diet, languishes and dies. However, new habits may be induced in the animal, and new properties communicated to the gastric juice, provided the change in the food which is natural to it, be brought about by slow and gradual means. Thus, an eagle may be brought to live upon bread, and a lamb upon flesh, but then the stomach in both cases (to borrow once more Mr. Hunter's strong, but applicable idiom) must be properly educated for the purpose; inasmuch as it is necessary that the change in the animal's natural habits and instincts should be slowly effected, by mixing at first a small quantity of the food not natural to the creature, with that which it instinctively feeds upon; withdrawing the latter by degrees, whilst the former is increased in the same proportion.

Such, then, are the amazing properties and powers of the gastric juice; and philosophers, finding that the phenomena of digestion,

could be referred only to the operation of this fluid, became desirous of collecting it in purity, of analysing it, and of discovering, if possible, by a chemical examination of its constituent principles, to what its remarkable effects are owing.

But, notwithstanding the labour and ingenuity that have been exercised upon the subject, by chemists and physiologists of the first abilities and characters, both at home and abroad, very little (I should be safe in saying almost nothing) has been done, towards developing its constituent principles, much less towards explaining the *mode* in which it acts in converting food into chyme. Many circumstances, indeed, stand in the way of an accurate analysis of the gastric juice, and prevent our coming to any definite or precise conclusions concerning its nature and properties.

In the first place, it has been found extremely difficult to collect it in any considerable quantity, and still more so in a state of purity.

It seems to me too, that insuperable difficulties stand in the way of obtaining it in a state of perfect purity, without which, all attempts to explain its mode of action on food, must proceed upon reasoning, purely hypothetical.

Now, the very contradictory accounts, which have been given of the nature and properties of the gastric juice, by those philosophers who have attempted its chemical analysis, have arisen chiefly from the impossibility of obtaining it totally unmixed with the food, and with the other excretions that are met with in the stomach. And if, as has been suggested by some physiologists, there be good reason to believe that this fluid is thrown into the stomach, only at the time when food is present in the organ (a supposition which I think not only exceedingly rational, but highly probable) then, all that has

hitherto been done in the way of chemical analysis, must go for nothing; inasmuch as such attempts have been thrown away upon the examination of other secretions, such as saliva, bile, and mucus, which are to be met with in the stomach.

Thus, some philosophers have maintained that the gastric juice is an acid, and others that it is an alkali. But if we may trust to the conclusions of the ingenious Spallanzani, the gastric juice is, naturally, neither acid nor alkaline.

If it be poured on carbonate of potash, it occasions no effervescence; and upon the whole, we may safely say, that no certain conclusions can be drawn from any experiments hitherto made by philosophers, respecting the chemical nature of the gastric juice.

But, though I think it highly probable that the utmost efforts of human skill and labour, will never lead nearer to a comprehension of the actual mode in which digestion is effected, than that point, which we have been permitted to approach, in our attempts to investigate many of the impenetrable mysteries of nature; I confess, for my own part, I see no cause for regret, on this score.

For, whilst the line appears to be drawn by the author of nature, for wise and inscrutable purposes, beyond which our most laborious investigations cannot possibly go, yet, the objects aimed at, in the course of these enquiries, not only serve to ennoble the pursuits of philosophy, and to enrich the stores of science, but to develop some things, which are found to be strictly applicable to practical purposes.

The truth is, that some very curious and important facts have been brought to light, in consequence of the experiments made on

digestion, as it is carried on in the stomach of living animals ; totally unconnected with any hypothesis respecting the chemical properties of this fluid, when examined out of the body. For instance, Spallanzani found, by examining its effects on food, that it attacks the surfaces of bodies, carries them off and unites with them so strongly that they cannot be separated by filtration. It follows, therefore, as a consequence, that the more intimately food is divided, the more speedily it will be digested, because the gastric juice, in this case, must act with more force and rapidity. This fact, therefore, shews us very satisfactorily, why soups and broths or panada, are more easily digested and are considered lighter for invalids than solid meat or bread.

And upon the same principle it must be evident, that meal mixed with water, will be more speedily and easily digested by a Horse, than oats ; especially on long and harrassing journies, when the stomach begins to participate (as a muscular organ) in the exhausted state of the other muscles of the body. It has been proved also, by the same philosopher, that the action of the gastric juice in the stomach, is increased by a warm temperature. This fact proves the importance of Count Rumford's valuable observations on diet, in the course of which, he has laid great stress upon the circumstance of the labouring poor, eating their food hot, in winter-time ; and it offers a solution (at least in part) of the good effects of water taken at meals, as hot as it can possibly be sipped, in some peculiar cases of indigestion, which have been known to be cured by this simple remedy, after the patient had undergone the routine of purgatives, tonics, bitters, opiates and stimulants, and even a course of the Bath waters without avail.



But the action of the gastric juice is not confined to the circumstance of reducing the food into minute particles, for it has the power of changing both its taste and smell, and in fact, of destroying all its sensible properties. This, indeed, may be reasonably inferred from a circumstance previously noticed, namely, that putrid flesh is rendered sweet in the stomach, by the process of digestion. So that this fact utterly excludes the possibility of supposing, that the gastric juice operates as a putrid ferment, in promoting the digestion of food. Now, as to the chemical qualities of the substances, (unconnected with food) found in the stomach, and examined after the death of the animal, two facts only have been perfectly ascertained, one of which, as Vanquelin and Macquart have proved, is, that the juice in this organ, in sheep and oxen, contains, uniformly, uncombined phosphoric acid; the other, that it has the property of coagulating milk and the serum of the blood.

And not only so, but it has been proved that the inner coat of the stomach itself, possesses this property in an astonishing degree. For, Dr. Young proved, nearly fifty years ago, by infusing seven grains of the inner coat of the stomach of a calf in water, that the liquid was capable of coagulating more than an hundred ounces of milk, that is to say, he discovered it had communicated to the infusion, the property of altering the arrangement of the particles and chemical qualities of a fluid more than 6857 times its own weight, which, it is most likely, was but in a small degree diminished.

The stomach of living animals, however, operates no other change upon food, in the way of digestion, than that of converting it into chyme, which may be considered the first stage of the digestive process.

Digestion, therefore, is not completed in this organ; for the chyme passes from the stomach into the intestines, and is there, by mixing with the bile, converted into two substances of very different kinds, namely, chyle and excrementitious matter.

The chyle must, in fact, be considered the immediate matter of nutrition. For, as we know that the blood is the magazine, from whence the waste of all the fluids, and the wear and tear of the solids are supplied, so, we also know, that the chyle makes good the perpetual demands that are made upon the stock of blood, by becoming converted into the latter fluid. But, how chyle, which is white, and resembles milk, becomes red blood, or how blood is afterwards (by the process called assimilation) converted into muscle, ligament, tendon, bone, and all the other component parts of an animal body, is a point which must be referred to those phenomena that are placed infinitely beyond the ken of human sagacity to reach or to explain.

Calm reflection might, indeed, have occasioned philosophers to doubt exceedingly (*a priori*) whether there was any greater chance of solving the phenomena of digestion, a process intimately connected with the very existence of animal life, than of being able to explain how the brain acts upon the nerves, or the nerves upon the muscles, in the production of voluntary motion. For, though, from the prodigious difference which is found between food and chyme, as well as that which exists between chyme and chyle, there was good reason for supposing that the change effected in both instances, must be of a chemical nature, yet, as chemistry cannot imitate either of these changes, we must infer that they are somehow or other connected with vitality, a power which it will be readily admitted, is beyond the comprehension of our finite faculties.

There is one more remarkable property, however, of the gastric juice, which it would be wrong to pass over, namely, the power this fluid possesses, of digesting the very organ which produces it. This fact was first noticed by Mr. John Hunter, who discovered, in some instances of sudden death, that the gastric juice had eroded the stomach in a few hours after the principle of life had forsaken the body. Nevertheless, whilst the stomach itself retains the living principle, the gastric juice is not capable of exerting any such power upon it, and this is the reason why Bots are not digested or acted upon inimically by this fluid.

