GLANDERS AND FARCY

IN

THE HORSE.

BY

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BEING THE SECOND AND CONCLUDING PART OF VOL. III OF THE AUTHOR'S "HIPPOPATHOLOGY."

LONDON:

LONGMAN, BROWN, GREEN, AND LONGMANS,

PATERNOSTER ROW.

1845.

PRINTED BY COMPTON AND RITCHIE, MIDDLE STREET, CLOTH FAIR.

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OTHER DISEASES.

FROM perusal of the various works treating of hippopathology, even from ancient date down to the present time, we learn that diseases, as generations and ages have rolled on, have remained unchanged in their nature notwithstanding the alterations in other respects they have manifestly undergone. In virulence or malignity many of them now are quite different from what they formerly were; in amount of prevalence or in epidemical character, others have shewn as striking changes. Grease, canker, strangles, farcy, glanders, are still in nature the same they ever were; yet how prevalent they were wont to be compared to what they are now-a-days! The state of horses in general, all large horse establishments, our cavalry in particular, bear record of these facts. I have oftentimes heard my father—who was for thirty years senior veterinary surgeon to the ordnance—say, when he first entered the service, to such an extent did grease and canker prevail, and in such malignant and incurable forms, that numbers of horses infested with these diseases had been, for years past he learnt, annually shot as incurable: so bad was the stable discipline, and so wretched the state of veterinary practice. What, however, would be thought of an army veterinary surgeon at the present day in whose regiment was found a horse incurably greased or cankered? Nay, no very wholesome opinion would be formed of such an officer, or of the stable-management practised in his regiment, were cases of this description, in any degree beyond a mere

accidental occurrence, known even to *exist!* So great is the beneficial change wrought in our cavalry through the introduction into the service of veterinary surgeons.

I can recollect, myself, the day when glanders and farcy prevailed to that extent among the horses of public departments that hundreds—nay, thousands—of pounds sterling were yearly sacrificed at the horse-slaughterers' shrines; during the last seventeen years, however, that I have served in the Guards, I have had to treat but four regimental cases of these diseases; and these four—as I shall hereafter be able to shew—would not have occurred had not the regiment gone into the locality of contamination.

Another most important—most tristful change that has taken place in respect to glanders and farcy, is the transfer of the disease from the quadruped to the human being. Many years ago the late Professor of the Veterinary College taught—and every disciple of his believed—that the disease was peculiar, in its infection restricted, to the horse and his fellows in species, the ass and the mule: sad, however, to relate, scarce twenty years had this doctrine, *ex cathedrâ*, prevailed, when a veterinary student, a schoolfellow of mine, through dissection contracted the disease, proving but too fatally in his own person, poor fellow! the complete fallacy of all notions about insusceptibility: since which I need hardly add, the melancholy truth of the human as well as the equine species being obnoxious to both glanders and farcy has had but too many mournful realizations.

In the investigation I am about to institute into the causes and nature of glanders and farcy, and into the efficacy of such medicaments as have at one time or another been brought forward as *remedies* or *antidotes* for those diseases, I do not anticipate being able to elicit or produce much, if any thing, that is *new*: should I, however, succeed in culling such materials from the ample sources of information lying open before me as shall, by judicious compilation, form what our neighbours the French are pleased to call, in briefer language than we can express the same, a *corps de doctrine*, I may, at least, become entitled to the merit of having laid a foundation serviceable to future inquirers in the same mysterious department of science.

GLANDERS.

THE DERIVATION of our word *glanders* is traceable through the French language, from which we appear to have borrowed it, to the Latin roots *glandula* and *glans:* the latter signifying any fruit kernel, such as a chestnut or acorn; the former, its diminutive, any small fruit kernel; and both afterwards used in medicine to denote the glands of the body, many of which—such as were then so called—are small and comparable, both in shape and size, to acorns or other kernels. Celsus applies the term *glandula* to a swelling in the neck, supposed to be glandular*; and Vegetius uses the same to denote swollen glands "between the cheek-bones and lower jaws:" from his saying, however, that the *glandules* are "especially troublesome to *foales*†," it would appear the disease he meant to describe was not glanders, but strangles. The French veterinarians, following the ancient phraseology, called a horse exhibiting any submaxillary tumour or enlargement, *glandé;* not with any especial reference to glanders, but simply because his glands or "kernels," as our farriers denominate them, had become enlarged: hence with the French a horse was said to be *glandé de gourme,* as well as *glandé de morve* and *glandé de farcin*‡. It seems to have been our English writers on farriery who have restricted the application of the term to the foul and malignant disease now known under that appellation: before then, glanders appears to have had no other meaning save that the horse had tumefied glands, or that, in the farrier's phrase, "his kernels had come down." The French call the disease *la morve.* A horse, however, in the estimation of Lafosse, is not to be regarded as having *la morve proprement dite,* unless he be *glandé* or have tumefaction of his glands.

* De medicinâ.

† De Arte Veterinariâ.

‡ GLANDE (cheval) est celui qui a une glande sous la ganache, plus apparente que dans l'état naturel, ou qui a une tumefaction sous la ganache: on dit glandé de gourme, de morve, de farcin.—*Dictionnaire d'Hippiatrique, par M. Lafosse.*

DEFINITION.—Glanders consists in a discharge, from one or both nostrils, of matter which by transfer or inoculation will produce the disease in another animal (of the equine or human species), and which discharge is, sooner or later, accompanied by vascular injection and chancrous ulceration of the Schneiderian membrane, by tumefaction of the submaxillary lymphatic glands, and by farcy.

SYMPTOMS OF GLANDERS.

DISCHARGE from the nose, enlargement of the submaxillary lymphatic glands, vascular injection or inflammation of the membrane lining the nose and different sinuses of the head, thickening, ulceration of it, mortification, exfoliation of the septal cartilage and turbinated bones, constitute the local and characteristic symptoms of glanders: they may be, and occasionally are, all present; commonly but two of them make their appearance in the incipient stages of the sub-acute and in the chronic forms of the disease, which two, or even one without the other, may be sufficient to constitute a case of glanders.

CONSTITUTIONAL DISORDER, either to a degree to attract the notice of those who look after the animal, or so slight as to be detectible by the professional attendant alone, invariably attends or ushers in an attack of glanders. There may or may not be palpable depression of spirits, and disinclination or indifference for food; there will be, more or less, discoverable indications of fever, such as increase of pulse, heat and dryness of mouth, heavy and watery appearance of the eyes, roughness and opacity of the coat. The horse may not be thought or called "amiss" by the groom, and yet the veterinary surgeon finds in him evident signs of indisposition. A great many years ago, an old and much-respected professional friend of mine, Mr. Berrington, formerly veterinary surgeon to the staff corps of cavalry, and late of the cavalry depôt at Maidstone, drew my attention to this premonitory or accompanying disorder of the first stage of glanders; and subsequent observation not only confirmed in my mind

the truth of his practical remark, that "few or no cases commenced without it," but likewise convinced me that even those cases of sub-acute disease which appeared completely to regain their health and spirits, were not, on closer examination, left altogether free from this febrile state of system. In general, after the first stage is passed, as soon as the discharges from the nose have become established, the animal rallies from any indisposition he may have shewn, recovers his spirits and appetite, and, to the common observer, appears as well as ever. This manifestation of recovery has led unprofessional persons to suppose that, were it not for "the running at the nose," and "the kernels," there would be little or nothing the matter with the horse: in all other respects he is regarded as being in sound and good health, and to such persons as have not seen him during the attack of the glanders, or whose observation has not been sufficient to enable them to detect any difference in him at that time, he has never appeared otherwise than in his usual state of health: hence the prevalence of the common notion, that glandered horses can do work the same as others; and, indeed, such is for a time the trifling constitutional derangement occasioned by the disease that they, in reality, are capable of work—though, still, not of the severest kind—so long as the disease in the head continues either in the sub-acute or chronic form, and the lungs hold their integrity. The preservation of their condition, and the good looks glandered horses for a time maintain, it is also that, when artful means are taken to conceal the nasal discharge and the tumours under the throat, enable sharpers to dispose of them as sound horses. In fine, one of the characteristic symptoms of the disease, in certain stages, is the unaffected good spirits and condition, and feelings of health, the animal manifestly enjoys.

LEBLANC confirms the foregoing observations. "I have uniformly observed," says he, "that horses exposed to causes considered as productive of glanders have exhibited some symptoms of general functional disorder prior to the manifestation of the malady;" adding, that "horses that become glandered and farcied *without* this premonitory disorder, *derive the disease from contagion.*" Should this latter remark prove well founded, it might

turn out one of some value to us: I fear, however, it is one unconfirmed by experience.

DISCHARGE FROM THE NOSE, though the symptom which commonly first attracts notice, is not the first in the order of appearance of the local symptoms, it being often, I believe generally, preceded by the tumefaction of the glands underneath the throat. At its commencement, the discharge is scanty and limpid, amounting to nothing beyond a little aqueous or serous fluid, trickling or dropping, commonly from one nostril only, but without intermission. The next day, or the day after, this watery discharge mostly appears streaked or intermingled with ropes of mucus; and in a day or two after that it will probably have become altogether mucous in its nature, and now glairy in its aspect, after which it gradually assumes a tinge of yellow, from the admixture with the mucus of albuminous matters, the aqueous discharge now diminishing, but not altogether ceasing. From this, which may be regarded as the *incipient* or *first stage of glanders*, the ordinary course of the disease is into

THE SECOND OR ULCERATIVE STAGE. From being aqueous or aqueo-mucous, with little or no show of purulent matter, the discharge by degrees acquires consistence, turns of a straw colour, exhibits true purulent characters, and soon flows in abundance, there remaining, however, still more or less aqueous stream mingled along with it. In time, this augmented flux, shewing less of the aqueous admixture, becomes thicker, less disposed to run off, acquires tenacity, and begins to cling about the hairs fringing the nostrils. At length, it becomes converted into a truly viscous flux, possessing glutinous properties of that remarkable kind that, like birdlime or glue, it sticks, nay, firmly adheres to the hair of the nostril, collecting and concreting within the *cornu* or fold of the *ala nasi*, and clogging, and more or less obstructing, the aperture, and in this manner, by occasioning impediment to the breathing, generating a snuffling noise in the passage of the air something similar to the mucous or bronchial *râle*, and which to the ear of the experienced practitioner is a sound so peculiarly characteristic of the state the patient is in, that, the moment he hears it, he is but too well informed of the nature of the case he is about to inspect.

blood, with this glutinous flux in any considerable quantity, such is the foul state outwardly and the obstructed condition inwardly of the nasal passages, in consequence of the adhesion and retention of the discharges, that when even but one nostril is affected the inconvenience caused to respiration is much felt; when both, however, are in the same foul and obstructed condition, there exists, at the time that the accumulation of matter becomes great, danger even of suffocation. Also now, or before this, according to the source and nature of the discharges, will be observed, what was not perceptible in the first stage, nor perhaps in the beginning of the second, *fetor*; and that of so peculiarly an offensive nature that often it, of itself, is sufficient to enable the veterinarian to pronounce on the case. Yellow, purulent, viscous, or glutinous discharges betoken either the acute or sub-acute form of glanders: in cases in which the disease, losing activity, degenerates into a chronic stage, the flux may continue from the first of a glairy or aqueo-mucous character, or it may turn like that of a nasal gleet, looking like so much whitening and water, and in that condition is not infrequently seen grumous. On the other hand, when the disease runs its regular course in a longer or shorter space of time, according to varieties in it which I shall hereafter point out, the nasal fluxes—changing with the havoc the ulceration is making, first, in the membrane, and secondly on the bones and cartilages—become of a most disgustingly offensive nature, and, in their hue, change from yellow to green, or to dirty brown or leaden colour; or exhibit streaks of blood; or bring away with them, every time the horse essays by blowing to clear his nose, masses of scab and exfoliated cartilage and even bone; thus denoting that the disease has reached its final stage, and that partial suffocation and consequent constitutional irritation must shortly put an end to the distressed animal's sufferings. From this, which is the common succession of the discharges in acute and sub-acute cases, varieties in their appearance and quantity will occur, depending on the degree of the vascular or inflammatory action going on within the chambers of the nose; on the presence, extent, and depth of ulceration; on the medicinal treatment the patient may be subjected to, the regimen he is placed

under, the atmosphere he is breathing, the exercise he is taking, &c. Bloody discharges, or rather blood tingeing the discharges, will, in the latter stages in particular, every now and then become apparent: when present, they augur either deep or extensive ulceration, or a disposition to ecchymosis, either from laxity of fibre, or some change in the condition of the blood; and their appearance is always inauspicious, though I never, myself, saw blood lost to any but trifling amount.

AN ANALYSIS OF THE NASAL DISCHARGES has been made by Lassaigne. He finds them to consist of *albumen, mucus, sub-carbonate of soda, chloruret of sodium, calcareous phosphate* (trifling in quantity), and *water;* the water making the largest proportion. In the normal state, the secretion of the Schneiderian membrane contains the same matters, with the exception of the albumen, whose presence, in large proportion, keeps pretty nearly pace with the quantity of purulent matter. From this it would appear that the *gluey* or *glutinous discharges* owe their adhesive properties to the predominance of *albumen* in their composition: they may, the same as purulent matter, issue out of the follicles of the membrane; though, in any considerable quantity, I believe they may invariably be regarded as the product of ulceration.

VASCULAR INJECTION or INFLAMMATION is observable in all acute and in certain stages of sub-acute cases, upon the surface of the Schneiderian membrane; though it is uncommon to see any intense degree of inflammation. This membrane, which in health and under repose of body is of a pale flesh-colour, under exercise of a vermilion hue, in a state of disease often displays patchy blushes upon its septal surface, having a peculiar shiny aspect, produced by the slimy or glairy secretion coating the surface; and we can generally perceive red vessels in places traversing its substance. Now and then, from the discharges adhering to it, the surface will present a patchiness of yellow intermingled with the shiny red. Should all signs of vascular action pass away, the disease, from an acute or a sub-acute running into a chronic form, the surface of the membrane will

become pallid or acquire a leaden hue; the ulcers, should there be any, at the same time undergoing the same process of deflorescence.

The late Professor Coleman characterized the inflammation of glanders as *specific*. As regards its products, it certainly is so; at the same time there is nothing in its aspect, abstractedly as inflammation, which can lead one to pronounce it *the inflammation of glanders*. Were it not for the discharges, and, more than them, for the ulceration, we should probably discover no difference between glanderous and common inflammation.

THICKENING is a change the inflamed membrane, from infiltration, quickly undergoes, and one that often continues advancing, even after all appearances of inflammation have vanished, so that in the end the membrane not only becomes greatly augmented in substance, but much altered in texture. These changes, hardly discoverable to the eye, from the small portion of membrane visible to us in the living animal, are exposed when we come to examine the head after death: we are then often astonished to find what a degree of thickness the membrane—in the nasal chambers, or in the sinuses, or in both—has attained through interstitial deposit or actual growth, something resembling the hypertrophic changes exhibited by the uterine membranes during the process of pregnancy. In some cases—in the sinuses especially, perhaps solely—such is the exuberance of the nutrient vessels of the membrane, that it sprouts or *granulates* upon the surface in some such manner as the conjunctive membrane of the eye of man is known to do in that peculiar human disease called *granular conjunctiva*. In cases in which the inflammatory action has confined its attack to or expended its force principally on the sinuses of the head, we not infrequently find effusions of lymph upon the membrane lining them; and these often tend, as they lie upon the floors of the cavities, more or less to obstruct their outlets, and in this manner put a temporary or permanent arrest to the nasal discharges: hence one reason why a glandered horse ejects from his nose a great deal more matter at one time than at another.

ULCERATION is the symptom upon which we place the

greatest reliance as denoting the presence of glanders. The simple circumstance of its appearance is enough to arouse the strongest suspicions; while that of its appearing in the form of *chancre* is conclusive. Scratch the Schneiderian membrane with a pin or a nail—wound it in any ordinary way—and the result will be a sore of a common nature; bleeding at first, but, subsequently, without the generation perhaps of pus, granulating, and so in the usual mode healing: but, introduce into this scratch *virus* taken from a glandered or farcied animal, and the result will be that, losing all disposition to heal, the lesion will inflame and secrete an ichorous matter, and become converted into a transparent vesicle, surrounded by an *areola* or circular blush upon the membrane. The next day the vesicle has broken, and we perceive in the place of it, a pale, foul, superficial ulceration, which in the course of another day acquires the genuine characters of the glanderous chancre—an elevated, circular, pinkish border, including a base of dingy or faint yellow albuminous matter, which on being wiped or irritated commences bleeding, and, on the matter being removed, exposes, when the ulcer is deep, the bare cartilage beneath; when superficial, a red spotted, rugged, foul, bleeding bottom. From its tendency to spread, the ulcer speedily loses its circular figure, exchanging that for one too irregular and variable in shape to admit of any further characterization: it has, in fact, now become a foul spreading ulceration, extending on every side, coalescing with similar ulcerations in its vicinity, having for its base the cartilage of the *septum nasi*, which alone, from its comparative insusceptibility of the ulcerative action, puts a temporary arrest to its devouring activity. It is when the ulcers have eaten down to the substance of the cartilage, or when others that are situated high up in the *meatus* of the nose, out of sight, have laid bare the turbinated bones, and that the substance of the cartilage and bone becomes attacked by the disease, that mortification and sloughing or exfoliation of these parts takes place, they being too lowly vitalized to carry on the ulcerative process: at this time it is likewise that discharges, foul to a degree and fetid past bearing, of a dirty green, or brown, or blackish nature, are running in great profusion, bringing with them sloughs of bone and cartilage, and clogging and obstructing the

nasal passages to that degree that the distressed animal, in the last and worst stage of glanders, may hourly expect to end his life of torment by an act of suffocation. I do not remember to have seen holes made *through* the septum nasi by ulceration*; but in such virulent forms of the disease as I have just described, it is not uncommon to find the turbinated bones ulcerated through into the nasal sinus; and I have seen heads of glandered horses that have been next to destitute, on one or both sides, of any turbinated bones, they having been consumed through the ravages of the ulcerative and exfoliating processes.

MILIARY ULCERATION:—So is called an ulceration of the same membrane, differing altogether in its aspect and tendency from the true chancrous ulceration we have just been considering. With the miliary ulceration upon it, the surface of the membrane has the appearance—as nearly as I can describe it—of worm-eaten wood, every part of it appearing as though full of pin-holes. This ulceration is not seen in acute glanders, at least I never saw it; nor is it often found in the sub-acute disease; but is peculiar, I may I think say, to chronic glanders.

DUPUY†, who has well described this species of glanders, characterizes these "little ulcerations" as the result of the "degeneration" of miliary tubercles; and represents them, truly, as having "thin edges, unevenly excavated, like pin-holes; with this difference, however, that the hole made by a pin would be deep and pointed, whereas these ulcerations are shallow and have thin edges. They are commonly regarded as erosions, sometimes mistaken for the dilated orifices of mucous follicles; though, if they be examined after the mucus in which they are sheathed has been removed, and the membrane has been cleansed with water, they will be found to be so many little ulcerations. The membrane of the septum is frequently covered with these exulcerations, with its surface, in places, elevated. They are, however, superficial, penetrating merely through some thin layers of the cellular tissue of the membrane, thereby rendering its surface irregular, uneven, and scabrous. They follow the course of the large veins upon the

* This may arise from a process of deposition upon the opposite side.

† DE L'AFFECTION TUBERCULEUSE. *Paris*, 1817.

septum. They are found also grouped within the fold of the *ala nasi*, particularly on the left side, and upon the turbinated prominences and their appendices."

ENLARGEMENT OF THE SUBMAXILLARY LYMPHATIC GLANDS—*kernels* as they are called by grooms—*buboes*, as they might with strict pathological propriety be denominated were they seated in the groin instead of underneath the jaw—is in general the earliest external indication we have of the approach of glanders. In cases of inoculation, swollen glands are perceptible on the third day, ulceration appearing on the fourth. These swellings owe their origin to the irritation created within the nose, the same as buboes are occasioned by irritation set up in the organs of generation; and in horses as well as in man the lymphatic glands may become tumefied from common as well as from specific irritation: a tight shoe may occasion a buboe in a man; and I have known common injuries, wounds about the nose or mouth, or in the limbs, occasion the same thing in horses, though in the latter the case is comparatively rare. At first, the submaxillary swelling in glanders is commonly small and round, isolated and moveable; or it may be that more glands than one are enlarged, and then the swelling will have a sort of lobulous as well as loose feel. Now and then the tumefaction will be so great at first that we may suppose it to be an attack of strangles. I have known the swelling altogether to be of that magnitude that it has projected beneath the lower border of the under jaw: indeed, its magnitude may be said to vary, taking the extreme cases, from a horse-bean to a goose-egg. D'Arboval has well observed, in regard to these swellings, that "their smallness is never to be received as a proof that no glanders is present;" and he adds, "while their multiplicity, especially their successive development one after another, is ever a symptom for alarm." On their first development these swellings are in general painful to pressure, and particularly when their development has been quick, when they have in a short time grown to large size, evincing thereby acuteness in the disease: in cases, however, in which they have never acquired much magnitude, but remained single and stunted, or disinclined to enlarge, becoming firmer in substance and fixed in their situation, they

possess but little feeling; indeed, often in the course of time, the disease having become sub-acute or chronic, they acquire a scirrhous hardness, and almost total insensibility. When first found, as I said before, the tumour frequently is loose and moveable; as it acquires firmness, however, it acquires fixity, getting by degrees adherent to the side of the jaw, the tumefaction being confined to whichever side of the head the disease occupies. A swollen gland or mass of glands forming a tumour of this description is, perhaps, the most usual kind of submaxillary tumefaction in glanders: it is known by its isolated character, by its distinctly being the only tumour present, the skin being drawn tensely over it, and the surrounding space being perfectly clear from any tumefaction; lastly, by its close and immoveable adherence to the side of the jaw against which it lies. Should there be disease in both chambers of the nose, we shall have tumefied glands on both sides, though it will rarely happen that both sets of glands will swell at one and the same time. While recent or susceptible of pain from compression, these tumours are apt to fluctuate in magnitude, being at one time large, at another comparatively small. In general, blisters and sometimes common stimulants will reduce them, though I have known the opposite effect produced. I do not remember seeing suppurative action produced in them; commonly, as I have before observed, they become hard, void of sensibility, and scirrhous in their nature, and so continue to the end. In reference to their variable character,

DUPUY makes the following observations on these glands:— "when the mucous membrane of the chambers of the nose is affected, the sublingual (submaxillary) glands become tumefied, and undergo some very variable changes. In succession, they grow, in the same subject, swollen, firm, painful, and moveable. In a short time after this they become insensible, diminished in volume, and appear to resume their natural condition; then again, all on a sudden, they recommence swelling, and in the course of a few days grow larger than ever they have been."

TUMEFACTION OF THE ALA NASI is a frequent, not a constant symptom of glanders: when present, it is always highly characteristic of the acute disease. It is seen in virulent and ma-

lignant attacks, and especially when the disease has set in suddenly; it is seldom an accompaniment of the sub-acute forms of glanders so long as they remain sub-acute, and is never seen in the chronic varieties. Should the tumefaction not accompany the onset of acute glanders, it is almost certain to come on during the latter stages, prior to dissolution. The swelling of the nostrils may arise from the intensity and spread of the inflammation in the interior of the nose: very often, however, it is obviously the result of an attack of farcy of the integuments clothing the nostrils, including frequently the upper lip as well; and in that case there will be tumefied or corded lymphatics perceptible upon the swollen parts, and very frequently traceable from them along the cheek to the border of the jaw, proceeding into the submaxillary glands. Pustules or farcy-buds will also appear, and break and become ulcers, seated occasionally within the fold of the *ala nasi*, the same as in other parts of the body. The tumefaction of the nostrils when combined—which it commonly is—with a profusion of gummy discharge, adds greatly to the embarrassment in the breathing. The partial closure of one nostril produces a good deal of inconvenience and annoyance: when this happens with both, the suffering and distress occasioned will be likely, as I before observed, to end in suffocation, unless relief in some way or other be afforded.

DOES GLANDERS SHEW ANY PREDILECTION FOR THE LEFT OR NEAR SIDE OF THE HEAD?

DUPUY states that it does. His words are—"In summing up the cases I have reported, it will be remarked that of those horses who had only the nasal membrane affected, *there is but one case in which the right nostril proved the seat of disease; whilst there are eight having the disease on the near side.* It is without doubt a peculiarity that the membrane of the left chamber of the nose should most frequently be the seat of the tuberculous affection: it is not very favourable to the notion of glanderous contagion; nay, it goes to contradict all that has been said on that subject. In the greatest number of the cases, the disease pervaded both sides of the nose." Out of fifty-eight recorded cases of glanders that have fallen under my own observation, twenty-one have had

the disease confined to the near side of the nasal cavity, nineteen to the off side, and eighteen have shewn it in both sides. My own experience, therefore, will not allow me to step out of my road—as some writers have done—to endeavour to account for a fact whose truth is by no means confirmed, and which, were there any truth in it, must be admitted to be of that extraordinary pathological character that seems to defy all attempts at explanation.

DIAGNOSIS OF GLANDERS.

The diseases with which glanders is liable to be confounded or for which it may be mistaken are, *catarrh*, *nasal gleet*, and *strangles*.

THE CHARACTERISTIC SIGNS OF GLANDERS are with singular accuracy, and with succinctness too, described by Solleysell*. "The signs by which the disease may be known, are when a horse, already too old to be troubled with strangles, without a cough, voids matter by the nose, and has a kernel sticking to the bone; and besides, in glanders the matter usually flows from one nostril, whereas in a cold it runs almost always out of both."—"Some cast the matter that is voided by the nostrils into water, and, if it swim on the top, they conclude the horse to be free of this distemper; but if it sink to the bottom, it is a sign of glanders: the principal use of this experiment being to distinguish the pus."—"But you must not depend on the certainty of this sign; for if the matter stick to the nostrils like glue, it is a bad sign, and you may conclude the disease to be the glanders, though the matter do swim on the top."—"When either the breath or matter that comes out of the nostrils *stinks*, the disease is almost always incurable."—"I have seen horses troubled with this distemper without kernels, or, if there were any, they were little and moveable; and the only sign by which we could discover it to be glanders was the glueness of the matter."

DUPUY tells us that suspicion of harbouring glanders—when the symptoms manifest doubt—will always rest upon a horse possessing

* The Compleat Horseman, by Sieur de Solleysell.

the character of having been reared in a low, wet, marshy country; such as flat feet, long hairy legs, exuberant chestnuts, &c., or upon one that has a narrow chest and razor back, or that is high upon his legs, loose made, and so forth; and upon one that coughs readily, or cannot stand much work. If, combined with these indications, the mucous lining of the nose be thickened, infiltrated, discoloured, as likewise the conjunctive and nictitating membranes, one of the eyes appears sunk and gummy, and the nostril curled and fouled by mucus sticking about it, we may set the case down for glanders in the first stage.

OUR DIAGNOSIS must be grounded, first, on the circumstance of the discharge coming from one or both sides of the head; secondly, on the nature of the discharges; thirdly, on the presence of ulceration, and the character of it; fourthly, on the presence and character of glandular tumefaction; fifthly, on the state of the animal's health; sixthly, on the presence of farcy; seventhly, on the absence of symptoms proper to other diseases.

The consideration of the symptoms that are present, taken collectively and with reference to their origin, together with a notice of the absence of such collateral ones as ought to be present were the disease other than it really is, will furnish us with evidence both of a positive and a negative kind, in regard to its veritable nature; and though, after all, suspicion may lurk about the case, we shall, by taking proper precautions, not be liable to commit any very serious blunder in our practice; neither will, commonly, more than a short elapse of time be required to put an end to all our doubts and apprehensions.

FROM CATARRH—the disease with which, of all others, glanders is the most liable to be confounded—it is as difficult to draw the line of distinction in certain forms and stages as in others the difference between the two diseases becomes self-evident. A horse, we will say, has a discharge issuing but from one nostril, with a submaxillary swelling on the same side; and our opinion is required on the nature of the case. Should cough or sore throat, or other symptom of catarrh, be found present, doubt need no longer exist. Should the horse be young—three, four, or even five years old—we may feel rather inclined to regard it as catarrh.

The suspicious accompaniments of these two symptoms are, the absence of any concomitant catarrhal indication, the horse having been slightly "amiss," but now appearing as well as ever again: the constancy and uniformity of the one-sided discharge; the circumscribed or defined nature of the submaxillary tumour, together with its proximity, perhaps attachment, to the jaw-bone; the duration of the two symptoms in question, without any material alteration for better or for worse; lastly, the horse being in his adult or an aged period of life. It is quite possible the discharge may issue from *both* nostrils, and submaxillary tumours appear on both sides as well; and so will the case be rendered more like catarrh, and yet have enough about it to engender in our mind suspicions of glanders. In fact, it may positively be glanders, either in an incipient or an insidious form, or in a chronic stage. No prudent practitioner, however, would go the length, on mere inspection, to pronounce on the case; although he would consider it his duty to segregate such a horse from his companions, and place him in a situation where there could be no possibility of communication, mediate or immediate, between him and sound horses. Attentive observation and appropriate treatment will, after no very great elapse of time, demonstrate whether the case be catarrhal or not: but if not catarrh, what is it, or what can it be? Is it nasal gleet? If so considered, let such treatment as is proper for nasal gleet* be adopted, and for a reasonable time persevered in, under a hope that it may cease or "run itself dry;" still using all precautions to prevent communication with sound horses as much as if we were assured we were actually treating glanders itself. Time, I say again, must and will unravel the secret. If this cannot be or has already been given, we are at liberty to resort at once either to the test of examining—through an operation to be hereafter described—the sinuses of the head, or to that of inoculation. The supervention of chancre in the nose, or of any indication of farcy in any part of the body, would, of course, decide the question at once.

WITH STRANGLES in its early stage it is possible, though not by an experienced hand probable, glanders may be confounded.

* Vide vol. ii of the HIPPOPATHOLOGY, page 24 et sequent.

The tumefaction of strangles at its beginning, or at times when it progresses unkindly or hardly at all, or when it assumes the aspect we call "bastard strangles*," may something resemble to the feel the solid defined submaxillary swellings denotive of glanders: unconnected, however, with other suspicious circumstances, we have, in the first place, no right to assume any unfavourable opinion of the case; and, in the second, supposing the *age* and state of health of the patient to afford no interpretation, heat and tenderness in the tumour, with a tendency to spread or grow prominent, and to form abscess, together with the quality of the discharges from the nose (for there will most likely be some), will prove such in a little time as to cast away all reasonable doubt as to the true nature of the case. Should such not appear, the case must be regarded in an unfavourable light, and measures taken with it accordingly.

OTHER DISEASES still there are, for the most part of rare occurrence, which may be and have been mistaken for glanders. A discharge from the nose, and in particular from one nostril alone, being the chief or most prominent symptom of glanders, it is evident that any local disease about the head or even in the neck or lungs, giving rise to such a symptom, may, so long as the proximate cause be concealed, be thought to be glanders. Disease on either side of the mouth or throat, attended with the secretion or formation of matter, will be likely to discharge that matter through the nose as well as through the mouth, and most probably the issue will be confined to the affected side; occasioning even at the time, it is not at all improbable, by irritation, a swelling of the submaxillary lymphatic glands of the same side, and thus simulating veritable glanders as much as one disease can resemble another. Cases of this description have often baffled professional men—have too often led to erroneous judgment—too often to the destruction of the patient, when, had the true cause of the malady been discovered, a simple operation or some appropriate treatment might have saved his life.

A CARIOUS MOLAR TOOTH has in several instances led to fatal mistakes. One that occurred to Mr. Cherry, I have already given

* Strangles taking its ordinary course is altogether a different disease from glanders. Vide vol. i of Hippopathology, page 155 et sequent.

the history of*. Another I shall here transcribe from an interesting account related to the Veterinary Medical Association by Mr. Simonds, in 1839 :—

A singular case of an ossific tumour taking its rise from the inner portion of the anterior maxillary bone, between the turbinated bones, and occupying the whole of the nasal cavity on that side. It owed its origin to the uneven wear of the molar teeth, one of which, the second on the right, had become carious. The opposing tooth soon gained upon this, from the balance of attrition being as it were destroyed, and it was presently worn down to the gums. The caries now rapidly spread to the alveolar cavities, involving them and the bony palate in the disease. A communication was established between the nasal cavity and the mouth, and from this resulted the growth of a sponge-like looking ossific tumour. Strange as it may appear, the farrier who attended the case said it was one of glanders, and the horse was ultimately destroyed. The head was afterwards brought for my inspection and opinion.—*Veterinarian for* 1840.

The next is a case respecting which Mr. Dick was consulted by letter, as follows :—

A mare has been returned and declared by two veterinary surgeons to be glandered. She had a cold about fourteen months ago. There seemed some obstruction in the nasal passages. The membrane of the nose was redder than usual ; but there was no ulceration, though at times a watery discharge. What is most remarkable is, there is a constant discharge of masticated food, especially when she is trotted ; pieces occasionally coming away as large as ordinary (physic) balls. To clear her nostrils, she sneezes with might and main, ejecting at the time the half-masticated food in all directions. After such an ejection, she may be ridden all day without discharging any more. When, however, allowed to stand and feed again, on starting afresh, she becomes as bad as ever. In other respects she appears in perfect health, and does her work well. Mr. Forbes told me that, before he sold her, he gave her a ball, and thought she had swallowed it. An hour afterwards, however, as she was being led out, the ball was ejected from her nostril. There is now a constant discharge of watery fluid, mixed with masticated food. It falls from the nostril drop by drop until she is taken out for a ride, and then she clears herself of it. The submaxillary glands are not enlarged.

To this account and appeal for advice, Mr. Dick replies :—

The case you mention is one of those which you will recollect I used to refer to in my Lectures as likely to be mistaken for glanders, but which is quite distinct from that malady. It is connected with disease of some of the molar teeth or the alveolar processes, or the velum palati. I have seen appear-

* In vol. ii of the present work, page 179.

ances very similar from the velum palati having been piereed in giving balls at the end of a sharp-pointed stick. If you will carefully examine the mouth of the mare, you will find an opening somewhere leading from it into the nose. I am unable to write with greater preeision, as you have not nientioned whether the diseharge comes from one or both nostrils. You will bc compelled, I think, to cast her. I am afraid you will not be able to do mueh good. There can be little prospeet of eure, as the orifiee will have assumed a fistulous eharaeter, which will be kept up by the eonstant passage of the food. If there exists a earious tooth or pieee of bone, it must be removed, and probably the parts will require frequent cleansing by syringing. I do not know any other means of eure.

The last case of the kind I shall relate is one I transcribe from the valuable posthumous collection of the late Mr. John Field. As in Mr. Simond's case, the disease proved to be in the submaxillary bone.

On the 10th of November, 1830, an ass belonging to Mr. T——, was brought to the infirmary, having been under treatment for a disease supposed to be glanders. There was an offensive diseharge from both nostrils, particularly from the near; from which, as well as from the mouth on the samc side, a quantity of yellowish inspissated pus was occasionally emitted: the submaxillary gland was enlarged.

On examination, a tumour was observed over the maxillary sinus of the near side, immediately eorresponding to the second molar tooth. The external surfaee of the anterior superior maxillary bone was eonsiderably elevated in the eourse of the levator labii superioris and anterior maxillary nerve, beginning just below the escape of that nerve, at the foramen maxillare anterius. The base of the seeond molar tooth within the mouth was in great measure destroyed: the portions remaining in the jaw were immoveable.

Nov. 12*th.*—An attempt was made to remove what was left of the tooth by lancing the gums, and by using very strong foreeps. This was done under an impression that the fangs of the tooth were diseased, and produeed the swelling in the antrum maxillare: however, the operation was unsueeessful.—(On the samc day an ass was inoculated with some of the glutinous discharge from the near nostril, on the right ala nasi, the right upper palpebra, and on both sides of the baek. After a few days a little pus was found in the largest incision, but in ten days all the wounds had healed, and the animal was quite well.)

13*th.*—On this day the ass was east, the hair was shaved from the tumour, and an ineision was made through the skin, eommeneing at an inch below the molar proeess of the maxillary bone, and extending along the eourse of the alveolar process to one ineh below the edge of the tumour; another transverse ineision was made across the first, and the four flaps were dissected baek,

and the superficial facial muscles were divided in the line of the second incision down to the maxillary bone. The trephine removed a portion of the thin bony plate covering the sinus; and through this opening nodules of bone, such as are commonly met with in diseases of the frontal and maxillary sinuses, were discovered, instead of the diseased fangs we expected to find. In order to remove these nodules, which were very large, it was necessary to make successive applications of the trephine, chisel, and saw. After the bone was removed, a large quantity of highly offensive inspissated pus was scooped out; but the largest portion was firmly attached to the membrane of the nose and antrum, and required considerable force, and some cutting, to detach it. The surface of the sinus was next ascertained to be uniform, and not to have any uncovered bone. The divided levator labii superioris was then united by suture, and the crucial flaps replaced and brought together. Very little blood was lost.

16*th*.—No increase of swelling had taken place in the face: there was a slight discharge from the near nostril. The ass fed, and was free from fever. A little pus appeared between the edges of the wounds.

19*th*.—Purulent discharge from nostril still offensive—tumour from submaxillary lymphatic gland much diminished. Ass fed well.

26*th*.—Wounds had all healed, save some superfluous granulations, about one-third of an inch broad, between the edges of the upper incision. Discharge from nostril less, but still offensive.

On the 4th of December the discharge had almost entirely ceased, the lymphatic gland was much reduced in size, and on the 20th of the same month he went away perfectly cured, and had no return of the disease.

The common notion is—and it is one consonant with reason, and for the most part, I believe, in accordance with practice—that matters coming from the lungs or windpipe through the larynx become discharged from both nostrils, or are as likely to find their way into one as into the other: I cannot, however, for my own part, help thinking, that every now and then it happens that a channel on one side becomes so established that all the matters as they issue from the larynx run, sideways, along it; none, unless through coughing, or other violent emotion, going by the other side. Should this supposition be founded in truth it will serve to place us more on our guard in practice.