Before I enter upon any practical remarks upon food, it may not be amiss to glance at some peculiarities respecting the structure and size of the stomach of the Horse. The stomach of this animal is very small in proportion to his bulk, when compared with the size of this organ in many other animals. According to Mr. Blaine, one of the stomachs of a sheep, is larger than that of a Dray-horse. The stomach of the Horse is divided into two nearly-equal parts, the structure of which is very evidently distinct. One of these portions, which is cuticular, and is not found in the ruminating class, has been called by some anatomists, the insensible portion of the stomach, in contradistinction to the other which constitutes the larger portion, is highly vascular and has been called the sensible part of this organ. It is in the cuticular or insensible part of the stomach that Bots are pretty uniformly found sticking, but I have occasionally met with them clinging to the vascular or sensible portion. The striking difference which exists in the structure and appearance of these distinct portions of the stomach, clearly implies a difference in their functions also. But, what the functions are, which the different portions respectively exercise, has by no means

been satisfactorily proved. Some physiologists have suggested that the villi (that is to say the ultimate branches of the arteries) of the sensible part, secrete the gastric juice; but, of this we have no manner of proof; and it has also been conjectured, that the cuticular or insensible portion performs the office of grinding the food; somewhat similar to, though in a less degree than a gizzard. But, if the insensible portion of the Horse's stomach performs the office of a gizzard at all (a fact which I very much doubt) it must be in an inconceivably small degree indeed; inasmuch as we find that oats which escape being crushed by the teeth, though moistened with saliva in the mouth, and afterwards soaked with the juices of the stomach, are not burst or broken down in this organ, but are uniformly voided whole, in every case, where the husk, over which the gastric juice has no power, remains entire. But though we cannot say what the peculiar office is which the cuticular portion of the Horse's stomach performs, there is certainly, one inference, fairly and safely deducible from its structure, which is that the Author of Nature designed this animal to be granivorous as well as graminivorous, inasmuch as this sameness of organization exists not only in the whole Horse tribe, but also in some other animals destined to feed on grain, such as rats and mice.

But, as to the notion which has been a good deal insisted upon, that this peculiarity of structure is in some degree connected with the difficulty of exciting nausea in the stomach of a Horse; no opinion, in my view of the subject, can be less tenable or more purely hypothetical. From some of the declamations which have been made on this point, one would be induced to imagine that the authors had founded their opinions on the vulgar adage, which seems to imply, that a Horse cannot be made sick.

Now, this idea is so far from being correct, that the very contrary is actually the case, as all Horses which get aloetic physis, are, uniformly, more or less sick during its operation, even if the Soccorine or Cape aloes be employed, and if the Barbadoes be used, the nausea is commonly excessive and long-continued, as has been already pointed out in the chapter on Purgatives. And further, that decided disinclination for food, which all-benevolent nature induces during the course of most acute diseases, is usually attended with considerable and evident nausea. The analogical reasoning employed upon this subject, has been of the following kind; viz. half a grain of Tartar Emetic, will excite nausea in a man; and therefore, (arguing on the principle of bulk for bulk) it was presumed that two or three grains would excite nausea in a Horse. Yet, it has been proved that a thousand grains of this preparation of antimony, will scarcely produce this effect on the stomach of a Horse, although one would be safe in asserting that this quantity would be sufficient to kill fifty men. Nevertheless, most violent nausea may be excited in the Horse, attended with strong attempts to vomit, by several vegetable productions, such as henbane and wolfsbane, given in no very large quantities. I have glanced at these facts, merely by way of shewing the deceptive nature of analogy, and of proving how cautious we ought to be in drawing inductions, grounded on this principle only. After these preliminary remarks, I proceed to the consideration of the different articles of Horse diet.

It is a well known fact that a Horse will not only live, but fatten upon grass; yet in this state, which we are too apt to call the true state of nature, he becomes, comparatively, unserviceable to man. In order, therefore, to produce the full amount of his services; both as to

speed and endurance of labour; it is found indispensably necessary, that at least some portion of his food, should contain more nutritious principles than grass, or, to speak more correctly, that the nutriment contained in it, should exist in a smaller compass than it does in grass. Hence, from the remotest ages, Horses have been fed, in part, upon different seeds, which get the name of corn; and also upon various pulses, which contain nutriment in as small a compass as corn does. When we look at the structure of the Horse's teeth, and take into account the natural habits and instincts of the animal, it becomes quite manifest that he was not designed by nature to be carnivorous. No doubt, however, can be entertained, for reasons which have been already advanced, that it would be possible to subsist a Horse on animal food, provided the change from his natural diet were slowly brought about. Many years ago some experiments were made in England; in order to ascertain this fact, the result of which led to no positive conclusions on the subject. For, a great portion of the flesh which was given to the Horse, being in a state of putrefaction, the stomach was suddenly called upon to perform two novel operations, both of which were unnatural to the organ, namely, to sweeten the putrid flesh, in the first instance, and, secondly, to digest it, when so made sweet. The attempt occasioned great emaciation, attended with violent purging, and so intense a loathing of the putrid food, that the Horse was observed to struggle violently against the act of swallowing. If the flesh, however, had been perfectly sweet, and the vegetable food had been gradually withdrawn from the animal, at the same time that the former was increased in the same proportion, there can be little doubt of a very different result. For, Broths made of animal food, are said to have

been found highly useful in recovering Horses from a state of great weakness, after severe diseases; and it is a common custom in India, to boil a pulse of that country, called Gram, along with animal food, which they mix with ghee (that is, clarified butter) and spices, and, blending the whole together, give the mass in the form of balls, to such debilitated Horses, as they wish to bring into the highest state of condition and vigour. And this plan of treatment, I am informed on good authority, is found to answer the desired purpose. There have been instances, also, where eggs have been given largely to valuable Horses, where their fattening nutritious property has been decidedly and unequivocally proved. The practice, indeed, of giving eggs to entire Horses, with the view of assisting the generative faculty, is by no means uncommon; and is said to be attended with the desired effect. And in some parts of North America, it is customary with the poor Cottagers, to mix animal broths along with vegetables; in the winter, in order to make up for the scanty supply of the latter, as food for their cattle, in that rigorous climate.

Taking, therefore, all these circumstances into consideration, I think there can be no doubt, that under the pressure of extreme scarcity, Horses might be brought to derive advantage from animal food, as well as oxen and other animals, which is, in fact, all that I am at present contending for. It is notorious, moreover, that in very rigorous climates and seasons, great numbers of Horses as well as other cattle, are known to perish for want of food, and the same thing takes place, occasionally; in Camps and besieged places, solely on account of a deficiency in the means of subsisting them. Now, as these extremities are usually foreseen in part, I think there can be no manner of question that the full amount of such calamities, might always be prevented, by killing

daily, a certain number of these animals, and making strong broths of the flesh, which might be appropriated to the sustenance of the others. At first it might be necessary to drench them, but, eventually, I imagine, they might be brought to take the broth voluntarily, if it were mixed with a small quantity of the vegetable food which they had been in the habit of eating. During winter, too, every particle of the dead animal, might be converted into nutriment for the living; inasmuch as no putrefaction would take place in the animal fibre so long as the thermometer should continue to stand as low, as the freezing point.

These remarks, which some may be inclined to think superfluous, will, I trust, render what follows, both more intelligible and interesting to a certain class of my readers. An investigation, however, of the various articles which contribute to the sustenance of Horses, even in these Islands, to say nothing of other parts of the world, opens a field of such immense latitude, as well to the natural Philosopher as to the practical agriculturist, that were I to attempt to discuss the subject on this comprehensive plan, it would not only carry me very wide of my original design, but would be the means of involving me in the disquisition of matter, much more curious than useful.

I propose, therefore, to confine myself to a consideration of such as are more commonly in use at home, and to begin with what may be called the Staple articles of Horse provender, namely hay and corn. And I do so, chiefly because it is pretty well known and admitted, that when these are of good quality, nothing further is necessary in the way of food, in order to preserve the health of the animal, and to enable him to support the severest labour.



The different grasses, (of which hay is made, both natural and artificial, have been proved by chemical analysis, as well as by the experience of the fact, to contain nutritious principles in considerable, though various, proportions, and the practice of soiling working Horses in stables, has been proved by Mr. Curwen, of the Skoose Farm in Cumberland, and many other practical agriculturists, to be highly economical. Along with the other nutritious matter, contained in grasses, Sugar is found in considerable quantity, and as this substance is known to contain more nourishment than perhaps any other production of nature, in the same bulk, it certainly becomes a great object to cultivate those grasses which are found to contain the greatest proportion of it, in preference to others. But, besides giving a preference to those grasses which are found by chemical analysis to yield the greatest quantity of Sugar, there is good reason for believing that Saccharine matter is developed in the process of making hay, and, for this reason, it would be well if chemical Philosophers would turn their attention to this branch of Rural Economy, and furnish the practical farmer with some certain data, which might guide him in the management of this important department of his business.

For, I think there can be no doubt that the practice which prevails generally in England, and so little in this country, of encouraging a certain degree of fermentation, in the stack, must operate upon the same principle as the process of Malting, and develop more Saccharine matter, than would otherwise be found in the same quantity of hay, made without being subjected to any fermentation.

Now, this circumstance of the great quantity of nourishment contained in Sugar, did not escape the sagacious observations of that incomparable Anatomist the late Mr. Hunter. And it is a notorious

fact, that, during the cane season, not only the Slaves in the West India Islands are observed to grow fatter, than at any other period, but the same change takes place in all animals that have access to the sugar, such as Goats, Sheep and Rats. Nay, the very Mules, whose labour is extremely severe, (being increased in a double and sometimes a triple proportion, during the cane season,) are always found to grow fat, in spite of their hard work, at this particular period. So that there can be no doubt that all such hay as is sweetest to the taste, must also (*cæteris paribus,*) contain the greatest quantity of nutriment. But, the management of the fermentation of hay in the stack, so as to produce the greatest quantity of Saccharine matter, without the risque of generating so much heat as to endanger its taking fire, or producing that partial combustion, which constitutes Mow-burnt Hay, is a matter which I dare not give any directions concerning, never having had an opportunity of making any experiments upon the subject.

There can be no doubt, however, that the thermometer would prove an instrument indispensably necessary to the success of the process. The fattening property of Malt Mash, too, hinges, in great measure, upon the quantity of Saccharine matter contained in the malt; and so decided are the effects of the nutritious quality of Sugar, that it has even been recommended to Government to permit the deterioration of this article, after taking off the duty, (by way of guarding against frauds of the revenue,) and to give it largely in order to expedite the fattening of cattle.

It appears from the analysis of various grasses, made by Sir Humphry Davy, that they vary very much, not only as to the whole quantity of soluble or nutritious matter found in them, but also as to the

amount of the Saccharine matter they contain, and this circumstance might be turned to good account in the choice of the artificial grasses.

I deem it unnecessary to give any directions respecting the choice of Hay, or to say any thing on the subject of the quantity necessary to be given to a Horse daily, as this must depend upon a variety of circumstances, such as the age, size, nature of the employment, and strength of the digestive organs of the individual, as well as of the kind and quantity of other food, which the animal gets.

During summer, it is a good practice to sprinkle hay with water, before it be given to Horses. Every one knows however, that hay alone, however good in quality, will not enable a Horse to sustain hard labour, and experience has taught people that some other substance, containing nutriment in a smaller compass than hay or grass does, must be given to working Horses.

The article commonly employed for this purpose is that kind of seed called oats, which contain a very large proportion of starch, and, are found to answer admirably for enabling Horses to endure the severest labour, and to preserve their condition and vigour. But, I think it admits almost of demonstration, that a saving of at least one fourth, (perhaps I should be safe in saying a third) of the quantity of oats given to Horses, might be effected by submitting them to the action of a machine, called an oat-bruiser, as a considerable quantity of corn is swallowed by *every* Horse, which escapes the action of the teeth and, on this account, passes through the animal, without contributing in the smallest degree, to the animal's nourishment. And if this rule holds good in every instance, even where the teeth are perfect, and with such middle-aged Horses as cannot be considered greedy feeders, how much more must it be the case

with very young, and very old Horses, and also with such as are voracious feeders.

But, lest it may be objected to me that my arguments on this head proceed chiefly upon mere assumption, a ground of reasoning which I have so frequently reprobated, and as facts are better than theory, let us see how they bear upon the case under our consideration.

And for this purpose I shall transcribe a very interesting communication sent to J. C. Curwen Esq. M. P. by an intelligent Officer who had served long in India, and published by him in his very excellent Tract on the Economy of feeding stock.

“ During the last seven years of my residence in India, I served with a corps of native cavalry, and had frequent opportunities of observing the mode usually adopted by the natives of Hindoostan in their management of that useful and beautiful animal; the Horse, as respects his food and shoeing; in this latter part, viz. shoeing, the practice for many ages, both as to the shoe and nail, is that recommended by Professor Coleman, in his late elegant and useful work on that subject. Horses are never used in agriculture, and those used in the cavalry, or for pleasure, are constantly housed, and with a double collar and hind picquet. Their food is either a large species of pulse, called, in Hindoostan, Channa, which is bruised and steeped for a few hours; or a smaller kind of pulse, called Colli; this is boiled, reduced to a paste, and given in balls; there is also a third mode sometimes practised, which is equal parts of channa and barley, ground to a coarse flour, and given in balls; the quantity from ten to twelve pounds weight, in the twenty four hours, with from twenty five to thirty pounds of hay. It is to be observed, the horses of Hindoostan are generally under the size of the English saddle

Horse ; the standard for the cavalry of the East India Company being fourteen and a half hands, and there is often considerable difficulty in procuring a sufficient number at that standard.

I have always been an advocate for cutting hay and straw, and bruising corn, for cattle of every description, and am convinced, that any man who has paid attention to the subject, will soon see the advantage that must result from the adoption of that practice.

My attention was particularly called to this subject by a circumstance which came under my notice when with the cavalry under Lord Lake, on the western banks of the Junna, in 1804. Channa, the usual food for the cavalry, being scantily supplied, Lord Lake ordered the horses to be fed with equal parts of channa and barley, bruised and steeped in the usual way, but from the irregularity of the size of the barley and channa, and inattention on the part of those whose duty it was to see it prepared, the greater part of the barley was given entire, and passed through the stomach and intestines of the horses, apparently little, if at all, impaired in its nutritive quality.

The scarcity of grain which prevailed at that time, induced many thousands to flock to the British camp in search of food, and I daily witnessed, for weeks together, many hundreds of all ages and sexes coming into the lines of our cavalry, and anxiously collecting and carrying away the excrement as it fell from the Horses ; this they exposed for a few hours to the sun, and by rubbing and sifting it, procured a large supply of good food."

This detail, which is on some accounts afflicting to humanity, will probably go further in convincing the incredulous upon this subject, than the most ingenious theory, or even volumes of well-attested

facts of experimental Philosophers. It must prove to every unprejudiced man, that a prodigious waste takes place in the use of corn for Horses, under all circumstances, when it is not previously ground or bruised. For, though I do not mean to maintain, but that some Horses whose teeth are perfect, and whose manner of eating is slow and gradual, do, in the act of masticating their food, crush nearly all the oats they swallow, yet, there can be no doubt, that in every case, some will escape being broken down by the teeth. And this is the chief reason, why crows and other birds may be observed at all seasons of the year, but especially in winter-time, to use such vigilance in searching the dung of Horses on the public roads, which in every instance, where the animal is fed in part upon grain, amply repays them for their trouble. And it is a familiar remark that our common poultry instinctively prefer the corn they find on dung-hills, to dry corn, as if conscious that the former contained an equal portion of nourishment and would give less employment to their gizzards than the latter. Upon the whole then, I cannot help considering this affair in the light of a great national object. For, when it is considered that the consumption of grain by Horses in these Islands is so prodigious, and as it will be admitted by every one who has been in the habit of giving bruised oats to these animals, that they keep their condition and perform hard labour as well upon three fourths of the ordinary allowance of unbruised corn, it follows that there will remain a great annual saving, for the sustenance of the population of the country. An immense object this, surely, at all times, but more especially in seasons of war and scarcity. But, some ingenious persons have suggested, that the saliva may contribute materially to the more perfect digestion of the food, and that, on this account, the

corn in its unbruised state, by giving more employment to the salivary glands, and being thereby more completely saturated with this fluid, may be more speedily and perfectly digested. Now, though it is impossible to disprove this opinion altogether, yet it ought to be recollected at the same time, that it is equally impossible to prove it to be well founded. The facts of analogy, indeed, are decidedly and unequivocally against such a supposition; for, in the instance of voracious fish and the amphibia, no part of their prey has been found materially altered in appearance, much less digested, except that portion which occupied the stomach, all the remainder preserving its original form and consistence. I think, therefore, there is good reason for supposing that the chief purposes which the saliva serves, are to lubricate the mouth and palate, and by this means to preserve the exquisite sensibility of these parts, and to furnish sufficient moisture during the act of masticating food that is dry, so as to fit the bolus for being swallowed, without exciting any painful or irregular action of the throat and gullet; which would otherwise take place in the act of swallowing hard substances.

However, without dwelling too much upon these doubtful points, the broad facts of the case would, one should think, be sufficient to establish the policy of giving bruised oats to Horses; and these facts are, from the concurrent testimony of all persons whom I have made it my business to converse with, who have made trial of this plan, whether scientific or practical men, precisely what I have stated them to be. Some of these parties maintaining that a saving of one third, and all agreeing that not less than one fourth, of the average allowance of corn may be effected, by means of an oat-bruiser. Sir Humphry Davy seems to be of opinion that the skin of the

kernel of the oat contains nutritious principles, and that when ground it may become digested and contribute to the nourishment of the animal. But, if this could be proved positively to be the case yet it would by no means disprove the facts which have been stated, respecting the voiding of oats whole by Horses, which have escaped being crushed by the teeth, for, the skin of the kernel may be digestible, although the husk certainly is not. And as we know that even such nutritive substances as are readily acted upon by the gastric juice, are digested the more easily for being in a state of comminution, it follows, of course, that it must be a great desideratum to reduce into small particles, such as are not readily converted into chyme, by the power of this fluid.

The same Philosopher has also suggested that certain combinations of nutritive substances may prove more nourishing than others; an opinion which it is impossible to disprove. And he has adduced a fact, apparently in support of this notion, communicated to him by Sir Joseph Banks, viz. that the Derbyshire Miners prefer oat cakes to wheaten bread, in winter, finding that this kind of nourishment enables them to support their strength and perform their labour better. He adds, that in summer they say oat cake heats them, and they then consume the finest wheaten bread they can procure.