Bearing in mind that neither discharge from the nose, though it be but from one side, nor submaxillary tumour, though it be affixed to the jaw-bone, nor even ulceration of the Schneiderian membrane, unless it be of a certain character, constitutes a case of glanders, it becomes our bounden duty to institute in every

instance suspected or asserted to be glanders, a searching, satisfactory inquiry. Numbers of horses—of valuable horses—no doubt, have fallen sacrifices to the ignorance or precipitancy of their medical attendants: a more skilful and thorough investigation of their cases, greater patience, allowing for the development of symptoms, would have shewn where the errors lay, and have saved, as well as many lives, the veterinary practice of days gone by a load of opprobrium since passed upon it.

VARIETIES OF GLANDERS.

WHATEVER division we may make of glanders — whatever kinds or species we may distinguish in it, we must bear in mind, the disease in nature remains the same. The varieties of aspect, of intensity, of duration, observable in it, are attributable to the part in which the disease is seated, to the stage through which it is passing, to the age, state, &c., of the patient, and to other circumstances, which in their proper places will hereafter receive notice. We might found our division upon the circumstance of glanders being seated at one time within the nose, at another within the sinuses of the head, within the lungs, within the larynx. We might distinguish as species or varieties the different appearances the disease assumes even in the same part, which we now regard as *stages;* such as the first or incipient stage, the ulcerative, the sloughing or typhoid stage, &c. To both these, I prefer the division based upon the intensity and duration of glanders, as the one which will be found most useful to us in practice, and which has this advantage over the two others we have noticed, that, although the three varieties will be found running into each other, yet no sooner does a fresh species make its appearance than that which existed before necessarily ends. According to notions that have grown up in my mind, after an observation of many years of glanders in all its forms and phases, the best division we can, in my opinion for practical purposes, make of the subject, is into *acute, sub-acute,* and *chronic:* the first, comprising such forms of the disease as rapidly and uninterruptedly run their course and end in death; the second, such as present the

pathological character of acute glanders, and yet manifest the sluggishness of the chronic variety; the third, that species of the disease in which all progress seems suspended, the morbid parts within the reach of our examination presenting no indication whatever of activity—of inflammation, ulceration, &c. To these we may add a variety our continental professional brethren have named *typhoid glanders;* but which is nothing more than the most malignant form of the acute, the malignancy being owing to the state of health of the patient at the time, the situation, &c. also, we have to add, *epizootic* or *enzootic glanders*, an appellation given to the disease when unusually prevalent; and *farcy-glanders*, which is no more than farcy combined with glanders.

ACUTE GLANDERS.—The purest and best specimen afforded us of this variety is the disease resulting from inoculation, that which we might denominate

INOCULATED GLANDERS.—Supposing inoculation with glanderous matter to be performed on the Schneiderian membrane, sometimes so early as the third, always on the fourth day afterwards—providing the inoculation take effect—may be discovered swelling of the submaxillary lymphatic glands corresponding to the side infected, with, in general, some slight discharge from the inoculated nostril, ulceration following on the fifth or sixth day: and these results are often accompanied by some appearance of farcy, manifested in the tumefaction of that chain of lymphatic vessels which extends from the ala nasi and angle of the mouth to the swollen glands under the throat. From this time the disease within the nose spreads rapidly, the nasal membrane quickly becoming a sheet of ulceration, and issuing discharges in that profusion and of that glutinous character that in some cases, so early as the tenth day, in hardly any later than the twentieth, the animal—a young ass, commonly—dies actually suffocated through obstruction in the nasal passages, caused by the accumulation of the discharges within them, combined with the agglutination and tumefaction of the nostrils outwardly.

ACUTE GLANDERS, however, is often enough to be seen—in situations where glanders is prevalent—where there is no reason to suspect either inoculation or contagion to have been present.

It commences with symptoms of slight febrile catarrhal disorder, and the fever attendant never quits the patient: we, therefore, might with some reason give it the name of *febrile glanders*. In the young ass, as we have seen, the disease, once commenced, rages with peculiar violence and malignancy; indeed, so remarkably so that the ass has, by many writers, been regarded as more susceptible of taking or harbouring the disease than the horse. And from my own experience, while serving in the peninsular campaign, I can attest the virulent and destructive course the disease likewise assumes in mules. Still, we are not in the habit of inoculating horses; and, moreover, we rarely find horse-patients of the same tender age, or of the impoverished condition asses are in; and again, horses are taken greater care of when sick than the poor despised ass is: on the whole, therefore, considering all these circumstances, I am not disposed to admit that either the ass or the mule presents any extraordinary *innate* susceptibility; but rather think that it is all acquired in the age and condition in which the animal receives the disease.

THE COURSE OF ACUTE GLANDERS is uninterrupted; oftentimes, like the product of inoculation, terrifically rapid, from the period of its attack to that of its surely fatal termination. The horse seems unwell, has manifestly lost the bloom on his coat, is unusually dull in his spirits and movements, does not feed with his ordinary appetite, evinces a sparing discharge from the nose of an unhealthy character, with submaxillary tumefaction, and this is followed by swelling of the nostril, chancrous ulceration, augmented and inspissated discharges, and appearances of farcy; symptoms which day by day increase and extend, and at that rapid rate that puts an end to life even so early as the second or third or fourth week, through the extreme irritation occasioned by the suffocating effects of the enormous tumefaction of the nostrils, and the clogging of their apertures from the inspissation and scabbing of the discharges within and around them. In this last stage of the acute disease the patient becomes so much an object of pity and compassion that it is but rarely he is suffered to live on to the last. Every breath he takes he draws with the utmost difficulty through his contracted nostrils, all but plugged up with the matters

lodged in them, and the noise he makes in drawing his breath hard through these accumulations is very distressful to a by-stander; at the same time there is something in the sound, as I stated before, so peculiar to the ear of the experienced veterinarian, that the moment he hears it, before even the patient's stable-door be opened, he recognizes it as the nasal *râle* of a glandered horse.

INOCULATED GLANDERS, I repeat, may be regarded as a genuine specimen of the *acute* variety. The common course it takes, already described after inoculation within the nose, is in the following case shewn modified by inoculation in other parts:—

May 3d, 1828.—An ass was inoculated in both upper eyelids, both sides of the loins, the off side of withers, and on the inside of the ala of each nostril, with the discharge from the off nostril of a grey gelding, purchased by Sir P——— D——— three years previous, who was affected with this same glanderous discharge at the time of purchase, and which had continued ever since.

7th.—All the wounds suppurating, except those on the nostrils, which appear to be healing,

9th.—Absorbents inflamed from the ulcers on eyelids and back.

14th.—Absorbents much thickened, having diffused inflammation about them, and at different parts of their course circumscribed tumours suppurating; the inflammation from the ulcers of the loins proceeding to the groin, that from the off side of withers to the breast, and, on the eyelids, producing small fluctuating tumours on the jugular vein, just below the ear: the alæ nasi were beginning to swell, and there was a snuffling in breathing, &c.

19th.—The alæ nasi much thickened, copious discharge from nostrils, and the swelling increasing.

22d.—Respiration greatly embarrassed. He died on the following day.

Examination.—Much frothy spume in trachea—general infiltration of lungs, which were inflamed—considerable consolidation of the anterior and inferior portion of right lobe—warty exulceration of Schneiderian membrane of both nostrils to a greater extent than I had ever witnessed before*.

TYPHOID GLANDERS, as the continental veterinary surgeons have named the worst or most malignant form of the acute, is that variety in which deep and extensive sloughing is going on in the cartilage of the nose and turbinated bones, occasioning dark coloured, in some instances black discharges, at times mingled with blood, having a most disgustingly fœtid odour, with the lungs

* From the Posthumous Cases of the late Mr. John Field.

in a state of abscess, from ripened tubercles running one into another, or, from their infraction having taken place some time before, in a state of actual ulceration. In such a horrible state of disease as this, made still worse by accompanying farcy tumefactions in various parts of the body, nothing can exceed the spectacle of loathsomeness and distress the patient presents. Even death itself seems preferable to such a state of suffering. The subjoined case, which was sent to THE VETERINARIAN for 1842, by Mr. Ernes, V.S., Dockhead, Bermondsey, is valuable, because it shews that now and then typhoid glanders assumes a character our French brethren designate by the epithet *charbonneuse*.

On the 16th of October, Mr. Ernes was sent for to see a horse that did not feed well: the horse was dull, unthrifty, and off his appetite. A prescription was given, and, after a few days, the horse resumed his work. On the 3d of November, complaint was made that the horse had a discharge from his nose: it was from the left nostril, and of a very suspicious character. Pimples were seen on the mucous membrane, towards the inner canthus, and on the septum nasi, about the size of a pin's head, and of a yellow red colour; but no ulceration was perceived. The submaxillary lymphatic gland of the same side was also slightly enlarged and hard. Mr. Ernes condemned the horse as glandered, and ordered him to be separated from the others. In the course of the day his hind legs swelled, the swelling extending to the sheath and posterior parts of the abdomen. On the 4th, these swellings had greatly increased, but the nasal discharge had ceased. On the 6th, the swellings had still farther increased, and were reaching towards the neck, shoulder, and lower parts of the head. There is a copious discharge from the left nostril, and the membrane, free from ulceration, is of a blackish hue. On the 8th, the swellings had increased to such an enormous size;—the nasal discharges being copious, mingled with blood; the nasal membrane sloughing; the dyspnœa so great, &c.—that an end was put to his life.

Autopsia cadaveris.—The effusion in the swollen parts proved of a *black* colour, resembling oil-paint, very sticky, and of considerable consistence. The membrane of the nose was one mass of gangrene, and in many parts covered with the same black substance that was found in the swellings. The lungs were a complete mass of ulceration, and of the same black hue. The abdominal viscera were all of a dark colour. The mucous membrane was healthy throughout, accounting for the absence of diarrhœa, which is a frequent complication of this disease.

PULMONARY GLANDERS is an appellation that may well be given to that variety of the acute disease which supervenes on the sub-acute and even on the chronic species, whenever the lungs,

in which the disease has been, either unceasingly or in relapses, creeping on all the while, have arrived at a point of disorganization to fail in their functions, and so to create constitutional irritation*. So long as the glanders remains chronic or inactive in the system, months, years even, may pass away without any material change: the moment, however, any thing occurs to derange the health, the disease re-appears in all its virulence, and then speedily runs on to the destruction of the patient. In many of these cases, however, symptoms of failure will a long while be apparent before the final break-up arrives: the glandered horse will be daily observed to lose his usual health and spirits, his coat no longer of healthy aspect, will draw out, and he will perceptibly fail in his strength, and fall away in his condition. All on a sudden, a fresh eruption of discharge will shew itself from his nose, the membrane will be found to have changed colour, the glands under his jaw to have become augmented, his hind legs swollen, farcy broken out perhaps all over his body, acute glanders and farcy, in fine, displayed in all their virulence, to end before long, in despite of any thing that can be done, in the destruction of life: not, however, as I have so recently described, through suffocation, but through consumption of the lungs by the disease, assisted by a wearing hectic sort of fever, the same as is seen in human *phthisis pulmonalis;* and, moreover, bearing a resemblance to that mode of ending life, inasmuch as the brute, as well as the man, retains his senses to the last.

EPIDEMIC or ENDEMIC GLANDERS amounts to nothing more than extraordinary prevalence of the disease among horses in general, or among the horses of some particular locality, referrible either to some peculiarity in the breed of the horse, or in the soil or air of the place he inhabits. So far, however, as *causes* are concerned, they will become matter of future consideration: all that we have to consider in this place is the question of difference, if there be any, between the epidemic disease and ordinary glanders. I believe the former almost always to assume the acute, generally the acutest form; nay, in many instances the typhoid or malignant type: farther than this I know, of my own experience and reading, no difference between epidemic or endemic

* I have more than once remarked that the disease has confined its ravages to the lungs of the side correspondent with the affected nostril.

and common glanders. In the Compte-Rendu of the Royal Veterinary School at Alfort, for 1841-2, we find it stated, that "the number of animals affected with glanders during the last year has been so considerable, that glanders may be said to have prevailed, and still prevails, *as an enzootic*, in all the environs of Paris. It has principally appeared among the horses employed in the fortifications, who have suffered severely. The form under which the disease has oftenest shewn itself is *an acute one*."—*Veterinarian for* 1843.

SUB-ACUTE GLANDERS is the variety of most ordinary occurrence. It commences with the usual signs—slight or otherwise—of indisposition; and the disease may—though the circumstance is a rare one—in the first instance assume the acute type. Instead, however, of continuing its rapid course, even after ulceration has displayed itself, both the inflammatory and ulcerative processes subside down to a state almost of total inactivity: the Schneiderian membrane grows pallid, acquires a leaden hue, and the ulcerations upon it lose their prominent red-streaked borders, and exchange their rugged bleeding bases for comparatively smooth and livid bottoms, throwing up a glass-like reflexion from the lymphy matters covering them. It is evident, the moment the nose is inspected, that the disease exists in the sub-acute form: how long it may continue so is very uncertain; it will not visibly impair the health, nor affect the appetite or spirits, so long as it does so remain; the moment, however, any thing occurs to derange the health, or even after a certain time—after a month or two, or three—without any apparent superadded cause, we may expect the acute disease to supervene, and then the destruction of the patient's health commences, and speedily is consummated in the manner already described. Though there be an evident cessation of the external disease, however, we are by no means certain that the inward organs—the lungs in particular—are not all the while affording a nidus for its spreading: in most cases it is probable this does happen, inasmuch as, whenever death has followed from the supervention of the acute disease, we find those organs in a state of tuberculous disorganization. It is this apparent cessation of the glanders outwardly, and the interval during which the disease continues in abeyance, that has afforded opportunities to experimental-

ists and hunters-after-a-cure to make trial of their various nostrums; and it is the topical influence some of their remedies have had upon the secretion, and even upon the ulceration, of the nasal membrane, that has led so many persons to believe at various times—myself among the number—that they have discovered the veritable antidote: no sooner, however, has the fire which has all along been smouldering within the lungs or head broken out and shewn itself outwardly in the display of acute glanders and farcy, than the glittering bubble *of a cure* has burst, and our darling remedy has to share the fate of those that have gone before it.

CHRONIC GLANDERS, properly so called, consists simply in a discharge from the nose, oftener from one nostril than from both, accompanied by enlargement of the correspondent submaxillary lymphatic gland or glands. Symptomatically, it differs from the acute and sub-acute diseases in the absence of any thing like inflammation or vascular injection, or chancre, or in fact of any perceptible change whatever in the aspect of the Schneiderian membrane denoting morbid activity: all is as usual in the appearance of parts, and in the animal's health and spirits and appetite; nothing whatever seems amiss, save the flux from the nose and the submaxillary tumefaction. And in this state, as I have so recently observed, the horse may continue for years*. Pathologically, also, it differs from the acute and sub-acute disorders in having for its especial seat the membrane lining the sinuses of the head†. It is possible a chronic discharge may proceed from the nasal membrane: I believe, however, that it rarely does or continues so to do for any length of time without some discoverable change in the aspect of that membrane; and that, although it is quite possible such a case might, at first, be supposed to be chronic glanders, a little time would suffice to shew whether it really were so or not. If it be chronic glanders, having for its seat the nasal as well as the frontal membrane, or

* As is exemplified in Mr. Field's case of Sir P. D.'s horse, given at page 183. The disease—which turned out to be chronic glanders—had been known to have existed *three years:* how much longer does not appear.

† Some veterinarians assure us a slight prominence is to be felt over the frontal sinus; and that tenderness when the part is tapped is evinced by the patient; also that the sound elicited by tapping with the knuckle is dull and obtuse to what it is in the healthy condition. For my own part, however, I cannot say I have ever derived much information from these (fallacious) tests.

to the exclusion even of the latter—a very rare case I believe—sooner or later we shall detect the *miliary* ulceration, the only ulceration present in this form of disease, and therefore one truly characteristic of it.

Chronic glanders appears sometimes as the sequel of other disease in the air-passages and lungs; it is more commonly, however, an idiopathic disease, and one that differs, as much as one variety of disease can be different from another, from the acute and subacute affections: between the latter there is but a difference of intensity, whereas the former, be it remembered, exhibits pathological differences. It mostly attacks its victim in a mild and masked form. The horse is thought to have caught cold, and no suspicion, perhaps, is aroused to the contrary until it comes to be discovered that this "cold" is lasting a great while longer than it ought to endure, and that it has resisted all the common means of cure. The horse's spirits and looks and appetite are not in the slightest degree impaired; he works—or would work—as cheerfully as ever; but all the time he has a discharge from one nostril, with an enlargement of the submaxillary lymphatic gland or glands of the same side. And although the nasal issue may be of a nature of itself to excite suspicion, and the enlargement may be such as appears to strengthen or confirm this suspicion, yet do cases incipient in their nature too often present themselves, in which it is impossible for any practitioner, from these appearances alone, to determine at once on the nature of the attack. Give time, and the veterinary surgeon, by watching the progress of the case, will be enabled to solve the mystery, and at length to demonstrate beyond any doubt the real nature of the animal's ailment.

Insidious Glanders.—Under this happily-chosen appellation my friend and schoolfellow, Mr. James Turner, has, in a paper he read to the Veterinary Society on the subject, in 1830, described, with his usual accuracy of observation, the stealthy signs by which we may apprehend the approach, or rather suspect the existence of chronic glanders in its early or masked form. He with truth characterises it as commencing "in a watery discharge from one or both nostrils, more frequently from one only, generally containing particles of mucus or pus, at other times assuming the appearance of both; invariably in small quantities, but never

entirely ceasing, either by night or day, at rest or in motion;" accompanied by "an indurated submaxillary gland, enlarged only to the size of a pea or horsebean; frequently loose, and not adherent to the jaw-bone, and, therefore, presenting no characteristic symptom of the disease more than we usually meet with in incipient catarrh." In support of the paper, Mr. Turner adduced the following instructive

Case of Insidious Glanders.

"A few years ago, a repectable farmer solicited my opinion respecting a hackney mare which he had had some time in full work; telling me that he did not know there was any thing amiss with her, but wished her to be examined. She was about seven or eight years old, in excellent condition, and had a good coat. The farmer directed my especial attention to the head, saying that there had been a discharge from the off-nostril for a considerable time, but in so slight a degree as scarcely to be considered worthy of notice, especially as the mare was not *jugged**. There was, however, an enlargement of the gland about the size of a tick-bean, and quite loose. If my attention had not been particularly directed to it, I might have passed it over as not of much importance. I found that the farmer had had the mare seven or eight months; that the discharge had existed during the whole time; and that he had kept her away from the other farming horses. The farmer wished for a decided opinion respecting her. I replied, that the mere circumstance of the discharge having existed for so long a time, led me to suspect she would never be perfectly sound, and that the farmer would not be justified in sending her into the market. She was immediately taken to a slaughter-house in the neighbourhood. While arrangements were making with the collar-maker, a farrier interfered, and purchased her for three pounds; and triumphantly rode her up the town, and declared, in no measured terms, that I had committed a grand blunder, and that he should make "a complete cure of her."

"Five or six weeks afterwards I was told that the farrier had nearly "cured" the condemned mare. I replied, that, if he had only *nearly* cured her, I understood the state in which she was. A month after this, I was examining the post-horses at an inn near London, when I was told that, by some collusion between the farrier and the ostler, she had been sold into their stables, and was in excellent condition. On closely examining these post-horses, I detected two cases of glanders, and two of farcy without glanders; *and this in a stable that had been occupied by post-horses for many a year, without a single case of farcy or glanders.* On discovering this, I ordered the black

* A cant term for enlarged submaxillary glands.

mare out, saying that if I found her perfeetly free from diseharge, and with no enlargement of the submaxillary glands, I would not aeeuse her as the eause of all this mischief. She was precisely in the same state as when I first saw her. *The first horse that failed was her own partner, and the next stood in the same stable.* Those about the stables were so much mortified by this diseovery, that the mare was immediately afterwards smuggled away; the infeeted horses were also removed, or died. Proper preeautions were used with respect to the stables, and no further disease appeared."

A Case somewhat analogous, with a Result altogether different, I shall select out of my own practice, with a view of shewing, by the two being placed in apposition, the risk the veterinary practitioner runs of being deceived in any opinion he may inconsiderately or rashly give at the commencement of the malady.

A grey mare, eutting her four-year-old teeth, was brought to the First Life Guards as one of a lot of reeruit horses, and was by me examined and passed as sound and fit for the serviee. The day after she had been examined, the eorporal who had charge of her together with the others—an attentive and observant man, and well aequainted with the habits of young horses—reported to me that the grey mare had that morning been discharging blood from her off nostril. I immediately inspeeted the nostril, and found some few small eoagula about the ala, with a streak of blood upon the septum, whieh had also congealed, there being then no blood aetually flowing. The mare was partieularly shy about the head, on which aeeount it was thought by the men, and for the moment listened to by me, that she might have struek her nose or head. The third day, in plaee of blood I found some appearance of matter, very seanty, but of a yellowish tinge, accompanied by an indistinet feel of lumpiness under the throat. I had her removed into a box by herself. The fourth day the discharge had augmented, and beeome mueopurulent, with an admixture of serous liquid, but there was no inerease of the submaxillary tumefaetion—or what was taken for sueh—nor were there, nor had there been from the eommencement, any signs of indisposition, unless an oecasional eough eould be so considered. The mare fed well, was full of spirits, and would hardly suffer any one to approach her: in fact, she was so shy, partieularly about her head, that it was deemed inadvisable to attempt to administer any medieine to her; nor was I desirous that any should be given her, being anxious her ailment should take its natural eourse. I therefore ordered simply a mash diet and confinement in her box. Two days afterwards the diseharge had beeome eonsiderable; it had the straw-eolour hue, and clung about the long hairs guarding the nostril, befouling them a good deal, insomuch that those about her ealled it "a nasty discharge." The man still affirming that he heard her eough occasionally—though nobody else, it seemed, heard it—I had a stimulating liniment rubbed upon the throttle, but

not under the jaw, the submaxillary feeling of lumpiness having undergone no alteration. In this state the mare continued for a fortnight, during which period she kept discharging pretty profusely from the off nostril, without shewing the slightest sign of any issue from the near; retaining her appetite and spirits, and only coughing now and then, without shewing any sign whatever of soreness of throat with it. During the third week I had her nostrils steamed with the vapour of hot water, with a view of eliciting a more copious discharge, and it appeared to have that effect; at the same time I ordered her diet to be changed from bran-mashes only to two feeds of corn, daily. On the eighteenth day her discharges, which under the operation of the steaming had first been augmented, were evidently reduced in quantity; on the nineteenth, a further reduction was perceptible; and on the twenty-first she was free from any running whatever; in fact, she was in appearance quite well again, though still (according to the man's account) keeping the occasional cough.

The foregoing case is instructive to us from its shewing how closely *coryza* or simple catarrh (which it was), may resemble insidious glanders, confined as the nasal flux was during the whole while to one side: the attendant cough, however, though it was but occasional, was favourable, and moreover there was no very distinct glandular tumefaction. The unfavourable symptoms being, the hæmorrhage from the nose, the offensive character of the discharge at one time, and the continuance of it from one to the exclusion of the other nostril.

In Duration hardly any disease can be more uncertain than chronic glanders. It may continue, simply as a discharge from one nostril, accompanied by submaxillary glandular enlargement, with very little or unimportant variation in either, for months—nay, for years: on the other hand, it may run into the acute in as many weeks. Any person, therefore, having a horse of this description in his possession can at no period say how long it may be before the disorder may shew itself in an active, nay rapidly destructive form. In some cases the nasal flux, as I said before, runs for a long period with but slight or unimportant alteration; in others, in quality as well as quantity, it exhibits most remarkable fluctuations; at one time appearing so scanty and trifling as hardly to be worth notice; at another, pouring forth in all the abundance of the eruption of pent-up channels, bringing in its current matters solid as well as fluid, from the admixture of lymph with muco or sero-purulent

flux, and all of the most fetid nature, in consequence of having been shut up for a longer or shorter period, and so undergone a putrefactive fermentation, within the sinuses of the head. Its colour is very variable, depending upon the nature of it, and upon the time it has been retained within the sinus: it may be white, yellow, green, brown, black, according to circumstances; its colour being often a sort of guide to us in respect to its composition and probable duration under confinement.

A DISTINCTION must be made, however, between chronic glanders and what we are in the habit of calling *nasal gleet;* an affection some horses are known to have either all their lives, or at certain periods of them. We must not set down every horse that comes to us for having had for any length of time, either (more or less) constantly or only at times, a flux from one or from both nostrils. The membrane clothing the nasal chambers and sinuses of the head is, the same as other mucous membranes of the body, liable to derangements in its functions—to secrete too much or too little, or not of the proper quality; and therefore the same as the membrane of the human urethra, it may become the source of gleet, and of gleet of so long duration that in time it becomes, as it were, habitual, natural to the secreting apparatus. This is the only way in which we can account for horses having, at times, discharges from the nose all their lifetimes; and yet they work, never shewing any glanders: indeed, to those acquainted with them, causing little or no alarm. The important question for us to consider is, how are cases of nasal gleet to be distinguished from those of chronic glanders. In all the cases I have seen, with no exceptions that I remember, though I do not deny there may be some—the discharge has consisted of an unusually white mucous or sero-mucous matter, and in several instances has been remarked to be grumous or lumpy. There is in general no enlargement under the jaw; and in this circumstance, as well as in the white mucous and grumous nature of the discharge, together with the history of its origin, when that can be obtained, may be found pretty safe ground of distinction between nasal gleet and chronic glanders*.

* For an account of nasal gleet, see vol. ii, p. 24-28.

Beyond any information we can glean from the symptoms, and such as is to be derived from the history of the case, we have no means of testing its true nature save through an operation, or by inoculation of an ass (or another horse) with the discharged matter. Of these tests we shall speak hereafter.

THE UNAFFECTED GOOD HEALTH horses having chronic glanders in general enjoy, together with the condition and apparent aptitude for work they maintain, it is that has given rise to a fraud often successfully practised at Smithfield and other horse markets, in days when glandered horses were more common in the country than they are at the present time. Three knaves act in confederacy. The horse, who previously has been made by some sternutatory means to blow out any matter that might be lodged in his nose, is by one of them led to the market for sale, where he is soon sold at a price much below his apparent value, the purchaser having been persuaded and urged on by a stander-by—a seeming stranger—who is no other person than the second confederate. Pleased with his bargain, the purchaser takes him away homeward; but has no sooner got clear of the market than he is met by another stranger—the third confederate—who happens to recognize the horse, and who at once expresses surprise and dismay that he should have bought an animal with such a foul and horrible disease upon him; adding that the horse ought to be, and must be in obedience to Act of Parliament, shot without delay; and in order that the purchaser may not be at any farther trouble or responsibility, offers at the same time for a small fee to take the horse of him "at knackers' price." In this way the subject of fraud finds his way back into the hands of his former possessors, and is soon offered again for sale; not perhaps in the same market, but in some other part of the country. The late Captain Harvey—a gentleman well known as one of the best riders in the Old Surrey hunt—was cheated in this manner at Bromley Fair: in his case there was no third confederate. The Captain thought he had got an excellent hunter for very little money, with the trifling drawback of his having "a slight cold in his head," and brought him the following day to my father for his advice. The opinion sought proved short and decisive;—the horse was "glandered."

The following narrative, taken from the Report of the Suppression-of-Cruelty Society, will confirm what I have been saying by way of premonition to the unwary :—

A gentleman passing through Smithfield Market on Friday the 23d inst., observed a man running a very good-looking bay mare up and down the market. It struck him that the mare would answer his purpose, and he asked the price; and was told by the owner, who seemed to be a countryman, that he would take fifteen sovereigns for her, and not a farthing less, and that he would warrant her sound in wind and limb, and in every respect.

The gentleman wished for a reference, and the name of a person at a distance, of whom he knew nothing, having been given, he expressed dissatisfaction, and asked whether there was any one in the neighbourhood who would answer for the character and integrity of the seller. "Oh, yes," said the countryman; and he led the way to a public house in Smithfield Market.

On entering the house he asked the landlord and another person at the bar whether they knew the countryman, who stated his name to be Brown; to which they applied in the affirmative, and that he was a perfectly safe man to deal with. The bargain was then concluded, and the fifteen pounds paid. A man to lead the horse was easily procured, and he departed with his bargain.

He had, however, scarcely got as far as Snow-hill, when he was surrounded by a crowd of fellows, who told him that he had bought a glandered mare, and offered to rid him of his bargain for a certain sum: he, however, would have nothing to do with them, but took the mare home, and, sending for his veterinary surgeon, found that he had indeed purchased a glandered animal, and that there was no help for it. Some ill-looking fellows afterwards came to his yard, and offered to purchase the mare, and he, ashamed of his bargain, sold her to a butcher-looking fellow for seven pounds.

He went to the next market, and learned that it was quite a common thing to sell glandered horses, re-purchase them for a small sum, and sell them again to new flats. While he was talking, he saw the same identical mare with which he had been duped run up and down for sale, and he heard eighteen pounds asked for her.

He immediately started in search of the police, but on his return the mare and her professed owner and purchaser had disappeared. He went immediately to the police office, and stated all the circumstances, adding that he had no desire of obtaining redress himself, but he wished to put an end to such rascally proceedings. The publican was sent for: he owned that he knew a person of the name of Brown, but not where he was to be found; and as for the circumstance alluded to, he had no recollection about it. The magistrate ordered him to appear again on the 26th, and to bring with him the man who was at his bar when the transaction took place; observing that a most villanous conspiracy had long been carried on in Smithfield, which the magistrates were determined to put down.

THE CAUSES OF GLANDERS

MAY be considered under the general heads of PREDISPOSING and EXCITING.

PREDISPOSITION may lurk in *breed*, in *constitution*, in *age;* or it may be generated through the influence of *soil, climate, aliment*, &c.

BREED, we have, I think, pretty satisfactory evidence, carries with it predisposition to certain diseases: to use a vulgar but expressive phraseology—"they run in the blood." Periodic ophthalmia is, perhaps, the most striking instance of this*; roaring, according to many authorities, is another†. Whether glanders or farcy can be ranked in the class of hereditary maladies I am not prepared to say: LEBLANC hesitates not to assert that it can. I should certainly give it as my opinion that insomuch as tender or delicate

CONSTITUTIONS are inherited by horses, to the same extent they become predisposed to certain diseases—to those in particular affecting the respiratory organs, and with these to glanders; and the same appear to be the notions of Dupuy, when he informs us that the "lank, ill-conditioned horse, the one that is soft in constitution, and soon knocked up at his work," is the subject the most likely to breed or contract "the tuberculous affection," as he calls glanders and farcy. Furthermore, a constitution originally strong and resistant may be reduced to a weak or "ill-conditioned," susceptible state, by bad keep, over-work, exposure to cold and wet, &c.; or through the failure of any of its principal organs, especially of the lungs. Constitutional predisposition may, therefore, prove to be either *natural* or *acquired.*

AGE, we well know, has considerable influence in predisposing horses to take disease of the air-passages—to take *catarrh, bronchitis, strangles, glanders:* we have no reason, however, to suppose that this influence is operative in the case of glanders *in particular;* for the same reason that a young horse is more likely to

* See part i, vol. iii, of the HIPPOPATHOLOGY, page 90, et sequent.

† See vol. ii of the HIPPOPATHOLOGY, page 49.

catch a cold than an old one, for the same reason, should he go within the reach of the exciting causes of glanders, he may be considered as especially predisposed to that disease. Out of forty cases of farcy and glanders occurring in the Ordnance, under the superintendence of my father, and, latterly, of myself, the ages of which happen to be registered, one was three-years-old, one four-years-old, four five-years-old, six in their sixth year, six in their seventh, six in their eighth, five in their ninth, eleven ten-years-old and upwards. Consequently, so far as this brief account goes, the adult and middle ages appear to suffer most from the disease.

Certainly, at no age are horses to be regarded as exempt from taking glanders. LATOUR relates the case of a foal that exhibited discharge from the nose and enlarged glands under the throat at its birth, which, in ten days afterwards, was followed by ulceration. LEGAND, the V.S. to the Tenth (French) Chasseurs, has also given, in the VETERINARIAN for 1828, an account of a glandered mare that brought forth a foal free from disease at birth, but which eight days afterwards commenced running at both nostrils, and on the sixth day after that (the fourteenth from its birth) died from suffocation. A horse belonging to the Artillery, destroyed for glanders in the year 1816, was twenty-four years old. Another, a very fine, old, milk-white horse, a great favourite with Colonel Quist, at that day in command of the Riding-House Department at Woolwich, was shot on account of glanders in 1818, after a servitude under the Colonel of sixteen years, and being supposed to have completed the twenty-fifth year of his age. Aged horses labouring under chronic disease of the lungs are very apt to have glanders and farcy break out and put an end to their days: indeed in such subjects it almost appears as one of the ordinary modes of terminating life.

The following statistic of a French cavalry regiment, which we glean from D'Arboval*, is instructive on this head. Out of 134 horses dead from glanders, only five had not attained their fifth year; sixteen being between the ages of five and six, thirty-one between those of six and seven, twenty-seven between seven and

* DICTIONNAIRE VETERINAIRE; under article "*Morve.*"

eight, the same number between eight and nine, eighteen between nine and ten, and seven only after the age of ten : making, however, altogether but 131 instead of 134. Of 1634 remount horses, most of them five-year-olds, received by another French regiment in the course of eleven years, 396 were lost from glanders, viz., six three-year-olds, forty-five four-year-olds, ninety-eight five-year-olds, ninety-seven six-year-olds, ninety-nine seven-year-olds, and fifty-one eight-year-olds. In a third French regiment, the total number of glandered horses during a period of nine years amounted to 167, of which the ages of 111 varied from five to nine years.

These statements tend to confirm the deduction I ventured to draw from my own comparatively limited experience, that glanders was especially a disease of the adult and middle ages; at the same time they appear to put us in possession of another important fact, which is, that the mortality from glanders in the French cavalry is much greater, in proportion to the numbers, than it is in our own. Of British cavalry regiments serving in England, Scotland, and Ireland, whose combined strength may be, in round numbers, computed to be 5500 horses, I am informed by the Principal Veterinary Surgeon, Mr. Cherry, there have been thirty-two horses destroyed for glanders, and fifteen for farcy, in two years and a half. In my own regiment, as I said on a former occasion, glanders has shewn itself but once during the seventeen years I have served, and that happened under peculiar incidental circumstances.

In respect to Climate and Soil, it would appear that glanders is a rare disease in cold and one absolutely unknown in hot climates, in Arabia and Africa, to which, I believe, we may add India; my cousin, Mr. Charles Percivall, having informed me that, during his eight years' residence in Bengal, while serving in the 11th Light Dragoons, quartered at Meerut and Cawnpoore, he had not seen a single case either of farcy or glanders. M. Saunier, veterinary surgeon to the King of Portugal, assured Dupuy that no case of glanders had occurred, to his knowledge, during the thirty years he had been living at Lisbon. This was prior to the occupation of that country by British troops. At the time of the Peninsular campaign everybody in our army knew that both farcy and glanders prevailed to a great extent, and particularly among

the mules that were in our employ as bat animals. To what such dread changes were owing—why a country at one time said to be free from any such disease should, some years afterwards, become, as it were, the very focus of contamination—is a fact which, if I mistake not, may prove of some importance to us in the investigation we are about to make into the *exciting* causes of glanders.

WET AND COLD are at all times prejudicial to horses' constitutions, and especially to those either very young or very old; and though the better their feed the less they are likely to suffer under such exposure, yet will these agents predispose and be very apt to lay the foundation for pulmonary, mesenteric, and glandular disease, which, in the end, will produce farcy and glanders.

Before we proceed to the consideration of the second class of causes, viz.

THE EXCITING CAUSES, it will be well for us to inform ourselves of the opinions of such veterinary writers, foreign as well as British, as appear to have paid much attention to the subject, and particularly to that all-important branch of it, *contagion;* a branch which, at one period of time, has had supporters on all sides, while at another it has been left almost without any. These I shall arrange in the order of the date of their respective works.

SOLLEYSELL, 1669, pronounced glanders to be "the most contagious distemper to which horses are obnoxious; for not only," says he, "does it communicate its venom at a small distance, but it *infects the very air*, and seizes on all horses that are under the same roof with him that languishes from it."—"There are (however) *several kinds* of glanders, *some of which are not so extremely infectious* as others; though there are none that ought not to be suspected*."

DE SAUNIER, 1734, regards glanders as highly contagious; and commands that the mangers, racks, &c. of glandered stables be destroyed. He thinks there are forms in which the disease is communicable even at a considerable distance†.

LAFOSSE, *senior*, 1749, is said to have been a non-contagionist;

* The Compleat Horseman: Hope's Translation, second edition, 1717.

† Parfaite Connoissance des Chevaux.

and, so far as making out seven kinds of glanders and admitting but one out of the seven to be contagious, he certainly was so. This one contagious species of his, it must, however, be remembered, was *farcy-glanders*; the very species we of the present day call true or confirmed glanders; and so, according to these views, Lafosse did not deny the contagiousness of glanders, although he held the opinion that the disease rarely arose out of such a cause.

BOURGELAT, 1765, the founder of the French Veterinary School at Lyons, evidently entertained notions opposite to those of Lafosse. He thought that horses exposed to contagion did not at all times take the disease. His words are, "according to the acridity of the virus of glanders, as well as according to the greater or less disposition of the sound horses to take it, will be its contagious effects; and sometimes no such consequences will follow." This opinion, remarks Gohier, from whom this account is taken, is conformable to the observation of the present day*.

GUERINIERE, 1769, concurs in belief with Solleysell, that glanders may readily be propagated within stables through the medium of the atmosphere†.

GARSAULT, 1770, is of opinion that the malady will be caught by licking the discharges from a glandered horse‡.

DUTZ, 1773, a Dutch veterinary writer, published some observations leading to the inference that the contagiousness of glanders was matter of doubt*.