Now though I cannot persuade myself that oats are in any case so nutritious as wheat to the human frame, (but with such exceptions as apply to all general rules,) yet it is with the greatest diffidence, lest I may possibly be accused of presumption, that I venture to differ from such high authority, by endeavouring to account for this curious fact upon other principles. For, according to my conception of the case, this fact, communicated by Sir Joseph Banks, is meant



to be considered nothing more than a corollary upon the proposition that precedes it, as to certain combinations of the nutritive substances proving more nourishing than others, independently of the affair of quantity, which it is admitted will generally prove a criterion of their value. Now, without laying too much stress upon the established, popular opinion, that wheaten bread is more nourishing than any other kind, (a notion by the bye, by no means to be overlooked in the argument,) we must recollect, that it appears from this chemist's analysis of wheat and oats, that the former seed contains 955 parts of nutritious matter out of a thousand, whereas in a thousand parts of the latter, there are found only 743 of nutritive ingredients. So that I infer it is meant, we should consider this fact of Sir Joseph Banks's, either as an illustration of the notion, respecting the peculiar combination of nutritious matter, producing more nourishing effects, than the mere quantity of such substances, or, at least, as a proof that the fact itself is one of a discordant kind, when viewed in relation to the different effects of the oat cakes, on the strength of the miners, in summer and winter.

But I confess I do not see that the fact, (which is one common enough in the north of Ireland, and is indeed too notorious to be disputed,) by any means reduces us to the dilemma, of either admitting its discordance, or of inferring that it is the peculiar combination of the nutritious matter, in the oaten cakes, which produces more nourishing effects in winter, than wheaten bread does. For, I cannot help being decidedly of opinion, that the preference which the miners give in winter to the use of these cakes, depends solely upon the well known property, which this kind of food possesses of irritating the skin. By the use of it, in fact, the skin is kept constantly warm, and it is well known, that in the se-

verest weather, so long as we are able to keep the surface of the body warm, we never suffer from the effects of cold. Whilst on the other hand, though the exhausting effects, which these hard working men experience in summer-time, (when to keep the surface cool, is to preserve the health and strength,) must be attributed, in some degree, to the heating irritating property of this food upon the skin; yet there can be no question, I think, that it ought to be placed *chiefly* to the account of its deficiency in nutriment; for at this period, we find, the miners purchase the finest wheaten bread they can procure.

For, we know that the heat of the stomach and digestive organs is the same in summer and winter, and therefore it seems very difficult, if not impossible to conceive, that there should be any difference at these respective seasons, in the quantity of chyle produced, from a given quantity of nutritive materials, or in the subsequent process of assimilation, which operation effects the supply of the fluids, and makes good the waste of the solids, of the bodies of animals. But one may readily see, how the heating property of the oat cake, upon the skin in summer, may not only produce constant irritation, but may contribute to increase the exhausting effect of labour, at this season of the year, whilst the warmth which will be constantly kept up, in this integument, in winter, by the use of this species of food, will not only serve to defend the system at large, from the debilitating effect of cold, but, on the same principle, make up for the lesser quantity of nutriment contained in it, in comparison of wheaten bread.

How far wheat might be found more nutritious than oats to Horses, I cannot pretend to determine, because in these islands, it never constitutes a part of their food; but it is said to be often given to the

Horses of the Great, on the continent. There can be little doubt, however, but that it would prove to be more nutritious than oats, on account of the greater quantity of gluten which it contains, in comparison of this, and, indeed, of every other species of grain. Gluten, I find, Sir Humphry Davy has placed highest in the scale of the nutritive materials of vegetables, and sugar next to gluten. But this Philosopher has not informed us, whether this scale has been formed from the observation of facts, which cannot err, or whether he has ventured to consider gluten as more nutritious than any other vegetable substance, on account of its near approach to animal matter. The assumption is, undoubtedly, fair, on the principle of analogy. But, Doctor Pearson, in his analysis of the potatoe, communicated to the board of agriculture, says, "I cannot find any just ground for the opinion that meal of wheat must afford much more nourishment than an equal quantity of potatoe meal, for, if it be granted that this must be the case, because the former contains animal matter, it is reasonable to believe that the proportion of animal matter is too small, to occasion a considerable difference between the nutritive properties of wheat, and those of other meals. But, it appears from some experiments of feeding animals upon the glue, or animal part of wheat, and upon the meal freed from this animal matter, that the former is much less nutritious than the latter."

Notwithstanding the high authority of Doctor Pearson, however, no reasonable doubt can be entertained of gluten whether vegetable or animal, being highly nutritious, and more especially as it appears from Sir Humphry Davy's analysis of different wheats, that this seed, instead of containing only one twelfth, consists of considerably more than one fifth part of gluten, or (which is the same thing considered in this point

of view) of albumen. It is, I imagine, in great measure owing to the saccharine matter contained in it, that barley is found to be more nutritious than oats to Horses; after they get accustomed to this food, for, besides containing a greater quantity of nutritive matter, in the aggregate, than oats, in the proportion of 920, to 743, it is found to consist of 70 parts out of 1000 of saccharine matter; whereas oats contain only fifteen parts. Through a great part of the continent, barley is given to Horses along with straw, which is used instead of hay, the barley making up the deficiency of the latter, in nutritive matter. For, it must be recollected that the stomachs of all Horses, and especially of such as work hard, need the stimulus of bulk, as well as that of nutriment, and as it would not be reconcilable with the interests of the proprietor (except under very peculiar circumstances) to allow working Horses as much corn as they would be inclined to eat, it becomes necessary to make up the deficiency, with some article less costly. Now, good Hay certainly contains a great deal more nutriment than straw, but whenever it may become advisable or necessary to give straw to Horses, rather than hay, an allowance of barley, in preference to oats, will be found to be attended with the best effect upon the animals. Both oats and barley are the better for age, and old corn seems to produce superior nutritive effects upon horses, on some principle not easy to be explained, inasmuch as none of the nutritive matter can possibly escape from the seed, which loses nothing but water during the process of drying. For, if we were to admit that an eighth of the weight of the grain is lost by keeping, in consequence of the evaporation of its water, (a proportion I should think much beyond what actually takes place) it will by no means account for the disparity supposed, by practical men, to exist between the nutritive effects of new and old corn.

It is certainly possible, however, that, (independently of the circumstance of its becoming drier by keeping) some slight chemical change may take place in the seed, upon which the superior nutritious quality of old corn, over new, may depend. The use of maize, or Indian corn, for Horses is but little known in these countries, yet it is given to them in many parts of the world, and it is found to be highly nutritious, chiefly, I presume, from the starch which it contains. Of its other nutritious principles I can say nothing, as no complete analysis of this seed, as far as I know, has been published by any Chemist. Of the pulses, none are commonly used for the food of Horses in these Islands, except beans, which are esteemed highly nourishing, and are given in England, chiefly to such as undergo very severe and regular labour.

When beans are given to Horses, they are generally mixed with oats, and it is a commonly received opinion that they are apt to produce costiveness in all Horses that do not get regular work. The austere astringent taste of this pulse, seems to give a reasonable colour to this popular notion. Beans ought always to be crushed before they be given to Horses.

Carrots are given largely to Horses in many parts of England, and very decisive evidence of their nutritious property has been furnished by many practical agriculturists.

There can be little doubt that the nutritious property of carrots depends, almost solely, upon the sugar they contain, for although this root is found to consist of only 98 parts in 1000, of nutritive ingredients, yet, of these, 95 are found to be saccharine matter. Mr. Curwen in his tract on the steaming of potatoes, says, he has found, by giving five pounds of carrots to each of his colliery Horses daily, he can take off four pounds of oats, and he adds, this keeps

them in great health and spirits, as much or more so, than with the full allowance of oats. Now, this opinion, delivered so decisively on this important point, by such an accurate observer as Mr. Curwen, whose experiments have been made upon a very large scale, I consider to be worth a thousand hypotheses of speculative men; for this gentleman keeps one hundred working Horses, and has not hazarded this notion on light grounds, having made use of carrots for the space of *three years*, before he published the result of his experience on this subject. This opinion of Mr. Curwen, too, (or rather detail of the result of three year's experience) forms a very strong presumptive proof of the superior nutritious property of saccharine, over every other kind of vegetable matter; for oats have been found to contain 743 parts of nutritive ingredients out of 1000, whereas, carrots contain only 98 parts, in the same proportion; but then (as has been before observed) 95 of these are saccharine matter.

The Ruta Baga, or Swedish Turnip, has been given on a large scale, to Horses as well as other cattle, and the late reports of many eminent agriculturists, are highly in favour of this root. The saccharine matter contained in this esculent has been found to be more than one twentieth part, which sufficiently accounts for its nutritious property. From the communication of a writer in the Farmer's Journal, it appears that working Horses that performed severe labour, were kept in good condition, upon a daily allowance of thirty four pounds of Swedish turnip, three quarters of oats, with chopped straw, without any hay.

And Mr Edgeworth of Edgeworthstown, adduces still stronger testimonies in favour of the nutritious property of Swedish turnip, by informing us, in the Irish Farmer's Journal of March, 1813, that

his working Horses were kept in high order by means of it, and that when his stock was expended, although they got a peck of oats daily, along with *excellent* hay, yet, they visibly fell off. He farther adds, that he observed one of his saddle Horses to be in the greatest condition and spirits, and he therefore suspected that too much corn was given to the animal, but, upon enquiry, he found that the Horse's condition and spirits were to be attributed to the Swedish turnip, inasmuch as the animal had got no corn. Now, although the nutritive effect of carrots and Swedish turnips, upon Horses, is owing, as has been already observed, chiefly to the saccharine matter contained in these roots, yet, it must not be put down entirely to this account; inasmuch as it is attributable in some, and, I apprehend, in no inconsiderable degree, to a circumstance which, as far as I know, has been entirely overlooked by those who have written on animal dietetics. And this circumstance is, the comparatively small call that is made upon the saliva of the animal, during the act of masticating provender of this juicy kind, in comparison of the prodigious quantity of this secretion, necessary for the preparation of the bolus, previously to its being swallowed, when the animal is chewing hay, straw, chaff, or any other species of dry food.

In order to be enabled to form something like a conjecture, respecting the quantity of saliva necessary to prepare dry food for being swallowed, I infused four ounces of hay, without bruising or crushing it, in boiling water, for fifteen minutes, and then expressed with my hands, as much of the water as I was able, using my utmost force for this purpose. The hay did not appear to be moister than a bolus of hay and saliva, chewed so as to fit it for swallowing. On weighing the hay in this state, I found that it had gained seven,

weighing now eleven ounces. This was an increase, which, I confess, surprised me, and if the call upon the salivary glands, for the fluid which they secrete, be in any thing like the proportion of water which was absorbed by the hay during its maceration, it helps (in some degree at least) to solve the apparent paradox of Horses fattening suddenly upon grass, although they had been previously falling off in the stable, notwithstanding their having been supplied with hay and oats of the best quality. But, suppose, for arguments sake, we say that the quantity of saliva absorbed by dry food is, instead of being nearly three times, only equal to, the weight of the food; still, will the demand upon the blood, through the medium of the saliva, be to a most astonishing amount. I have already adduced pretty strong, and, I should hope, satisfactory reasons, for supposing that the saliva has little or no concern in the process of digestion, and that its chief use is to furnish sufficient moisture to food that is dry and hard! Now, we know that all the saliva necessary for this purpose, is furnished from the blood, the stock of which must be materially lessened by this demand.

And though it is impossible to define with any accuracy, the quantity of this secretion necessary to moisten any given quantity of dry food, yet, if we admit it equals in weight, that of the food itself, the amount will appear so enormous as to be almost incredible; for, working Horses are known to consume from ten to sixteen pounds of hay daily. And, therefore, if it were only on this account, the plan of preparing the food of animals by coction, when it consists of dry materials, which contain but little nourishment, cannot be too highly recommended; although it has been decidedly reprobated by a certain writer, who has, within these few years, published what he



calls a philosophical treatise on Horses and their diseases. Nor can there be any manner of question, notwithstanding the dogmatic assertions to the contrary of the writer alluded to, that the practice of subjecting food to the culinary process, not only enables the animal to digest it more quickly, but, in the instance of all such substances as contain only a small quantity of nutritive matter, such as straw and chaff, by which latter I mean cut straw, to convert every particle of that quantity, however small, into chyme.

There is another consideration, however, which ought not to be overlooked in the argument, namely, the prevention of costiveness, by this mode of feeding, that fruitful source and material aggravation of many diseases in Horses. And, as I have already alluded to the philosophical treatise on Horses, I cannot refrain from going a little farther out of my way, in order to observe that I consider this performance a most remarkable instance of the incongruity of the human mind.

Of the religious, moral, and political sentiments scattered through this most extraordinary medley, as they come not within my province, I shall not pretend to speak; but, as it appears to be fairly within the scope of my subject, to give my opinion on the merits of the book as a Veterinary Work, I shall not scruple to use the same freedom with this author, which he has used in criticising and descanting upon the works of others. Confining myself, therefore, to this view of the matter, I shall observe that I cannot help considering it a most extraordinary proof of rashness, that any man endowed with talents such as this Author is unquestionably gifted with, should venture to write upon a subject, the very idea of which, presupposes a decent share, at least, of elementary knowledge, in the person un-

dertaking the task, which this author candidly avows he has had no opportunity of obtaining.

Nevertheless, in no way dismayed by the want of proper armour, this hardy champion ventures to throw down the gauntlet, to some of the greatest names amongst modern Philosophers, to criticise their opinions, and to dispute their tenets. Now, if this gentleman's dogmatism, had been confined to mere matters of theory, or speculative points only, they might have been passed over in silence, and suffered to find their own level, but as it seems to me that many of the rash and bold assertions of this Author, on the subject of animal dietetics, are of such a nature as to strike at the very root of the greatest discoveries of modern times, and to invalidate the facts of several eminent agriculturists, the scale of whose experience, has been in a tenfold degree greater than his own, I feel it incumbent on me, to point out the fallacy of some of the opinions he has maintained, on this important branch of rural economy.

Speaking of the Continental system of managing Horse diet, this author says: "In this reforming age various have been the improvements proposed for the œconomical dieting of Horses. Lord Dundonald, and indeed others before his Lordship, had been strong advocates for the Continental culinary system, or the practice of cooking the victuals of Horses, or at any rate of malting their corn.

Tedious methods! which I conceive will scarce ever obtain in this country, where the raw provender, judiciously chosen, and properly diffused, succeeds so admirably. In feeding for the Shambles, I admit the superior utility of coction, which I have often essayed." Now, the admission of this last fact, seems to me quite sufficient to overturn the notion, on which this bold assertion, as to the inefficacy

of applying coction to the food of labouring animals, is founded. Nor, though the ground of this writer's opinion is admirably adapted to the popular tone, and seemingly very specious, yet, it certainly will not stand the test of strict scrutiny. (For may not all the argument, (if any thing like argument can be said to be conveyed in it,) be reduced into the compass of the following question? viz. whether any man would think of drawing an inference from the facts which he had observed as to the nutritious property of certain articles of food, when used for the purpose of fattening cattle for sale, and of applying these facts to the case of such Horses as undergo severe work? to which I answer, in the most unequivocal and decided manner, yes, certainly. And for this plain reason, because no substance can fatten an animal, which has not strongly nutritive powers, and if it has been found that certain articles, fatten animals faster, for being subjected to the culinary process, it follows (a fortiori,) that animals which labour, will be equally benefited by the use of such food, although it certainly does not follow that some modification with regard to quantity, mode, and periods of administering it, may not be both necessary and proper.

For, in addition to the powerful reasons already adduced, for feeding working Horses on cooked provender, may be mentioned another, which Mr. Curwen has very properly laid great stress upon, namely, the time gained in eating food of this description, which of course allows of so much more, for rest. A Horse will consume near six hours, in eating a stone of Hay, whereas he will eat a stone of steamed potatoes in twenty minutes. This is undoubtedly a weighty consideration in the argument, but this is not all, for cooked provender is not only more readily and speedily acted

upon by the stomach, as a digesting organ, but the sudden filling of this viscus, in comparison of that gradual distention which the eating of dry food occasions, will have the effect of disposing the animal to sleep, which is highly favourable to the digestive process; or, in such animals as do not sleep, of inducing a state of quiescence, approaching that of sleep, which, in them, is equally favourable to the digestion of their food. This is a most important point, and must operate strongly in favour of the system of giving cooked provender to working Horses; and is one reason why several of those Mr. Curwen employs in his Colliery, which, when he purchased them, were skeletons, and supposed to be fairly worn out with labour and old age, not only soon became fat, but remained in good condition six years afterwards, notwithstanding the severity of the labour which they continued to perform. There cannot be the least question, indeed, but that this system of feeding will materially contribute to protract the lives of working Horses, and enable them, at the same time, to perform a greater quantity of labour. The teeth of Horses so fed, will, in fact, be scarcely called into action, and an old Horse, whose general constitution is sound, will, in this respect, be perfectly on a par with a young or middle-aged one; for the bolus, on account of the state of the food, will be ready for being swallowed, almost at the instant the Horse takes it into his mouth, and thus little or no saliva will be requisite to be mixed with it.

The fattening effects of food thus prepared, on Mr. Curwen's worn-down Horses, proves I think, almost to a demonstration, that the saliva does not perform so essential a part, in the process of digestion, as some have been inclined to imagine. Whether Horses

could be readily brought, like oxen, to feed on cabbage, I cannot take upon me to determine, having met with no decisive evidence upon this point. But the experiment is certainly well worth the trial, as the aggregate quantity of nutritious matter, found in this vegetable, is greater than that of the Swedish turnip, and very nearly equal to what is contained in any of the grasses. It must be observed, however, that the saccharine matter contained in cabbage, does not amount to half the quantity that is found in the Swedish turnip. Common turnips have been sometimes given to Horses, but not upon a scale sufficient to enable one, as far at least as I am acquainted with the facts, to draw any positive inference as to their nutritive properties. But there is good ground for supposing that in some districts, and under certain circumstances, they might be made to constitute a portion of their food, very advantageously; for, though the whole quantity of nutritive matter in the common, falls very far short of the amount found in the Swedish turnip, yet the quantity of saccharine matter in the former, is very considerable, and must inevitably constitute the great basis of the nutritive properties which it is known to possess, as food for various sorts of cattle.