LAFOSSE, *junior*, 1775, was an affectionate copyist of his father§.

VITET, 1783.—"Should a sound horse be made to live with one virulently glandered, he would soon take the disease. In mules the disease makes great ravages, and is readily communicable. It is more contagious in summer and in hot stables than in winter or out-of-door situations. Some farriers think a horse cannot take the

* L'Abbé Rozier's "Dictionnaire d'Agriculture Pratique."

† Ecole de Cavalrie, contenant la Connoissance, l'Instruction, et la Conservation du Cheval, 1769.

‡ Le Nouveau Parfait Maréchal, 1770.

§ Dictionnaire Raisonné d'Hippiatrique, &c. 1775.

disease without mediate or immediate contact; others maintain a contrary opinion, saying they have witnessed foals glandered who have never been near an infected horse. In such a case, might not the farrier or groom convey the disease? It is sufficient for its transmission that a man or a dog touches the glandered subject. Even the air may, within a certain distance, prove the medium of contagion. There is, however, reason to believe, from an infinity of experience, that the poison of glanders is not communicable save through its coming into immediate contact with the membrane lining the bronchial tubes, through air charged with the glanderous molecules, or through eating or drinking. Introduce glandered matter into a wound in the skin of a horse in good health, and he will not turn glandered*."

VOLPI, Veterinary Professsor at Milan, makes the bold assertion that glanders "is caused by contagion alone;" and adds that "the opinion of those who pretend that this formidable disorder is not in its commencement contagious, but may become so during its progress, is certainly erroneous. This opinion has led some young veterinarians to believe that glanders is not contagious; and I know one," continues Volpi, "who, coming to a regiment impressed with this notion, neglected to segregate glandered horses; and the consequence was, the disorder became general." "A troop horse that had a cataract, but was in other respects sound, was sent to the Veterinary School at Milan, to have an operation performed on his eye. The horse was put into a stable along with some glandered horses, the disease not being, by the operating surgeon, believed to be contagious. After the result of the operation was known, the horse was returned to his regiment, and, in about two months from his joining, became glandered†."

WHITE, of our own country, a man who bestowed a good deal of pains on researches into the causes and nature of glanders, tells us, "Volpi is the only author he has met with who asserts that both glanders and farcy originate in contagion *only*. I have long," he continues, "held this opinion." And in another place: "It is now

* Médecine Vétérinaire, vol. ii, 1783.

† Taken from White's Treatise on Veterinary Medicine.

twenty-six years since I have been devoting a considerable share of my attention to this subject*."

PROFESSOR GOHIER, of the Royal Veterinary School at Lyons, in 1813, from some experiments he instituted with a view of ascertaining in what different ways glanders could be communicated, received the following results:—

"Firstly: that of two horses, a mare, and three asses, upon whose pituitary membranes glandered matter had been smeared or injected, in the three asses glanders appeared from the sixth to the ninth day; and that one died on the tenth, one on the eleventh, and the other on the fifteenth day; that one of the two horses had tumefied submaxillary glands on the fifth day, and chancres on the thirteenth, but without discharge; and that the other had swollen glands on the fourth day, which, by the eighteenth, had been followed by confirmed glanders: lastly, that the mare had swollen glands on the fourth day, and, on the ninth, chancres; and that both remained stationary until the twenty-ninth, the day on which she was destroyed.

"Secondly: that of two horses, two mares, and two asses, placed in communication with animals confirmedly glandered, both horses escaped contamination, although one had been there a month, the other two months; but of the two mares, one shewed symptoms of glanders on the tenth day, the other on the twelfth day; the disease making progress in the one, tardy in the other. Of the two asses, one became glandered on the eighteenth day, and perished on the forty-first; the other remained a month in the stable with the glandered horses without manifesting any sign whatever of having caught the disease.

"Thirdly: that of two horses, a mule, one male and two female asses, on whom were put halters and clothing taken off glandered horses, and who wore them from six to fourteen days, one of the two asses presented on the fourth day well-marked symptoms of glanders, of which it died on the sixth, but that the five other animals escaped contamination.

"Fourthly: that of two horses, a mare, a mule, and an ass, upon

* A Treatise on Veterinary Medicine, seventh edition.

the borders of whose nostrils, and upon the sides of the necks, the virus of glanders had been inserted, almost all had, where punctures had been made around their noses, spreading ulcerations, preceded by a good deal of tumefaction of the parts, and accompanied by some swelling of the submaxillary lymphatic glands.

"Fifthly: that a mule, three asses, and an ass foal, into whose submaxillary intervals wounds were made, in which were insinuated, and by suture maintained, lymphatic glands, excised from the same parts in glandered horses, not one of them experienced any symptom of glanders; but the young ass died on the sixth day, from a large submaxillary ulceration, and consequent tumefaction of the parts about the throat, which ended in every symptom of suffocation.

"Sixthly: that of two horses, a mare, a mule, and two asses, into the jugular veins of each of which he injected from a kilogram and a half to three kilograms of blood, drawn from either the jugulars or carotids of glandered horses, not one became affected with glanders; though they all died from the first to the fifth day after transfusion."

"One might object, that, as most of these experiments were made on aged animals, or such as were worked down in condition, or reduced from bad feeding, &c., the deductions from them were not equally valid with what they would have been, had the subjects been young, and in the enjoyment of their full strength. There is some foundation, no doubt, for such objections; but for such experiments we had no other subjects than such as were purchased by the pupils for dissection; and out of them I made choice of those in best condition, and such as were free from any malady. And further, all such as were selected were, while under experiment, well fed, it being an object to prolong their life to the period desired.

"Neither colour nor sex appeared to have any influence in these experiments. And in all the subjects that became glandered, the discharge has been nearly the same from both nostrils, with this difference, that it almost always appeared, as well as the tumefaction of the glands and the chancres, somewhat earlier on the left than on the right side of the head.

"THE PRECEDING EXPERIMENTS leave the contagion of glanders no longer a matter of doubt. By contagious matter applied to the nasal membrane, it is proved to be communicable, and more readily to asses than to horses. In other ways, however, such as through cohabitation, the employment of articles or utensils used by glandered animals, or the introduction of glandered matter into wounds made in other parts of the body, the disease is by no means so readily communicable; and as for the transplantation of diseased lymphatic glands and transfusion, the disease does not appear to be producible at all in either of such ways; although, in regard to the latter, some veterinarians have maintained the contrary*."

FROMAGE DEFEUGRE, 1815, the presumed author of "Morve," in Rozier's "Dictionnaire d'Agriculture†," &c. tells us that he, at one time, "fell into the popular opinion of glanders being a contagious disease, and even went so far as to prescribe means for its prevention: at the present time, however," continues this author, "from a multitude of observations I have made personally, I believe that *glanders is not contagious*. It originates in one horse, as in a great number, from individual predisposition, from aliments, from work, from habitation. I have seen the disease attack a number of horses on a sudden from having fed on damaged hay;" "or having eaten ship corn that has speared, and had afterwards lime mixed with it, to make it appear dry."—"Horses that dealers call *rotten* will also have it;" and "certain waters will produce it;"—"heating aliments, over-work in posting and coaching establishments;"—"catching cold from standing while over-heated;"—"immersion in cold water, rivers, &c."—"Sometimes the disease appears as the sequel of neglected catarrh, strangles, quittor, canker, mange, water-farcy treated by repercussives. The disease has

* Memoires et Observations sur la Chirurgie et la Médecine Vétérinaires, par J. B. Gohier, Professeur d'Operations et de Maladies à l'Ecole Imperiale Vétérinaire de Lyon, tom. iii, 1813.

† The article "Morve" has the signature (F) affixed to it in the Dictionary; and from Fromage Defeugré being the only one among the authors given in the title-page whose name begins with F, we take him to be the writer of the article in question.

been known to break out in stables through or near which common sewers or infected streams of water have run."—"Marasmus is sometimes the precursor of glanders: it may also arise from wounds penetrating the nasal bones, or frontal, zigomatic, or maxillary sinuses; from carious molar teeth: though, in this case, it entirely depends upon local lesion."

DUPUY, 1817, states in one of his corollaries, "That almost all veterinarians have adopted the idea of contagion; though some few have advanced an opposite opinion." And in the one following: "that I (Dupuy) know of no well-conducted experiments in favour of contagion; whereas there are some against it*."

COLEMAN, who barely admitted the contagiousness of glanders, will best have his opinions on the subject set forth, in his own happy way of expressing them, by the following extract from his Lectures†.

"The disease has been long known to be contagious, to be communicable through the medium of contaminated stables, and by inoculation; hence it has been concluded that it had no other origin but contagion. Most physiologists, indeed, have supposed that contagious diseases could not arise from any other cause; and there are certainly some animal poisons whose operation appears to favour this hypothesis; but, in prosecuting our investigations, it would seem that every such poison is governed in its operation by certain laws peculiar to itself: as different medicines produce different effects, so the different poisons of contagious diseases appear to possess peculiar properties, though the diseases themselves all in common admit of propagation by contagion. There are several diseases affecting the human subject, that, according to general opinion, can only be generated by contagion; such are syphilis, small-pox, measles, and hooping-cough. When a person has contracted any one of these diseases, it is said that he has been in the vicinity of contagion or infection; and it may be impossible to prove, beyond all suspicion, the contrary; but, what was it that *first* bred these disorders? Not contagion; but *a combination of certain causes;* and, being once engendered, they became contagious. We have examples of this in jail and ship

* De l'Affection Tuberculeuse, vulgairement appelée *Morve*, &c. &c. 1817.

† Published in the third volume of my "*Lectures on the Veterinary Art.*"

fevers, and in dysentery: these, once generated, become contagious; notwithstanding no such cause could possibly give them origin. Itch, the Professor believes, is often produced in the absence of contagion: it is bred in personal uncleanliness. Why, then, may not hooping-cough, small-pox, &c. arise spontaneously, *i. e.* from the same causes which originally produced them? Those who are most conversant in the habits and diseases of horses now know, that glanders, although demonstrably contagious, much more frequently arises from other causes: it is a disease that rarely or never spreads among horses at pasture, though a glandered subject may have been grazing among them; for we learn from experiment, that, although the disease is communicable by contact, the poisonous matter must be applied to a part bare of hair, and that, even then, the chances are in favour of the animal escaping infection unless the part have previously been, or happen to be in the act, abraded."

"There are two casual experimental results by which practitioners, in investigating this subject, have suffered their judgment to be misled, and thence have come to erroneous conclusions. The one is, that, because a horse has been subjected without effect to inoculation, *ergo*, the animal from whom the matter of infection was taken cannot be glandered; the other, that, because the former became glandered, *ergo*, the latter must of necessity have the disease. Two circumstances are absolutely and indispensably necessary for the production of a disease by contagion;—the application of the poison, and the susceptibility of the animal or part to which it is applied. You may inoculate without success from insusceptibility of the inoculated subject, on the same principle that you may administer the same doses of aloes to two horses, and effect violent purgation in one, but make no impression upon the other. It is by no means uncommon to see persons inoculated for cow-pox and small-pox without effect: the explanation of which is, that they are not susceptible of that degree of poisonous excitation at that particular period. Again, it has been argued that a disease could not be glanders from which a horse recovered, even though it shewed every characteristic outward sign of glanders. But the very groundwork of this position is untenable: the Professor has

seen (and so have I) several cases of spontaneous cure from chronic glanders; and evidence may be brought forward of recovery even from acute glanders combined with farcy."

"So far from contagion being the ordinary cause of glanders, the Professor estimates that *not one horse in a thousand, or even in ten thousand, so receives the disease.* The poison of glanders is bred and diffused in an atmosphere rendered impure by repeated respiration, and by gaseous impregnations from the dung, urine, and perspiration, emitted in hot and foul stables. No vital being, neither animal nor vegetable, can maintain life in the total absence of pure air; and, according as an animal is from nature habituated to purity, so, generally speaking, it would seem that he suffers from atmospherical contamination. There are several sorts of vegetables that cannot be grown (at least to perfection) in the vicinity of London, in consequence, we believe, of the impurities continually floating in the atmosphere; whereas, there are animals, such as rats and mice, and we may add bots, who enjoy health in the most confined and noisome situations. Man can withstand a contaminated or poisonous atmosphere, it would appear, from his habits, much better than the horse: we join house to house, form villages, towns, and large cities; and we live thus crowded together with seeming innocuousness: still, to obtain specimens of well-grown forms and robust health, we must go into the country and select them from among the husbandmen; for in large and populous towns instances are always presenting themselves of rickets, scrofula, consumption, &c. &c."

"The horse is an animal destined by nature to breathe an atmosphere of the purest kind; in proof of the salubrity of which to him, suffer him to remain in his native fields, and he will live long and ail nothing. But, bring him once into a state of domesticity, place him in a confined situation, in which he is compelled to breathe air that has been already respired, not only by himself but perhaps by other horses also, air impregnated with the exhalations from the urine, dung, and perspiration, and you sacrifice him a victim to malignant and fatal maladies. And none of our domestic animals, no more than horses, can tolerate this with impunity. If poultry are kept in a confined place, they breed what is called the

ip, which proves a very destructive disease among them. Hogs, under similar circumstances, engender the *husk*, a species of pulmonary phthisis. Even plants, unless they are occasionally supplied with fresh and pure air, will wither away and die in our greenhouses. These morbid consequences arise not from any deficiency in the vital or oxygenous part of the air; for, it is found by experiment, that there is proportionably as much oxygen in the atmosphere of the closest alley in London as in that which encompasses the hills of Highgate. No! these deleterious effects are ascribable solely to the animal poisons contained in the atmosphere, which are not only inhaled with the breath, but probably taken in with the food also; be that as it may, however, through one or both of these channels the poison becomes absorbed into the system, corrupts the whole circulating mass, and breaks out in local forms in various susceptible parts of the body. Therefore it is, that, in the degree in which a stable is foul and heated, from want of ventilation, we find its inhabitants the subjects of glanders, farcy, phthalmia, &c. We seldom receive these cases from gentlemen's stables, because in general they are well-constructed, and kept clean, and do not contain many horses; but in collieries, breweries, post-houses, coach establishments, &c., where the stables are filthy from the dung and urine which stagnate in cavities in the pavement, for want of proper sewers to carry them off, and where the men are suffered to add to the mischief by plugging up every air-crevice they can find, we are continually witnessing the ravages of these very formidable diseases. Farmers' stables, though no better or even worse in their construction, do not appear to turn out so many glandered subjects; a fact that admits of reconciliation with what has been advanced, from the circumstance of their stables being in general very capacious, and many of them in too ruinous a state to admit of exclusion of the external air. The Professor was first led to adopt this notion of the spontaneous origin of glanders and farcy from an occurrence in our cavalry service which came to his knowledge. Many years ago (I believe about 1796) there was an extensive encampment on Dover heights, from which the horses could not be removed until the autumnal season was far advanced, in consequence of the stables intended for their reception

not being in a state of readiness. Now, these stables were newly erected ones, notwithstanding which, great numbers of the horses, though previously in perfect health, soon after entering them, became diseased: the greater proportion contracted grease, but several were attacked with glanders and farcy. He has since also received peculiarly satisfactory evidence of this in two memorable instances, in which stables that were hot and foul, and had from time to time turned out several glandered horses, were rendered equally salubrious with others adjoining them by proper ventilation and attention to cleanliness."

"By this time we shall have received some striking illustrations of what was advanced in the outset, that every animal poison is regulated in its operation by its own peculiar laws: were it not, most wisely, so ordained, the whole animal creation must long before now have been exterminated. *If man had been susceptible of contracting diseases from horses, oxen, hogs, sheep, dogs, &c.*, and these animals, in their turn, could have taken human disorders, all must have lived only to act their dreadful parts in the work of universal devastation."

"We now come to the relation of that celebrated experiment of the Professor's, by which not only the contagious, but the constitutional nature of glanders is proved beyond all doubt and idle speculation—that experiment which goes to disprove the assumption of Mr. Hunter, that *the blood itself was never diseased.* Of a horse affected with acute glanders the Professor laid bare the carotid artery and jugular of the same side, and around each vessel placed a ligature. A pipe furnished with a stop-cock was then inserted and fastened into the artery, which was made to communicate through the medium of an elastic tube—an *ureter*, I believe—with another pipe introduced into the jugular vein of an ass; this animal having been previously bled until he had fallen from exhaustion. In this manner blood was conveyed from the artery of the horse into the vein of the ass until the latter evinced signs of perfect resuscitation. A circumstance occurred, however, in the revival of the ass, which, though it did not affect the issue of the experiment, may serve as a warning to future experimentalists; and that was, that in consequence, as it was thought, of

transfusing more blood than was requisite, the ass appeared puffed out or swollen in every part of its body: the tumefaction was, however, relieved in four or five days, in the course of which time *the animal became glandered in a most virulent degree;* and to prove that his disease really was *glanders*, other asses were inoculated from this one, and they all, without a single exception, shared the same fate. The blood lost by the horse was not sufficient to deprive him of vitality*."

SMITH, 1818, as a non-contagionist, stands in the same rank with Dupuy and Coleman. "Having been taught," he says, "at a very early period of life, to believe that glanders is a disease highly infectious, and holding my preceptor (this could not be Coleman) in great estimation, I received his opinions on the subject with implicit confidence." Farther, Mr. Smith states in his preface, that, in offering the result of his experience, he has "no wish to allure any into fatal security, by inducing them to permit the diseased subject to remain with one that is perfectly free from it."—The "causes of glanders" Mr. Smith enumerates to be,—I. GENERAL DEBILITY.—II. A PREVIOUS DISEASE.—III. BREATHING AN IMPURE AIR.—IV. EXPOSURE TO A CURRENT OF COLD AIR, OR BEING PERMITTED TO DRINK COLD WATER WHEN HOT.—V. A SUDDEN TRANSITION FROM COLD TO HEAT, and VICE VERSA.—VI. INFECTION. The first three of these Mr. Smith regards as PREDISPOSING CAUSES; the latter three being EXCITING CAUSES. "General debility may be considered as the forerunner of every disease, the system being thereby rendered more susceptible to morbid impressions." "Glanders is frequently produced by a variety of other diseases."—"I have seen the mucous membrane ulcerated, the bone carious, and all the characteristic symptoms of glanders produced by the cut of a sabre. I have also seen one case in which glanders was produced from

* "No proofs can be more conclusive than those which the Professor (Coleman) adduces of the contagious poison in question affecting the mass of blood, and producing ill effects through this medium, viz. the production of the disease in one animal by the inoculation with the matter of secretion, and in another by tranfusion into its veins of the fluid from which such secretion is formed."—*Travers' Inquiry concerning Constitutional Irritation.*

the effects of a severe fall, by which the frontal sinuses were perforated. In another, the os frontis laid entirely bare, and the concussion so violent as to excite a copious discharge of mucus and pus from the nostrils: and in another, the same symptoms produced by a blow on the superior part of the nasal bones." In stables ill-ventilated, wherein "a great number of horses stand together, especially in barrack-stables"—"the same air is re-inspired *until it becomes a putrid vapour*, totally unfit for supporting health; and though it is not so entirely divested of vital air as to occasion immediate death, yet, *being in part deficient of this essential principle*, the functions of the secreting organs soon become imperfect: hence succeed languor and debility, the usual precursors of every disease; and, if the cause be not removed, farcy, glanders, atrophy, and death, inevitably follow." Of the *exciting* causes, "exposure to cold when hot may be considered" one; and this combined with the predisposition induced by "the heat and impurity of the stables"—"perhaps more frequently produce not glanders only, but every other disease that prevails amongst horses in the army." In respect to "change of temperature"—"I have always," says Mr. Smith, "found glanders to prevail during a campaign;"—"and I have always found," he adds, "that when the greatest heat prevailed in the course of the day, the nights cool, and the fogs more copious and heavy, that diseases amongst the horses were also most prevalent."—Of "infection," Mr. Smith says, "as only two cases of inoculation with the matter of glanders performed on the horse have fallen under my observation, in neither of which was the disease produced, I do not state this on personal knowledge, but merely suppose it probable, from common report. *I grant that the disease may be propagated by inoculation, and,* of course, *admit that a glandered horse may communicate the disease to another, when they stand together: but, as I have never seen one case of glanders that could, with any degree of certainty, be traced to infection as its origin,* while, on the contrary, the real cause was generally easily discovered, if not self-evident, it has long appeared to me, that, *where one case of glanders proceeds from infection, ninety-nine are produced by the causes just enumerated.*" "This will be more manifest, if we consider that *glanders is a*

local disease, and cannot be communicated by effluvia, but that *its propagation must be accomplished by the absorption of its virus.* It is very well known that the cow-pox is transferred from one animal to another by inoculation, yet it is universally allowed not to be infectious*. The lues venerea is also conveyed from one person to another by the absorption of its virus; but there is no instance where it has given the infection by a vapour†. And the reason assigned for this is, that it is considered as a local disease, affecting particular parts."—"Now there is no disease incident to an animal that is more local and specific than chronic glanders. I have seen an instance where the surface occupied by the disease could have been covered by the end of the thumb; and in many others, the whole circumference of the diseased surface did not exceed three inches. From this circumstance, and the numerous instances I have seen of horses that have stood with those really glandered escaping the disease, and of others being affected with it where no infection could possibly be traced, I am decidedly of opinion *the disease cannot be communicated by effluvia;* but that, in order to propagate it, it is necessary that the matter discharged from the nostrils be applied to the action of the absorbents in its most recent state, for which purpose a perforation must be previously made through the skin; and in this way most of the animal poisons, the vaccine virus, the poison of the viper, the saliva of the dog, &c., are introduced into the system; that is, either with the point of the lancet, the teeth of the animal, accidental wounds, or excoriation. If the mucus issuing from the nostrils of the horse be so infectious as it is generally supposed, how is it that those animals which have access to the places where they stand, and in which they are frequently confined, escape the disease?—especially dogs, who also feed on such horses immediately after death, when the noxious influence of the matter retained in the nostrils must be greater than after it has remained for years in a stable. It is very well known, that horses are affected with hydrophobia when bitten by a mad dog. It is reasonable, therefore, to suppose that, if glanders were equally contagious, the disease would be equally

* Edinburgh Review.

† Hunter on the Venereal Disease.

reciprocal. It is a fact well known, that the cow-pox is transferred to the milkers from having wounds or excoriations in their hands; and *I have frequently had my hands scratched by the diseased bones in dissecting the heads of glandered horses, and covered with matter, but never found the least inflammation excited, or any other ill effects produced; and I have often applied it to dogs with the same result.*" Mr. Smith argues "the improbability of one horse infecting another," from the hair with which the animal is "completely covered;" it being known that rabid saliva is wiped off the teeth by a woollen garment so as to prevent infection, and, moreover, that the matter of glanders becomes soon dry and as hard as glue. "And if there is so little probability of *this poison* being conveyed into the system in the most fluid state, how can it be communicated to it after having remained on the surface of a rack, in the crevice of a manger, or in a hole in the wall, for months or years, as is commonly reported? This appears equally absurd and incredible as it is for one horse to communicate the disease to another when fifteen or twenty miles apart."—"But, it may be objected, that, although the mucus has become dry and solid, may not the breath and saliva of the animal render it again fluid, that it may be taken up by the absorbents?" But, if this were the case, "*the lips, and not the nostrils, would always be the first part affected,*"—"which very rarely happens." And although the nasal membrane is so much exposed, yet has it "*greater power of resisting the action of any morbid poison,*" from its being "*a secreting surface;*" "therefore the ulceration observed in the membrane in this disease *does not appear to be produced by the absorption of a poison.*"—"I have in a variety of instances seen one horse lick the nostrils of another that was glandered clean with his tongue, but never saw ulcers produced by it, either on the lips or the tongue."—"I have known horses of a brigade of cavalry *perfectly free from the disease for a long time prior to their taking the field, yet before they had been encamped two months some of them became glandered,* although they stood on ground where no horses had been for many months, perhaps years, before." From whence did the disease proceed? Was it contagion? 'Most certainly,' say its advocates." "When at Longford, I was informed by General —— of some French authors having asserted

that, when the Duke of Marlborough took Lisle from the French, the glanders broke out there among the horses with such virulence that the stables were obliged to be shut up; that they remained so for thirty years; but, from the circumstance of another war, they were again opened, and then, from the infection having—as they affirm—remained in the stables all that time, the horses that were put into them became immediately glandered." Mr. Smith laughs at the idea of ascribing this to contagion—the matter of which, "had it been *brass* instead of mucus or pus, must have been reduced to ashes long before the expiration of this period"—but assigns the true cause to be "*the want of the vivifying principle*" —oxygen; whence alone, in his opinion, "sprung all the diseases which those writers asserted to be the effect of contagion."— "When the regiment—the Second Dragoon Guards—returned from the continent in 1795, in consequence of contrary winds, the horses were kept on board ship upwards of seven weeks, during which time many of them became glandered, and others died without any symptom of this disease. Now, as one of the ships in which the disease prevailed had never been in the transport service before, and consequently these were the first horses that had ever been in her hold, whence did the disease proceed? Could it have arisen from the bottom of the North Sea? in the month of December?"—"It was the depth of the hold in some of them, the obstruction of the air by the forage, &c., the removing of the wind-sails, and the covering up of the hatchways, that indubitably rendered the ships so extremely injurious and fatal to the horses, and produced effects similar, in some degree, to those too frequently experienced in mines and other subterraneous situations." Another striking illustration is afforded by the following narrative:—

"A stable at Longford, containing forty-two troop horses, was so constructed that the air could find ingress only by the doors and windows at the two ends. "This did not, however, admit a sufficiency to support such a number of horses in health: both glanders and farcy consequently prevailed amongst them. That the disease was positively occasioned by *the absence of pure air*, the following circumstance will fully prove:—The first troop of the regiment that occupied this stable entered on the 19th March, 1804, and continued in it until the 23d July, during which period some of its best horses became glan-

dered; but no sooner had this troop left the stable than the disease disappeared from among them; but still continued its ravages in the troop that succeeded it until the 18th January, 1805, when the glass windows fixed above the doors were taken down, and lower ones put up in their stead; and four large tubes, two on each side, were at the same time introduced into the wall, which tubes ascended obliquely through the roofs of the shed-stables. Six points of communication with the atmosphere being thus opened, the cause of the disease was removed; and though the same troop continued to occupy the stable until the 29th of July following, its baneful influence never re-appeared."

"The foregoing statement," concludes Mr. Smith, "requires no comment." "The disease not accompanying the first troop when it left the stable, and its progress being arrested in the second troop, by removing, through the means of ventilation, the cause which produced it, added to the circumstance of its never appearing again during the time the troop continued there, are facts which every one will be able fully to appreciate*."

RODET, 1830, Professor at the Royal Veterinary School at Toulouse, and formerly Veterinarian in Chief to the Hussars of the Royal Guard, in reference to the regiments of which he has had the veterinary superintendance, alleges the general predisposing causes of glanders to be, the fatigue, the privations, the excesses, the sudden and frequent changes experienced by military horses in campaigns." "In regard to remount (young) horses, the principal predisposing causes are, a strong predisposition to diseases of the lymphatic system, having its source or origin in a temperament eminently lymphatic, as is observable in horses with short heads, slender necks, flat sides, narrow chests, and contracted shoulders;"—"castration practised without proper precautions, at a time of difficult dentition, or while they are spreading in growth; lastly, and especially, at the period they are experiencing sudden changes of living, in food and grooming, country, regimen," &c. "Last of all, forage of bad quality." "Contagion can but rarely be regarded as the cause of glanders in the army, since every precaution is taken to guard against it. It cannot be considered either as a proximate, or as the most frequent or the most ordinary cause,

* The Horse-Owner's Guide, 1818.

as persons without any knowledge of such matters are apt to believe*."

YOUATT, 1832:—"The main cause,"—"the grand cause of glanders is CONTAGION."—"I advisedly call it 'the grand cause,' for I believe I shall be able to render it probable that glanders arise oftener from contagion than from any other source†."

VINES, 1833, in section 3 of chapter V of his work‡, treating of "The Infectious or Contagious Nature of Glanders and Farcy," remarks, in a note explanatory of the meaning and application of the words *infection* and *contagion*, "as we have never seen a case, and are unacquainted with an instance where glanders or farcy was produced by inhaling the breath or effluvia of the body of another animal, *but only by actual contact of matter*, we shall, like Smith and Dupuy, use the terms synonymously." (P. 157.)—"Mr. Coleman," says Mr. Vines, "attributes the infection or contagion to a *specific poison in the blood;* and he also asserts that a similar poison exists in those animals where glanders or farcy is generated; that it is formed in the atmosphere of stables by the secretions and excretions of the animal, and that it is *a compo of dung, urine, breath, and perspiration.* But, in my opinion, any impure air which may be thus formed, *only tends to render the system debilitated and unhealthy;* and that from this cause, as well as from a variety of others, *the blood and fluids which are formed are rendered vitiated or unnatural, and of an infectious or contagious character*, and capable of producing general derangement or disease, if introduced into the system of some other animals, especially the ass, *which is almost naturally predisposed to the disease from bad feeding, and the weak texture of its skin.* Thus far only, then, do I consider the discharge in glanders and farcy infectious, and *not in consequence of an independent poison in the blood.*" (P. 157, 158).—"If it is contended that, by inoculating with the matter of glanders and farcy, the proper symptoms are produced, and that the fact is then proved, and that a specific poison thus existed, and that *this poison*,

* Recherches sur la Nature et les Causes de la Morve, 1830.

† Mr. Youatt's Veterinary Lectures, in THE VETERINARIAN for 1832.

‡ A Practical Treatise on the most important Diseases incidental to Horses, more particularly Glanders and Farcy. 1833.

like other poisons, is governed by laws peculiar to itself, and that this is still further proved by introducing blood from a glandered horse into the veins of a healthy ass, and similar symptoms produced, I am prepared to prove *that* UNHEALTHY BLOOD *taken from an animal* NOT GLANDERED *will produce similar effects as blood taken from a glandered horse.* In the course of my experiments *I have produced glanders and farcy with a considerable tuberculous disease of the lungs,* and water in the chest, that ended in death, in the course of ten days, *by introducing half a pint of blood, taken from a rabid dog, into the jugular vein of a five-year-old healthy ass ;* and similar effects will likewise follow the introduction of any irritating fluid into the circulation—as a solution of copper." (P. 160.) This clearly shews that it is the particular irritation to which the system of some animals is so susceptible (no matter from what cause) that produces the diseased symptoms, and that it is not the effect of a *specific* or particular *poison* contained in the blood." (P. 161.) Mr. Vines adds, he has seen "glanders, and even death, produced by inoculating an ass with matter taken from an *unhealthy* animal labouring under virulent grease." (P. 161). "Many of our present practitioners believe that glanders cannot be communicated from one animal to another through the medium of the breath or exhalations of the body, but that it requires the actual contact of glandered or farcied matter to produce an effect. In these views, then, I perfectly coincide, *never having seen a single case which could be fairly attributed to infection,* through any inhalation from another horse." (P. 166.)—"I find that the contagiousness, by which I mean *the actual contact of matter,* both of glanders and farcy, admits of various modifications: for instance, *in those animals where the system is in the most* UNHEALTHY STATE *the discharges or matter will be of the most contagious character,* and so on the reverse." (P. 166.) "Strong, healthy, well-fed horses are by far the least susceptible of inoculation by morbid matter; while, on the contrary, those animals which are but badly fed, and out of condition, especially asses—whose systems are always weak—are the most susceptible and liable to become affected, and generally die about eight or ten days after inoculation." (P. 166.) Mr. Monk, a well-known horse slaughterer

n Whitechapel, informed Mr. Vines, "that for sixteen years he has kept a horse in a stable generally containing a number of glandered and farcied horses, but this horse has never been affected." (P. 168.)

DELWART, 1837, veterinaire de première classe, Professor at the Veterinary School at Cureghem-lez-Bruxelles, and formerly of the Royal Veterinary School at Alfort, after making mention of other causes, says, "but so many facts militate in favour of contagion, that it is impossible to call it into question. So long as observation and experience are wanting to convince us to the contrary, we shall continue to regard glanders as capable of transmission from one individual to another; and we shall recommend our *élèves*, and all persons charged with the care of animals, to separate with scrupulous precaution any such as may shew the slightest signs of glanders*."

HURTREL D'ARBOVAL, 1838: "The majority of the French veterinarians of the present day, if they do not entirely deny the contagiousness of glanders, have come to think that it is a more rare occurrence, and one attended with more difficulty than it was formerly. Many have come to the conclusion that glanders is contagious only in the acute form, and this, at the time we are writing, is the opinion most commonly entertained." . . . "For our own part, however," says D'Arboval in winding up this paragraph on contagion, "we can conceive a disease to be more contagious at one period than another, but not in any distinct form. Either a disease must be contagious in all its forms or varieties, or in none of them; or the so-called forms are no longer the same disease†."

LEBLANC, 1839, a veterinarian of repute in France, and in England too, from his literary works, comes to the conclusion, after an examination into the different kinds of glanders and farcy, that "*in all their forms* they are contagious, though in different degrees‡."

BLAINE, 1841: "Both glanders and farcy originate in contagion;

* Pathologie Speciale, ou Description des Principaux Animaux Domestiques.
† Dictionnaire de Médécine, de Chirurgie, et de Hygène Vétérinaires, 1838.
‡ Des diverses Especes de Morve et de Farcin, 1839.

and *infection*, in its strict sense, is the cause of acute glanders at least*."

THE EXCITING CAUSES of glanders, many and various though they be, admit of distribution into five classes:—

THE FIRST CLASS comprises such as come under the head of *contagion*.

THE SECOND CLASS includes those causes that come under the denomination of *infection*: the principal—perhaps the only one—being the *miasm of the stable*.

THE THIRD CLASS comprehends all such causes of a common kind as, acting on the animal's constitution in an ordinary or healthy condition, produce ordinary effects, but which *operating against morbid or vitiated states of body*, produce malignant disease, such as glanders, farcy, &c.

THE FOURTH CLASS is devoted to the consideration of causes, still of an ordinary nature, but which in consequence of their operation being *intensely severe or subitaneous*, have been *said* to be followed by glanders and farcy.

THE FIFTH CLASS embraces those diseases—of *the air-passages and lungs* especially—of which glanders and farcy is known under certain states and circumstances to be the occasional sequel.

CONTAGION.

I have placed *contagion* in the first or highest class of causes, not because I regard it either as the most frequent or the most important of causations; but because I think the early consideration of it may cast a light on some of the other causes to be afterwards inquired into, in particular on those included under the head of the *miasm of the stable*.

BETWEEN INFECTION AND CONTAGION, according to the late Dr. Hooper†, "there does not appear to be any distinction made:" according to Dr. Copland‡, such distinctions as have been

* Outlines of the Veterinary Art, fifth edition, 1841.

† In his "Medical Dictionary"—Article "Contagion."

‡ In his "Dictionary of Practical Medicine"—Article "Infection."

made are without "a true difference." We learn from the latter eminent authority, that M. Dupuytren regarded *infection* as "the contamination of the air by persons confined in low, close, ill-ventilated, and dirty situations, and by vegetable and animal substances undergoing decomposition, the emanations with which the air is thereby charged acting on man as poisonous agents."—"*Contagion*, on the other hand, Dupuytren considers to be in many respects independent of atmospherical conditions, and a species of germ or virus developed in the bodies of the sick, or forming an atmosphere around them containing the principle of the malady; and through the medium of this germ, virus, or morbid principle, the malady is transmitted to the healthy."—Dr. Copland himself uses the word *infection* "in its *generic* acceptation:"—"applying it to whatever may affect, so as ultimately to *taint*, *pollute*, or *corrupt the body*." And the word *contagion*, as a form or kind of infection—"as an *infection by immediate or mediate contact*—as a *pollution by the touch*." With a desire to conform in the use of these terms, as nearly as we can, to this lucid exposition of their true or natural signification, we shall use the word *contagion* to express the transfer of glanders or farcy, through whatever means, from one horse to another; and the word *infection*, for such taint or pollution *from other causes* as still may produce the disease, the same as though it had originated from inoculation or contagion.

THE CONTAGIOUSNESS OF GLANDERS has proved a fruitful theme of disputation among veterinary writers; some contending that a glandered horse carried a poisoned atmosphere about with him wherever he went, contaminating all other horses within a certain distance of him; others as confidently assuring us that we had nothing to fear unless by actual contact, and not very much even then. All the old writers, some of the modern, are in favour of contagion: "it infects the very air," says Solleysell; "it is caused by contagion alone," says Volpi; and White, of our own country, confirming what Volpi has asserted, concludes by saying he has "long held the same opinion." The first to question this doctrine was Lafosse: out of seven species or varieties of glanders he described, but *one* he said was contagious, and that *rarely propagated its contagion*. After the Lafosses' (father and son's) days, the doc-

trine of *non-contagiousness*, or rather that of *comparatively little contagiousness*, gained so much ascendancy, that there were those who hardly scrupled to affirm, the disease could not be caught in any such manner: Dupuy "knew of no well-conducted experiments in favour of contagion:" Coleman did not believe that "one horse in a thousand, or even ten thousand! received the disease through contagion;" and Smith "has never seen one case of glanders that could be traced to infection." Most recent veterinary writers have been content to assert the contagiousness of glanders without qualifying their assertions with any such remarks as, the disease is never, or hardly ever, taken in that way, or never, or hardly ever, taken in any other way. I do not think that any veterinary surgeon of the present day absolutely *denies* the contagiousness of glanders; nevertheless, since, for my own part, I feel no hesitation in pronouncing it to be *a contagious disease*, I think it my duty in this place to give my reasons for holding such an opinion.

The admitted most direct proofs of a disease being contagious are,

First, its propagation by inoculation.

Secondly, its spreading from the diseased to the healthy, *immediately*.

Thirdly, its transmission through the medium of habitation, clothing, &c., or through the breath or air.

THE PROPAGATION OF GLANDERS BY INOCULATION is a fact so well established that it appears supererogatory to offer any examples of it. It was one of the first questions regarding glanders and farcy which the late Professor of the Veterinary College sought to set at rest; and it was, in numberless instances, proved in the affirmative, both by himself and those studying under him, in the most complete and satisfactory manner.