But, the author of the philosophical treatise on Horses, condemns the use of turnips, in the most decided and unqualified terms, by the following assertion, Page 84—"Of potatoes and turnips as food for Horses, more particularly if they labour, I have no other idea than of their *gross impropriety*; but I once turned a mare, *lean* and *worked-down*, into turnips, upon a rich sand in Essex, with a lot of bullocks, and she came up *nearly as fat as the beasts*." I shall make no further comment upon this extract, than merely by observing, that the fact which is stated, seems to me to be in the very teeth of the author's own hypothesis.

But, of all our esculents, I think it can admit of no doubt that the potatoe, when cooked, is the most preeminently useful and economical, as food for Horses, as well as other cattle. And Mr. Curwen, whose practical work I have alluded to, has certainly done an essential piece of service to the community, by the satisfactory and convincing proofs which he has afforded of the highly nutritious property of this root as a substitute for hay, for working Horses. From a correspondence which I have had with this gentleman, I find that the experience of every successive year, does but confirm him in the conviction of the policy and economy of feeding his working Horses, upon steamed potatoes.

In a letter which I received from this indefatigable experimentalist, dated December 22nd, 1811, he says, "I can confirm after great and most extensive practice every thing I have formerly advanced with respect to feeding Horses with potatoes. I have found it expedient to add a little more straw, with a view to rendering the food less costly. A decisive distinction should be made between cut straw and chaff, or the husk of the grain. The latter is perfectly indigestible and dangerous. I strongly suspect I have lost Horses, formerly, by its being used contrary to my orders. The practice of potatoe feeding has been adopted by several gentlemen, upon a large scale, all of whom concur in declaring, that the opposition to relinquishing this mode of feeding, would now be as great, as it was to its adoption. I fed my Horses till July this year, my stock was so great. I have found steamed straw very good food, when I could do no better. You will observe that the method I practice, is that of boiling by steam. I feed eighty head of cattle, forty milch cows,

and the same number of oxen, with steamed chaff, (viz. cut straw) and some little hay. They are in very high condition, which I attribute to the warm food. The quantity of fuel used is but trifling. Very few of my milch cows that are not fit for the butcher, at the same time that the average of milk will be between twelve and thirteen quarts, upon three hundred and twenty days. This plan of feeding is certainly making its way; and I do not complain when I consider, that it took Mr. Coke twelve years, to establish the drilling of grain in Norfolk."

I have made this extract from Mr. Curwen's Letter, for the sake of remarking upon two points of it, which seem to me, of the utmost importance. The first which I shall notice is, the satisfactory and singular coincidence in opinion which appears between this observant, intelligent Agriculturist, and some eminent philosophers, as to the indigestible nature of the husk of grain, which, he very properly advises, should be distinguished from cut straw, both being occasionally called chaff. The second important point contained in this letter, is, the fact respecting eighty head of cattle being kept in very high condition upon steamed cut straw, and only a little hay; insomuch that the milch cows gave on an average between twelve and thirteen quarts of milk daily, upon three hundred and twenty days in the year, at the same time that most of them were fit for the butcher. Now let us see how these irrefragable facts, which we may observe apply to the case of working Horses as well as cattle, can be made square with the hypothesis of the author of the philosophical treatise on Horses; who says, page 86; "Of cut straw I have no opinion as being void of nourishment, and I think the straw of greater use under the feet of the Horse, than in his belly. Hulls or chaff are much better."

I think it important, however, to warn the reader in this place, against any improper interpretation of the terms in which Mr. Curwen has delivered his opinion respecting the superior advantage and efficacy of warm food, lest any one should be inclined to imagine, that the warmth and moisture of such food were the circumstances upon which this superiority depended. For though it cannot be denied that warmth and moisture assist materially in the process of digestion, yet are they but secondary considerations, compared with the still more important one, of the food being exposed to the culinary process, for a length of time, sufficient to cook it completely.

This is, in fact, the grand secret, the hinge upon which every thing turns, in the late improvements, in regard to animal dietetics, notwithstanding the rash assertions, to the contrary, of the author of the philosophical treatise on Horses. And it is for this reason, that Sir Walter Raleigh's invaluable blessing, the Potatoe, is, comparatively speaking, of small value as food for Horses, or other animals, unless it be cooked. This fact was proved most decisively and satisfactorily, by my friend the Bishop of Kildare, in the winter of 1798, (the period of scarcity,) who fed his Waggon Horses upon steamed potatoes, at his living in Lincolnshire, and notwithstanding the deplorable state of the fen roads, and the severe labour they underwent; they were in the highest condition possible from the effects of this food. But, some accident unfortunately happening to his steaming apparatus, his Lordship was reduced to the necessity of giving the potatoes raw to his Horses, and the consequence of this was, that they immediately fell away to a state, that is hardly credible. On this subject, his Lordship has written to me to the following effect.



“ You know the road from my late farm in Sutterton Marsh, to that Village, 2 miles. When I entered on that part of the Glebe of Sutterton Vicarage, (I think it was in 1797) the outgoing tenant did not leave so much as a wisp of straw on the premises, and he had sold off the whole of the manure, produced in the previous winter.

I found 35 acres prepared for spring corn, according to the custom of the country. No other crop had been sown, nor was there one inch of the whole farm in a state to be laid in for hay.

I instantly planted ten acres of the former years wheat stubble, with potatoes and drill.

I relied on the accuracy of my pulverizing instruments to render the ground friable, because I had no manure. The rest of the land, in course for fallow, was well laboured, and with the potatoe ground sown with wheat in that autumn. My powerful steam apparatus went to work in the winter, there was no hay on the farm, the working Horses were served with 56 lbs each, per diem, of steamed potatoes, there was no rack in the sheds, and to these sheds they had free access to and from the straw yard. Each pair was divided off by itself, in the straw yard and shed. Thus managed, the month of May found my Horses fatter and more glossy-coated than any Coach-Horses in the neighbourhood. From the nature of the case, nevertheless, they might have had oats, but I do not believe it, for I tried the Horses with clean oats and potatoes, placed by own hands in their mangers, at the same instant, over night, and with my own hands I removed all the corn untouched, on the following day. To place the matter beyond doubt, in winter 1798-9 I had no oats, no hay, on my farm, in that wet autumn my neighbours were called to the opening of a new threshing mill, and the corn, wet as it came

from the field, was clean threshed by four potatoe-fed Horses, none of which turned a hair, although they worked for two whole hours, in the sight of many intelligent persons, who particularly asked how they were fed, and had immediate ocular demonstration afforded to them.

Within a few days of this transaction, by the carelessness of the proper attendant, the copper bottom of my boiler was burnt. Of necessity we came to raw potatoes, and in *three days*, the fine condition and spirit of the animals vanished. In great haste I bought the best oats and hay that could be procured, but they did not recover their condition or strength during the whole season; for when the boiler was repaired, although potatoes were again administered, and every indication was present of a speedy recovery, a new disaster befel me, by which I lost my whole stock of potatoes. In a flood of water occasioned by the melting of the snow, rather suddenly, a dam was discovered in the main Sewer, where a neighbour had mended his fence, and this penned the water back, which penetrated my heaps of potatoes and destroyed them.—No quantity of corn and hay *however liberally given*, procured condition during the remainder of the season, but the Horses performed their work very well, and you know I never spared them.”

These facts constitute proof of a positive kind, respecting the great superiority of cooked, over raw potatoes; for though something must, no doubt, be placed to the account of the preference which the Horses gave to the cooked potatoes, after they had been long accustomed to this food, and though an allowance must also be made for the stomach having, in some degree, lost the powers it would otherwise have been enabled to exert over the potatoes in a raw state, yet these two material considerations, (and material

I must allow them to be in the argument,) will by no means solve the apparent paradox of the Horse's becoming fat from eating the cooked, and lean from the use of the raw potatoe; inasmuch as the nature and quantity of their work, was in both cases the same. The facts which have been already related prove, indeed, that the gastric juice is not always of the same kind, in the same animal; for it has been shewn that such animals as are instinctively carnivorous, may be brought to subsist on vegetable food, and vice versa, but then if the change to the creature's natural diet, be made suddenly, it will fall away or die, in consequence of inability to digest that very food, which it was instinctively taught to prefer. Now, a sort of modification of this principle, undoubtedly applies to the case before us, for, though the difference between raw and cooked food of the same kind, can by no means be compared to that which exists between vegetable food and animal, yet this circumstance must not be overlooked in our endeavours to account for effects of such a curious kind. But, the solution of this apparent difficulty, must be sought for, in the culinary process, which renders the potatoe a very different article of food for animals as well as man, from what that root is, in its raw state. The mode, however, in which cooking effects the change in the potatoe, so favourable to digestion, admits not of any very decisive or satisfactory explanation. I am afraid we must content ourselves with the knowledge of the bare fact, until we are enabled to develop in some degree, the mysterious nature of digestion. Nevertheless, it is certain that coction produces some chemical change in the potatoe, for, the juice which may be separated from boiled potatoes, is sweet-tasted, which is not the case with the raw juice. Some change, therefore, similar to that which is brought about in corn by

malting, appears to take place in the potatoe, during the act of boiling; and the saccharine matter which is evolved, is, no doubt, produced at the expence of either the starch or the mucilage, contained in this root. For, though M. Kirchoff, a Russian Chemist, succeeded in converting starch almost entirely into saccharine matter, by a process which has been successfully repeated in this country; yet, Einhoff has rendered it probable that the mucilage of the root is converted into this substance; for, by chemically analyzing potatoes, sweetened by frost, he found all the other ingredients, in the usual proportions, except the mucilage. It seems, however, reasonable to infer, that in addition to the circumstance of the development of sugar, by the culinary process, the potatoe is changed from its natural state, which, Dr. Pearson (in his analysis of this root, communicated to the Board of Agriculture) considers to be a mere mechanical mixture of water, starch, fibrous matter, and soluble mucilage, into a new substance, containing, in great measure, new properties; for, though the starch of potatoes forms a transparent solution with, yet the meal of this root is insoluble in, boiling water. By boiling, the starch unites with the other constituent ingredients of the root, and they form together, an insoluble compound. Now, if the culinary process effected no other change in the potatoe than the formation of a small portion of saccharine matter, this circumstance alone would furnish some clue to the cause of the superiority of cooked, over raw potatoes; but I cannot help being of opinion, that the new combination which cooking produces in the ingredients of the root, is of much greater consequence than the development of this highly nutritious substance.

Nevertheless, I have no doubt that malted potatoes would be found to be more nutritive than the root in its natural state, or, in all probability, than when cooked; just as malt mashes are found to be more nutritive than mashes made of barley, for Horses exhausted by disease or severe labour. For which reason, if potatoes could be malted at a trifling expence, the application of the root in this state, as food for animals that are to be fattened, bids fair to be attended with the best effects.

Dr. Pearson attributes the lightness and easiness of digestion of cooked potatoes, in the human stomach, to the circumstance of the meal being more intimately mixed or diffused through two and an half, or three times its weight of water, which the root itself contains, than is the case with any artificial mixture of meal and water. This observation of Dr. Pearson's, whether well or ill founded as to the cause of the lightness of this root, at any rate explains the reason, why Horses, whose food consists of a large portion of steamed potatoes, do not require much water.

For, it is a rule laid down by Mr. Curwen, (grounded no doubt upon experience,) that they ought to be allowed but a scanty supply of water, even when fed in part only, upon this root. And the Bishop of Kildare informs me, that he has found when steamed potatoes are given *largely*, no water should be allowed, and that a Horse indulged to the extent of his appetite with this food, will drink little or no water, if it be offered to him after feeding. He further adds, that if a sufficiency of steamed potatoes, and a fair feed of oats be laid at each end of the same manger, at the same instant, before a Horse in the habit of feeding on the former, he will not, till provoked by renewed hunger, take the pains to break and masticate the oats at all. His Lordship

seems, moreover, to agree in opinion with me, as to the superior efficacy of cooked, in comparison of raw potatoes. Speaking of their effects which he had observed upon horned cattle, he says—"For these, the food, viz. raw potatoes and straw were weighed, no water was given.

Again—steamed potatoes and dry straw were weighed,—no water was given. In both cases the cattle fattened well, and speedily, to the same point of value and size. But here, in confirmation of your opinion, I state it as a fact, which every experimental feeder should submit to a severe trial, that one half of the quantity of potatoes steamed, produced the same value in money, in the same time, as the whole quantity did when given raw."

Mr. Curwen lays great stress upon mixing the cut straw along with the potatoes, being of opinion that the former prevents the too rapid digestion of the latter. Now, though I suspect this opinion of Mr. Curwen's not to be quite correct, embraces nevertheless, a point of the utmost consequence in the argument. For, if cooked potatoes can be said to be defective in any respect, as food for Horses which labour hard, it is on account of their being too easily and too rapidly digested; and although assimilation generally keeps pace with the digestive process, yet it is a well known fact, that languor soon ensues after great muscular exertion, when the stomach is empty. Whether, therefore, we admit, that cut straw retards the digestion of the potatoes or not, by being mixed with them, yet, as it certainly will continue in the stomach much longer than the latter, so the consequences attendant upon this organ, being long in a state of inanition, will, at any rate, be avoided, by this mode of feeding. Mr. Curwen's caution, however, not to work Horses that are fed on cooked potatoes, too soon after a feed, is well worthy of attention; for the small space of time

they take in eating it, distends the stomach too suddenly to admit of of this being done with impunity, notwithstanding the rapidity with which the digestion of this food goes on, in comparison of any dry provender that is not cooked.

It is to be regretted, nevertheless, that Mr. Curwen should have pronounced so preremptorily and decisively, upon the impossibility of properly supporting working Horses without corn, for, by several communications, from the most respectable quarters, made to the Board of Agriculture, it appears, that Horses have worked well, and for a continuance, that were fed with forty two pounds of steamed potatoes, daily, with no other allowance than cut straw; whereas Mr. Curwen's utmost allowance of this food, is twenty one pounds. And the facts which have already been stated, in the letter of the Bishop of Kildare, may serve to satisfy every reasonable doubt upon this head. I am decidedly of opinion, however, in case corn be thought indispensably necessary, for Horses that labour hard, in addition to cooked potatoes; that it ought to be mixed and blended thoroughly, along with the potatoes and cut straw, into one mass.

It is unfortunate that so many impediments exist, to prevent this plan of feeding Horses upon cooked provender, from becoming general; as I have no doubt that it would be found to be a national object of immense magnitude, combining, as an ingenious author has very properly observed, the saving of the individual with that of the public. Indeed, few persons who keep only one or two Horses, would choose to be, at the trouble of having their food cooked for them; although the application of steam to common culinary purposes, has, of late years, been rendered both cheap and easy, from the great improvements which have taken place in the construction

of grates and fire places. But, as a steaming apparatus upon a large scale, may be erected by any one, who has a spare building or out-house, at the expence of about forty pounds, there can be no doubt that all proprietors of great works, who keep a number of Horses, would soon find a prodigious saving by feeding their Horses upon steamed provender. And, if this plan should ever be generally adopted, racks will become not only unnecessary but useless, whilst, at the same time, the most scrupulous attention will be found necessary to be paid, to the state of the mangers, which would soon become sour from any remains of the food.

I may further remark on the subject of Horse provender, that although I am not prepared to maintain that the application of the culinary process to hay and straw, will enable the stomach to elicit a double proportion of nourishment from these articles, as seems to be the case with respect to the potatoe; yet I have no hesitation in asserting that something considerable will be gained in this way; and, further, that other incalculable advantages will spring from the adoption of this mode of feeding to the health of working Horses.

I have already shewn the prodigious demand of saliva, the chewing of dry food occasions, which must be furnished from the blood; and I have also advanced several arguments, rendering it highly probable that this fluid is not necessary, to the process of digestion.

So that if this point be conceded, it must be evident that the great fountain of all the secretions, will be much less exhausted by soft, than by dry food. And if we take into account, that by this plan of feeding, extreme thirst will be prevented, large draughts of cold water precluded, and a more equable, regular action of the digestive organs effected, there can be little difficulty, I should think, in admitting, not only that many diseases will be avoided, but that the longevity of Horses, will, infallibly, be promoted by means of it.



To all Horses that labour hard, and especially to all such as stand, occasionally, exposed to the elements, without motion for hours, as is the case with hackney Coach-Horses in great cities, the being fed with warm cooked provender at night, must prove highly advantageous, for various reasons which have been already insisted upon.

Nor can I readily persuade myself, that this method of feeding, need, by any means, to be confined to the larger and coarser kinds of Horses, which perform slow labour; as several well authenticated facts have come to my knowledge, which seem to render it probable that it would be found to answer for mail and stage-coach horses, notwithstanding the rapidity with which they perform their work.

For we must recollect that it is not so much the rapidity, as the intensity and continuance of muscular action, which exhausts animals; and as heavy Horses are found to endure slow labour, which, alone, their structure fits them for performing, and are observed to keep themselves in high condition, upon a sort of food, heretofore considered both unnatural and improper for them, why may not this same food enable the lighter kinds of Horses, to go through that sort of labour, which their make qualifies them for the performance of?

But this is a point, which I will not insist upon too strongly, as my facts are too limited to enable me to pronounce upon it decidedly; and I am also well aware of the full amount of popular prejudice, which clings to the minds even of the most liberal, on this subject. As I conceive it, however, to be one of immense importance to the community, I think it ought not to be prejudged without a full and fair trial; and, in this case, the change from the ordinary diet of the animals, should be made in a slow and gradual manner.