In later times inoculation has been practised more by way of a test of the presence or genuineness of glanders in doubtful cases than with any view of proving its communicableness; and asses, on account of their comparatively little cost, have commonly been chosen as the subjects of inoculation: the circumstance also of their being, as I before observed, more predisposed than horses to take glanders and farcy, has rendered them additionally inviting. It is

not often we hear of inoculation being practised in the horse. I performed it once myself on a healthy middle-aged horse: whether the result proved glanders or not my reader shall determine.

On the 11th of September, 1818, I inoculated a brown horse, then about seven years of age, upon the septum nasi, with matter of glanders procured from the slaughterer's at Cow Cross. On the third day there was a pimply and slightly tumid condition of the part of the membrane inoculated, accompanied by some trifling yellow albuminous issue from the nostril, and swelling of the submaxillary lymphatic gland of the same side; and on the fourth day there was evident ulceration, with augmented discharge, and that of a purulent character. On the fifth day there were to be plainly seen two large unhealthy-looking ulcers upon the inferior part of the septum nasi, and there was a mixture of pus and mucus ejected from, as well as adhering about, the external nostril; and from the enlarged submaxillary glands was proceeding along the hollow between the jaw-bones a cord of tumefied absorbents of the size of my wrist. On the eighth day the ulceration had become deep and extensive. On the eleventh, another cord of absorbents proceeded from the swollen submaxillary glands, over the side of the face, to the affected nostril; and next day suppuration had taken place in a couple of buds upon the cords of absorbents. On the fourth day after inoculation, barytes, in its pure or caustic form, was administered, a medicine in which, at that time, my father and myself placed great faith as a remedy for glanders; and the same medicine was prescribed throughout the case. From the twelfth to the twenty-ninth day no material change was noted; but, on the thirtieth day, such were the alterations for the better that hopes, which had almost been abandoned, suddenly and unexpectedly were revived, and there seemed every prospect of recovery. The ulcerations upon the septum were manifestly healing, all swelling had left the nostril, and the enlarged glands were diminishing. On the thirty-seventh day there remained but the cicatrices of the ulcers to be seen, with some slight mucous discharge. The appearances of farcy were vanishing also; the farcy-buds, or rather ulcers, healing and cicatrizing; but the enlarged gland under the throat felt soft and disposed to suppurate and ripen. By the

fiftieth day, however, all signs of disease had disappeared save some trifling remains of induration underneath the jaw.

If this was not a case of glanders and farcy, it was, at all events, a case that nobody, save through the test of inoculation, could, for the most part of its progress, have distinguished from glanders and farcy; and that it was not I can imagine many veterinarians will contend, and for two reasons;—one being, that the enlarged submaxillary gland shewed a tendency to suppurate, though, after all, it did not break; the other, that the case ended in recovery. It must be remembered, however, that other instances of alleged "cure" stand on well-authenticated record; and that, therefore, this might have been a case, like many or most of *them*, of spontaneous recovery, and consequently there was no absolute need of ascribing the horse's getting well to the barytes.

May 24th, 1820, I inoculated an ass about ten or twelve months old with matter taken from a horse of Mr. Stowe's, a farmer, at Farnborough, suspected to have (chronic) glanders. No effect followed. On the 28th I repeated the inoculation with matter taken from the frontal sinus of Lieut. Rich's horse, also suspected of having (chronic) glanders. June 6th, still no appearance of disease. I next procured some matter from an acutely glandered subject, standing for slaughter at Cow Cross, and with it repeated the inoculation for the third time, as before, scarifying the *ala nasi*, and rubbing the virus upon it. On the fourth day after this last inoculation the nostril had become swollen and tender, and had a knotty feel, evidently from lymphatic inflammation; the submaxillary gland of the same side was also swollen and tender on pressure. *On the sixth day* a foul ulcer appeared upon the inoculated part. *On the eighth* there came discharge from both nostrils; and the ass had fallen very lame in the near fore leg, seemingly from an attack (as yet concealed) of farcy. *Ninth day*, the animal commenced heaving at the flanks, and appeared altogether very ill, continually lying down, &c. Three pints of blood were drawn; this, however, was no sooner done than he became faint from its loss, and staggered, and died about five minutes afterwards. Examination of the head shewed the Schneiderian membrane, on both sides, reddened and thickened in substance, its surface studded with small white tubercles, which, in a short time, would have turned to ulcerations; likewise the nasal *meatus* were filled with sero-mucous discharges.

No question, I should imagine, can arise, that, in the case of the ass just related, glanders and farcy also were produced by inoculation. The same fact stands likewise proved in the case extracted

from the late Mr. Field's "Records*." Again, we may adduce, as confirmatory evidence—if any be wanting—

THE COMPTE-RENDU OF THE VETERINARY SCHOOL AT ALFORT for 1839-40. MM. Renault and Bouley have prosecuted their researches into the nature and symptoms of glanders, with especial direction of them to its *contagious* property, to which increasing interest has been given since the disease—in so many instances—has proved communicable to the human subject; and they have arrived at the conclusion that *acute glanders is contagious by inoculation from horse to horse.* In the animals they have inoculated, *without a single exception* the infection of glanders has made its appearance from the third to the fifth day.

Standing, however, as the fact of propagation through inoculation does upon the ground of undeniable proof, yet is it also a fact with which those in the habit of practising inoculation are likewise well acquainted, that it is by no means certain that the disease follows the application of the virus: a good deal of fastidiousness or predilection is often manifested on the part of the inoculated subject which we are unable to account for; and this has led some into the error that glanders was not at all or hardly producible in any such manner, and others into the belief that the chances of production were so small as scarcely to render such a result probable. It is evident the success of inoculation must depend upon two conditions:—The condition of the animal from which the matter is taken to communicate the disease, and the condition of the one to whom the matter is applied to receive it; and that, supposing either of these conditions fail, no result can follow. In the case of the ass but just given, it would appear that the horses from which the matter used in the two first inoculations was obtained, were, if glandered at all, but *chronically* so; whereas the matter that had the desired effect was procured from a condemned subject in the last or ripest stage of *acute* glanders. In order to insure inoculation for small-pox or for vaccination, we know surgeons to be very particular about the day on which they collect their lymph, believing, nay, knowing, it to be more efficacious or "stronger" at one period than at another, and to grow less effica-

* To be found at p. 183.

cious or "weaker" as the disease declines. Why should not something of the same kind happen in the progress of glanders or farcy? It is, indeed, asserted, and on good authority, that in the acute forms or stages these diseases are more contagious than in the chronic or latent forms or stages; a fact which seems to harmonize with the result of our experiment upon the ass, as well as with what we have just observed in regard to the small-pox and cow-pox; those diseases being found to be most contagious when at the height of their natural course.

But inoculated glanders differs strangely from inoculated diseases in general—from inoculated small-pox and cow-pox, for example. These disorders are rendered mild and comparatively harmless by being produced in such manner*, whereas glanders, the product of inoculation, commonly manifests itself with augmented virulence and malignity. A horse taking glanders in the common way, apparently spontaneously, may, and often does, have the disease in a sub-acute or comparatively mild form; whereas, when we inoculate an ass for the disease, we expect no other result than, should the inoculation take effect, to see it fall a prey to the ravages of glanders and farcy in the very short space of time of ten or twelve days! Aware of this, we are furnished at once with a reply to persons who inquire of us, why we do not inoculate horses for glanders or farcy, the same as surgeons do children for small-pox and cow-pox. But, supposing even that the disease were, by inoculation, rendered comparatively mild, and in that mild form were curable, still are we not certain that once having it would prove any immunity against taking it afterwards. The fact of the disease appearing in an aggravated rather than a mitigated form after inoculation, also in some measure accounts for the rapid and fatal course of it in those melancholy cases in which man has been

* The effect of inoculation is to lessen the number of pustules (in small-pox); and thus to diminish the general violence of the disease. The mortality from natural small-pox used to be as much as one in six; whereas, after inoculation, not above one in two—say in five—hundred, dies. Dr. Fordyce said that the severity of the inoculated disease was regulated by the quantity of matter used in inoculation; it is, therefore, right for us to use as little as possible in small-pox, but in cow-pox a considerable quantity should be introduced.—*Dr. Elliotson's Lectures.*

the subject of it. I do not know that in any instance man has taken the disease save from inoculation: a fact somewhat singular, and one that possibly may prove of some service to us hereafter.

It is not reasoning on sound pathological principles to argue that a disease is not contagious, simply from the circumstance of matter supposed, or even proved, to contain its virus having been besmeared upon the Schneiderian membrane, or having been swallowed into the stomach, without being followed by contamination. I have myself, on several occasions, rubbed upon this membrane what I imagined to be glanderous matter with impunity. On the other hand, I have produced the disease in this manner. In an experiment apparently so simple as this appears, there are still several conditions on which its success must depend. There is, as was before observed, *the condition of the matter*, dependent on the kind, the stage, the duration of the disease affecting the subject from which it was taken; next, there is *the condition of the subject* to which it is applied to receive the disease*; and, lastly, there is to be taken into the account *the condition of the Schneiderian membrane*, ordinarily shielded as it is by its natural mucous secretion from harm, and resistent as it is by nature to the action of *virus* or poison of any kind. I have, on many occasions, imbrued my own hands with the matter of glanders, falsely believing my constitution to be insusceptible of taking any harm, and therefore unheeding whether there were scratches or wounds upon my hands or not: although however I escaped, and hundreds of others escaped infection, yet, at length, did one and then another person catch the disease; and now veterinarians no longer dare do that which they have a hundred times before fearlessly done, and with impunity†.

* I quite agree in opinion with Mr. Vines, that "strong, healthy, well-bred horses are by far the least susceptible;"—"while, on the contrary, those animals which are badly fed and out of condition, especially asses, whose systems are always weak, are the most susceptible."—*Practical Treatise on the Diseases of the Horse.*

† We have endeavoured, by a succession of inoculations, to determine whether acute glanders loses its contagious property by reproduction; and we have seen that, *even in the seventh generation*, the virulence was as active in its effects as when it proceeded from glanders spontaneously developed.—*Compte Rendu of the Veterinary School at Alfort, for* 1841-2.

With regard to the fact of the matter of glanders having been made up into balls, and so introduced into the stomachs of a horse or ass without producing the disease, a fact to which much importance has been attached by some of our non-contagionists, it is no more than in accordance with experiments of the same kind that have been made with other poisons. Speedily and deadly fatal as the Woorara poison is known to be, inserted in the form of inoculation, Sir Benjamin Brodie found he could administer it by the mouth, even in considerable quantities, without producing any perceptible effect whatever.

THE SPREAD OF GLANDERS FROM CONTAMINATED TO HEALTHY HORSES, influenced as it is and naturally must be by a variety of circumstances, can be proved, beyond any reasonable doubt, to have on many occasions taken place.

PROFESSOR COLEMAN—non-contagionist as he was in his opinions—was wont to relate in his lectures a "*remarkable* instance," as he called it, of glanders being communicated from one horse to another. The Professor was sent for into a gentleman's stable to examine one of his carriage-horses that had been some time unwell. He found the patient standing in his stall between two others, and pronounced him glandered, and had him shot. One of his other horses also had a discharge from *the nostril that was nearest* to the glandered horse. Him he had removed. To no purpose, however; for he turned glandered, and was likewise shot. Not a great while afterwards, the third horse took to discharging from *the opposite nostril*—still the next one to the horse that stood in the middle stall—and he also in the end proved glandered.

MR. SELBY, OF WILMINGTON, in the month of July 1826, sent to my father at Woolwich two cart-horses—a black mare, ten years old, and a grey mare, about sixteen or seventeen years old—which he had purchased in the autumn of the preceding year, and had worked ever since. The black mare, however, had had "a cold" on her since Christmas. Three weeks ago, for the first time, tumours were discovered underneath the jaw. The black mare proved confirmedly glandered: she had three or four chancrous ulcers upon the *near* side. And the grey mare, who had only recently shewn any, and that but trifling, flux from the nostril, was pronounced as certain to become so—if not glandered already—from the circumstance of her having stood on the *near* side of the glandered horse, without any stall or partition between them. In the end both were destroyed.

THE REVEREND MR. RASHLEIGH, OF SOUTHFLEET, in the year 1821, sent to my father a brown horse, for an opinion concerning the animal. The horse manifested sub-acute glanders. He had come out of a stable inhabited by

one that had recently been shot on account of glanders; and two others, living in the same stable, subsequently took the disease.

General Sir J. M'Cleod, of the Royal Artillery, had a horse become glandered in his stable, which was instantly, on its discovery, removed. Five weeks afterwards, a brown stallion that had stood in the next stall to him, who had on no previous occasion shewn the slightest ill-health, was removed in consequence of an ulcer having a healthy aspect making its appearance in the near nostril. The ulcer healed while in the infirmary, and the horse was thought to be recovering, when, a week afterwards, the patient was suddenly attacked with excessive pain and lameness in one hind leg: so painful was it, he refused even to place it on the ground. Three days after this attack the septum nasi, on the same side as before, manifested foul and spreading ulceration, and farcy declared itself in various parts of the body.

Mr. Turner's Case of "Insidious Glanders," related at page 189, tends to the establishment of the same point—the propagation of glanders from horse to horse. The black hackney mare Mr. Turner had condemned as glandered, and that was doomed to slaughter, was purchased by a farrier for three pounds, who subsequently was said to have "*nearly* cured" her. A month afterwards, Mr. Turner was examining some post horses in the very stable where the "nearly cured" mare had been standing, and found two of them glandered and two farcied; and yet this stable, for many a year before, had never harboured a case either of glanders or farcy. This led to another examination of the black hackney mare. She was precisely in the same state in which she was when Mr. T., had pronounced upon her case before. And what rendered the affair so much easier of unravelment was, that the first horse that failed was *her own partner*.

Mr. Hales, V.S., Oswestry, whose "faith in contagion is not so strong as to believe some of the extraordinary accounts that are given of glanders being caught in this way"—but whose experience has "fully convinced" him "that the disease may be readily communicated by a glandered horse being stabled with others, or kept at grass in the same pasture with them," sent the following plain and convincing statement of facts to The Veterinarian for 1834:—

"In February 1832, I was sent for to give my opinion on the case of a horse supposed to be glandered. I felt no hesitation about the matter; and, as the horse had been diseased for several months, he was shortly afterwards destroyed. In the latter end of June in the same year, I received a letter from the gentleman, the owner of the above-named horse, again requesting my attendance at his house. I found that my patients were two very fine four-years old horses that had farcy ulcerations and swellings upon the extremities: the disease had been observed for two or three weeks, and the horses prescribed for by a veterinarian of the neighbourhood. Knowing the previous case of glanders, I very strictly inquired whether there had been any communication between these young horses and the one that had been de-

stroyed, and was positively assured by the proprietor of the horses and his groom that there had been no possibility of intercourse between them; and that they had, in fact, never been near the glandered horse, and that any thing like contact or application of matter was out of the question. After this declaration, I was obliged to admit and to consider that the farcy must have had its origin from some other source than contagion, and advised that Mr. Vines' plan of treatment should be adopted. The gentleman now asked me to walk with him to a field at some little distance from his house, in order to see a very fine hunter that he supposed had taken a cold some time ago, and which had left an enlargement under his jaw, which he should like to have removed; at the same time remarking, that there was not much the matter with him, for he was in as good health and spirits as a horse could be. I found the horse full of flesh and spirits, but with an enlargement of the size of a pigeon's egg firmly attached to the lower jaw, and a discharge, but not a profuse one, from the nostril of the same side. The horse had been in the same state for three months The case was now unravelled; for although this horse had not been kept in the same stable with the subject of the first case, still there were frequent opportunities of communication; they were watered often from the same bucket, and the same brushes, &c. made use of in dressing them: in fact, the first case was not supposed to be glandered till shortly before I saw him, and no very strict quarantine had been enforced. In May, the hunter (with the enlarged gland and nasal discharge then upon him) had been turned into the same pasture with the young horses, and they were kept together until the young horses were removed in consequence of their having become diseased. Treatment was of no avail, and in six weeks the young horses were decidedly glandered. A professional friend who saw them agreed with me in opinion that it was putting their owner to useless expense to continue the treatment any longer, and they were destroyed. At this time the constitutional symptoms shewed themselves in the hunter; ulceration and bleeding from the nose came on, farcy supervened, and this very valuable horse, for which 150 guineas had been refused, was consigned to destruction. The value of the three horses mentioned was at least £400, and I think there can be no doubt that in them *glanders was propagated by contagion.*"

"How often have I heard it affirmed," says Leblanc*, arguing in favour of contagion, "by the proprietor of horses, that his stud has lived in the same stable, and been fed and groomed and worked alike for years, and never have had any glanders or farcy break out among them until an infected horse entered his establishment."—"Not only," continues Leblanc, "have I heard this a hundred times, but I am myself convinced of the truth of such statements; and I am acquainted with a great number of veterinarians who have been witnesses to parallel occurrences. And this observation applies to glanders in all its stages and varieties" (p. 66). And in another place (p. 68) the same excellent authority follows this strong expression of his own opinions

* Op. Cit. at page 217.

up, by asserting that "at the present day, an immense majority of the veterinarians of Germany, Britain, Belgium, Italy, and Spain, believe in the contagion (even) of *chronic* glanders."

It would be an easy matter for me, or for any person engaged in practice, to multiply examples of presumptive contagion; but if those I have adduced, in combination with the established fact of propagation by inoculation, fail in carrying conviction to the unbiassed mind, that glanders is a contagious disease, I should feel apprehensive that any addition of narratives of similar occurrences would prove alike unsatisfactory. I am aware it is just as easy for anti-contagionists to bring forward an equal or even a greater number of examples of sound horses having stood beside of or lived or associated with others that were glandered without having caught the disease. Such, however, to my mind, estimated *at the most,* but tend to shew that the chances against contagion are greater than those in favour of it; and by no means insubstantiate authenticated facts proving glanders to be a contagious disease. Were counter-facts such as these allowed to have more than their due weight, it would be easy to shew that the contagion of syphilis were matter of doubt: six healthy men shall have intercourse with the same diseased individual woman, and it shall happen that but one or two of the men shall take the venereal disease, the remaining four or five shall escape. Does this throw any difficulty in the way of believing syphilis to be contagious, when, both by inoculation and contact, it has, over and over again, been demonstrated to be communicable? Supposing for a moment—and I believe such to be the case in glanders—that instances wherein, under the influence of contagion, no disease has been contracted are in amount greater—even much greater—than the examples wherein contamination has taken place, still, if half-a-dozen honest cases of proved contagion can be adduced, they are of themselves sufficient, against all the host of evidence on the other side, to prove the bare fact, that *the disease is a contagious one.* And, after all, the counter-evidence amounts but to this—that so far from being a *highly* contagious disease, the chances of escaping are *greater* than those of catching its contagion.

Mr. Field, senior, Veterinary Surgeon to the 2d Life Guards, had in one of his infirmary boxes at Windsor Cavalry Barracks a troop horse, which he felt but too confident had glanders; and, with a view of testing the contagiousness of the disease, he turned into the box, along with the horse, a healthy ass. The two animals lived together a month—eating out of the same crib, and drinking out of the same pail—without the latter taking the disorder. So far the experiment was satisfactory. To carry the test further, however, Mr. Field inoculated the ass with matter taken from the nose of the horse. The ass in due time became contaminated with glanders in its virulent form, and in consequence he was, along with the horse, without further doubt or demur put to death.

Mr. Smith has related several similarly striking instances of horses that have stood beside of, or been stabled with, glandered and farcied subjects, escaping the disease*.

Mr. Vines, also, has adduced strong evidence of non-contagiousness in his mention of the strange immunity enjoyed for sixteen years by Mr. Monk's horse in a stable inhabited by condemned subjects†.

Still, I must repeat, these cases,—in most of which the disease, I fancy, will turn out to have been glanders in its *chronic* or least contagious form—after all, when set against those in favour of contagion, but tend to shew that the chances of a sound horse taking the disease in such a manner are little compared with his chances of escaping the contagion.

Of the transmission of the Contagion of Glanders through the medium of Stabling, I have had happening, in my own regiment, as remarkable and convincing a demonstration as probably stands on record. I entered the 1st Life Guards as veterinary surgeon in the year 1827. Up to 1833 not a single case of glanders or farcy, or of any disease approaching thereto, had come under my notice. March 14th, 1833, the regiment, then stationed in the Regent's Park Barracks, was ordered away into cantonments at Barnet, Whetstone, Hornsey, and Highgate, in consequence of an election for members of parliament about to take place in Mary-le-Bone, taking with them 272 horses, all supposed and believed to be "effective," i. e. in good health. The regiment remained in out-quarters eight days, returning on the 22d of March into the barracks. The day after its return,

* Op. Cit. p. 214. † Op. Cit. p. 215.

The Colonel's Charger, a dark chestnut horse, whom I had known for the six years I had been in the regiment as a hardy horse and one that had never ailed any thing—was brought to me with a complaint that he had "caught a cold standing at out-quarters." He had not during the last night fed with his usually good appetite, and this morning he evidently looked dull, and his coat was roughened and lustreless; also his hind legs were filled, shewing a disposition to be "humoury." His pulse was quicker than natural, and his mouth unusually warm and dry, and there was some little watery issue out of the corners of his eyes and from his nose. I ordered him into a box, to take aperient medicine, and live upon mash diet. This was on the 23d of March. On the 25th, the horse appeared better. On the 28th, however, the man still complaining of his being "humoury about his hind legs," more aperient medicine was given.

31*st.*—Although he has been purging, and the physic is at present but "setting," a corded swelling as large as my wrist has appeared on the inner side of the off thigh, extending from the groin to the hock, which feels hot and gives pain on pressure. Let him be largely bled immediately, and have a dose of calomel and aloes, with common turpentine; and be exercised twice a day.

April 1*st.*—The swelling in the thigh has disappeared, owing to the large and timely blood-letting.

Some return of it took place on the 7th, and in consequence he was bled again.

14*th.*—Some swelling has again appeared. Bleed again, and continue the calomel and aloes and turpentine, in divided doses.

On the 4th of May, a chain of superficial ulceration broke out between the hock and fetlock, discharging foul ichorous matter. Is now taking iodine: the general health being tolerably good, and the appetite quite restored.

Up to the end of June, the iodine treatment was pursued, but with no permanent benefit, though at times it was thought to do good. The limb became ultimately very large, and the sheath partook of the tumefaction; and in this state of incurability the horse was, in accordance with the regulations of the service, destroyed.

The Colonel's little Chestnut Hackney—rather a tender constitutioned animal—was brought to me the next day after his charger was taken unwell, also on account of a "cold." The symptoms, with the exception of the swellings in the hind limbs, were about the same as in the charger: I had him bled, and gave him an aperient, and ordered low diet.

April 1*st.*—The off hind fetlock has taken to swell.

3*d.*—The tumour has broke on the inner side of the joint, as though a small abscess had formed there; but there are no cords, nor any swelling whatever to be detected in the thigh.

6*th*.—A yellow-greenish muco-purulent discharge from the off nostril.

7*th*.—The submaxillary glands tumefied, and a cord of tumid absorbents, altogether as large as my wrist, proceeding from the swollen glands along the hollow of the jaw to the symphysis.

10*th*.—Two circular ulcers with elevated margins and surfaces covered with incrustations appeared upon the septum nasi.

12*th*.—Ulcers spreading—the discharge, still muco-purulent, has lost its greenish tinge.

15*th*.—One ulcer is half an inch in breadth.

16*th*.—Now so decidedly glandered, and farcied as well, that I have recommended he be shot.

March 23*d*, 1833, the same day the colonel's charger fell sick,

A 24, BLACK TROOP-HORSE was brought to me for being "off his feed." He was in good—fat—condition; but was not looking healthy in his coat. I ordered him a soft diet, and gave him some opening medicine; after which he appeared to amend.

On the 1st of April, however, he was again brought to me for a 'blotch' on the outer side of one of his arms, which was surrounded by a circumscribed swelling. At first it appeared to me like the effect of a blow; and I accordingly ordered fomentation and physic.

The physic worked briskly; the swelling subsided; and the appetite became restored: but a sore remained, half as large as a sixpence and of a circular figure, with a yellow base.

April 7*th*.—Another blotch has appeared at the place where he was bled from the plat vein. I begin to suspect farcy. His coat lacks brightness, and his pulse is increased.

10*th*.—My suspicions have become confirmed. Cords of absorbents are now running from the last ulcer upwards to the cariniform process of the sternum, altogether about a foot in length.

16*th*.—What has been done—Blood-letting and purgation and diuretic medicine have made no alteration in the tumefied absorbents. His general health is not so good as it was.

30*th*.—Since the date of the last report, strong mercurial ointment has been rubbed into the corded absorbents, and calomel given; but with no good result.

May 2*d*.—His appetite fails him; pulse 60, and stronger and fuller than it has been. Keeps up his flesh pretty well; though his coat seems permanently to have lost its gloss and does not shed kindly, as it ought now to do.

10*th*.—The tumefied lymphatics have increased in size and are distinctly knotted; but as yet no abscess has broken. But the submaxillary glands of the right side have suddenly swollen to the size of an egg: though the swelling has a lobulous loose feel, and gives pain when squeezed.

11*th*.—The man says he has seen some efflux of "watery humour" from the off nostril, though I can see none myself. The Schneiderian membrane, on both sides, certainly appears higher coloured than natural. Discontinue the mercury, and let him take iodine.

12*th*.—The nasal flux is apparent: it is muco-gelatinous.

13*th*.—An ulcer, indisputably glanderous in its character, is now visible upon the septum nasi, high up; the membrane around having a carnation hue.

18*th*.—The ulcer has extended considerably, and grown pale. The flux is sero-purulent. His old coat clings to him. Let him take iodine.

25*th*.—A farcy pustule has broke in his breast—the hind legs are both filled—one of the fore limbs is likewise swollen. Continue the iodine.

27*th*.—Fresh ulceration observable upon the Schneiderian membrane, and the hind legs are more swollen.

June 4*th*.—Since the last report, the disease has been making progress in all the affected parts, and several other tumefactions, about the magnitude of eggs, have appeared in different parts of the body, neck, and arms. Continue medicine.

18*th*.—Has been progressively in every way growing worse, and now is in that hopeless state of glanders and farcy that his destruction becomes imperative.

C 21, BLACK TROOP-HORSE, making the fourth case, did not fall ill until the 5th July—fifteen weeks after the return of the regiment into barracks. His first symptoms were discharge from one nostril of a suspicious character, and submaxillary tumefaction, and these speedily resolved themselves into acute glanders; for which, at the urgent request of the commanding officer, he was shot so early as the sixth day after his attack.

FURTHER PARTICULARS, throwing light on the origin of the above cases, stand as follow:—The colonel took out of barracks but the two horses in question, and they stood by themselves in a four-stalled stable at the head inn at Barnet, and while there appeared all along to enjoy good health. A 24, stood with one other troop horse in a small stable at Whetstone, much out of repair, and in a filthy condition, from holes and defects in the (cobble) paved flooring. C 21, troop horse, stood with some others—I have forgotten their number—in a stable also of an inferior description, at Barnet. It is well known to people in the army, that the proprietors of inns and posting or coaching establishments, make it a rule to send military horses billeted on their houses into their worst stables nor would some of our worthy hosts, I am afraid,

be over scrupulous about such stables being wholesome or free from infection. In addition to which it may be stated, on almost public authority, that Barnet and Whetstone, having been for years towns wherein large numbers of coach and post horses have been kept for work on the great northern roads, many of whom from time to time have turned glandered and farcied, are both places that may be said to harbour the *fomes* of contagion.

CONNECTING, THEN, ALL THESE CORRELATIVE FACTS—the non-appearance of either glanders or farcy in the regiment from 1827 to 1833; its quick and sudden eruption on the return of the regiment from out-quarters in three instances, and fifteen weeks afterwards in a fourth, notwithstanding every horse left the Regent's Barracks apparently in full health only the week before; its disappearance with that fourth case, and no return in any shape whatever of the disease since 1833, up to the time I am writing, the conclusion of 1844; the airy cold stables, from want of repair, in which the horses were lodged at Barnet and Whetstone, together with the proverbial *fomites* of those two towns for glanders and farcy;—I say, taking all these circumstances into account, I do not see to what other conclusion we can reasonably come than that the disease was the product of a contagion, to the influence of which the horses were exposed during their sojourn at out-quarters. Educated as I have been in the Coleman school, imbibing as I there did notions of non-contagion, I must confess I was in the early part of my life sceptical concerning the contagiousness of glanders; not doubting its *possibility*, but questioning its *probability*: the above series of incidents, however, occurring as they did under my very nose, have dispelled any scruples I may have had left on the latter point, and in my mind established the fact, together with its likelihood in certain situations and under certain favouring conditions to become realized, beyond the reach of being shaken by any arguments founded upon the present state of our knowledge of the etiology of glanders. It is very natural to ask,

HOW HAPPENED IT THAT 268 HORSES ESCAPED? even those in the same stables with and standing by the very sides of them that contracted the disease? Every circumstance of regimen and work, as well as habitation probably, with the bulk of them, being similar.

we have no means of accounting for this dissimilarity of result, save in the resort we have in the medical axiom of *insusceptibility*; but in what that consists—why one horse should prove susceptible, another not—we know no more than we do about the *modus operandi* of contagion itself. Had the disorder been catarrh or simple fever, the probability is, among such a number of horses there would have been more cases of it: the sequel proved that it was neither—that it was, in fact, no other disease from its very beginning than glanders and farcy.

COLEMAN, probably, would have ascribed the production of the disease to the *foulness or want of ventilation* in the stables the horses inhabited. The colonel's two horses, however, had a four-stalled stable to themselves, and consequently could hardly be said to be in *confined* air; and the stables the troop horses occupied were, for the most part, in such want of repair that air-holes were more numerous than were desired; and though the floorings were in a dirty or filthy condition at the time the troops first took possession, yet would military discipline not allow them to remain so. Considering, therefore, these circumstances, and taking into account the number of other instances that might be—and some of which in these pages have been—adduced of the influence of contagion, for my own part I think we have good reason for alleging the same to have been the exciting agent on the occasion in question. Presuming, then—and we think we have shewn strong reasons for so doing—that

STABLING MAY BE THE MEDIUM OF CONTAGION, the inquiry comes before us—and an interesting one it is—whereabouts and in what form the contagion presents itself, and what is required to render it operative. Applying our observations especially to the case of the introduction of glanders into my own regiment, there appeared but two ways in which consistent virus or emanations from it could have reached the nostrils of these horses; either through some part of the stable, the mangers in particular, or through the water pails, neither halters nor bridles of any kind having been used save what the men took out of barracks with them. And as it is probable the pails had, up to the time the men marched into their quarters, been in constant use at the inns—there rarely

being in such establishments any utensils of the kind to spare—it seems but reasonable to infer that the wooden stable fitments, the racks and mangers more particularly, were the contaminating media. Admitting that they were, there arises another question: viz. in what manner was the transmission made? Shall we say that glandered horses had inhabited the stables, and besmeared with their discharges the mangers, &c., leaving upon their surfaces desiccated matter which waited but for moisture, and especially for moisture with heat, to render it active and operative again? And shall we suppose that the sound horse, who took the contagion, in some way or another actually got this moistened matter conveyed upon the membrane lining his nose, and so inoculated himself; or that he inhaled the effluvia caused by moisture and heat to arise from the desiccated besmearments, and that these effluviæ entering with the air into the animal's air-passages, therein became absorbed, and thus infected his system: the contamination, therefore—*mediate* instead of *immediate*—breaking out afterwards in the form of glanders and farcy? I must confess I think this latter the more feasible *modus operandi* of the contagious virus; and my reasons for so thinking are—first, the unlikelihood of any of the dried matter obtaining admission in any consistent form into the nose; secondly, the results being so different; in one horse the contagion producing farcy; in two others, farcy succeeded by farcy-glanders; in the fourth case glanders alone.

That the contagious Virus enters the Horse's System through the aerial Passages or Cavities, we appear to have, I think, very satisfactory evidence. Clothed as the animal's skin everywhere is with hair, we can hardly imagine such a thing as *cutaneous* absorption; and in respect to the alimentary passages, it has already been shewn that substances deleterious in the extreme when applied to the skin, become innocuous when introduced into the stomach; and glanderous matter has repeatedly been exhibited by White and others in the form of bolus without effect. The deduction, therefore, naturally is, that the aërial membrane is the medium through which the virus of glanders becomes introduced.

That this Virus may lie latent in the System appears tolerably satisfactorily proved by the case of C 21 troop-horse.

Supposing he took the contagion at the time the other horses did—and I really do not see how this can be, with any shew of reason or argument, questioned—then the disease must have lain dormant in his constitution upwards of fifteen weeks. Nobody can allege, with any degree of plausibility, that the disease was contracted in the barracks, after the horses' return; for I have never seen such a case in barracks, either before or since; and it is not at all likely a solitary case, and in the form it did—being similar to the others—would have presented itself at one time and not at another.

CLOTHING, PAILS, BRIDLES, HALTERS, &c. may, each and all of them, prove the media of contagion; though none of them, in my opinion, are so likely to convey pollution as is vulgarly imagined. Supposing that clothing—and woollen is very likely to do so—harbours the contagious virus, unless it were put directly in the way of the animal's nostrils, so as to fairly admit of any effluvia arising from it being inhaled, there is not much risk of its propagating the contagion. And as for pails, they are in general kept free from pollution by continual ablution. Bridles and halters left uncleaned after use about glandered horses would be more likely to contaminate the next wearers of them: still, remembering the several circumstances required to favour the operation of contagion, we should say the chances of escape exceeded much those of transmitting the disease.

CAN GLANDERS BE PROPAGATED THROUGH THE MEDIUM OF THE AIR, or through the breath of the horse? On this mysterious and important question a good deal of wide difference of opinion has prevailed, as will have been seen from the perusal of the abstract we have given of the various notions entertained by veterinary writers on the subject of contagion. For my own part, I neither put faith in the assertions of those who tell us that the glanderous virus infects the very (out-of-doors) air, nor in the doctrine of those who would deny the possibility of communicating the disease save through actual inoculation or transmission of consistent matter. I think, myself, it is *possible*, though a very unlikely incident, that the air may become the medium of contagion; inasmuch as for it to prove so, I should say it was requisite the current of the diseased animal's breath should pass direct, and undiluted with the common

air, into the nose of the sound horse, as we know does take place at the time that horses approximate each others' noses, and smell or sniff one at the other by way of recognition, &c.: in such an impregnated condition, charged with the effluvia it has received in its passage over a large superficies of discharge and ulceration, I can conceive it possible, and under certain favouring circumstances probable, the air may become the transmitting medium of glanders; but certainly under none other. Indeed, if we come to consider, the air ought to be regarded as the communicating medium in the case of stables, &c. I have before represented how unlikely it is for matter in any sort of substantial form to obtain ingress into the inside of the horse's nose; and have given it as my notion of the pollution, that it was, in fact, *mediate* contagion: the effluvia generated by moisture and heat from the desiccated besmearments proving the mephitic agents. And besides, glandered and farcied horses standing in stables or other places with confined atmospheres may by their breath and exhalations contaminate the air to that degree that it may possess poisonous power enough to disease other horses. The probability, therefore, is, that the air plays a more important part in the ordinary work of contagion than we are in the habit of imagining.

Is Chronic Glanders contagious? Some of the continental veterinarians deny that it is; while there are others who entertain doubts concerning it. They allege that the secretions in acute glanders are acrid and irritating compared to the discharges of the chronic disease, and that the latter, from their mild character, do not appear capable of propagating the contagion. I have already broached an opinion, that the strength or contagious property of the discharged matters, in all probability, varies according to the stage, form, &c. of the disease. I think also, our observation and experience confirm this account of the acute being a more contagious disease than the chronic; at the same time we must remember, the fact of the communicability of the latter through inoculation has become established*, and also that there are examples enough on record to prove that glanders, though chronic or insidious in it aspect, has the power of propagating its contagion

* Mr. Field's case of Sir P. D.'s horse, at page 183, is an example of it.

to horses in health, producing in them acute glanders and farcy, Although, therefore, less danger is to be apprehended from a horse having chronic glanders than from one having the disease in an acute or sub-acute form, we are by no means warranted in treating the subject of chronic disease as though no contagion could be caught from him; on the contrary, such precautions should be taken in regard to him as may prevent his intercourse with sound horses; leading which segregated life he may, and will do work, it is probable for years, without shewing any signs of failure, or growing anywise worse in his ailments.

To conclude with my own Opinions on the subject of contagion, they are shortly these:—I have no more doubt of glanders being a contagious disease than I have of syphilis or small-pox or itch being contagious. At the same time, from the known fastidiousness of contagion in regard to its operation, and from the several collateral circumstances required to insure its effect in the case of glanders in the horse, in the generality of instances the chances of escaping under its influence greatly, I believe, exceed those of contamination. The comparatively few examples that any of us can adduce of contagion, even after an experience of many years, in my mind seems to warrant this inference; at the same time, these examples are fully sufficient both to establish the fact and warn us against running any risk of propagating the disease. The lamentable as well as discreditable difference of opinion that has hitherto existed on the contagiousness of glanders seems to have arisen out of the narrowness of the circuit of observation whence the deductions have been made: one man's practice may not have furnished him with any well-marked examples of contagion, another's may have shewn him several; the former infers that glanders is a disease of self-origin, the latter that contagion is its source; both too precipitately and confidently running to their opposite conclusions. Let us hope, however, now that our sphere of observation and experience is becoming so much enlarged by the contributions of fellow-labourers, both in our own and in foreign countries, that we shall approximate in our opinions on this vitally important question; and, as a humble step towards such desirable

agreement, I believe the conclusions I have, after a good deal of deliberation and some experience, come to here, will not be found widely diverse from the opinions entertained by the majority of veterinarians whose works or words are, at the time I am writing, known to us.

THE MIASM OF THE STABLE.