If, however, there should exist insuperable impediments, or prejudices, against giving cooked provender to such Horses as perform rapid work, yet, enough, I should hope, has been advanced to shew the policy and economy of bruising their oats, and cutting their hay and straw. I deem it unnecessary to lay down any rules, respecting the *periods* of feeding Horses, as the nature of their employments, and the experience of proprietors, will generally regulate this point properly. But, there is one erroneous practice, which prevails with regard to feeding Horses, that travel fast on journies, which is productive of infinite mischief, and cannot be too much reprobated. I mean the custom of giving them corn, just before they are put into rapid motion.

For, it frequently happens in this case, not only that the corn does them no good, but that it is productive of much mischief, as violent exercise is known to arrest or suspend the process of digestion. This fact was proved several years ago, by Professor Harwood, of Cambridge, who having kept two pointers without food for a considerable space of time, gave each of them a full meal, and immediately afterwards took one of them out into the fields, with his gun, and kept him out several hours. The other dog was left at home, and being confined, was observed to lie down and sleep. On his return, both dogs were killed, and on examining each, it was found that the food in the stomach of the dog which remained at home, was completely altered in appearance, being nearly converted into chyme; whilst that in the stomach of the dog exposed to severe exercise, had undergone little or no change.

Now, in the instance of a Horse performing a long journey with rapidity, when the digestive process is arrested by excessive

muscular exertion, the mischief does not end with the mere suspension of the powers of the stomach; for, food, if it be not digested, cannot remain long exposed to the heat and moisture of this organ, without running into some chemical change, unfitting it for digestion; in which case, it will not only not nourish, but will add to the distress and fatigue of the animal. For this reason, it will be found a good general rule, to give a double allowance of corn over night, and none in the morning, to all Horses that are to travel pretty rapidly, early in the day. By this mode of treatment, time will be given for the digestion of the corn, and the hay which the animal eats during the night, will suffice to give the proper stimulus of bulk to the stomach, and thus prevent the ill consequences of inanition.

**FORMULÆ OF MEDICINES.**

**Purging Balls,**

*VERY MILD.*

**TAKE**—Of Soccotorine Aloes in Powder, six drachms,  
Compound Powder of Cinnamon, one drachm,  
Volatile Oil of Aniseed, twenty drops,  
Peppermint Water, sufficient to make a Ball.

**MILD.**

**Take**—Of Soccotorine Aloes in Powder, one ounce,  
Powdered Ginger, one drachm and half,  
Volatile Oil of Aniseed, thirty drops,  
Peppermint Water sufficient to make a Ball.

**STRONG.**

**Take**—Of Soccotorine Aloes in Powder, ten drachms,  
Powdered Ginger, two drachms,  
Volatile Oil of Aniseed, forty drops,  
Peppermint Water sufficient to make a Ball.

**VERY STRONG,**

For large Carriage or Cart Horses.

Take—Of Soccotorine Aloes in Powder, one ounce and half,  
Powdered Ginger, three drachms,  
Volatile Oil of Aniseed, sixty drops,  
Peppermint Water sufficient to make a Ball.

—000—

Note, I have recommended a watery menstruum for compounding these Balls, as Syrups of all kinds, add materially to the bulk, without increasing their efficacy; but it may be observed, that if the ball be not wanted for immediate use, it will be proper to add a tea spoonful of fine Olive Oil, and half a drachm of salt of Tartar, in order to prevent its becoming dry and hard.

When Physic is to be given to Horses at grass, one fourth part of the Aloes, should be subtracted from the ordinary dose.

**Diuretic Balls,**

**VERY MILD.**

Take—Of Venice Turpentine, three drachms,  
Castile Soap, two drachms,  
Volatile Oil of Juniper, one drachm,  
Liquorice Powder sufficient to make a Ball.

## MILD.

Take—Of Venice Turpentine, half an ounce,  
 Castile Soap, three drachms,  
 Volatile Oil of Juniper, two drachms,  
 Liquorice Powder sufficient to make a Ball.

## STRONG.

Take—Of Venice Turpentine, six drachms,  
 Castile Soap, half an ounce,  
 Powdered Ginger, one drachm,  
 Liquorice Powder sufficient to make a Ball.

## VERY STRONG.

Take—Of Venice Turpentine, one ounce,  
 Castile Soap, half an ounce,  
 Powdered Ginger, one drachm and a half,  
 Liquorice Powder sufficient to make a Ball.

## Cordial Ball,

## MILD.

Take—Of Powdered Carraway Seeds, half an ounce,  
 Powdered Ginger, two drachms,  
 Volatile Oil of Aniseed, one drachm,  
 Honey or Treacle sufficient to make a Ball.

**STRONG.**

Take—Of Powdered Carraway Seeds, half an ounce,  
 Grains of Paradise, in Powder, one drachm,  
 Powdered Ginger, three drachms,  
 Volatile Oil of Aniseed, two drachms,  
 Honey or Treacle sufficient to make a Ball.

**BLISTERING OINTMENT.**

Take—Of Fresh Powdered Spanish Flies, one ounce,  
 Volatile Oil of Origanum, two drachms,  
 Volatile Oil of Turpentine, six drachms,  
 Hog's Lard, four ounces, mix.

**STRONG BLISTERING OINTMENT,**

For old Chronic Swellings, and for Diseases of the Bones.

Take—Of Fresh Powdered Spanish Flies, one ounce,  
 Powdered Euphorbium, three drachms,  
 Volatile Oil of Turpentine, half an ounce,  
 Ointment of Yellow Resin, }  
 Hog's Lard, } each two ounces.

—000—

N. B. It is right to remark that this composition, though more powerful than the former, will be more apt to blemish the part it is applied to, on account of the Euphorbium.

## LIQUID BLISTER.

Take—Of Fresh Powdered Spanish Flies, one ounce,  
 Olive Oil, four ounces,  
 Volatile Oil of Origanum, }  
 Volatile Oil of Turpentine, } each half an ounce.

## EYE WATER, No. 1.

Take—Of Acetated Ceruss, one drachm,  
 Rose Water or Plain Water, one pint and half,  
 Tincture of Opium, two ounces, mix.

If the Opacity of the outer Coat should continue, and a film appear to grow over the Eye, the following may be tried, or a little of either of the eye powders, be blown into the eye, through a quill, every third or fourth day.

## EYE WATER, No. 2.

Take—Of Muriate of Mercury, four grains,  
 Alcohol, one ounce,  
 Lime-water, one pint, mix.

## EYE POWDER, No. 1.

Take—Of Sulphate of Alumine, finely powdered, ten grains,  
 Powder of Opium, one drachm, mix.



**EYE POWDER, No. 2.**

Take—Of Sulphate of Copper, finely powdered, ten grains,  
Sulphate of Alumine, Do. half an ounce, mix.

**ASTRINGENT GREASE POWDER.**

Take—Of Sulphate of Zinc, in powder, two drachms,  
Sulphate of Alumine, Do. two ounces,  
Armenian Bole, Do. one ounce, mix.

**ASTRINGENT GREASE LINIMENT.**

Take—Of Sulphate of Zinc, in powder, one drachm,  
Sulphate of Alumine, Do. one ounce,  
Armenian Bole Do. half an ounce,  
Honey, two, ounces, mix.

**TONIC BALLS.**

Take—Of Winter's Bark, in powder, one ounce and half,  
Sulphate of Iron, Do. two ounces,  
Extract of Gentian, one ounce,  
Powder of Liquorice, one ounce,  
Honey or Treacle sufficient to make a mass, to be divided into six Balls.

## WORM POWDERS.

Take—Of Tartarized Antimony, one ounce and half,  
Powder of Liquorice, three ounces, mix, and divide into  
six equal parts.

## CALOMEL BALL.

Take—Of Calomel, one drachm,  
Compound Powder of Cinnamon, two drachms,  
Powder of Liquorice, half an ounce,  
Honey or Treacle, sufficient to make a Ball.

FINIS.

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25	14	for abcess, r, abscess
29	14	for even with, r, nor even with
30	18	for limbs, r, limb
32	21	for perceptable, r, perceptible
32	28	for shoule, r, should
50	2	for spasm, r, spasms
55	2	for crysalis, r, chrysalis
55	9	for ostrus, r, œstrus
55	20	for homorihodalis, r, homorrhoid- alis
60	11	for than that of the, r, than the
65	12	for prostrations, r, prostration
78	9	for cannot be, r, cannot but be
82	2	for has, r, have
89	18	for cod, r, cold
92	5	for ready take, r, ready to take
93	4	for defeats, r, defeat
99	24	for embued, r, embrued
102	26	for now then, r, now and then
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105	10	for there, r, these
106	11	for too, r, two
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113	25	for 1 drachms, r, 1 drachm
115	17	for diseases, r, disease
115	20	for diseases, r, disease

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135	24	for cause, r, nature
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335	23	for by own, r, by my own
340	15	for embraces, r, it embraces.



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