THE late Professor of the Royal Veterinary College, as has been shewn by extracts from his Lectures on Glanders and Farcy, was a great non-contagionist in his opinions, not believing that "one horse in a thousand, or even in ten thousand, caught the disease from contagion;" but that the ordinary and almost exclusive source of glanders and farcy was what he called the *poison*—what I have here denominated the *miasm*—of the stable: "a poison generated," he said, "in a confined atmosphere, out of exhalations from the breath, the dung, the urine, and the perspiration of horses pent up in it." And in support of this theory of general and almost exclusive causation he had collected many facts which, with great ingenuity and force of reasoning, he shaped into arguments admitting of the following classification:—

First: the Professor argued, since nothing short of *immediate* contact could, in his opinion, produce glanders by contagion, and since, even then, abrasion of the touching surface or inoculation in some way or other was, he thought, required, the disease could rarely, according to his notions, be propagated in any such manner.

Secondly: that the *first* horse that ever became glandered could not possibly have contracted the disease through contagion.

Thirdly: that several well-authenticated instances stood on record of glanders and farcy having broken out (in an epidemical form) among horses who, in apparent health at the time, had been placed in new stables or on board new ships; and that such sudden and general attack of the disease had been satisfactorily shewn to be owing to want of due ventilation.

Fourthly: that where such *fomites* of infection had been destroyed, places, before to the utmost degree unhealthy, had been rendered perfectly salubrious by the introduction of proper ventilation.

Let us examine these alleged facts, together with the ingenious and plausible arguments our late Professor founded upon them.

Coleman's talents were of an order that gifted him with a ready and acute perception of things in general, enabling him often to discover cause and design where, to those around, all seemed buried in mystery. This penetrative and fertile genius of his, however, would at times lead him beyond the limits of fair and legitimate deduction into regions of theorization where his best friends felt loth to accompany him: he had at the offset, perhaps, framed a pretty and truth-looking theory; but too often would he mar the fair image he had created by loading it with more accountability than it was able to sustain. Thus it was with the point of hippopathology now before us. He succeeded in proving to the minds of most, if not of all veterinarians of his time, that the poison or miasm of the stable was a fruitful source of glanders and farcy, and that it was especially operative when those diseases broke out, and on a sudden, in an *epidemic* form; but he refused to admit the influence of contagion in any case, save where actual contact and abrasion, tantamount altogether to inoculation, could be proved to have taken place. In every other instance of alleged contagion brought before him he could discover some want of ventilation, some source of "poison;" and to such an extent did he carry the omnipresence of this suppositious poison, that I have heard him say that horses at pasture even might, by sniffing over parcels of dung or places wetted by urine, in the open fields, inhale it in as efficacious a form as though they had inspired it generated in their stables. Consistently with which notions so far did he carry his plans of ventilation, that he thought open sheds in straw-yards should have apertures for the admission of pure and the emission of impure air, the same as stables themselves. And yet, non-contagionist as Coleman was in his opinions, the regulations issued from time to time at his suggestion for the guidance of the veterinary surgeons of the army were, in their nature, as effectually calculated to prevent the spread of the disease by contagion as any one of an opposite way of thinking could possibly desire, as will appear by the subjoined extract from them, received by me in the month of October, 1837:—

Extract of a Report from the Principal Veterinary Surgeon.

"I have always considered it the duty of all commanding officers and veterinary surgeons of cavalry regiments to report to the respective barrack-masters any and every stall occupied by a glandered horse, and requiring painting, &c.; and, in my opinion, those stalls or standings only, occupied by horses with symptoms of glanders, require being painted in oil, but that the whole of the racks and mangers should be thoroughly washed with soft soap and hot water well softened by soda, and which I have no doubt, if the stables are properly ventilated, will prevent all danger from infection. Glanders is much more frequently produced by defective ventilation of stables than by glandered matter."

(Signed) "EDWARD COLEMAN, P.V.S."

If it can be shewn, beyond any reasonable ground for doubt, that glanders may be, and not infrequently is, taken through *mediate* contagion, through stabling, &c.—and I think enough has been advanced in these pages to demonstrate, at least, the plausibility of such a deduction—then Coleman's first argument sustains so much weakening, that the miasm of the stable no longer can be regarded as the *universal and exclusive cause* of glanders and farcy, which he in his enthusiastic prosecution of his schemes of ventilation imagined it to be, but must descend in the grade of causation, to take no more than its due share in the production of the disease, along with other equally well-grounded and recognized causes.

Secondly: that Coleman established his great point, that glanders and farcy *did* originate independently of contagion, there is no question. Setting aside the necessity of actual contact, and the improbability of horses coming together in such manner as to catch the disease through inoculation one from another—neither of which positions would experience suffer Coleman to maintain;—setting aside, also, the posing query ever put to contagionists, "Whence did the *first* glandered or farcied horse take the disease?" there is ample evidence on record to demonstrate that foul and ill-ventilated stabling has proved a fertile source both of farcy and glanders*; and to Coleman the greatest credit is due

* M. Patu, M.V. to the 4th (French) Cuirassiers, ascribes the extraordinary prevalence of glanders and farcy in the French cavalry to the crowd-

for the masterly and persevering manner in which he discovered and exposed this *fomes* of infection, and for never, after his discovery of it, leaving it—so far, at least, as the cavalry and ordnance stables were concerned—until he had cleansed it out from the very bottom, and, in the place of a heated and polluted atmosphere, filled the public stables with currents of cool and pure air—with air that was wholesome for the horses to breathe, in the place of that which was pregnant with miasmatic vapours: continually charged, as the unrenewed atmosphere of the closed-up stable must have been, even in the daytime, but especially by night, with carbonaceous exhalations from the lungs of its inhabitants, and ammoniacal and other noxious effluvia from the urine, the dung, and the perspiration. To neutralize or expel this miasm constituted Coleman's *principle of ventilation*;—this was the object he ever and always had in view. How far his plans for effecting it were judicious, or the best that could, under the circumstances, have been devised, is quite another question: that, in general, they proved successful, is in a measure shewn in the comparative infrequency of glanders and farcy at the present day. I say, *in a measure*, because we have had no reason to take it for granted that contagion had no, or even comparatively small, influence: whatever share it might have had, however, in the causation, it is not likely that Coleman, intent as his mind ever was upon his favourite theory of stable "poison," would have heeded it.

To my mind, however, Coleman's own reasoning on the *modus infectandi* of this poison is in every way sufficient to prove that the disease, once generated, is capable of spreading by contagion, and through the medium of the air, too, from one horse to another. If the atmosphere of the stable, charged as we know it to be with humidity, can carry a miasm from the excretions and secretions into the nose of the horse, sufficiently concentrated to produce glanders and farcy, is there any good reason why the same atmosphere may not convey the virus of glanders itself, emanating from

ing together of the horses in small, low-pitched, ill-ventilated, dark, damp stables; and finds great fault—not without reason—with the authorities for not affording proper and healthful accommodation.—*Veterinarian for* 1836.

the nose or lungs of a glandered horse, or from the open buds of a farcied one? Surely, that which can conduct poison from the dung or urine upon the floor of the stable, can transport virus from one horse's nostrils into those of another;—and, surely, the virus emanating from a chancrous surface must be as virulent and efficacious as any generated in the dung, the urine, or the breath of horses in health*.

Thirdly: no doubt has ever been entertained by me of the spontaneous origin of glanders and farcy—of their origin apart from the influence of contagion. Coleman, whose field for observation was greater than almost any man has enjoyed either before or since—he having had the Army, the Ordnance, the Veterinary College, and some private practice besides, to range over—adduced much satisfactory evidence in proof of this fact. He shewed that these diseases, on several occasions, had made their appearance in situations never inhabited by horses before, and then, for the first time, by horses at the time of their entry in apparently perfect health; in new, public, and private stables, and on board of new ships†. And he said that the morbific agent was the poison the healthy inhabitants of such uncontaminated abodes themselves generated, by being shut up without due or proper ventilation.

SMITH contended as strongly as Coleman for the origin of glanders independent of contagion, and admitted how frequently and commonly the disease broke out in foul and unventilated stables;

* "A glandered horse may contaminate the air of a stable to such a degree that horses breathing the same air may become infected with the disease, although the infected may never come in contact with the infecting horse. Fortunately, glanders is not so infectious as some other diseases to which horses are liable, otherwise the breed would soon become extinct."—*Vide an admirable article* "*On the External Causes of Disease*," *by W. F. Karkeek, V.S., Truro, in* THE VETERINARIAN *for* 1833.

† Although some doubt has been cast by "an old artillery officer" on Coleman's account of the Quiberon expedition (*see* VETERINARIAN *for July* 1840), yet has the fact of glanders having broken out on board of ship been attested by Mr. Mogford (*see* VETERINARIAN *for Aug.* 1840), as well as by Smith, at page 213 of the present volume.

but he ascribed the mischief to the consumption and consequent *deficiency of pure air**, and not to any specific poison. Coleman, however, had from the first suspected this cause himself, and immediately set about the investigation of it; and the result of his inquiry was, that—to use his own emphatic language—"the air of the closest alley in London was found to contain as much oxygen in proportion as the air that encompasses the hills of Highgate:" shewing him that there was no good ground for believing that the atmosphere of the close stable possessed less pure air than that out of doors; and serving to confirm him in his opinion of what was the real deleterious agent, which was *the animal poison*.

Fourthly: that, as I observed before, Coleman's introduction of ventilation into the stables of public and private establishments has been productive of incalculable benefit, admits of no question whatever: not only has it proved prophylactic against glanders and farcy, but against other diseases as well; and were the profession and the public indebted to him on no other account, the good arising from ventilation alone is sufficient to preserve his name, for many a year to come, in the records of veterinary science.

What the Nature of this Miasm or Infection is—Whether it be similar in its essence to the virus of glanders itself, or whether it simply be an irritant of that miasmatic description that empoisons the system, and breeds malignant disease somewhere, depending for the form in which it breaks out upon certain local susceptibilities, producing one disease in one part, another disease in another part, we have no direct or positive evidence to shew. Coleman was clearly of opinion that, though *specific* he considered "the poison," it was *general* in its operation: he not only ascribed glanders and farcy to its influence, but *rabies*† likewise, and also

* See his account of this at page 210 of the present volume.

† On the occasion of the Professor being examined before a Committee of the House of Commons, touching the Bill to prevent the spreading of Canine Madness, to the question, "Have the goodness to state what (in the course of many years' experience) has occurred to you?" he gave the following answer:—

"I have made up my mind on one point, in which many people, however,

periodic ophthalmia and grease. Supposing the existence of a *virus* in each one of these diseases, nobody would contend they were all four of the same nature, or that the diseases themselves

are of a different opinion,—that the disease is often produced without contagion."

"Spontaneously?"—"Yes; but when I say spontaneously, I believe that to arise in consequence of the fact of their being exposed to their dung and urine, and to confinement, too much feed and too little exercise. I do not believe that carrion flesh is capable of producing it, but I think it arises more from being confined, tied up, and exposed to their own dung, and their own urine, and their own breath, and also from the want of proper exercise. I believe that, with hounds in kennels that are properly attended to, it is rather an uncommon disease; but when the kennel has not been attended to, canine madness sometimes takes place, of which I know one instance in particular: the subscription pack of fox-hounds in Surrey had the disease to a considerable extent, and there was one remarkable fact, that the dogs did not bite the bitches, nor the bitches bite the dogs. The kennel had been very much neglected; there was no water flowing through the kennel: I suggested improvements in that respect, and the disease for a length of time disappeared."

"In the cases you are now speaking to, have you examined the dog after its death in any case where the dog has not been bitten?"—"It is impossible to prove the negative: we cannot say the dog has not been bitten; but if it did always arise from the dog being bitten, how came the first dog to be mad? But, independently of that fact, it will be found, that in different parts of the country you hear nothing of hydrophobia, and then you hear of it in different parts of the country pretty nearly at the same time. Now there are many diseases highly contagious in themselves, but which are capable of being produced without contagion. The glanders can be thus produced—it is a contagious disease; and so is farcy; and yet it is a fact that these diseases are more frequently generated than propagated by contagion. The itch also is notoriously produced by filth, and, when produced, becomes contagious; so with ship fever and gaol fever, which, when they break out, become contagious; but they can be generated."

"Would the glanders be produced by inoculation in the case you refer to?"—"I can mention one extraordinary instance, which was in the Quiberon expedition: there were a great many horses examined prior to their going out, and not one of them had any apparent disease: they were put on board different transports; they encountered a hurricane; they were obliged to put down the hatches; several horses were suffocated, and great numbers of them became glandered in consequence. At Dover, in the year 1796, where there was a great encampment, the government could not get stables to receive them late in the autumn: they built close and confined stables;

differed—no more than farcy and glanders differ—only in being seated in different parts or tissues; therefore, when Coleman asserted that the same poison that produced glanders would produce ophthalmia, grease, and rabies, it is manifest he could have regarded the poison but in the light of a common though malignant infector.

There is no absolute need to suppose that the infection or miasm generated in the atmosphere of the stable, and believed to be the producer of glanders and farcy, is the same as the contagious virus of glanders itself: it may be a sort of *malaria,* the result of the decomposition of animo-vegetable matter, or else of a compound of mephitic vapours positively injurious of themselves to the mucous membrane of the nose and air-passages, independently of any exclusion or diminution of the oxygen of the confined air. And as a poisonous agent, it may either prove at once noxious to this membrane itself, or, through its medium, become absorbed and carried into the circulation, contaminating the blood, and breaking out in the form of *farcy* in some horses, in that of *glanders* in others; and capable—the same as malaria is thought capable of producing fever in some persons, cholera in others—of producing, according to Coleman, *ophthalmia* and *grease* as well, and even, in the dog, *rabies.* Whatever plausible reasons there may be, however, for believing that what will produce glanders and farcy, the same may create ophthalmia and grease, there do not appear to be any examples of the *spontaneous* origin of rabies: the only argument in support of such a presumption being the hackneyed question of, how the *first* case of rabies came to appear.

and the most healthy horses went into those new stables, and a great number became glandered, affected with farcy or diseases: a great many of them died. Many of the horses were sent to Hythe and placed in an open shed; not one of these horses became affected. It was certainly intended that animals with lungs should have an element to breathe once, and but once, and that the air should receive something from the blood, and impart something to the blood; but that, when made to go several times into the lungs, it produces a disease which becomes infectious. In the human subject it produces fevers and the plague, and farcy and glanders in horses, the pip in fowls, and the husk in pigs."

OTHER CAUSES OF GLANDERS.

THAT both glanders and farcy have on occasions taken their rise from other causes than contagion and the miasm of the stable, there is on record ample evidence to prove in the face of all mere assertion to the contrary; and this will account for the number and variety of causations we find enumerated by authors in their descriptions of the origin of the disease as it happens to have occurred within their own particular sphere of observation. Looking over the accounts of different writers, we find glanders ascribed to contagion, to infection from the miasm of the stable and other sources, to transitions from cold to heat and from heat to cold, to suppressed perspiration, to sudden immersion in cold water, to humidity of the atmosphere, to want of exercise, to over-work, to bad forage, to water of some particular quality, to locality, to marasmus or debility, to fulness of condition, to wounds and other injuries of the head, to previous disease, &c.

Such of these divers alleged causes as rest upon any good ground of authority admit of distribution into three classes, which we have already specified and numbered among our general causations as third, fourth, and fifth classes*. The perusal of these will shew it is our opinion that for any cause of a common description to produce glanders or farcy, that cause must operate against a constitution predisposed to take on such a diseased action. Mr. Vines views this predisposition as consisting simply in *unhealthiness;* for our own part, however, we rather side with Dupuy, and fancy there must exist somewhere in the body the seeds of lymphatic or tubercular disease, waiting only for the requisite amount of excitation to lead to their development in the form of glanders and farcy. Were mere unhealthy state of body all that was required for a cause of an ordinary nature to produce glanders or farcy, the disease would, surely, be a great deal more prevalent than we now find it. How far a common cause acting with inordinate severity or suddenness might occasion either glanders or farcy, is another question: that such causes have produced effects *semblant* of such diseases we are well convinced; but, that these results were veritable

* At page 218.

glanders and farcy, admits, in our opinion, of considerable doubt. Once let glanders and farcy be the acknowledged result of a common cause acting upon a body free from all specific predisposition created by taint or pollution, or by lymphatic temperament*, and the door is thrown open to the admission that glanders and farcy are producible after the manner of ordinary disease, and that every inflammation of the Schneiderian membrane attended by ulceration and fetid discharge constitutes a case of glanders: in a word, that there is no such thing as *common* lymphatic disease, no other ulcerous affection of the nose save glanders. For these reasons, and for one other, it is that we regard with the greatest suspicion as to their true nature the following cases extracted from the practical work of Mr. Smith on glanders: we cannot, in our own minds, conceive how horses can become "*instantly* glandered," and as "*instantly* affected with farcy." We have no doubt, as we said before, that cold and heat suddenly or intensely applied produce effects such as have been described; but we would not—could not, consonant with any notions of the *specific* character of such diseases—call them by the names of *glanders* and *farcy*.

"June 22d, 1793, the Second Dragoon Guards (of which Mr. Smith was the Veterinary Surgeon) encamped on the plain of Cysoing. The weather was extremely hot. In about a fortnight afterwards, however, they experienced a few days of incessant rain, accompanied by a high wind, in consequence of which many of the horses in two troops that faced the wind became severely affected about the head. In four cases, the nostrils were rendered quite impervious, which occasioned their death; and several others that were less affected *became instantly glandered.* But in the other two troops, *where the horses stood in a contrary direction, no case of the disease took place*†.

Case II.—"August 16th, 1806, the (same) regiment paraded in marching order on the Hoe, at Plymouth, at three o'clock in the morning. The horses remained there upwards of five hours without moving, during which time they were exposed to a very heavy fog. The consequence of which was, that four young horses that stood without saddles or cloths *were instantly affected with farcy*, and one of them exhibited symptoms of glanders also. Those affected with farcy recovered: the other was shot†."

That glanders and farcy have epidemically prevailed in humid atmospheres and in damp stabling seems no longer matter of doubt.

* Read Rodet's Account of Glanders, at page 271.

† The Horse Owner's Guide. By T. Smith, V.S., Second Dragoon Guards.

"An innkeeper at Wakefield built some extensive stabling for his horses; but, from inhabiting them too soon, he lost a great proportion of his cattle from glanders. At present there are no more healthy stables in the place. The immense range of stabling under the Adelphi in the Strand, whereto light never enters, and the supply of fresh air is not too abundant, were for a long while notoriously unhealthy, and in them many valuable horses were destroyed from glanders; but now they are filled with the finest waggon-horses the metropolis or country contains, and they are fully as healthy as the majority of stables. In a French journal an account is given of a cavalry regiment, while quartered in a low humid situation and lodged in damp stables, losing in that year thirty-one horses from glanders. They moved into a dry situation and better constructed stables, and their loss the following year amounted to but a single horse*."

Formerly there existed many posting and coaching establishments that might truly be said to be *fomites* for farcy and glanders: now, however, that the number of these establishments is diminished, and that things are better ordered and managed in such as remain, we fear but little in comparison about their being annoyed by these diseases. Coleman would have said—and probably with great amount of truth—that all this was owing to defective ventilation, drainage, &c. Unwarped, however, by love for any theory in particular, we ourselves would probably have attributed some of the cases of the disease to contagion, and others—a few though these might be—to over-exertion. Whether, however, we should be correct or not in applying such causation to this particular case, we have no hesitation in ranking *over-exertion* among the causes of glanders, however low down in the catalogue it may stand, because we have seen some and heard of more horses that have turned farcied and glandered after severe runs in the chace. It is an occurrence probably more likely to happen to an aged than to a young horse.

"In 1805, while the Second Dragoon Guards were encamped on the Curragh of Kildare, a very old horse was ridden throughout a very fatiguing field-day, during the former part of which the weather was extremely hot, but changed just as the troops returned to the lines, and continued very cold all night. The regiment being ordered out again next day, the same horse was mounted in the morning as usual, no indisposition having been observed in him until he came to the troop parade, when a hæmorrhage from both nostrils was discovered. Being in the lines, I (Mr. Smith) saw him in this state, and

* Mr. Youatt's Veterinary Lectures in The Veterinarian for 1832.

found the mucous membrane very much inflamed and ulcerated about the extremity. There was no cold or previous discharge from the nostrils*."

Injuries about the head, from blows or falls, have on many occasions given rise to symptoms that might, in ignorance of the lesion itself, be mistaken for those of glanders.

A valuable chestnut hunter was sent to Mr. Jos. Sewell for his opinion, supposed to be glandered, from his having had for six weeks a considerable discharge from his off nostril, with enlargement of the submaxillary gland. On examination, Mr. S. discovered his patient had received a contusion upon the off frontal bone, and this induced him to propose trephining him. This led to the discovery (as was supposed) of a fracture, and to the exposure of a splinter of bone suspended from the membrane lining the frontal sinus. The wound after being closed was syringed with astringent lotions; and in five weeks afterwards the patient had recovered, very little blemished.—*Veterinarian for* 1840.

Carious teeth and disease of the maxillary bones and of the sinuses have generated a similar set of delusory symptoms†.

It is surprising what trifling and strange causes may now and then be assumed to be influential in attacks of glanders or farcy. In the case following, simply a dose of cathartic medicine appears to have done the mischief:—

"February 2d, 1806, a dose of physic was administered to a young horse (belonging to the Second Dragoon Guards, Mr. Smith being their Veterinary Surgeon), which was taken the following day from Birmingham to Coventry, the troop to which he belonged having marched there. The unfortunate animal was led eighteen miles under a violent purgation, exposed all the while to an intense frosty wind. *He became instantly glandered from ear to lip.* The skin on that side of the head most exposed to the wind appeared as though a mild blister had been applied to it§.

In another instance *castration*—in general a simple and safe operation in the young horse—was followed by farcy and glanders; and the owner of the colt refused, in consequence, to pay my father—who was the operator—his charge for the operation‡.

* Smith's Horse Owner's Guide.

† Turn to pages 176-180 of the present volume.

§ Op. cit.

‡ The case will be found in the second vol. of the present work, p. 427.

SEAT AND NATURE OF GLANDERS.

In pursuing our investigations through the division of our subject at which we are now arrived, we anticipate more difficulty in coming to sound pathological conclusions than we experienced in agitating the question of the *contagiousness* of glanders. We shall set about the inquiry by first shewing what progress our science has made in developing the true seat and nature of the disease, by—as on a former occasion—collecting the accounts of authors on the subject from the earliest periods down to the present; and this will be found to furnish us with a body of information from which we may, at least, safely deduce two facts, which are,—that veterinarians of the present age are pretty generally agreed as to the *seat* of glanders, though, touching its *nature*, almost every point of the pathological compasses of humourism and solidism seems to have been, at one time or another, touched at by them, by way of affording some sort of satisfactory explanation of the phenomena exhibited by glanders and farcy.

Lafosse (senior) in his "preface" to his "Treatise upon the true seat of glanders in horses," states, that "great was his surprise, when he found that such distemper was not only *unknown to the ancients*, but that it was altogether *a new disorder*, and did not appear in Europe till about the year 1494."—"Twas at the siege of Naples, after the arrival of the Spaniards from their discoveries in America, that glanders in horses appeared for the first time."

"Parazzer is the first author who has mentioned it,—he himself was at the siege; and the Spanish authors are the first who have given us the history of this disease, which they term Muormo*."

Dupuy, however, in his prefatory history — "partie historique"—contradicts this account on the authority of MM. Masse and Jourdain, two French veterinary writers who have been at the pains to translate the writings of the Greek hippiatrists, and from whom, he says, we learn that the father of medicine himself,

* A Treatise upon the True Seat of Glanders in Horses, together with the Method of Cure, &c. with cuts. By M. De La Fosse, master farrier of Paris, and farrier to the King's Stables, 1751.

Hippocrates, was acquainted with the disease, and has, in its confirmed stage, pronounced the malady incurable.

VEGETIUS, who wrote in the fourth century, has described one disorder he has called *morbus humidus*, and another he has named *morbus farciminosus*, the former of which some of his veterinary interpreters have said was *glanders*, the latter *farcy*. His descriptions, however, to say the least about them, are very vague and indefinite, at one time seeming to mean something more, at another something less than glanders and farcy.

"The humid disease (*morbus humidus*) is when from a horse's nostrils, instead of snot, there flows a stinking and thick humour, of a pale colour. A horse thus affected has a great heaviness in his head, and hangs it down. The tears fall from his eyes, and there is a whizzing noise in his breast. He becomes thin and meagre, with his hair standing on end, and of sad aspect. This disease the ancients called the ATTICAN FLUX, or running at the nose. But whensoever a bloody humour or like to saffron begins to flow from the nostrils, then he is incurable, and near death's door*."

LEONARD MASCAL, 1587, our earliest writer, like the ancients, had no correct notions of glanders as a disease by itself. He tells us, "glanders are kernels under the jawes, and when they be ripe, they will run at the nose and there break out†."

BLUNDEVILLE, 1609, writing in the reign of Queen Elizabeth, the next authority we have, I believe, extant on the subject before us, appears to have made some progress in the knowledge of the fluxes or humid diseases of the ancients, for he instituted distinctions between *glaunders* and *stranguillion*, though he treated them both alike. He imbibed Theomnestris' notion, that *difference of colour* in the nasal discharges constituted a *difference in the disease itself*. He thought "glaunders" originated in *cold*, and that "last of all" came "mourning of the chine‡."

GERVAISE MARKHAM, 1630, was equally in the dark. He

* Vegetius Renatus, of the Distempers of Horses, translated into English by the author of Columella. London, 1748.

† The Government of Cattel, divided into three Bookes. Gathered by Leonard Mascal. London, 1620.

‡ The Four chiefest Offices belonging to Horsemanship: that is to say, The Office of the Breeder, of the Rider, of the Keeper, and of the Ferrer. By Master Blundeville, of Newton Flotman, in Norfolke, 1608.

imagined the difference between strangles and glanders to consist in one breaking *outwardlie*, the other *inwardlie**.

De Grey, or De la Grey, 1740, adopted Solleysell's notion of glanders proceeding from neglected cold, distinguishing the disease "by the inflamed kernels or knots which may be felt under the *chaul* of the horse." He, however, continued in the old errror, of fancying that "the thinne rheume ascendeth up to the head and settleth neere to the brain, and so venteth itself at the nose:" the cold gradually getting worse and ending in glanders†.

Solleysell, 1669, a French writer of this period, of excellent repute, still considered glanders as related to catarrh, though he did not suffer himself to be misled by the difference of colour the nasal discharges assumed. Neither did he think—as those before him had imagined—that the discharges proceeded from the brain, but from the lungs, liver, and spleen. He thought glanders was "caused and fermented by an ulcer in the lungs;" which, increasing, consumed those organs, and at length killed the horse‡.

Lafosse, in 1749, presented to the (French) Royal Academy of Sciences "A Memoir of the Glanders in Horses, relating to the Seat of that Disease§;" wherein, after exposing the errors of those who had written before him, in supposing the viscera—the lungs, heart, liver, spleen, kidneys, &c.—to be the seat of the disease, he informs the Academy that he had found the frontal and maxillary sinuses filled with matter, and "the pituitary membrane inflamed; and, consequently, much augmented in thickness," and "affected with *sanious ulcers:* which, in some cases, had corroded through the substance of it to the very bones. That, when horses discharged matter from both nostrils, both sides of the membrane were affected; and that when they only ran at one nostril, that side only of the membrane was found distempered."

* Cavelarice; or that Part of the Arte wherein is contained the Knowledge or Offiee of the Horse-Farrier, with the Signes and Demonstrations of all Manner of Infirmities, and the most Approved Cure for the same. The Seaventh Booke, 1607-1676 (numerous editions).

† The Compleat Horseman and Expert Ferrier. By ————, 1740. In one plaee the author's name appears as De Grey, in another as De *la* Grey

‡ Op. Cit., at page 198.

§ The Memoir is appended to his work, published two years after. See title of work, given at page 252.

"In like manner he (Lafosse) constantly observed an agreement between *the obstruction of the sublingual glands*, or glands under the jaws, and the affection of the aforesaid membrane; that is to say, if one of these glands only was obstructed, then the horse discharged matter only by one of his nostrils; but, on the contrary, if both the glands were affected, matter should be discharged from both nostrils."—"One may (therefore) reasonably conclude with M. Lafosse, remarks the Academicians, "that the glanders does not depend upon *a general distemperature of the blood*, but is really and truly A SIMPLE AND LOCAL MALADY."

In 1752, Lafosse presented the Royal Academy with "A New Memoir," "improving and bringing to perfection his discovery." Herein "he distinguishes *seven kinds of discharges* which may come from the nostrils of horses."—"He, also, makes it evident that the true glanders has its characteristics, which essentially distinguish it from every other disease that has been called by the same name."—"And, in order to prove that a great inflammation of the pituitary membrane is always the cause of glanders, he has attempted to bring on an inflammation upon the same membrane *by a corrosive injection;* and, when the injection was only made on one side, the maxillary lymphatic glands were swelled on the same side, and that nostril only produced the discharge. But, on the other hand, when both nostrils were injected, these symptoms appeared on both sides."—"The first Memoir presented by Sieur Lafosse was confined to a bare description of the disease, and only a proposal of a method of cure by way of project; but, in this, he certifies that *he has cured several glandered horses* by means of his injections and fumigations thrown into the nostrils*."

LAFOSSE, JUNIOR, 1775, strongly advocating his father's doctrines, contended that the most conclusive and satisfactory evidence of their truth was afforded by repeated autopsies, and by the well-known experiment so often made by his father, as well as by himself, of throwing corrosive injections upon the pituitary membranes of horses, and of so turning them glandered. He shaped his father's

* Observations and Discoveries made upon Horses, &c. By Sieur La Fosse, Farrier to the King of France, 1755.

pathology to the improvements medical science had in the interval undergone, and made some alterations in the divisions of glanders, calling them proper and *improper—primitive and secondary—incipient, confirmed, and inveterate—simple and compound.* He would not admit that the lungs participated in glanders, save from the supervention of pulmonic disease during its existence. But he allowed that the *frontal* and, occasionally, the *maxillary sinuses*, together with *the cornets and alæ of the nose*, partook of it. It was some time, however, before he discovered that the tumours under the jaw were *not salivary*, but *lymphatic* glands*.

MALOUIN, 1761, appears amongst the earliest dissentients to the generally-received doctrine of Lafosse. He presented the French Academy with the results of his own observations, tending to shew that *other parts*, besides the pituitary membrane, became involved in disease; and that the longer the duration of glanders, the greater the number of other tissues found affected by the disease.

GIBSON, 1754, describes glanders to consist in "a malignant ulcer formed in the inside of the nose of the horse"—"generally accompanied by a swelling of the kernels under the jaws. The matter discharged is, for the most part, either yellow or greenish, or tinged with blood; and, when horses have been long glandered, that the bones and gristles are grown foul, the matter turns to a blackish colour, and becomes very fetid and stinking. And this is what usually passes for *the mourning of the chine*, from a mistaken notion of corruption and putrefaction of the brain and spinal marrow."—"But the most common and usual kind (of glanders) does not proceed from any of these causes†, but from *a bad disposition*

* Op. cit., at page 199.

† Not having had by me Gibson's work at the time I was giving others' opinions of the CAUSES OF GLANDERS, I may be excused for introducing this author's notions of the origin of the disease in this place. Gibson thought glanders "sometimes proceeded from *colds* ill cured;"—"sometimes from strangles;"—"from an epidemical fever" occasionally; from "hard labour and bad keeping." It is "the most infectious of all distempers;" and is "certainly so at some seasons more than at others. However, I have known glandered horses stand a considerable time along with sound horses through negligence or ignorance of the distemper, thinking it only to be an inveterate cold,

in the blood; which, perhaps, continuing for a considerable time unperceived, at last shews itself by a swelling of the glands under the jaw-bones, and a running at the nose, *without any other visible sign of sickness or disease;* and this is "*what properly constitutes the glanders* in the horse, and is either of the scrophulous kind, the same with the evil, or else cancerous; both which I have met with in practice, and may be either *hereditary*, or the effect of *hard labour* and *bad keeping**."

REEVES, a farrier at Ringwood, Hants, who about this time, 1763, published a veterinary work† under the eye of a physician, looked upon glanders, as Lafosse did, as "properly an inflammation of the pituitary membrane;" running into the same errors about the "kinds" of glanders Lafosse did, and adopting his mode of cure by injection.

BRACKEN, 1769, assures us, he "cannot describe the glanders better than Mr. Gibson has done; to wit, 'that it is a flux or running of corrupt matter from the nose of a horse, which matter is of different colours; as white, yellow, green, or black, according to the degree of malignancy, or according as the distemper has been of long or short continuance.'—"I know but of one *inseparable* sign of glanders, and that is inflammation or swelling of the glands about the throat or *behind the ears*. And as to what Solleysell, Blundeville, and others, write about *the mourning of the chine* or consumption of the brain and spinal marrow, &c., it is a pack of nonsense."—"I take Mr. Snape's account of the glanders not to be very defective; only I cannot agree with him in one thing, that is,

and yet no harm happen. On the other hand, I have known a glandered horse infect every one that has stood near him in the same stable; and I have also known sound horses carried into a stable where glandered horses have stood, and by that means catched the infection, though the stable has been cleaned and aired before they were brought into it; and other horses, that have been set up along with them in the same stable, and in the very stalls where the glandered horses stood, have escaped the infection."—Op. infra cit.

* A New Treatise on the Diseases of Horses. By Wm. Gibson, Surgeon, 1754, 2d edit.

† The Art of Farriery, both in Theory and Practice, &c. &c. By Mr. John Reeves, Farrier at Ringwood, Hants. The whole revised, corrected, and enlarged, by a Physician. Second edition, 1763.

in this distemper being contagious or infectious; for he might as well say that *we catch colds, consumptions, &c.*, by infection*."

BARTLET, 1773, a surgeon, who wrote a veterinary work about the same period, became another of Lafosse's proselytes. "A new light," he tells us, "having been thrown on this whole affair by the study of M. Lafosse, the King of France's farrier, who has been at the pains to trace out and discover, by dissections, the source and cause of this disorder; we hope the method he has proposed, with some farther experiments and improvements, will soon bring to a certainty the cure,†" &c. &c.

BOURGELAT, 1765, the great founder of the French Veterinary School, saw reason to secede from the notions of Lafosse, which, in his day, had firm hold of public opinion. He believed glanders to have its source in *the corruption of the blood* and humours of the body, and thought there was great analogy between the ulceration of glanders and venereal chancres.

PAULET, however, as we learn from Hurtrel D'Arboval‡, was the French writer who especially drew attention to the similarity there existed between glanders and syphilis. "The two viruses," he says, "exert their action in a similar manner: in both diseases, the lymph, contaminated through the presence of the virus, in its turn infects the gland in the neighbourhood to which it has been taken. In one case it happens to the glands in the groin, in another to those in the throat; both performing the same office. The two viruses, acrid and irritating in their nature, having reached, in one instance the urethral canal of man, in the other the cavities of the head of the horse, lined by the pituitary membrane, and being there dissolved and decomposed, occasion by their presence irritation, inflammation, burning, speedily followed by purulent flux, together with augmentation of the natural mucous secretion."

GILBERT, another French veterinary writer, regarded the knowledge of the means of *preventing* glanders as hardly less in importance to the discovery of the cure for the disease. His notions, like Solleysell's, were that both strangles and bastard-strangles frequently

* Farriery Improved. By Henry Bracken, M.D., 1769.

† The Gentleman's Farriery, by T. Bartlet, Surgeon, 8th edit. 1773.

‡ Op. cit., at page 217, article "Morve."

ended in glanders; in fact, that the two diseases were alike, glanders being but an imperfect evacuation of the strangles. But *farcy* being the disease which, of all others, most frequently terminates in glanders, it has received from farriers the appellation of its *cousin German*. Ordinarily, in horses, the disease is of a chronic nature; but on occasions it assumes the acute form. In mules and asses it is constantly acute*.

VITET, 1783, describes glanders to consist in a discharge from the nose of a virulent and contagious humour, in the first stages unaccompanied by fever or cough, or loss of appetite or spirits. The horse, mule, and ass, are the only animals obnoxious to it. The disease commonly commences in one nostril. Its course is very uncertain. The horse may survive one, or two, or even three years. Some regard the *pituitary membrane*, others the *lungs*, as the seat of glanders. For my own part, I willingly class myself with those who think both the *head* and the *chest* the seat of the disease. Those who have considered glanders to be a local disease have essayed by injections to accomplish a cure; while the advocates for its being a pulmonary disease have made use of detersions, such as the terebinthinates and balsams; while those who have regarded as its seats both the pituitary membrane and lungs have been as fond of employing internal as external remedies†.

VOLPI, the Italian professor of veterinary medicine, suspects strong identity in nature between glanders and syphilis. Glanders is so frequently associated with farcy, that many assert they are the same disease. Farcy, however, is much more easily cured than glanders. Glanders is only curable while recent: after it has long existed, the organic lesions occasioned by it render all our remedies of no avail, these said lesions proving the disease to be of an inflammatory nature. It is absurd to consider the submaxillary tumefied glands as the focus of the disease, and to imagine that extirpation of them will tend to its removal.

SNAPE condemns the operation of trepanning, as insufficient to cure the glanders; sagaciously asking, "can success be expected from the irrational procedure of attempting to remove the defects, previous to subduing the original cause, *which is seated in the*

* Observations sur les Causes de la Morve, &c. &c.

† MEDECINE VETERINAIRE, par M. Vitet, vol. ii, 1783.

blood, where it is introduced by various means?" This author seems to have had an impression that glanders and farcy were but the same disease; for he says, "the first stage of glanders is *farcy in the head,* and the last stage of a farcy in the head is *a confirmed glanders**."

TAPLIN, 1791, after, in his own peculiar happy vein of irony, holding Lafosse, and "his trumpeter, Bartlett," up to ridicule for the notions of "the seven different kinds of glanders," and "the cures almost incredible," through trepanning, syringing, &c., that were said to be performed, gliding from the eminence of satire "gently into the vale of reason," informs us, as his own opinion on the subject, "that any corrosive matter discharged from the nostrils, and suffered to continue for a length of time, so as to constitute ulcerations and corrode the bones, will degenerate into, and constitute, the disease generally understood by the appellation of glanders: every stagnant, acrimonious, or putrid matter is possessed of this property, and more particularly when lodged (or by sinuses confined) upon any particular part"—"whether proceeding from an ulceration of the lungs, or the inveterate glandular discharges from the head (where the case is of long standing, and the bone carious), they are equally *incurable*†."

ST. BEL, 1792, the first Professor of the Veterinary College of London, adopted the opinions and practice of Lafosse on the subject of glanders; and so, his experiments at Lyons, detailed here after his death, exhibit a series of nasal injections, united with antimonial and mercurial preparations by the mouth, &c‡.

THE LATE PROFESSOR COLEMAN made a division of glanders into *acute* and *chronic.* "That form or kind is acute which, like other acute diseases, proceeds regularly through its course and ends in death; that chronic, which, so long as it continues so, will not destroy the animal. This is illustrated by what happens in chancre, bubo, and (venereal) gonorrhœa: one requires the administration of mercury, the other will in time run itself dry."

"ACUTE GLANDERS may be defined to be, a *specific* inflamma-

* A Practical Treatise on Farriery; from the management of the late Mr. Snape, farrier to their Majesties and to the second troop of Horse Guards.

† The Gentleman's Stable Directory, by Wm. Taplin, Surgeon. 1791.

‡ This account is taken from Mr. Blaine. Op. cit., p. 218.

tion and ulceration of the Schneiderian membrane, more particularly of that part of it covering the *septum*, that appearing to possess *a higher degree of sensibility*. It is generally accompanied by tumefaction of the submaxillary lymphatic glands, which glandular tumour or tumours is simply the consequence of irritation."

"By *specific* is meant, an inflammation not attended with the usual phenomena. If the inflammation could be as well recognised by any characteristic appearance as the ulceration is, then the horse ought to be pronounced glandered prior to the supervention of the ulcerative stage: to this there are analogous instances in the human subject. No surgeon decides on a case of syphilis before chancre makes its appearance, or on small-pox until pustules have formed. We may safely lay claim to two discoveries respecting glanders and farcy. One is, that the whole mass of blood has been found to be contaminated; the other, that both diseases may be, and are commonly, produced without the agency of contagion. Mr. HUNTER concluded that the blood was never in itself diseased, because he could inoculate with it in small-pox and syphilis without infecting the subject; whereas, if he made use of lymph, he produced the disease. This is no proof, however, that the blood contains no morbific matter; for the poison mixed with it may be, as we now know it to be, in too diluted a state to take any effect, though, in the purulent discharge, it appears to exist in a concentrated form. On the same principle, a person may drink a tea-cup-ful out of a pail-ful of water containing a certain quantity of arsenic, with impunity; but, should he take a quart or a gallon of the same fluid, he may probably experience from it deleterious effects. Aloes itself is a poison exhibited in large doses. Another proof of the blood being diseased, is, that syphilitic infection will frequently create disease in the throat: how could the poison get there but through the medium of absorption and circulation? Be this explicable however as it may, we have proved the fact beyond all doubt and dispute by the test of direct experiment."

"Glanders is not so prevalent in the summer as in the winter season; and it has, in several instances, been known to be epizootic, particularly when horses brought from camp or other external situations have been returned into warm and unventilated quarters.

If precautions were taken to properly ventilate stables, the disease might be altogether eradicated. In further proof of the disease originating without contagion, we have instances of glanders breaking out among horses that have been embarked in a perfectly healthy condition on board of ships entirely new. In the expedition to Quiberon, the horses had not been long on board of the transports before it became necessary to shut down the hatchways: the consequences of this were, that the horses were almost suffocated with heat, and that almost all of them disembarked either glandered or farcied. The malady which broke out among the men engaged in the Walcheren expedition attacked almost all of them, hence it was considered to be a contagious disease; afterwards, however, it proved not to be, nor was this assumption required to explain its endemic character, for they all (if the expression may be allowed) ate it, they all drank it, and they all breathed it. It is for want of reflection upon these points that people are so often differing about the contagious and non-contagious nature of diseases. It has been observed, that glanders is mostly present where grease is prevalent; indeed, this fact led SAINBEL to say, that grease was a cause of glanders: but, in truth, it is no more a cause than dung and urine are causes; it is simply operating as another source of atmospherical impurity. Under such circumstances, the fetor of grease will predominate, as the stench of a goat will, over the effluvia arising from the excretions and secretions; and it was the observance of this fact probably that gave origin to the vulgar notion of the salutary influence of goats kept in stables."

"The acute glanders is the same disease, in regard to the nature of the poison, as farcy and chronic glanders; I am, however, not so confirmed in my opinion concerning the affinity of the last as in respect to farcy. Acute glanders hardly ever proves fatal without farcy making its appearance before death: on the other hand, farcy rarely or never of itself puts an end to life, it being superseded commonly by acute, sometimes by chronic glanders. Independently, however, of these practical observations, we have shewn their essential identity by direct experiment: we have produced farcy by inoculation with the poison of acute glanders, and

acute glanders by inoculation with the matter of farcy: we do not always succeed, it is true, but one case proves as much as a thousand."

"CHRONIC GLANDERS commonly affects but one side of the head: if, therefore, a discharge makes its appearance from one nostril alone, that of itself is strong presumptive evidence of the presence of this disease. This partial flux cannot come from the lungs, for, if it did, the other nostril would discharge too*: it must have its issue from some part anterior to the larynx; consequently it can have no other source but the membrane of the nose or that portion of it lining the sinuses. Should it come from the nose, the membrane, most likely, will have a redder aspect upon that side of the septum than upon the opposite, or there may be a disposition to, or actual ulceration. If the nasal discharge is considerable, and, at the same time, the animal to all appearance continues in the enjoyment of good constitutional health, such circumstances should serve to strengthen your suspicions. People cannot conceive how it is a horse can have glanders so long as he eats and drinks, and does his work like one in perfect health; this very fact, however, I repeat, is corroborative of an unfavourable prognosis. Another circumstance to be attended to is, that the nasal flux has little or no fetor; offensiveness of breath is pretty certain evidence that glanders is not present: not but what pneumonia and glanders may exist in the same subject, but, fetid breath commonly proceeding from the lungs, and this chronic discharge coming from the sinuses of the head, the one disease is not in any way necessarily connected with the other. In glanders, the nostrils are contracted and gummed with inspissated discharge; but the flux is not offensive, or, at least, to the same degree as pulmonary fetor is. Again; in glanders, generally speaking, there is, on the same side from which the discharge comes, a defined swelling of the submaxillary lymphatic glands, which is attached closely and immoveably to the side of the jaw: if it is a tumour of considerable size, one that is diffused and extends inwardly, or one that is very moveable under the fingers, most likely it is not lymphatic, and

* See my remark concerning this at page 179.

therefore not connected with this disease. So far as my observation has gone, no such glandular swelling happens in common inflammation."

"In chronic glanders, then, the general health, appetite, spirits, &c. remain unimpaired. There is simply a discharge from one nostril, unaccompanied by fetor, with a circumscribed immoveable tumour under the jaw on the same side. In some cases, however, the flux comes from both nostrils: here, commonly, both sets of glands are tumefied, the nature of which swellings will serve to direct the diagnosis; in addition to which, most probably, the animal's health continues good, and the discharge is not offensive. But, if cough be present with such a discharge, the submaxillary tumefaction uniformly diffused between the sides of the jaw, and there are feverish symptoms and evident impairment of the general health, the lungs are probably in this case the seat of disease. Still, in order that we may be certain about the existence of chronic glanders, we have no occasion to implicitly rely even upon these signs, for we may at once decide the point by the test of practical investigation. We have only to perforate (with a spill-gimlet) the frontal sinuses, and inject some clean tepid water into them: should the sinuses be healthy interiorly, the fluid will run from the nose either limpid as it was thrown in, or merely be tinged with blood; whereas, in a case of disease there, the water will carry down with it the matter lodged in the cavities. It is not uncommon, in chronic glanders, to observe a horse discharging profusely for several days, and then suddenly to cease running altogether. This arises either from inspissation of the matter collected, or from the effusion of adhesive matter within the sinus, which settles at the bottom of the cavity, and plugs up the aperture by which it communicates with the chamber of the nose. During the interval of suspension no sign of disease remains but the submaxillary tumefaction; there is no discharge, and consequently there can be no source of contagion; but, the collection of matter continually augmenting, at length the plug is forced out, and the flux returns with more virulence than ever. In Smithfield, it used to be a common cheat to sell a horse having this disease for a sound one; the trick

consisting in stopping up the nostril of the affected side with a piece of sponge, which, of course, received and imbibed the discharge."

"Though we have no specific remedy for chronic glanders, no more than we have for acute, the Professor has seen more cases of recovery from this than from the latter disease. When the discharge early in this affection becomes profuse, and continues long so, it will end, every now and then, in a spontaneous cure, as is the case so often with gonorrhœa: at other times, the flux will persist and run for years, and the horse, so long as the disease continues chronic, maintain his full health. Many horses of this description are to be found in various parts of the country working in road waggons, brick carts, farmers' establishments, &c. Notwithstanding that the disease is not only incurable, but is contagious. The matter emitted from the nose of a horse having chronic glanders has the property of propagating, through contact, either acute or chronic glanders, or even both."

FERON, 1803, in discarding the notions of Lafosse, gives a very imperfect outline of such as were entertained, in his day, by Coleman. He tells us, "the disorder may be divided into two states, the one chronic, and the other acute. The first is easily distinguished from the other, as the running at the nose is but trifling, and of a very transparent colour, and no ulcers at the nose are yet observable; whilst in the second case, or in the acute stage, the running and the ulcers in the nose have a very offensive smell," &c. The *earliest* stage of the disease "I call *chronic**."

SHIPP, 1808, among his "Cases in Farriery" relates but one of glanders; and that occurred in a horse "belonging to a glazier of Doncaster;" from which solitary instance we are led to infer, either that glanders was unknown in his own regiments, or that he had kept no records of any military occurrences of the kind. The case itself is only worthy of mention as shewing the author's belief that the horse "might live *many years* with the disease, and in that time contaminate a great number of (other) *good* horses," &c†.

* A New System of Farriery, by John Feron, veterinary surgeon 13th Light Dragoons. 1803.

† Cases in Farriery, by John Shipp, veterinary surgeon 23d Light Dragoons. 1808.

PEALL, the Irish veterinary Professor, 1814, imbibing the more correct pathological views of glanders and farcy which had been formed by Coleman, surprises us when we find him saying, that, "in a practical point of view, it is not very material to inquire whether the farcy and glanders (which he regarded as the same disease) originate *in the arterial or the lymphatic system* !*"

SMITH, Veterinary Surgeon to the 2d Dragoon Guards, published in 1818 the results of his observations, in his regiment, on glanders†, which, as we have already seen, are chiefly interesting to us on account of the pertinacity with which he, on the strength of the facts and cases he adduces, argues the great improbability and irreconcileableness of the doctrine of the spread of glanders through contagion. He places glanders "either in the nasal, frontal, or maxillary sinuses; as a discharge from the lungs, trachea, or fauces, through the nostrils, does not constitute a real case of glanders."—Although "it frequently happens that only one of the nostrils, or one of the frontal sinuses, is diseased;" Mr. S. has never seen either of the maxillary sinuses diseased unless the frontal sinuses were also affected." Mr. Smith, like Professor Coleman, regards glanders as "inflammation, increased secretion, and ulceration of the mucous membrane lining the nostrils and the other cavities of the head." He has seen but "eight cases in which death was occasioned by suffocation."—"In several cases he has seen the mucous membrane ulcerated, and the bones affected, without any enlargement between the maxillary bones." He feels it "scarcely possible," from the "various shapes" glanders assumes, to give such an account as will "enable a person who has not been in the habit of investigating the symptoms, to determine with certainty whether a horse be really glandered or not:" he has "seen many horses pronounced glandered where no indication of the disease could be found to exist in the head after death."—Follow-

* Observations on the Diseases of the Horse, by Thos. Peall, Veterinary Professor to the Dublin Society, &c. Cork, 1814.

† The Horse Owner's Guide: containing Valuable Information on the Management and Cure of Diseases incident to Horses; more particularly that very fatal Disease called GLANDERS. By Thos. Smith, late V.S. 2d Dragoon Guards.

ing Coleman, he reckons but "two species of glanders,—*acute* and *chronic*."—"The acute disease is situated in the *nasal sinuses*, and is frequently a primary disease, as well as a sequel of other diseases previously existing in the system, particularly *farcy*, which has probably occasioned them to have been mistaken for the same disorder. But, notwithstanding they are produced by the same cause, and appear in the same subject, *they are nevertheless distinct diseases, having no other affinity than there is between a primary and a secondary disease.*" Mr. Smith has "seen glanders without farcy produced by diseased liver"—and "both farcy and glanders are the consequence of diseased mesentery"—also farcy by itself and glanders by itself from the same.—"When glanders is a concomitant of farcy, it is generally in consequence of that disease having extended to the mesentery;"—this membrane "falls into decay, and then glanders appears, generally, a few days before death; not because it is the same disease, but because the nostrils, being an extreme part, and their living power diminished, the mucous membrane becomes susceptible of inflammation, which is probably excited and increased by the ingress and egress of the air in respiration:" &c. Mr. Smith has "never seen death occasioned by the acute glanders, except by suffocation or *hæmorrhage*. If it was a constitutional disease, would it not affect the system, and produce death in a variety of other shapes? In the chronic state, glanders does not produce any other disease in the system"—"nor occasion death, *except by destroying the orbitary processes of the os frontis, and affecting the brain.*" In one subject he has "seen death occasioned by a morbid affection of the brain." In another, "matter compressing that organ so as to occasion lethargy."

AYGALENQ, a French physician, in a pamphlet, published in 1809, entitled, "Aperçu General sur la Perfectibilité de la Medecine Vétérinaire," in proposing to adopt names derived from human medicine for our veterinary ones in ordinary use, suggested for glanders that of "affection contagieuse du système lymphatique;" plainly shewing from this what his views were in regard to the pathology of glanders.

DUPUY, 1817, whose celebrated work on TUBERCULOUS

DISEASE, commonly called *glanders, consumption, strangles, farcy, &c.*, I was the first to introduce to the notice of my brother veterinarians in this country, occupies one of the highest stations in our present historical catalogue, as being the author of an entire new doctrine on the pathology of glanders, farcy, &c. Holding in little estimation the opinions of his predecessors; looking upon them as altogether insufficient to account for the phenomena exhibited in glanders and farcy, and resolved, if possible, to discover "the source of the evil," he traced the origin of both these diseases, as well as that of several others, not of horses only, but of dogs, cats, monkeys, and domestic fowls as well, to the existence and development of *tubercle* in some part or other of the body, and, accordingly, he ranged all these several disorders of the animals mentioned under the generic appellation of "TUBERCULOUS AFFECTION."

"Tubercles, which appear as little, firm, grey, hard bodies, are organic productions, originating from causes unknown, existing at first in small numbers, and interfering but little with the functions of the parts generating them. In this, their incipient state, the animal enjoys perfect health, and continues in the preservation of it up to the period of the disorganization of the tubercle, those changes in its interior which end in its mortification and ulceration. In time, they increase in number, and the result is a discharge commonly from one nostril, which, at its commencement, is regarded as *catarrh* or *strangles*. This stage may occupy a term of five or six years*. In the second stage the tubercles grow soft, break, and become converted into ulcers. There are varieties of tubercles; the most common are the *miliary;* and these are the precursors of that species of ulceration which I have described (at page 169) as resembling worm-eaten wood. They are found in greatest numbers in the course of the large veins upon the septum. They are also found within the duplicature of the *ala nasi*, and upon the turbinated bones, pursuing the course of the large bloodvessels. They may even exist within the substance of the cartilage of the septum, and thus assist in its destruction. The membrane lining

* Dupuy cannot exactly say how long: once developed, however, resolution is hopeless.

the sinuses is rarely found tuberculated. Tubercles have, however, been observed in the lungs, lymphatic glands, cellular membrane, skin, testicles, lining membrane of the alimentary canal, &c. Should glanders be complicated with a tuberculous affection of the lungs, the animal coughs frequently, tires soon, perspires readily: latterly he loses his vigour and energy, becomes washy, soft, and lazy; subject to catarrh, ophthalmia, cutaneous eruptions, farcy, œdema, &c. And now, soon, glanders becomes complicated with farcy. *Farcy buds are nothing else but scrofulous tubercles:* they grow, develop, and decline, the same as pulmonary tubercles. *Glanders bears, therefore, the closest analogy to phthisis in man.* The phthisis of the pituitary membrane will sometimes turn of a cancerous nature; at other times it has been known to become typhoid."

FARCY, Dupuy regards as the same "tubercular affection" as glanders, notwithstanding it is "often *local* and an *original* affection;" and on this account "it admits of being cured, while glanders has resisted every remedial means hitherto used." When we find one veterinarian declaring farcy to be curable, another incurable, "the probability is, they have been treating different varieties of the same disease: in one case the farcy may have been *local*, in the other *constitutional*."

OF THE PULMONARY TUBERCLE, Dupuy has observed "three varieties, the *miliary*, the *pisiform*, and the *unciform*. Each tubercle is composed of an envelope or cyst, and of a whitish substance easily crushed between the fingers, which Messrs. Dulong and Labillardière have found to resemble osseous matter. Very considerable depositions of this bony substance are occasionally seen in the proper pulmonary tissue, especially in the ox species. When the tubercles are of the large kind their number is limited; but the *miliary* species are innumerable. While forming, they are firm, organized, and *always found in the course of the blood-vessels*, whose caliber is singularly augmented. They grow and become developed like any other organized bodies, without our being able to offer any rationale of the process, or of the space of time they continue organic, prior to their mollification and degeneration. They commonly end in ulceration and destruction of the

pulmonary tissue. The lungs present *vomicæ* or cysts of various sizes, containing thick reddish matter, or else a more liquid cheese-like matter."

Dupuy has likewise discovered miliary tubercles within the parenchyma of the liver and kidney; but much oftener than in either of these bodies, within the testicles. Even the epidydymis has contained them.

Dupuy agrees with Gilbert in regarding strangles as so far "identical in its nature with glanders;" — "that strangles and bastard-strangles as well as farcy, grease, and ophthalmia, are frequently the results of one and the same specific cause;" that cause being "the tuberculous affection."—"Glanders itself," he adds, "*is a specific disease*, and not a termination of strangles, bastard-strangles, cynanche maligna, farcy, watery farcy, catarrh, &c. When the lungs are affected, *it is a sequel of the tuberculous disposition*, and not a termination of pneumonia. On the contrary, pneumonic affections are very often consequences of the tuberculous affection." And in another place—"observation has shewn that puriform matter coming from the bronchiæ, which is discharged by the nose, *does not cause glanders in passing over the nasal membrane*, as veterinarians have imagined."

Dupuy informs us that glanders may exist in that "latent" form, that it may not by the most acute observation be discoverable during life. "Tubercles will exist not merely in the first, but even in the second degree of development in the internal viscera, without deranging their functions, and particularly in the lungs." Or the disease may, after having made its appearance, subside for a time, and afterwards re-appear, without any ostensible reasons.

Speaking of what in France is called *acute glanders*, Dupuy tells us "it is a disease of another order. *It must not be confounded with the tuberculous affection;* rather, it has analogies with the typhus of cattle or with the great epizootics which at different periods have ravaged France and Europe."—"All I am desirous," adds Dupuy, "of impressing, is, that *this disease cannot be considered as glanders.*" It is consequently one concerning which, for the present at least, we need take no account*.

* Op. Cit., page 204.

MOREL, 1823, denies the specificity of glanders, regarding the disease as no more than the natural consequence of chronic inflammation of the mucous lining of the aërial passages*.

GERARD, 1827, asserts the identity of glanders and farcy. "Glanders," he says, "is no more than *farcy in the nose*. And the farcy-buds and pimples observable upon the pituitary membrane constitute lesions of the same description, in both instances succeeded by ulceration†."

RODET, 1830, the Veterinary Professor at Toulouse, adopted the Dupuy theory, but with such important modifications as gave it a more regular and systematic form. Admitting tubercles to constitute the especial and proximate cause of glanders, he—not leaving us, as Dupuy has, in doubt—ascribes their origin to a constitutional influence, dependent upon a lymphatic temperament, vicious conformation, hereditary disposition, or upon accidental causes, such as the relapse and chronic prolongation of diseases at first acute and of a different nature; from which it follows that glanders may be either constitutional or acquired. The former will be primitive or secondary, according as the tuberculous affection has its seat exclusively or at least originally in the pituitary, or as that membrane becomes affected through extension of the disease from the lungs; the latter—or acquired disease—will be the result and producer of phlegmasial irritations, repeated or more or less protracted, sometimes in the pituitary alone, but oftener, if not always, in the mucous membrane lining the air-passages, a circumstance which, at the time that the degeneration (of tubercles) exists nowhere but in the nose, goes far to shew that glanders is an affection purely consecutive to these same irritations."—In fine, according to Rodet, glanders is no more than a symptomatic disorder—"a morbid state ever consequent upon other disease‡."

BENARD, in some researches he made into the nature of the blood in glandered horses, discovered albumen to be predominant in it according to the length of time the disease had existed, and

* Traité Raisonnée de la Morve, 1813.

† Remarques et Observations sur l'Identité de la Morve et du Farcin. Recueil de Med. Vet., tom. iv, p. 269. 1827.

‡ Op. cit., page 215.

that any amelioration that took place of the patient under its influence was attended by a correspondent diminution of the quantity of albumen. In some horses virulently glandered, albumen constituted seven-eighths of the mass of blood. And this excess of albumen in the blood, Benard ascribes rather to disease of those excretories of the body which give issue to albuminous secretions, than to irritation or modification of the vitality of organs whose function it is to renovate the circulating fluid*.

BARTHELEMY, in discussion before the Royal Academy of Medicine, wished to be understood that he had never pronounced glanders to be a *local* disease. Acute glanders cannot be considered as a local affection, from the circumstance of its being accompanied by an eruption all over the body: it is a *constitutional* malady, whose principal, essential, characteristic effects shew themselves in the nasal cavities. Nevertheless, some facts lead him to believe that the particular affection, denominated *chronic glanders*, is a local disease*.

DELAFOND thinks that glanders is often bred in the system. So far from imagining that the disease originates *always* in the pituitary membrane, he affirms that in an immense majority of cases its seat is *in the lymphatic system;* and that its nature consists in an alteration, about which we know little, of the *lymph* as well as of the vessels conveying it*.

HURTREL D'ARBOVAL sums up the ancient as well as modern doctrines on glanders, and concludes his interesting summary with his own notions on the subject:—"Lafosse appears to us to have been the first to have hit upon the true seat of glanders. In shewing glanders to be a local malady, confined to the cavities of the nose, to the sinuses connected with it, and to other parts of the nasal membrane, he has established a fact which to us appears indisputable, one that is actually admitted—as, indeed, it ought to be—by all candid persons, by all such as make it their rule to found their medical observations upon pathological anatomy and physiology."—"If we have been thus fortunate in our discovery of the true seat of glanders, it only remains for us to agree concern-

* D'Arboval's Dictionary, article "morve."

ing its nature. To how many hypotheses, founded upon analogies more or less erroneous, has not this point given origin? and what are we to think about a disease whose nature has given rise to so much diversity of opinion? Let us leave to the accurate observations of minds unbiassed and guided by truth alone the important task of discovering and unveiling to us the veritable, the intimate nature of glanders; and, while these researches are making, forming our opinion from such phenomena as are already within our knowledge, let us be content with viewing the disease as *a specific inflammation of the pituitary membrane; acute* in its *incipient* stage, however short that stage may be—*chronic* in its other stages, possibly so from the beginning; and, like every other *phlegmasia*, susceptible of re-acting upon other organs with which they are connected through sympathy, through reciprocity of relation connecting one with the other, and rendering them reciprocally dependent one upon the other. In the actual state of our knowledge we must not expect to be able to explain what we mean by the inflammation being *specific;* in what it differs from other inflammations of the same tissue; why it should be contagious and hitherto prove incurable; why, as it resembles catarrh at its outset, it does not terminate in the same manner, but, on the contrary, assumes specific characters, distinguishing it from *coryza*, *angina*, and what is called *strangles*. When we shall have thoroughly examined and probed this question, when we shall have sufficiently studied all the points bearing upon its unravelment, perhaps we shall find fewer difficulties standing in the way of its solution;—perhaps we shall discover that glanders does not differ so much as we had imagined from *coryza*,—perhaps we shall find out that it is nothing more than a modification of *coryza*. It may be, that glanders differs from nasal catarrh in nothing beyond its being obstinate and tardy in its progress; that it is analogous to an habitual and chronic coryza—or nasal gleet—which may, the same as glanders, entail serious consequences; may be, in spreading by degrees to the lungs; may be, in giving rise to ulcerations and excrescences upon the pituitary membrane. Besides, do we not know that, in highly acute coryza, the nasal discharge, especially while it continues clear and limpid, is acrid to that degree that it irritates and even

excoriates the skin, clothing the doubling of the nostrils over which it flows? The facility with which horses, standing together in the same stable, *catch the same catarrhal disorder*, might lead us to presume that the discharge, at least up to a certain period, harboured some contagious property. After all, these are but hints that we have thrown out; and so far are we ourselves from regarding them as infallible, that now we are going to offer some further considerations apparently of a contradictory character."

"Nevertheless, before we conclude, we shall frankly give our own opinion on the subject. According to our notions, *glanders is a disease of the pituitary membrane*—an abnormal secretory irritation of it—either arising spontaneously or caused by contagion. The idiopathic disease may be primitive or consecutive to the internal change, be it of the entire economy or of one of the principal systems, especially the respiratory. As for the different forms or modifications under which glanders appears, *chronic* and *acute*, *pustulous* and *ulcerative*, *ecchymotic* and *gangrenous*, these are but phases of endless variety, consequent on the conditions of individuals and on extrinsic causes*."

PROFESSOR SEWELL'S opinions on glanders—as they stood at least so far back as the year 1827-8—will be found in an Introductory Lecture delivered by him for that sessional year, at the Royal Veterinary College; which was by myself taken down in short hand, and afterwards published in the first volume of THE VETERINARIAN. I here transcribe them, with some slight alterations of wording and arrangement† :—

The Professor believes the *lungs* to be the *original seat* of glanders, and the affection of the nose to be *secondary*. He agrees with Dupuy in thinking that *miliary tubercles constitute the original disease;* and that these suppurate, and by coalescence form considerable abscesses in the lungs, the contents of which

* Op. cit., at page 217.

† In reply to a letter I wrote to the Professor in March 1844, submitting to him the statement I now introduce here, and requesting to be informed if this coincided with his present views, I received for answer—"that he (the Professor) is confirmed by time and experience in his opinions and views which he expressed on the subject of glanders in his Introductory Lecture for 1827-8."

become discharged through the nose, and thus constitute glanders. *In the early stage,* even in this (tuberculous) condition of lung, Professor Sewell believes that many horses are *recoverable.* He has ascertained that matter taken from these suppurated tubercles *(vomicæ)* will by inoculation produce glanders as surely as one (planted) potatoe will produce another. Asses inoculated with such matter have had tubercles produced in their lungs *in the space of five days ;* and what renders this experiment more satisfactory, is, the fact of asses *rarely* having (from other causes) tubercles in their lungs.

YOUATT regards glanders as " inflammation of the Schneiderian membrane, *strictly local for awhile,* and during its insidious state; and even when the discharge becomes gluey, and some time after chancres have appeared, the horse is apparently well."—" I cannot say," continues Mr. Youatt, " that glanders, like the rot, improves the condition; but I have seen that often, and for a long while, for months and even for years—it does no injury to the general health. The inflammation is purely local, and is only recognized by that invariable accompaniment of inflammation,—increased secretion. Although that secretion is poisonous, and its neighbours fall victims to it, it affects not the animal whence it came. But this continued inflammation at length tells, or other circumstances increase its power and its effect, and the vitality of the tissue is destroyed and suppuration succeeds; but not that of a healthy character—not that which is connected with reproduction; —it is malignant and destructive from the beginning; and soon another process commences, salutary or destructive, according to circumstances. There are absorbents on every surface; they are found on the surface of the chancres which are beginning to appear; and they take up the fluid which is secreted from the ulcers, and they soon feel its poisonous influence. The absorbents become inflamed and tumid, and, where the virus rests, as it were, viz. at the valves, destruction of the part ensues, and the chancres spread in every direction."—" Some portion of the venom passes on, and is carried into the circulation and mixes with the blood, and vitiates the blood."—" Then comes the constitutional affection. The membranes of the neighbourhood, and those most susceptible of irrita-

tion, first yield. Chancres proceed down the pharynx and larynx, and gradually the ulcers spread over the frame. The acrimonious fluid, mingling with the blood everywhere, begins everywhere to attack that tissue which is most susceptible of its influence, viz. the lining membrane of the absorbents; and by degrees, and in most distant parts of the frame—the hind extremities are a favourite situation—the absorbents become chorded, and tumours appear in the situation of the valves, and ulcerations ensue. First, the superficial absorbents are affected; then the deeper-seated become involved: the whole frame is empoisoned; farcy is established in its most horrible form, and death speedily closes the scene*."

VINES, 1833, deserves the thanks of the profession for the pains he has taken in the practical investigation of a subject, some of the main doctrines concerning which he has had the boldness to question the validity of, and in their place has introduced others, if not altogether novel in their character, at least, original in this country; which I shall, by quotation, endeavour to put my reader fully in the possession of. That opinion on which Coleman and his followers grounded their theory of the nature of glanders—the existence of *a poison in the blood* of glandered and farcied horses—Mr. Vines denounces as "great error" (p. 2): he believes neither in *specific disease*, nor in *specific poison*, nor in *specific effects*. "All the symptoms of disease which constitute glanders and farcy," he avers, "invariably depend upon *the unhealthy state of the system*, into which it is reduced or brought, and not, as is generally supposed, from (upon?) *a specific poison* contained in the blood" (p. 2).—"In common inflammatory diseases, the system is always in a more or less healthy state; but, on the contrary, when those symptoms of disease which constitute glanders or farcy occur, the system is always in a more or less unhealthy state; and in proof of this I may advance, that the diseases of a common inflammatory nature, such as *strangles, colds, inflammation of the lungs, grease, injuries*, &c., from neglect or improper treatment, frequently degenerate into what is commonly termed glanders or farcy" (pp. 6-7): so that—putting *poison* and *specification* altogether out of the ques-

* Mr. Youatt's Veterinary Lectures in THE VETERINARIAN for 1832.

tion—glanders and farcy are nothing more than "unhealthy disease" of the "mucous membrane which lines the nose, the substance of the lungs, the skin, and the cellular membrane underneath" (p. 4). This constitutes the groundwork of Mr. Vines' doctrine.—On the subject of *pulmonary glanders*, Mr. Vines assures us that "there are cases, both of glanders and farcy, where no alteration or disorganization of these parts (the lungs), or any disease of the lungs, are to be found" (p. 11).—"Glanders and farcy have hitherto been most commonly described and treated as distinct and separate diseases; whereas they are, if properly considered, *only the unhealthy, and, not infrequently, the latter stages of common inflammatory diseases of certain parts of the body, generally of the mucous membrane of the nostrils, cellular tissue, or substance of the lungs, the skin, or the connecting cellular membrane underneath;* and the inflammatory diseases which glanders and farcy most frequently follow are those termed *strangles, true* and *false; common colds; distemper; acute and subacute inflammation of the lungs; general or local dropsy (anasarca or œdema);* and the latter whether it occurs from general or local debility, conjointly with *grease*, or *injuries* of different parts of the body or not; as, for instance, when a horse has been for a time labouring under one or other of these common inflammatory diseases, from the effect of which, or by improper treatment, the system has been brought into an unhealthy state. When such changes as these take place, and the discharge and ulcerations become unhealthy, the disease with which the animal was before afflicted is now altered from its original character; and, under these circumstances, the animal is usually considered to have become *glandered* or *farcied*. Glanders and farcy not only follow such diseases as have been just mentioned, but also appear sometimes *in unhealthy and debilitated animals from over-exertion and other causes*, and without being preceded by any of the former named diseases of a common inflammatory character: *and this is occasioned by the system being reduced to an unhealthy state, from the same causes as those which, in more healthy and vigorous animals, would be found to produce strangles, common colds, inflammation of the lungs*," &c. (pp. 12-13). In cases of glanders following colds, &c., Mr. Vines does not consider them,

strictly speaking, as glanders, "until the discharge or matter from the nostrils *is capable of producing similar effects*," &c. (p. 167). Mr. Vines makes a division of glanders according as it is confined to the head, or as the head and lungs are both diseased:—"In order to enable those who may be disposed the better to comprehend the subject, I shall divide the symptoms which constitute glanders into two classes, beginning with those which are confined to the head." Here follows "Sect. I," treating of "Glanders when confined to the mucous membrane lining the nose and cavities of the head;" and, "Sect. II," "Glanders, when the head and lungs are both diseased." The treatment for glanders and farcy recommended by Mr. Vines I shall defer the account of until we come to consider that branch of our subject.

BLAINE has always "felt convinced of the *specific nature* of this affection (glanders), which, for variety in its mode of production, continuation, and termination, has no parallel; and to which only we can attribute the unsettled state of the opinions concerning it, but which do nothing to unsettle its claim to the character of a *direct and peculiar poison* which can always beget its like, and its like only. If the matter of farcy and the matter of glanders could produce at one time grease or strangles, and at another mild catarrh, I might doubt," says Mr. Blaine; "but when I find nothing but the same type of disease follow from the infection, I can only consider such an infection as one *sui generis**."

SPOONER, 1842, the able Editor of White†, has, in one of his

* Op. cit., at page 218.

† At page 200 I have quoted from the *seventh* edition of White's "Treatise on Veterinary Medicine"; nor did I know, until Mr. Spooner's reconstructed work came into my hands, that there had been a sixteenth edition. And at page 236 I have named White as authority for glanderous matter having been administered to horses in the form of bolus *without effect*. Now, however, that I have Mr. Spooner's edition before me, I can—and must in justice to the original author—correct myself.—"Glanders," in this edition, White tells us," is a contagious disorder, which is communicated by inoculation, and *by swallowing matter*, and not by effluvia proceeding from a glandered horse, or a stable in which a glandered horse has been kept." And in another place, "I am inclined to believe that the disorder is more readily caught *by eating the glanderous matter* mixed with the oats and hay than by drinking it with the water," &c.—White, edited by Spooner, 1842.

interpolatory paragraphs, favoured us with his own opinions on the nature of glanders "These views (Dupuy's) are deserving of great weight, but we cannot altogether coincide with them; for, although perhaps in the majority of cases tubercles are found in the lungs of glandered horses, yet there are instances in which there are none to be found there or elsewhere. The particular seat of glanders is certainly *the membrane lining the nostrils and chambers of the head*, although in a great number of cases the lungs are involved. We cannot say whether in all cases the constitution is affected, or whether in some instances the disease is entirely local; but, in the subject chosen by Professor Coleman for experiment, it was clearly proved that the blood was infected. There is evidently a much greater predisposition in some horses to receive the disease, either from infection or otherwise*," &c.

TARDIEU†, bringing our literary history up to 1843, has made a systematic arrangement of the several important questions touching glanders and farcy, and with considerable clearness and ability has respectively examined them :—

1st. He considers the identity of glanders and farcy, in respect to their production—to their being allied by the same specific virus —as a point settled; but, he asks, are we thence to conclude, as other writers have done, that their *pathology* is identical? This grave question, involving no less than the knowledge of the *nature* of glanders and farcy, he confesses himself unable to decide, further than that the diseases differ in their nosological characters.

2d. Glanders he regards as essentially consisting in *lesion of the nasal fossæ :* all cases not shewing this belong to farcy; and this applies to men as well as to solipedes.

3d. That farcy, in the chronic stage, may present different phenomena in men and animals without losing their specific relation to

* White's Compendium of the Veterinary Art, edited by W. C. Spooner, V.S., &c. 1842.

† De la Morve et du Farcin Chroniques, chez l'Homme et chez les Solipèdes, par Ambroise Tardieu, Docteur en Médécine, 1843.

each other. These constitute his "Considérations Préliminaires." The work itself is devoted to the consideration of what he denominates "chronic" farcy and glanders in man.

Few histories of disease, perhaps, carry with them more interest than the one which, by extracts from authors, writers, and lecturers on the subject, we have just finished tracing, from the earliest records down even to the present period. The primeval notion was, that the nasal discharges came from the brain—nay, consisted even of the cerebral matter itself running away through the nostrils: and considering how white and curdly (brain-like) the nasal fluxes in chronic glanders often are, the idea was not, in the times in which it was conceived, so very romantic a one. Succeeding writers located the disease in some of the viscera—in the liver, the spleen, the lungs, &c.; and in later times it was, in accordance with the humoral pathology in vogue in those days, said to be in the blood.

To Lafosse the veterinary world most assuredly is indebted for the discovery of the true seat of glanders. And, considering the good health horses for a time enjoy with the disease, together with the fact that many that die of it exhibit disease in no other part save in the head, and that his injections did on occasions, no doubt, suspend, if not *cure,* fluxes from the nose, it is no matter of surprise to us that Lafosse pronounced glanders to be a *local* disease, one confined to the membrane lining the nose. Neither ought we to marvel that Lafosse's doctrine should have become so universally received and adopted as it was, not in France alone, but in England as well, and by veterinarians of the greatest repute too, by (among others) St. Bel, the first Professor of the London Veterinary College, seeing that it had already received the stamp of approbation of the Royal Academy of Medicine at Paris. And in order to perpetuate so valuable a discovery—for it really was a valuable one, and especially when compared with the notions entertained concerning the seat of glanders antecedent to Lafosse's time—Lafosse's son exerted all his energy in defence of it, against any attacks on the part of those who had the boldness to call its truth

into question. Indeed, at the present day even, we have only to give a little more scope to Lafosse's definition still to confirm its truth, and say, that

THE SEAT OF GLANDERS—instead of being confined to *the pituitary membrane*—is in THE AERIAL MEMBRANE*; that membrane with which the respired air comes into contact, and which constitutes the lining of the nose, of the sinuses of the head, of the windpipe and its ramifications. Dupuy, in investigating the seat of the tuberculous affection, so far as he found it corresponded to our glanders, came to the conclusion, that, commonly, the disease attacked, *primarily*, "the mucous membrane lining the frontal, maxillary, and other sinuses; secondly, and next most frequently, "the membrane lining the chambers of the nose;" thirdly, "the lungs." Rodet, the adopter and expounder of Dupuy's doctrines, tells us that the pituitary or Schneiderian membrane may become *secondarily* affected, "through extension of the disease from the lungs."

THE EARLIEST INTIMATION we receive of disease in the aerial membrane consists in discharge from the nose, which may either be speedily followed by ulceration, or may continue for an indefinite length of time with but trifling alterations of it either in quality or quantity. Of the primary morbid changes in the membrane—unless the disease should happen to attack the part covering the septum nasi—we can obtain no information: injection of its vessels, amounting or not to inflammation, may exist hours, or even days, before any running from the nose appears of that quantity or quality to attract notice: the submaxillary gland in the meanwhile becoming swollen or not, according to the amount of local irritation present. The case at the beginning will assume that insidious or indefinite form that it may, and particularly when no suspicion lurks in the mind of the examiner, be mistaken for catarrh, the inflammatory or augmented vascular action in the membrane, of the frontal and other sinuses, proceeding all the while, converting the natural scanty mucous secretion into a copious and morbid or ma-

* This appellation is preferred on account of its comprehensiveness. Had we said *the membrane lining the air-passages*, the sinuses of the head *might* appear not to have been included.

lignant one, and increasing through infiltration and interstitial deposit materially the thickness or substance of the membrane. These are the primary, in some instances the only, changes the aerial membrane undergoes in glanders; and though they are alterations which would take place from any common irritation and inflammation, still, in the case of glanders, they must be regarded as *specific* ones, from the circumstances of the discharges (from the nose) being found capable, through inoculation, of engendering similar disease in another (equine or human) animal. Vascular injection and thickening are succeeded by the appearance of pimply or tubercular elevations upon the surface of the membrane; and these, as we have already seen, are but the preludes of a correspondent number of ulcerations, called *chancres*, in which, for the first time, supposing them to be visible, we may distinguish characters such as are peculiar to glanderous disease; or, at all events, such are not seen in the ulcer which we meet with on the occasion of common irritation or lesion from injury, whenever this —rare though the occurrence be—does happen to take place. And it is worthy of our especial remark, that the pimples or tubercles make their appearance in waving lines, pursuing the courses of the larger bloodvessels, the superficial veins in particular, the chancres resulting from these pustular formations preserving the same chain of connexion; though, when the latter come to spread over the surface of the membrane, these lines of concatenation are, in course, rendered much less distinguishable.

Notwithstanding every part of the aerial membrane is liable to be, and, indeed, in its turn, has been known to be, the seat of glanders, yet are certain parts of it much more frequently affected than others, and, under a state of disease, present phenomena somewhat different from what the other exhibit. Coleman's notion concerning the most frequent or especial seat of the disease corresponded with Lafosse's: he thought the membrane clothing the septum nasi was the part commonly attacked—that it possessed a peculiar or especial susceptibility to be affected by the virus or miasm. Dupuy, however, has found the *sinuses* of the head to be the primary and most frequent place of attack; and, knowing the subacute and insidious form glanders in so many instances at its beginning as-

sumes, we are inclined to believe Dupuy's pathology to be the correct one. Next to the head, we find the lungs taking on the disease; not by direct extension of the morbid action to them through the medium of the windpipe and its branches, but—as we suspect—from the continual inhalation of the glanderous effluvia arising from the diseased surfaces in the nasal cavities and sinuses, as well as from the malignant matters lodged within them; at the same time, the general contamination of the system not being without its influence. The lungs, however, do not prove diseased in all cases of glanders. In such subjects as exhibit the disease in its acute form, and wherein death, resulting from suffocation, is suddenly or quickly produced, the lungs—unless they might happen to have been already in a state of disease—are commonly found in a perfectly normal state. The consideration of these contingencies, upon which the condition, sound or morbid, of the lungs appears to depend, will serve to reconcile the wide differences of opinion that have been promulgated concerning them: some contending that the lungs always were found diseased in glandered horses; others, that they hardly ever were, or were only so in cases in which disease had previously existed in their own structure.

Another, and by no means an infrequent, seat of glanders is the *larynx*. The glottis takes on the specific inflammation and thickening, and ultimately breaks forth in a state of ulceration, manifesting all the characters of the glanderous chancre; and, with his larynx in this condition, the horse turns roarer, though this is an effect that is not often discovered, unless the animal happens to be at the time at work. In the stable, I have never observed any great inconvenience arise from this ulcered condition of the larynx: a circumstance, probably, the chronic or inactive nature of the ulceration will serve to account for.

I have seen ulceration within the windpipes of glandered horses; but it is an occurrence which I believe to be exceedingly rare, not within the main tube only, but within its ramifications as well. There does not appear to exist the same susceptibility in the portion of the aerial membrane lining these tubes as in other parts of it—as even in those divisions of it constituting or lining the pulmonary air-cells.

NATURE OF GLANDERS.

Of the forty authors whose opinions I have sought on the subject, no one, to my seeming, has framed a more truth-like pathology of glanders than M. Leblanc: a French veterinarian of considerable repute in his own country, and very far from being unknown in ours. In 1839, Leblanc published at Paris a small work* which, by accident, came into my possession a few months ago, wherein, to my great gratification, I found notions entertained such as for many a year had been floating about in my own mind; though with me they were, confessedly, rather the offspring of inductive reasoning from certain admitted facts, than of any such practical demonstration as they appear to have since received in the hands of Leblanc.

Coleman, long ago, proved beyond any reasonable ground for doubt, that glanders and farcy were identical diseases, or, rather, the same disease affecting different parts of the body; and yet—which was singular enough—he never, on any occasion that I recollect, went so far as to say that the pimple or tubercle or chancre of glanders was in reality a *farcy-bud* or a farcy-ulcer. The proofs of identity in nature between glanders and farcy rest upon—1st, their reciprocity of production through inoculation; 2dly, their traceableness to the same causes; 3dly, their termination one in the other, which almost invariably takes place, when they are suffered to run their natural course, previous to death; 4thly, their frequently simultaneous appearance in the same subject, together with the similitude of the phenomena and course they exhibit.

Assuming it, then, as proved, that farcy and glanders are in their nature but one and the same disease affecting different parts of the body, and it being admitted that farcy is a disease affecting the lymphatic system, it of course follows that glanders can be no other than disease of the same system of vessels; and, supposing that this were proved, it would also follow that the pimples we see rising upon the *septum nasi* after inoculation for glanders, and on occasions in idiopathic glanders as well, and which Dupuy called

* Des Diverses Especes de Morve et de Farcin, considerées comme des Formes variées d'une même Affection Generale Contagieuse. Par U. Leblanc, Médécin Vétérinaire, &c. &c. Paris, 1839.

and regarded as *tubercles*, would probably turn out to be nothing more than so many *farcy-buds*. With such notions as these, I repeat, impressed by such a train of reasoning upon my mind, I will leave my reader to imagine with what pleasure and satisfaction I perused the little work of Leblanc from which I am now about to make some copious extracts fully confirmatory of my own ideas, crude and undigested as they had long been, and might long have remained, for want of opportunity in my present position to put them to any sort of practical or probatory test.

SNAPE appears to have been the first veterinarian who regarded glanders and farcy as the same disease affecting different parts. He pronounced glanders to be "farcy in the head*." In the year 1827, also, a clever paper was published, "On the Identity of Glanders and Farcy†," by Gerard, a French veterinarian, the concluding part of which runs as follows:—

"Farcy is sometimes so superficially seated, that, only the skin appearing affected, it has been regarded as a *cutaneous disease*. Considering the analogous organization existing between the skin and mucous membranes, have we not reason for believing that, if the pustules, instead of appearing upon the skin, come upon the pituitary membrane, these same pustules will then constitute glanders?"—"We have only attentively to note the symptoms to observe the same course in glanders as in farcy. Glanderous chancres appear in cords prior to ulceration, resembling (chains of) farcy-buds. The lymphatic glands tumefy in one as in the other disease. And the puriform discharges from farcy-buds answer to the discharges from the nose in glandered horses. The glanderous chancre commences in a little inflamed bud, whose summit is contracted and rounded, and filled with serosity; the pellicle covering it becoming attenuated, bursts and discloses an ulcer, which speedily acquires certain dimensions. Are not these the same phenomena that farcy-buds present?"

* Vide page 260.

† At the time I perused the brief summary of Gerard's opinions, given at page 271, I was not in possession, as I now am, of the JOURNAL DE MEDECINE VETERINAIRE, containing Gerard's paper, "*Sur l'Identité de la Morve et du Farcin.*"

Turning from these accounts to the observations of Delafond—that, "in an immense majority of cases," glanders originates "in the lymphatic system," and that, in nature, it "consists of an alteration of the lymph as well as of the vessels conveying it,*"—we find the ground well prepared for laying the foundation of the pathology of glanders; and that Leblanc has achieved a great deal towards erecting a plausible and natural superstructure thereon, will, we think, appear manifest from the following extracts from his pamphlet:—

LEBLANC regards GLANDERS, whether it be *chronic* or *acute*, *pustulous* or *gangrenous*, and FARCY, be it *chronic* or *acute*, as but different forms of one and the same disease—but aggravations or ameliorations of one common or general contagious affection, having its apparent seat within the nasal fossæ or in the lymphatic system, and consisting in lesions as follow:—

IN A GENERAL ALTERATION OF THE FLUIDS OF THE BODY, in particular of the *lymphatic fluid*. This turns yellow and becomes coagulated within the canals of the lymphatics and the cavities of their glands, the tunics of the vessels thickening and turning opaque, exhibiting red points upon their inner surface, and adhering in places to the coagula within, and in other places growing more or less softened, without, as yet, shewing ulceration. In time, all the thickened parts of the vessel partake of this softening, spreading from a single point upon its circumference, the coagulum within softening likewise, and the cellular tissue corresponding to the point of ulceration becoming tumefied, then hardening, and lastly softening. And now a little tumour exists, having its seat, in part, in the lymphatic vessel, in part in the cellular tissue, observably close upon the situation of the lymphatic valves, which accounts for the accumulation, the lymphatic fluid in its incrassated or coagulated condition not being able to pass the valves†. This explains the knotted aspect of the corded swellings in farcy. When the little tumours or *farcy-buds* have the lymphatic vessels for their seat, they are not tardy in ulcerating their way to the surface through the skin. When deep seated, they grow large

* Turn back to page 272.

† Coleman regarded the *valves* as insusceptible of the action of farcy.

at the expense of the surrounding cellular tissue, which either ulcerates or sloughs, and thus contributes to the abscesses.

The fluid the softened farcy-buds contain is found pretty uniform in its character. It commonly proves a mixture of viscous fluid and coagulated matter; of infiltrated and softened cellular tissue; of purulent matter variable in its aspect, and sometimes streaked with blood. We never find phlegmonous (laudable) pus in these small abscesses.

Farcy-buds are evidently not seated within the *principal* lymphatic vessels, and, consequently, have no determinate arrangement: we find them here and there; in the greatest number, however, where lymphatic vessels most abound. At one time they are superficial, at another deep-seated. And they are found in most of the organs of the body: in the muscles, in the tendons, in the periosteum, in the skin, in the testicles, in the lymphatic glands, in the lungs, in the mucous membranes, even in those of the digestive passages.

On some occasions, either when the disease makes rapid progress or the alteration in the fluids proves deep-seated, farcy-buds are soft from their first formation, and burst almost immediately. And then, the buds are not confined to any region in particular, but simultaneously appear all over the body. In this case, the fluid they contain is homogeneous in its aspect, sometimes limpid, oftener livid or muddy; and this (latter) denotes deep-seated alteration of it. The blood, also, is strikingly changed.

An attempt has been made to distinguish these farcy-buds from what are called *real* farcy-buds; the former not being so considered on account of their not being found to communicate with the lymphatic vessels; the vessels not being injectible through their cavities. This, however, may arise from the extreme exility of the lymphatic vessels, or from their canals being plugged up. What induces Leblanc to regard these isolated buds as farcinous, is the frequent appearance in farcied horses of cords and buds of different sorts at one and the same time.

In speaking of the alteration the lymphatic liquid undergoes in glandered and farcied horses, Leblanc considers it his duty to make known his opinion of the glanderous lesions that have been called

tubercles, whether they exist upon the mucous membrane of the respiratory passages, or within the lungs, or the lymphatic glands, or any other organs.

These little tubercular bodies have received divers denominations: according to their aspect they have been distinguished into *crude*, *soft*, and *encysted tubercles*, and various have been the opinions entertained concerning their nature. According to Leblanc's (and my own) notions of them, they present an analogy in physical character to farcy-buds. Examination of the mucous membrane of the nose of a glandered horse will shew, in a certain stage, that it becomes *thickened*. And that this thickening, which is owing to an accumulation of fluids of a white or whitish-yellow colour, precedes the appearance of the tubercles, the same as tumefaction of the cellular membrane precedes the formation of farcy-buds. In this (thickened) condition the membrane assumes a shiny and more humid aspect than it has in health. Then, upon divers points of its surface, and notably upon the middle part of the nasal septum and within the doubling of the nostril, make their appearance little white or yellowish white pimples *(élévures)*, rather prominent at their centres, with borders insensibly declining to a level with the surrounding membrane. *These pimples or tubercles correspond to the course of the bundles of lymphatics, and very probably have their seat in those vessels.* "At least," continues Leblanc, "I have been able to prove that little shreds *(masses élongées)*, in composition absolutely like what is found within the lymphatics of a farcied limb, were inclosed within their canals, from which it was easy, with the points of the forceps *(d'un instrument)* to extract them: they proving adherent only in certain places, marked by some increase of redness*. I have found the greatest analogy between these alterations and those which the lymphatic fluid commonly undergoes in farcy. The two sorts of pimples in the thickened membrane, after awhile, turn soft. The lymphatic substance of which they are composed becomes consumed, and passes away with the secretions from the mucous surface. From its degenera-

* We must be careful not to confound these lymphatic *coagula* with the clots of blood contained within the small veins of the mucous membrane, which (as well as the former) are often colourless.

tion result pale ulcerations, reddish at their bases, and more or less deep in proportion to the magnitude of the pimples. Their uneven borders, like those of the pimples, are indented, the ulcerations resembling leaves that have been eaten by insects. On occasions, indeed, they present the true *worm-eaten* aspect (*vermoulures**) : their edges, however, continuing rather prominent so long as any thickening remains. These ulcerations, no more than those supervening on farcy-buds, shew no disposition to cicatrize : commonly they spread, and never cicatrize at all†. When very deep, and they take to closing, they do so through forming indurated prominent cicatrices, in substance white, corrugated, and radiated‡."

" The pimples or tubercles, or tuberculous risings upon the mucous membrane of the nose, form with more or less celerity, remaining a longer or shorter time in the state of pimple. Their progress is quicker than is commonly believed: I know for certain that from four to six days, at most, suffice for some of them to commence in pimple and terminate in ulcer."

" The excoriations and superficial ulcerations of the nasal membrane in glanders take their rise in the same manner as the deeper ulcerations we denominate *chancres*. And similar lesions are to be observed upon the mucous membrane of the larynx, the Eustachian tubes, the trachea, and the velum palati. The *cartilages* of the nose, larynx, and trachea, become likewise, on occasions, the seats of tubercles and ulcers."

" There are other lesions of the Schneiderian membrane which still bear the strongest analogy to certain forms of farcy. These consist of pimples, more prominent than the preceding, rounded, solitary or confluent, and either red at their origin, or else white, surrounded by a circle of red. At first they are hard, but they soon grow soft and turn to ulcerations, which spread with rapidity. Their especial seats are the places whereupon appear the tubercles

* This is the MILIARY ULCERATION described at page 169.

† One reason for which is the nature of the (mucous) tissue in which they are seated, very different from the *cutis vera* under disease.—*Author.*

‡ I have often observed this puckered, radiated cicatrix: indeed, I have preserved several specimens of it as proofs that there are occasions on which glanderous chancres heal up.—*Author.*

and the variously disposed tubercular masses; the regions, in fact, in which exist the greatest number of lymphatics. This form (of the disease) is always marked by acute symptoms, and by lesions spreading over the membrane of the nose, sinuses, larynx, and sometimes trachea as well. And it is either accompanied or preceded by complete alteration of the fluids; the effects of which are very evident on a number of organs, in particular on the membranes of the nose, the sinuses, and the larynx. Very extensive ecchymoses take place in the mucous membranes and fibrous tissues underneath the nasal cavities; and these hæmorrhages are, on occasions, followed by destruction of the ecchymosed tissues."

"THE LYMPHATIC GLANDS, those in particular receiving the lymphatics from the affected parts, are larger than in their natural condition, softer in substance, and paler (*blafardes*), and contain little yellowish white masses, the transformations, probably, of the altered lymphatic fluid. In some cases this liquid appears to be infiltrated into the tissue of the gland, in others, to be accumulated in little sacs," &c.

"I have met with tubercles, or rather deposits of albuminous substance, in the glands of horses affected with all kinds of glanders and farcy. But these deposits are by no means infallible signs of the *chronicity* of the disease. And this is a point I wish to lay stress upon, since it seems to correct an error which by many, as well as by myself, has been long entertained."

"In glanders and farcy, the lesions we have denominated *tuberculous* in the glands, are found within the lungs, the liver, the spleen, the testicles, &c. And, moreover, I have observed, in respect to the lungs, that the tuberculous growths exist in greater numbers, and become farther developed, than in any other organ. And I therefore think that the respiratory passages are the especial seat of the transmission of glanders; and that they likewise have the greatest influence in generating the spontaneous disease. Glanderous pulmonary tubercles are exceedingly abundant wherever lymphatics are most numerous."

"THE PULMONARY GRANULATIONS met with in glanders and farcy bear great resemblance to the encysted tubercles of the lymphatic glands. They are often found in numberless abundance in

the midddle of the pulmonary crepitating tissue. They consist of deposits of albuminous matter, solid or liquid, inclosed within cysts of palish grey aspect, which, perhaps, are nothing more than air-vesicles whose walls have acquired morbid thickness. They frequently commence by red points, whose centres, in time, turn white, remaining for awhile enveloped in a red case. At length the inclosed matter suddenly becomes softened, then hardens again, and turns of a calcareous nature."

Such is Leblanc's practical exposition of the nature of glanders and farcy. The important novelty in it, is, that he has brought forward proofs, as far as morbid anatomy with the aid of chemistry would supply them, that glanders, like farcy, is a disease of the lymphatic system; that the pimples or tubercles observable in the incipient stages of glanders are nothing more than so many farcy-buds, which in time become pustules, and burst, and end in turning to so many open, foul, spreading ulcers. Dupuy regarded glanders as identical in nature with farcy; but then he confounded both—along with other diseases, such as phthithis pulmonalis, strangles, &c.—under the appellation of *tuberculous disease;* and, so far from telling us that the tubercle is a farcy-bud, insists upon the farcy-bud being a tubercle: "farcy-buds," says he, "are nothing else but *scrofulous tubercles;*" admitting, however, that tubercles are *organic productions;* and that "they are found in the greatest numbers *in the course of the large veins* pervading the septum,"—"pursuing the course of the large bloodvessels:" the very course we know the lymphatic vessels take.

Assuming, then, that the lymphatic vessels, together with their glands, are the parts primarily or essentially diseased in glanders and farcy, it next becomes our business to inquire in what the morbid action consists, and, if we can, to find out in what part or tissue of the lymphatic vessel it originates, or is principally seated. Coleman regarded farcy as *a specific inflammation besetting the internal coat* of the lymphatic vessel; and, considering the heat, and swelling, and tenderness of a farcy-cord at its first formation, and the ordinary conversion of the buds from a hard into a soft state, and the final change of them into *pustules* or abscesses—

the same as happens with any common pustular tumor of the cellular membrane—there can be no doubt but that the morbid process is, during this stage at all events, of an *inflammatory* nature; and that it is *specific* as well, we argue from the fact of the pus or matter produced by it being capable of procreating the disease (either glanders or farcy) in another of the horse species. We are assured by Leblanc, that this bud, whether it be a farcy-bud or a glanders-bud, and be, as the latter, denominated either *pimple* or *tubercle*, consists *of albuminous* matter; and that, when the usual conversion of this into purulent matter does not follow, calcareous deposit has been found: thus satisfactorily accounting for the degeneration of farcy-buds into hard callous tumours or tubercles, and, perhaps, likewise explaining the pathology of such glanderous affections as we denominate *chronic*, on account of their length of duration without breaking forth into the ulcerative stage. The irregular, knotted appearance, of the farcy-cord, that appearance of it which first, no doubt, gave rise to the appellation of *farcy-buds*, was accounted for by Coleman, out of the circumstance of the valves—which we know to be very numerous in the lymphatic vessel—not being susceptible of the specific inflammation; "for if one of these diseased vessels be examined," said the late Professor, "perfectly sound partitions of membrane will be found between the knots, which cannot be any thing else but the valves*."

Whether the *pulmonary* glanderous tubercle is to be regarded as no more in its nature than a farcy-bud, and whether the pulmonary tubercle of glanders bears any, and how much, analogy to the tubercle of phthisis pulmonalis, are questions not so easily solved. Leblanc assures us, as far as his examinations have gone, of the identity of the former; but he is silent in regard to the latter, although Dupuy hesitates not to pronounce them in nature both alike. For my own part, I feel disposed to think, that the production which is taken for and called a pulmonary *tubercle* in glanders or farcy, but which may turn out to be nothing but a por-

* See the Third Volume of the Author's Lectures on the Veterinary Art.

tion of diseased lymphatic, must be a different thing from *veritable tubercle* of the lung, concerning the origin, and seat, and nature of which such various opinions have at one time and another prevailed among human pathologists, and which we now find described by—perhaps the best authority we have—M. Louis, as follows:—

"It may now be inquired, in which of the various systems of organs composing the lungs does the development of tubercles take place? It results from the researches of M. N. Guillot, that the ramifications of the pulmonary artery, as far as they can be traced, are smooth, and free from tubercle; so that the opinion of those who place the primitive seat of the product *in the vessels* is with difficulty tenable. On the other hand, according to the same observer, if the bronchial ramifications of the tuberculous lung be cut open as far as possible (the organ having been previously injected in such manner that the fluid used shall have filled the entire web formed by the bronchial arteries on the surface of the tubes) *morbid changes are invariably detected in these.* The earliest stage of change appears in the form of a small whitish speck, produced by a semi-transparent matter, of rounded or elongated shape, and resembling the miliary tubercle pretty closely in colour and consistence, or still more closely a small fragment of epidermis macerated in water. At this period no vascularity is discoverable in the subjacent mucous membrane. In the second stage the whitish semi-transparent matter is thicker and more spread out, and the correspondent part of the parietes of the bronchial tube is destroyed within variable limits. Hence it follows, that the production of tubercles does not take place in the pulmonary vessels, but *in the bronchi*—a doctrine which, as is well known, is that professed by Dr. Carswell. It is true, adds M. Guillot, that at the period when the morbid matter may be made the subject of examination in the bronchi, there have already existed tubercles in the midst of parts of the organ inaccessible by means of instruments; but it is not fair to presume that the phenomena of which I have just spoken may have equally well taken place *in the ultimate culs-de-sacs of the* respiratory system? It is, however, matter of very little consequence whether the primitive seat of a tubercle placed in the centre of the lungs be *the internal surface of a pulmonary vesicle*, or *the substance of the wall separating* each pair of cells: the extreme tenuity of these parts is well known, and the attempt to localize a lesion at its origin in the midst of such excessively delicate parts, could really lead to no useful result*."

That the purulent matter contained in the suppurated pulmonary tubercle of a glandered horse will, through inoculation, produce

* Researches on Phthisis. By P. A. C. Louis, M.D. Translated from the French by H. H. Walshe, M.D.

the same disease in another horse—even "as surely," to use Professor Sewell's expressive language, "as one potatoe will produce another"—admits no longer of doubt: yet no one, I imagine, will assert, that the glanders or farcy is producible by matter taken from a vomica in the lungs of a horse that has died of *phthisis*, or any other ordinary pulmonary disease. This fact may not of itself be sufficient to prove one so-called *tubercle* in the lungs to be different from another; weighed, however, with what has been before advanced, we think it strengthens our opinion, that the pulmonary tubercle of glanders, and that of pneumonia or phthisis, are substantially different productions.

The question we shall next consider, is, whether the lymphatic system in horses, the same as in men, be liable to derangement or to inflammation from *common* or simple causes? My own experience bids me answer in the negative. That such a case, however, has happened, and, consequently, may happen again, exception as I believe it to be to the laws of hippopathology, I certainly would not take upon myself to deny. A punctured finger often, in a man, proves the origin of an inflammation of the lymphatics of the arm, enlargement of the glands of the axilla, &c.; a tight shoe often gives rise to similar disease upon the leg and thigh, and in the groin. But in horses, although great and fearful mischief may arise from a puncture, yet, if it be into muscle, shall we have faschial inflammation, or, into tendon, thecal inflammation, in both cases without any apparent lymphatic disturbance. As I said before, however, I do not mean to assert that we *never* see what is called *absorbent irritation* springing from common causes: I believe the following case to be a rare example of it, and therefore have I deemed it worthy of insertion in this place:—

C 25. Black troop mare was brought to me on the 30th May, 1842, on account of having got her fore leg injured by being over the bail, a very common accident in barrack stables. The arm was swollen, and she halted upon it. Use fomentations to the injured part, and give her some cathartic medicine, and let her be gently walked out twice in the course of the day.

June 3d.—She has been. and continues, purging. The swollen limb diminishes.

6th.—Instead of gradually subsiding into the healthy condition, as ninety-

nine out of a hundred of these trifling cases do, her arm has taken to swell again, and is become tense and hard and warm.

8*th*.—To-day there is plainly discoverable to the feel, in the course of the plat vein, corded tumefactions, which seem to me to be enlarged lymphatics; the lymphatic irritation being combined with faschial inflammation of the whole arm. She now halts exceedingly in her walk, and cannot bear to have her injured member handled or compressed. There is but little constitutional disturbance, and her appetite continues good. A trial was made to confine a poultice upon the part after the fomentation, but, in the end, it proved fruitless: the weight of the poultice and the movements of the animal continually displaced it.

10*th*.—The tumefaction has extended both upward and downward. Take blood from her jugular, keep her bowels acting, and be unremitting in the use of fomentations.

15*th*.—The swelling is much reduced. Use cold discutient lotion and diuretic medicine.

18*th*.—There is remaining a cord of tumefaction in the axilla, taking the course of the plat vein, but it has lost its morbid sensibility. I cannot, by the most careful examination, satisfactorily determine upon the existence of matter deep-seated. Apply the *acetum cantharidis* to the cord.

19*th*.—The blister has resolved our doubts. There is now evident fluctuation in the cord. A lancet plunged *deeply* into it let out some well-concocted pus. Another abscess was found close up against the sternum. Subsequent probing proved that the matter had a good deal under-run the faschia. Foment, &c., as before.

21*st*.—She may now, in a gentle manner, resume her walking exercise, and have a weak solution of sulphate of zinc injected into the punctures in her arm. From this date she went on doing well, without any relapse, and was, on the 19th of July following, sent to her duty.

Notwithstanding the case just related *appeared* to be one shewing the possibility of disease of the lymphatics arising from an ordinary cause, yet at no stage of it did it assume the aspect of farcy;—never could it have been mistaken by an experienced hand for farcy. I, therefore, feel little hesitation in coming to the practical conclusion, that the lymphatic system of the horse derives disturbance producing phenomena of a certain well-known character *from no other cause but farcy or glanders;* a fact which militates much in favour of the doctrine of a specific poison or *virus*. Were it otherwise, did common irritants annoy the absorbent system, or did that system contract disease simply under un-

healthy conditions of body, as is Mr. Vines' opinion, we certainly ought to have cases of farcy and glanders, or cases analogous thereto, a great deal oftener than we now see them. But, if we suppose the necessity of the presence of *virus* or poison of some sort to produce such an effect, and recollect that this virus, should it not be taken by contagion, is only seen generated in the body under certain impure or mephitic states of atmosphere, or under certain infected conditions of blood, we can at once account for the comparative rarity, at the present day, of glanders and farcy, and, at the same time, for the efficacy of such prophylactics as have been recommended and used for their prevention. We may, therefore, with truth say, not merely that glanders and farcy are *a* disease of the lymphatic system, but emphatically *the* disease of that system; for we know, in horses, of no other—at least, no other that produces the corded, tuberculated, knotted condition of the lymphatic vessels; that condition which turns to suppuration and ends in ulceration of their canals, and upon which remedies of an ordinary description make little or no impression.

From the lymphatic Vessel, in which it has its origin, glanders spreads into the substance of the mucous membrane, farcy into that of the cutis vera, involving both one and the other in the morbid action and its consequences: the substance of the lymphatic vessel, in the language of Leblanc, "becoming consumed, and passing away with the secretions*." The changes the mucous membrane undergoes under such circumstances have already been described†; those the skin experiences when invaded by farcy will become the subject of our consideration in another place.

Is Glanders a constitutional or a local Disease? Under ordinary circumstances, I answer, a *constitutional* disease; and in proof of this assertion I allege, first, the febrile commotion discoverable in the system; secondly, the eruption of the disease in the form of farcy, in some remote or other part of the body; thirdly, the contaminated condition of the blood; fourthly, the inefficacy of topical remedies by way of cure.

* Page 288 † At page 166, et sequent.

THAT CONSTITUTIONAL DISORDER accompanies or speedily follows that which, to the superficial observer, has the appearance of being but a local disease—a disease confined, as Lafosse thought, to the nose—has been shewn in our account of the symptoms* ; and that such disorder originates out of the infection of the system, the same as signs of ill health, slight or severe, arising after inoculation of the human subject for small or cow-pox, proclaim the constitutional efficacy of the inoculation, to me appears highly probable. In cases where glanders or farcy has been the product of inoculation, it is possible such constitutional disorder may not be observable; and this may have led Leblanc to believe that "horses that become glandered and farcied *without* this premonitory disorder derive the disease from contagion†." In the cases, however, of the horses of my own regiment‡, which I cannot ascribe to any other source but contagion, the same constitutional disorder was manifest; and this is a circumstance which precludes me from assenting to Leblanc's inference, further than that, in the case of absolute inoculation, such disorder may not, as I said before, be detectible.

THE ERUPTION OF THE DISEASE IN SOME OTHER PART of the body is pretty satisfactory evidence that the virus or infection has travelled from the head through the system into the limbs, or into whatever other part of the body may happen to prove the seat of eruption. Even supposing the contagion or infection from without to be imbibable by the skin as well as by the aërial membrane, the natural conclusion still is, that the former, in a horse already glandered, received its infection through the medium of the constitution. Lastly, we come to that irrefragable proof of the constitutional nature of glanders and farcy afforded by

TRANSFUSION OF THE BLOOD, from out of the vessels of a horse affected with glanders or farcy, or both, into those of a horse free from any such disease, and the production thereby of the disease —glanders or farcy or both—in the latter subject. That such an experiment has been made on more occasions than one at the Veterinary College, in the time of the professorship of Coleman, is well known to many members of the profession now living, several of

* At page 162. † At page 163. ‡ At page 230, et sequent.

whom, indeed, have been eye-witnesses of it; and that the results have proved such as to leave no room for doubt concerning the morbid or infected condition of the blood, can be indisputably attested. If there be in existence any records or detailed accounts of the experiments, they are unknown to me. For my own part, I regret there should exist none. I have, however, always understood that the (healthy) subject into which the blood has been transfused has commonly been an ass, previously prepared for the influx by blood-letting, and that the blood transfused was derived from the carotid of the glandered horse, through a stop-cock inserted and fastened into the vessel, to the opposite extremity of which was affixed an *ureter;* a kind of tube found to answer extremely well as the medium of communication between the stop-cock in the carotid of the horse and another stop-cock fixed into the jugular vein of the ass. The current of blood being turned on, was allowed to flow until such time as revivification of the ass, asphyxiated from previous loss of blood, had become established. And the uniform result—whenever the ass survived the operation, for, now and then, as happened to myself in an experiment of the kind I made years ago, the ass died either under it or in consequence of it—I repeat, the uniform result was, the eruption of glanders or farcy, or both, in the ass, after a very short space of time, and in so virulent and malignant a form as to destroy the life of the animal (through suffocation) in the course of a very few days afterwards*. Transfusion, as was very properly remarked by Coleman, furnished a sufficient *dose* of blood for the production of the disease, and seemed completely to overturn John Hunter's notion, that the blood could not be diseased since inoculation with it proved harmless†: indeed, this important experiment brought to light two facts of immense value to pathologists; one being, that the mass of blood could harbour and transmit disease; the other, that one of the diseases so harboured and thus capable of transmission was glanders and farcy.

* In the absence of any record of this truly interesting and important experiment, this is the best account, from memory, I can give my readers.

† See the Professor's own ingenious and convincing arguments on this point at page 261.

The circumstance of a horse affected with glanders or farcy recovering, after a short time, his usual health and spirits, or even never ostensibly losing them under the disease, is no valid argument against the constitutional essence of the disease. There is a class of diseases affecting man, eruptive in nature and several among them contagious—the *exanthemata*—whose character it is to commence with fever, which, on the appearance of the eruption, either altogether leaves the patient, or much abates in violence; and to these diseases glanders and farcy, in this respect, may be said to bear more or less analogy: this, however, is not the case with syphilis, even after it is supposed to have become constitutional; a circumstance in which it differs from glanders, though by many between the two diseases there has been thought to be, and it must be confessed there certainly is, in some other respects, a good deal of resemblance.

Of the fourth proof of the constitutional nature of the disease, viz.

THE INEFFICACY OF TOPICAL REMEDIES, I shall speak when considering if any and what treatment is likely to prove available in glanders and farcy.

UNDER WHAT CIRCUMSTANCES, IF UNDER ANY, GLANDERS MAY BE REGARDED AS A LOCAL DISEASE, it is not easy with any certainty to determine. Inoculated glanders or farcy, making its appearance at the usual period—about the third day—after inoculation, may be or may not be so considered; and the same might be said of such cases of proved contagion whose origin bore any analogy thereto. Cases, however, in which, although contagion appears to be the cause, weeks or months elapse before the disease shews itself, should be viewed, I think, as the result of the contamination of the system. And so, likewise, ought every case originating in pollution of the blood from the inhalation of mephitic gases—in other words, from the *miasm of the stable*—to which Coleman attributed such universal and exclusive influence: proving that, according to his notions, almost every case was constitutional. Mr. Youatt, however, who is a great contagionist, defines glanders to be an inflammation of the Schneiderian membrane, "*strictly local* for awhile, and often for a long while, and during its insidious

state* ;" resting his opinion upon the circumstance of the horse enjoying his health. If, however, as others and myself have observed, glanders commences with that disturbance of the health which indicates—as appears natural to suppose it does—contamination of the system, the same as the febrile commotion perceptible after inoculation for small-pox or after vaccination affords a test to the surgeon that the constitution has felt the inoculation in consequence of the absorption of the virus applied locally, then it seems natural to infer that glanders from that time becomes a constitutional disease, although, like syphilis or scrofula, it may remain long lurking in the constitution without coming into secondary or destructive action, or even interfering with the ordinary vital operations. Another argument against glanders being a local disease is the general inefficacy of all topical measures employed for its cure: had it consisted simply in inflammation or ulceration of the Schneiderian membrane, Lafosse and others, with their detersive and healing injections and fumigations, must, most assuredly, have been more successful in their practice than we know them to have been. How it happens that a disease, constitutional from its beginning, should assume all the characters of a local malady for a longer or shorter period of time, and then all at once, as it were, re-assume the constitutional form, and that of a far worse character than before, we do not pretend to be able to give any explanation of, further than such as is afforded by comparison with those diseases of the human subject which have heretofore been adduced by way of analogy. But that so stands the fact is sufficiently proved by Coleman's experiment of transfusion, supposing that the subject from whom the blood was drawn—which we believe to be the case—shewed no more than the ordinary glandered—apparently healthful—condition.

That the Poison of Glanders, after its absorption, may be latent or inactive in the system for weeks—months even—the same as the virus of syphilis is known on occasions to be, and as that of rabies always is—to me is satisfactorily shewn by the case of C 21 horse†. Whereabouts was the virus lurking during the

* Mr. Youatt's Lectures in The Veterinarian for 1832.

† Given at page 233. See, also, the same question discussed at pages 236-7.

fifteen weeks' interval between his exposure to the contagion and the actual eruption of disease? Was it circulating in his blood? and, if so, why did it not, as in the cases of the Colonel's chargers and A 24 horse, shew itself before? After so long an interval it is hardly possible to conceive the disease, when it did appear, could be *local*. Rather would it seem that, notwithstanding the blood is contaminated, yet does no topical eruption happen until such time as certain parts or localities have acquired *a predisposition* to admit of the eruption. Should the animal, whose system is supposed to be already infected, contract a catarrh or have the strangles, the certainty is, that either one or the other will turn to glanders; or should he get swelled legs or injure his limbs in any way, the lesion or tumefaction will surely turn to farcy. After all we can say or surmise, however, on this abstruse subject, there is that strange, unaccountable caprice, as regards their effects, about contagions and the poisons or viruses of contagion, that defies all science or art to bring their action within the compass of any known laws or principles: we can only adduce facts—or what appear to us to be such—and by them, and them alone, we must be guided in the narrow circle wherein we dare reason upon them, and out of which we dare not permit our reason to wander.

Of the Nature of the (so-called) Virus of Glanders we know no more than we do concerning the supposed viruses or poisons of syphilis, rabies, variolus, vaccinea, &c.: we have the same ground for arguing the existence of virus as there is for doing so in the diseases just named, and no more; all the knowledge we possess in regard to the virus of glanders arising out of the observations we have been enabled to make of its operation and effects. Indemonstrable, however, as the virus is in any abstract, palpable form, yet have we no conception, at least according to the views we take of the pathology of glanders, of the existence of the disease without its presence. We do not imagine, as we said on a former occasion, that simply an unhealthy or ill-conditioned state of body can give rise to glanders or farcy. We believe that the specific virus must, in some form or another, somewhere or other exist.

One of the strongest advocates for the doctrine we are now propounding was Coleman; and yet, towards the latter part of his professional career, in consequence of some experiments he had recently made, did Coleman at times suffer himself to doubt whether there absolutely was such a thing as the virus or poison of glanders, or rather, whether its presence was absolutely necessary to the production of the disease. I am led to say thus much from minutes* made by myself of a conversation I had with the late Professor so long ago as June 1824, in the course of which he informed me, that he had produced discharge from, and ulceration of, the Schneiderian membrane, and all the symptoms, in fact, of glanders, simply by throwing muriatic acid gas (chlorine) into the frontal sinuses. But this was no more than Lafosse had done, and afterwards had adduced as a strong argument to prove the correctness of his doctrine of the *locality* of glanders, and its consequent curability by topical means, and never to my mind can bring conviction that inflammation and ulceration of the aërial membrane, brought on by *common* causes, is identical with glanders. As well might we say that a carious tooth or a diseased maxillary bone or a violent catarrh constituted glanders. Unless we associate with our notions of the nature of glanders, the existence, demonstrable or imaginary, of a poison or virus, the term *specific* is no longer applicable to the disease, and any case may bear the denomination that happens to shew fetid or gluey discharge from the nose and ulceration of the nasal membrane, whether there exist lymphatic disease or not; though, as I have in another place observed, should the lymphatic vessels and their glands prove to be in a state of disease, the probability—dare we say, certainty—is, that the case is glanders and farcy; and for this reason, that lymphatic disease, at least of the *same* character, arises in the horse from no other source of irritation.

* The opinions broached by the late Professor appeared on this occasion so strangely at variance with what I had always conceived to be his pathology of glanders, that I could not resist the impulse I had at the moment to make a memorandum of the conversation; and it is to this my present observations have reference.

FARCY.

DERIVATION.—Our word *farcy* is a modification or alteration of the French word *farcin*, the etymon of which is from the Latin verb *farcire*, to stuff. Vegetius called the disease *morbus farciminosus*, the *stuffed* or *stuffy* malady; and certainly a farcinous limb exhibits very much of that character. The translator of Solleysell's "Compleat Horseman" (Sir William Hope) introduced into our language the French appellation itself, *farcin*, and for many years afterwards the disease went by that name. We find the learned Dr. Bracken writing "on the *farcin*." Gibson appears to have been the first who ventured in print on the introduction of any innovation. At the head of his chapter he writes "of the *farcin* or FARCY," and in his description of the disease adopts the latter in preference to the former appellation. Still, however, though authors since his time, and veterinarians and horse-folks in general, have called the disease "farcy," yet is the old French name not altogether exploded from our language, it being by no means a very rare occurrence, even in our own day, to hear farriers in the country talking about the "farcin."

DEFINITION.—Farcy consists in the appearance upon such parts of the body as are known to give passage to the lymphatic vessels, of swellings in the form of nodous cords, called *farcy buds*, which in time ripen into *pustules*, and terminate in ulceration.

VARIETIES.—We distinguish, in respect to severity and rapidity of course, the same varieties in farcy as we do in glanders—the *acute*, *sub-acute*, and *chronic*. Acute farcy manifests equal virulence, and runs its course in almost an equally short period of time with acute glanders, in which disease it commonly terminates some short time prior to dissolution. *Sub-acute*, however, is the ordinary form farcy assumes; and a very irregular, fluctuating course in this form it is apt to take, remissions being more or less marked, or intermissions taking place of greater or less length, until at last acute farcy supervenes, and with the aid of glanders

closes the scene. But the sub-acute disease may run into the chronic stage or variety ; all apparent morbid action may cease, or become suspended, the parts, the seat of disease, growing callous and insensible, the general health and spirits becoming quite restored, and the animal able to resume his labours. In this flattering condition the patient is too often pronounced and believed to be "cured;" when, in reality, the serpent is but "scotched, not destroyed:" one day, it is more than probable it will raise its head again, and assume a more virulent aspect than ever.

In addition to these varieties of intensity and progress or course, there is a kind of farcy which has a more superficial or cutaneous seat, and which farriers call *button farcy*, from the buds being smaller and more circumscribed than in the deeper-seated species, which they look upon as a more malignant and intractable disorder, commonly having its seat upon the insides of the limbs.

Mr. Blaine has noted another, a third variety of farcy; one, he says, "which is usually passed over by authors, and which is also one wherein the poison is self-generated, probably. It often puts on a chronic, protracted form, and shews itself by the affected horse becoming suddenly lame in one limb, the tumefaction and heat of which recede and attack the other limb in the same manner. In this way he (the horse) may remain for months with his health very slightly affected; at length, however, the disease assumes a more marked character,—some of the swellings ulcerate, and glanders eventually closes the scene*."

Symptoms.—Farcy, like glanders, is in general ushered in by tokens of ill health. The horse, perhaps, is said by the groom to have "caught cold," or to be "humoury." He is out of spirits, and loathes his food, or eats it only in part, and with little appetite; his coat has a roughened, lustreless aspect; his pulse is quicker than natural, and his mouth warmer; his hind legs, perhaps, fill a little, or one may swell and not the other, and he evinces some stiffness in his movements, or may be actually lame in one of his limbs. I have known horses so lame from farcy, before the disease had in any local or characteristic form declared it-

* Op. Cit. at page 218.

self, that shoes have been removed and feet searched, &c., to discover the seat and cause of lameness, no suspicion having existed at the time that farcy was present in the animal's system. It may so happen, however, that none of these preliminary symptoms are observed or observable; that, on the contrary, farcy at once develops itself in an attack on some locality, most probably one hind limb. Indeed, so sudden and sharp and severe are attacks of farcy in some instances, that in the course of one night the horse's limb will be swollen to a frightful size, so as to incapacitate him almost from turning in his stall and walking out of his stable. Ordinarily, the development of farcy plainly accounts for the halting or lameness: now and then, however, as I said before, the lameness appears *without* any ostensible cause.

Viewing the affected limb from behind, we perceive a fulness on the inside of the thigh, along the course of the femoral vein, and the application of our fingers to this will immediately detect a corded nodous swelling, which has been, happily enough in the sensation it conveys to our feel, compared to "a cord with so many knots tied in it." This at once is declarative of disease of the lymphatic vessels—of the presence of *farcy*. The fasciculus altogether may be of the magnitude of a person's wrist: it is hot to the feel compared with what the parts naturally are, and, when handled and compressed, flinches from pain: now and then, indeed, it is so exceedingly sensitive that the slightest pressure upon it causes the horse to catch up his limb, and in that unexpected and awkward manner that may prove the occasion of a blow to the examiner unless he be on his guard at the time of the examination. Tracing the cord upward from its place of origin—which commonly is above the hock—the hand is carried into the groin, and there discovers a lobulated tumour, a swelling of the inguinal glands, which may, without impropriety, be called *a buboe*: sometimes, however, the buboe does not make its appearance until after the full development of the cord.

Farcy does not at all times commence its attack in this open and unambiguous form; on occasions it presents itself in a shape so insidious that at first we hardly suspect it to be farcy, unless there happen to be present circumstances to induce suspicions

of its existence. Sometimes, one of the limbs—most likely a *hind* one—will swell *below* instead of above the hock, and the swelling will increase around the fetlock, and an abscess will form there. In other cases, blotches or isolated pustules will break out upon the limbs—more likely upon the inner than the outer sides of them—or upon the body, or upon the shoulders, neck, breast, or quarters; and these will break and discharge among the hair clothing those parts an ichorous or dirty-looking thin puriform matter. We trim the hair off one or more of these blotches, as they happen to arise, and find them with a yellowish sloughy base, which by some escharotic dressing, or by cauterization, we soon reduce to a healthy granulating surface: in the mean time, however, while we are doing this, others make their appearance, and in some remote parts, perhaps: this may serve to increase our suspicions concerning the nature of the eruption, and yet not confirm them. Any doubts we may still entertain are not doomed, however, to long duration. Soon will corded lymphatics be discovered issuing from one or other of these patches of pustules, running into buboes, and thus resolving, beyond all question, the veritable nature of the case.

THE GENERAL SWELLING of the surrounding parts, which ordinarily *accompanies* the development of farcy-buds, may not come on until some time afterwards: rarely does it precede the buds. The common attack includes the simultaneous appearance both of buds and swelling: the hind limb—for that is the part, of all others, most likely to suffer—becomes swollen from quarter down even to hoof, and often, as I said before, to an alarming degree, exhibiting everywhere heat and tenseness and tenderness, and feeling oily or greasy upon the surface, from some sebaceous exudation. The whole limb is evidently seized with a violent inflammation, and the fever observable in the system is commonly in some sort of proportion to it. What affects one appears to affect the other: as the one declines, in consequence of the buds coming to maturity, the other declines, and should one after abatement or subsidence shew a tendency to exacerbation, the other will be found to manifest similar disposition.

The unwillingness with which the patient moves, the stiff and

awkward manner in which he drags his farcied limb after him, tell plainly of the pain and inconvenience motion puts him to; and yet, when so much swelling sets in, we by practice find that exercise is one of our most influential agents in bringing about a reduction of it.

After the inflammation has reached its acme, and is on the decline, the swelling, somewhat diminished, becomes altered in nature from an inflammatory to an œdematous one; parts that before were hot and tense and tender, now become hardly warmer than in a state of health, lose all their morbid sensitiveness, and *pit* under the pressure of the finger. In fact, the disease, so far as the general tumefaction is concerned, is now assuming one of those forms to which farriers of old applied the ambiguous appellation of "watery farcy."

THE FIRST STAGE OF FARCY, from what has been said, will be found to consist in the development of the farcy-bud, and to last so long as the bud retains its properties of solidity, heat, and tenderness, and is accompanied by inflammatory tumefaction and lameness.

THE SECOND STAGE is commonly a *suppurative* one. The solid bud gradually grows soft from centre to circumference, and at length becomes a *pustule* or little abscess, which as soon as ripe bursts, or rather, gives way at the most prominent and thinnest part of its capsule, and admits at the place where it has partially burst the tardy escape of its contents, part of them being still retained by the flaps of the capsule and the investing hairs. In this sparing or partial manner does a farcy pustule unload itself when left to break in the natural way: in time, however, the remains of the capsule become absorbed, and then we have exposed to view a *farcy ulcer*.

THE MATTER DISCHARGED FROM A FARCY PUSTULE ordinarily is puriform. It is not, however, what we should regard as laudable pus; it is thinner in consistence, and has a dingy or dirty yellow or white aspect, and is offensive. Now and then it is bloody: in other cases it is more of the nature of *ichor*, or an ill-conditioned fœtid serum, than pus. Farcy pustules that have, from some apparent deficiency in the adhesive inflammation, extended their usual or natural limits, and thus become abscesses of comparatively large

size within the cellular tissue, are those most apt to manifest a secretion or effusion of this latter description.

The second stage of farcy is not invariably suppurative. Now and then the disease takes quite a different turn. The farcy-bud, instead of becoming soft, grows firmer and harder, insensible and indolent, and in time acquires a most unusual induration, one amounting to *scirrhosity;* and in this condition may continue for an indefinite length of time, the horse appearing to have quite recovered his accustomed health and spirits, and seeming, and working with his "big" leg, as though he ailed nothing. And work now will do his farcied limb good; it will prove a stimulant to absorption, and in time considerably reduce the size of it. Let not his master, however, fondly hope, or believe the flattering tale, that his servant is "cured." No, nò! this state does not constitute cure, but rather check or arrest. One day, it is to be dreaded, a fresh eruption will make its appearance, either in the enlarged limb or in some other, perhaps remote, part of the body;—nay, glanders may unexpectedly present itself: and then comes home to the mind of the master the utility and truth of the warning he had received, but may possibly have disregarded.

THE THIRD STAGE OF FARCY is the *ulcerative.* The pustule has broken, its overhanging flaps of capsule have disappeared, and an ulcer of a *chancrous* description is disclosed to view, large or small, in accordance with the size of the original bud, circular in figure, having its surrounding edge inverted, its base yellow and strewed with bloody points. In consequence of the cutis, after a time, becoming its seat or *nidus,* and also, in some measure, owing to its lying exposed to the air, and especially if any escharotic or detersive application should happen to have been used to it, the farcy ulcer will by degrees, in a sound constitution, assume a healthy aspect, and evince a disposition to granulate; and very often, with a little medical care, will granulate and heal up, and even cicatrize: at other times, and particularly so long as any morbid action continues to prevail, do all we can, the sores can be made only to dry up. When, however, the constitution of the animal is unsound or unhealthy—from disease of the lungs or other cause—

the farcy ulcer will often manifest a phagedœnic or sloughing disposition, extending itself into the surrounding tissues and such as are deep-seated, consuming them all alike in one common destruction. Now and then the ulcers change into what has been called the *cancerous* condition: they lose all propensity to spread, and yet cannot be got to heal; they dry up, and their surfaces grow hard and acquire in time the same sort of insensibility and indolence that farcy-buds do when they refuse to proceed to suppuration.

THE PARTS MOST OBNOXIOUS TO FARCY are the *hind limbs;* next to them, perhaps, the *fore limbs;* then the *breast,* the *head,* the *neck;* and, lastly, the *trunk.* In whatever member or part of the body the eruption takes place, we look for the disease in the situation and course of the lymphatic vessels, which, for the most part, is the same as that of the larger bloodvessels. Thus, when the attack is on the hind limb, we expect to find the cords of farcy-buds running up the inside of the thigh; when on the fore limb, along the inside of the arm; when on the breast, along the axillary hollow, in the course of the plat vein; when on the head, about the lips and along the cheek, from the angle of the mouth towards the lower jaw and into the submaxillary space; when on the neck, frequently taking the course of the jugular vein. As a general observation, we feel warranted in asserting that the nearer the head farcy makes its eruption the more the danger of glanders following, though it be a rule to which very many exceptions will present themselves in the routine of practice. When the head itself becomes the part attacked by farcy we may entertain the greatest apprehensions of glanders approaching. Commonly, one hind (sometimes one fore) limb is affected to the exclusion of the other; at other times, a hind and fore of the same side will prove so, the disease confining its attack still to one side of the frame: it does not often happen that either *both* hind or fore limbs are simultaneously affected. When the attack is a *general* one all four legs will become diseased.

A remark everybody has made in respect to parts attacked by farcy is, that the disease exhibits at all times almost a predilection to places where the skin is thin, and nearly or quite hairless: the insides of the thighs and arms, the lips, nose, &c., are

all common localities for farcy. Why is this? Is it that the contagious or miasmatic effluvia gain admission through the pores of the skin in these places, and produce in them, in this direct manner, a local disease?—or is it a mere incidental circumstance, one referrible, not to the thinness of the skin, but owing to such places being coursed by the principal trunks and major number of the lymphatic vessels? Without taking on myself to refuse all belief in the possibility of contagion or miasm affecting the lymphatics through a thin hairless cutis, or to its entering into their canals through the pores of the latter, I must say that the impression on my mind is strongly in favour, as in the case of glanders, of constitutional taint, in the generality of cases *prior* to the local eruption; in all, very shortly afterwards. Still, I repeat, I would not go so far as to deny that farcy, as well as glanders, might, in some cases where contagion or miasm had been operative, be for a time, longer or shorter, according to circumstances, simply a *local* disease.

COLEMAN assigned as a reason for the *hind* limbs being the especial seat of farcy, their distance from the central force of circulation. The more remote a part is from the heart, the more it is under the influence of causes extrinsic to the body; and so far this reason is valid. In my opinion, however, there is yet another reason to be given; and that is, the *work* the hind limbs have to perform in progression compared with what the fore, or any other parts of the body, have to do. This is found to have considerable influence in lameness; and every veterinarian knows that the hind limb is at all times more ready to take on inflammatory action—become "humoury"—than the fore limb; which does not seem altogether well to tally with its comparative remoteness from the centre of circulation, or, at least, to depend upon that cause alone.

OTHER PARTS than those that have been named become the occasional seat of farcy. The eyelids, the ears even, sometimes shew the disease. In stone-horses, we are told by continental veterinarians, it is by no means uncommon to find the spermatic cord and testicle affected with farcy. Of our own experience we can allege that the mamma is occasionally so; the disease, when it is so, commonly extending into it from the thigh. In conclusion, we

may safely assert that no part of the body can be said to be exempt from an attack of farcy. Now and then the disease will break out in a sort of *broadcast* form—appear over the body generally, without evincing any predilection whatever for those parts along which the principal lymphatics are known to take their course; on the contrary, will rise upon the *outside* instead of upon the inside of the limbs—upon the shoulder, quarters, &c. This is

BUTTON FARCY, The other kind being distinguishable by the denomination of *cord farcy*. And we have remarked that, in this variety, the buds, though more numerous, are smaller in size, and continue so through the stages of suppuration and ulceration; thus bearing a resemblance to the *miliary ulceration* of glanders: the cord farcy being succeeded by a more true chancrous or phagedœnic ulceration. This smallness and more numerous and general distribution arises, no doubt, from the exility of the ramifications of the lymphatics compared with their trunks and principal branches. Another circumstance in which these small buds differ from those of larger size, is their more intimate connexion with the *cutis vera*: they are frequently so incorporated in substance with it that no dissection can separate them. This, probably, arises from their having their origin in cutaneous lymphatics.

THE LYMPHATIC GLANDS commence swelling simultaneously with, or speedily after, the lymphatic vessels themselves; and when swollen they evince tenderness, and feel unusually hot likewise, plainly shewing that they also have become the seat of inflammatory action. The glands that take on disease are those into which the farcinous lymphatics directly run, or through which they pass in their course into their common duct: should a hind limb or the parts of generation become affected, the *inguinal glands* swell; should it be a fore limb, *the axillary glands* tumefy; and the same glands become enlarged when the disease invades the breast and shoulder; and on the occasion of the head becoming the seat of farcy, the same glands—*the submaxillary*—tumefy, as do when glanders is present. *The bronchial glands* may enlarge from disease deep-seated in the breast; usually, however, tumefaction of them indicates disease in the lungs. It is stated by Hurtrel d'Arboval, that *the mesenteric glands* have been found in

a state of disease from farcy, as well as those of the *mediastinum* and *pelvis.* I cannot, however, for my own part, recall to mind any observations confirmatory of this; at the same time, I do not question the statement. All that I have to say in regard to it being, that when *suppuration* is named as having taken place in the lymphatic glands, it would, in my mind, furnish an argument against the disease turning out to be farcy or glanders.

DIAGNOSIS.—The old writers on farriery seem to have had no standard whereby farcy was to be distinguished from some other diseases resembling it. Any common anasarcous swelling of the hind limb that proved to be general they called "*watery* farcy;" thus evidently confounding it with that œdematous state of limb which is known to be one of the concomitants or consequences of true farcy. Modern veterinarians, with their improved knowledge of pathology, have got rid of these erroneous notions, and by shewing that farcy is a disease of the lymphatic system, have laid the foundation for a new and more orthodox hippopathology. We now know that no disease can be farcy that does not affect the *lymphatics;* I am not aware, however, that any veterinarian beside myself has carried his observations so far as to pronounce that farcy was the *only* disease to which the lymphatic system of the horse is obnoxious. And yet this, if established, is an important point, inasmuch as, then, our diagnosis becomes well defined and comparatively facile in practice. No swelling of a hind limb (or of any other part) constitutes a case of farcy apart from unequivocal signs of *lymphatic* disease: there must be present corded, nodulated swellings—*buds* in some form or other—together with actual or approaching tumefaction of the lymphatic glands, or the case is not farcy.

I cannot help thinking, from accounts I have perused in some veterinary authors, that both glanders and farcy have been mistaken; or rather, that diseases of another kind have been mistaken for them, and for farcy oftener than for glanders. One disease in particular, and one that is by no means so very rare in its occurrence, I feel quite certain has been called by the name of *farcy*, and under this appellation appears to have been "cured," and to have been recorded as such. The disease I allude to is

that which is now known by the name of *diffuse inflammation of the cellular membrane:* a disease consisting in the (generally sudden) appearance of lumps or patches of sub-cutaneous effusion of a solid and even firm description, attended by œdematous states of the limbs, belly, sheath, &c.; and thus having, so far, the additional character of *watery* farcy. But in these cases, let it be well observed, there is no *lymphatic disease,*—nothing like *farcy-buds* and *cords;* in which circumstance it is, connected with the course and termination these respective diseases are seen to have, that we are to seek for a correct diagnosis. But how are we to distinguish farcy-buds from some cutaneous eruptions—from *surfeits*—which appear so much like them? There is but one species of farcy for which these eruptions can be mistaken; and that is the diffuse or broad-cast variety—the button farcy. Now, should the attack be farcy, the probability is, from its being a *general* one, that the animal will shew signs of ill health at the time; whereas, a horse that has "broken out in a surfeit all over his body," is commonly in unusually good, what is called "fine," condition. Then, again, "surfeit lumps" are often large and irregular in form, and frequently appear in patches; whereas the buds of button farcy are small and regularly spheroid in shape, and spread pretty uniformly over the body. Again, surfeit eruptions are often but of an hour or two continuance,—rarely are they visible on the following day: any doubt, therefore, that may impend over the case is not likely to be of lengthened duration.

THE PROGRESS OF FARCY, always upwards, towards the heart or towards the head, will depend on the character it happens to assume. *Acute farcy*, as I have before observed, will run its course rapidly and uninterruptedly, the same as acute glanders is known to do; with which, indeed, it is commonly at an early period, always almost prior to death, associated. *Sub-acute farcy* is apt at times to manifest a good deal of irregularity in its progress,—at one time it being acute and full of virulence, at another in a state of indolence or absolute suspension, the patient appearing to be recovering from the disease. In the progress of farcy a good deal will depend on the state (of soundness or disease) the lungs happen to be in; when they are already in a state of tuberculous dis-

ease, though the animal may, by care and judicious management, be kept up for a time, he will, in the end, turn what has been called "hectic" or (with less propriety) "typhoid," and end his days in phthisis. As to *chronic farcy*, it is impossible to say how long it may remain in the state of inactivity and apparent harmlessness into which it has, either of its own accord or through treatment, relapsed, or to make sure even for a day that it will not spring up again in the system in all the virulence of the acute disease, and put a speedy end to the animal's existence. The following case, communicated by Mr. Horsburgh, V.S., Dalkeith, to THE VETERINARIAN for 1843, is well adapted to shew how rapidly and destructively farcy, when it is *acute*, frequently runs its course:—

On the 6th April 1842, Mr. Cossar, horse dealer, bought from Mr. Thomson, another horse-dealer, a bay pony for £9, warranted sound. The pony was delivered to Mr. Vessy, inn-keeper at Dalkeith, without having been at all in Mr. Cossar's stables: Mr. Cossar also warranting the animal sound.

The pony being very fat, Mr. Horsburgh, V.S., was requested to give him a dose of physic on the 8th April. While giving the ball, Mr. H. perceived a mark below the off eye, like that of a recently-healed wound, but having a peculiar shining aspect, with a depression in its middle as though the point of the finger had been impressed upon it. This was noticed to the groom.

The morning of the 10th (the physic having been working the day before, and set over night) the groom came to Mr. Horsburgh in a great hurry, saying, "The pony was all over swelled and stiff, and could scarcely move." Mr. H. found him as described, with the lymphatics swollen to that degree on his quarters, that any body would have imagined he had been recently whipped severely. The mark under the eye was also tumefied.

The day after (the 11th) the disease was but too evident. The place under the eye had broken, and become a spreading sore; the lymphatics of the thigh were much swollen, and presented numerous farcy buds. The submaxillary glands were swollen and hard, and there was discharge from both nostrils.

13*th*. Every symptom shews the rapidity with which the disease is running its course. The head is swelling, the discharge from the nose greatly increasing, the limbs (the hind ones especially) much swollen, and farcy buds multiplying in all directions.

16*th*. Mr. Dick saw the patient, and, as he was in so hopeless and dangerous a state of disease, ordered him to be destroyed.

FARCY TERMINATES in various ways. The termination most to

be dreaded, and, unfortunately, that which proves the most frequent, is in glanders—in *acute glanders*—and, as a consequence, shortly afterwards in death. On the other hand, farcy has on many occasions been known to gradually disappear, expend itself, as it were, in the part in which it broke out, and the patient to recover. The disease confines itself to the part first attacked—to one hind limb; at all events, it does not spread either to the head or to the lungs, but manifests itself in a *local* form only, and in that form admits of removal or cure, or else, in the part attacked, degenerates into that callous, chronic stage that may last for nobody knows how long, and in which the horse can do certain work pretty nearly, or quite as well, as if his limb had no such thickening or enlargement about it as an attack of farcy is but too apt to leave.

The amount of work horses with limbs of this description, or with limbs actually breaking out with farcy at the time, will often do, and the length of time—even years—they sometimes are enabled to continue their work, without any spread or augmentation of their disease, is on occasions truly surprising.

As I said before, however, this is not a state of security. Glanders may at any time supervene on any fresh attack; or, should pneumonia at any time, or even a severe catarrh or influenza come upon the subject, the probable termination will still be glanders.

THE PROGNOSIS, in farcy, can under no circumstances be pronounced "favourable." So long as the disease confines itself to one locality, and continues by degrees to give way to treatment, some hopes may be entertained of a termination in the indolent or chronic stage, or even of the disappearance of disease altogether: still, it must on no occasion be forgotten how in a day farcy may return in all its worst virulence, and be productive of glanders. As was observed on a former occasion, the farther the locality of farcy is distant from the head the less the probability, generally speaking, is there of its producing glanders: this rule, however, does not hold in all cases, many horses, shewing farcy in one hind limb breaking out in glanders, without any intermediate part, between the limb and the head, manifesting disease. The chronic variety of farcy, or the sub-acute that shews a disposition to run

into that form or stage, is certainly that which affords the best prospects under treatment, or which may, even without any treatment at all, admit of the animal doing part or all of his work; but, even here, it is injudicious to make the prognosis too sure: it ought, under almost all circumstances, to be a *qualified* one.

THE CAUSES OF FARCY.

Whatever tends or operates to the production of glanders, the same has the power of causing farcy. Contagion becomes no exception to this admitted truth, supposing its agency to be through the medium of the constitution: contaminated blood is quite as likely to emit its virus in the form of farcy as in that of glanders. Coleman, however, appears to have viewed the operation of contagion in glanders as being *local*, upon the Schneiderian membrane; and that, to take effect, it must have a local operation also in the production of farcy; since, in his lectures, he informs us, that, "of all three affections (viz., acute and chronic glanders and farcy) farcy affords the most conclusive evidence of the production of the disease *in the absence of contagion*." Undoubtedly, it is out of the range of probability—out, almost, of that of possibility—for the inside of the thigh of one horse to come into contact with the nose of another horse, or, in fact, with any contagious virus, through chance or accident; supposing, however, that the contagion enters the system before the local disease be produced, there is in that case quite as much likelihood of farcy following as of glanders. We know that, by inoculation, farcy has been produced by the matter of glanders, and glanders by the matter of farcy, and that, consequently, there is every reason to infer a similarity, or rather an identity in the viruses of the two diseases; and in farther proof of this, as was said before, one disease, or form of disease, almost invariably terminates in the other prior to dissolution. There can be no question but that the same contaminated or miasmatic atmosphere of the stable or elsewhere which produces glanders may occasion farcy; and *vice versâ*. The cases of the four horses of my own regiment* fully bear out this conclusion:

* Given at page 230, et sequent.

three of them first shewed *farcy*, the fourth commenced with glanders. Surmising that the *virus* or animal poison, or *miasm*, or *malaria*, or whatever it may be, enters the blood, the part upon which it takes *local* effect will be that probably in which, from some cause or other, there resides the greatest amount of predisposition or susceptibility; and further than in this obscure manner we shall find ourselves unable to account for any predilection manifested by the disease.

That farcy, like glanders, may take its rise from other causes than contagion and contagious miasms—from such as are comprised in our third, fourth, and fifth classes of exciting causes*—we have already stated there exist examples amply sufficient on record to shew: the consideration being, as in the case of glanders, in respect to their operation, whether the system of the animal under such circumstances can be said to be in its *natural* state; whether, on the contrary, facts would not warrant our assumption, that some morbid or peculiar susceptibility did not at the time exist in the lymphatic system—something more than mere unhealthiness—to account for causes of an ordinary nature having such extraordinary effects. Some veterinarians believe farcy and glanders to be capable of being "bred" or generated in the horse's system: if so, any common causation might prove adequate to excite their development; and our position still holds good—that for causes of an ordinary or pure nature to be productive of the specific disease, they must operate on a system in which the *seeds* of that disease already exist, or in which there is present a susceptibility of some kind different from any existing in a healthy system, or even in one under any ordinary condition of disease or unhealthiness.

* Turn back to page 218.

SEAT AND NATURE OF FARCY.

FARCY may be said to have its seat in the *skin*, that of glanders being accounted to be *the aërial membrane*. In strict pathology, glanders and farcy together constitute one and the same disease of the lymphatic vessels and their glands: the disease originates in these vessels, and for a time confines itself to them; in the course of its progress, however, it extends into the contiguous tissues, affecting in one case the *cutis vera*, in the other the mucous lining of the air-passages, and it is in these parts respectively that the phenomena of farcy and glanders are exhibited. No wonder, therefore, that the appearances in farcy—the local symptoms—should differ so much as they do from those of glanders, and that the buds and ulcerations of the one should be found, in the course of treatment, so much more manageable or more "curable" than those of the other form of disease; or that one disease should be so much more dangerous to the animal affected, as well as to horses (in health) around him, than the other. Inflammation in the cutis is a different disease from inflammation in a mucous membrane—productive of different phenomena, and requiring a different (local) treatment: hence the apparently wide differences between two diseases essentially or in nature alike.

In general, in dissecting farcied limbs or other parts, as soon as we have cut through the thickened and indurated skin, we appear to have bottomed the disease—to have reached its depth or profoundest seat: the subcutaneous tissue everywhere around is infiltrated, apparently in a state of local dropsy, but of the farcinous disease the skin has manifestly borne the brunt. In cases, however, of inveterate or malignant farcy, in which the deep-seated as well as the superficial order of lymphatics have taken on disease, we meet with farcy-buds and pustules, and occasionally with abscesses of large and irregular dimensions, situated among the muscles.

Dupuy informs us he has met with "tubercles" (or farcy-buds) and farcy-pustules upon the mucous lining of the alimentary canal; and Leblanc, so far as having witnessed one case of the kind,

confirms this account. On the same authorities also we may state that the liver, the spleen, and the testicles, have all been known to exhibit farcy. In the case of disease of the *mucous membrane*, be it in the intestinal canal or in any other situation, to be consistent in our pathology, we ought to call the disease *glanders*.

IN NATURE farcy is identical with glanders: they are, let it be remembered, one and the same disease seated in different tissues and localities of the body; glanders being an affection of mucous tissue, seated in the head; farcy one of dermoid tissue, appearing upon the limbs and body; both originating in disease set up in the lymphatic system.

WRITERS ON FARRIERY have regarded farcy as a disease of the bloodvessels, of the *veins* in particular; and considering that farcy cords take in general the same course which the superficial veins are seen to do, and that the knowledge these writers possessed of the lymphatic system amounted to little or nothing, we need not feel surprise at their running into so venial an error. SOLLEYSELL* informs us, that the "*farcin* may easily be known by the knots and cords that *run along the veins*, and are spread over the whole body." And he describes "four kinds of farcin," to which he says "all the rest may be reduced;" and that "the second sort of farcin is accompanied with hard swellings, resembling ropes or strings, that run beneath the flesh and the skin, *along the veins*, especially those of the thigh, neck, brisket, and along the belly."

A century later than the time of Solleysell we find the best English veterinary author of his day, GIBSON†, a *surgeon* as well as veterinary surgeon, still believing that "the true farcy is properly *a distemper of the bloodvessels*," notwithstanding he treats in the same work of the "distribution" and "use" of the *lymphatic vessels*. "When inveterate," he continues, "(the farcy) thickens their (the veins') coats, and common integuments, so as they become like so many cords, and these are larger or smaller in proportion to the size and capacity of the *veins* that are affected by it. It is seldom perceivable *on the arteries*, because of their continual motion and pulsation," &c. &c.

* Op. cit., p. 198. † Op. cit., p. 257.

COLEMAN pronounced farcy to consist in "an inflammation and suppuration of the *lymphatic* vessels;" and assumed, that the disease had a predilection for the *superficial* to the exclusion of the deep-seated order of those vessels, the same as other diseases of the body had their peculiar seats. He considered farcy-buds to arise from effusions of adhesive matter into the canal of the lymphatic, distending the vessel in the intervals between its valves, which latter he regarded as insusceptible of the farcinous irritation; "for if," said he, "a diseased lymphatic vessel be examined, *perfectly sound partitions of membrane* will be found between the buds, which cannot be any thing else *but the valves**."

LEBLANC, however, with whose researches and opinions we have had reason, when on the subject of the pathology of glanders, to be well pleased, regards the farcy-bud as the result of *the coagulation of the lymphatic fluid* or *lymph*, accumulated within it in consequence of the obstruction in its incrassated condition the fluid (lymph) receives from the valves, to which accumulations is owing the well-known plumpness and rounded shape of farcy-buds. Still, Leblanc admits that the vessels themselves are "almost always" in a state of disease: he has found their coats thickened and opaque, their lining membrane frequently exhibiting red spots, ragged, adherent to the contained portions of coagulated lymph, and in places softened without any ulceration, or else altogether in a softened condition. This softening change in time pervades the other (thickened) tunics of the vessel, and even affects the contained clots of lymph, ending, at length, in points of ulceration, opposite to which the surrounding cellular tissue becomes at first tumid, afterwards solid and firm; lastly, soft, as the other parts have become. In the centre of the softened mass a little depôt of matter forms, *a pustule*, having its seat partly in the lymphatic vessel, partly in the cellular tissue, and separated from other pustules above and below it by the valves. In places where the skin is very thin—on the lips, nose, insides of the thighs, &c.—Leblanc observes, farcy-buds are in general smaller than in parts

* Coleman's Lectures on Glanders and Farcy, as contained in vol. iii of my "Elementary Lectures on the Veterinary Art."

clothed by thick skin. This, I imagine, is owing to the scantiness or density of the cellular membrane in such parts.

THE CHARACTER OF THE FARCY-BUD is well described by Rodet*. "Detach a moderate-sized farcy-bud of recent formation, and before the softening process has commenced in it, and cut into this firm, indolent, rounded, everywhere isolated, completely formed bud, and its interior will be found composed of a hard, fibrous, condensed, milk-white tissue, resisting the bistouri; and though exhibiting throughout, in certain cases, a homogeneous texture, is nevertheless, in other instances, found grooved and traversed by some sanguineous capillaries. At a rather later period than this, at the time when it commences growing soft in its centre, and is about to become adherent to the skin, and sometimes before it has adhered, we may observe (providing the recent internal process of liquefaction be not completed) that its circumferent parts still retain the white fibrous indurated texture which formerly constituted the entire bud, and that within its interior is inclosed a pultaceous matter of a yellow or dirty white colour, or else slightly reddened. At length, when the process of softening is completed, and before it is converted into abscess, we find that within the bud several little morbid productions, united by lamina one to another (arranged in concentric layers, and resembling adventitious serous membranes slightly infiltrated, whose raw interior gives the appearance of ulceration to its inner surface), concur to form the walls of the abscess, inclosing a white, thick, homogeneous matter, whose consistence, varying a good deal, is at one time caseous, at another puriform, at another analogous to that of thick jelly (bouillie)."

The peculiar well-known spheroid shape of the farcy-bud, as well as that of the pustule which succeeds it, is proved to be owing to the existence of the valves within the lymphatic vessel, they preserving their integrity while the coats of the lymphatic are vanishing through absorption. Coleman said the valves were *insusceptible* of irritation and consequent inflammation from farcy, and alleged as one reason for this, their being structures organized in a less degree than the tunics of the vessel. In some cases—in such probably as would be regarded as unhealthy or ill-conditioned

* Op. cit., page 215.

constitutions—we know that the valves, as well as the tunics, do however inflame and ulcerate or become absorbed; and that, in consequence, the farcy pustules run one into each other, and by such communication lose their characteristic shape, lengthening into fistulous abscesses, well known to farriers under the denomination of "farcy pipes," or spreading into abscesses of large and irregular shape, burrowing deep in the connecting cellular tissue.

THE SKIN—the *cutis vera*—undergoes changes very analogous to the thickening and induration of the farcy-bud. In the course of time it becomes enormously augmented in substance, remarkably white, and unusually tough and hard, cutting like so much white leather rather than skin, especially in the immediate vicinity of the buds; several of the more superficial of which, some that have become *pustules*, will be found embedded in its thickened substance. We, however, no sooner cut through the indurated cartilaginous-like cutis than we expose chains of farcy-buds and pustules, immediately underneath it, invested by cellular tissue full of infiltration of a jelly-like citron-coloured fluid, beyond which bed of effusion we appear suddenly to lose all vestiges of disease. To this, however, there are exceptions. In inveterate farcy the infiltration will sometimes be observed extending deep between the muscles, and every now and then abscesses, depôts of matter, of considerable volume, will be discovered buried among the fleshy structures. Nor do the bones, no more than the muscles, escape the ravages of farcy and glanders: we know how the turbinated and ethmoid and nasal and maxillary bones have suffered in malignant cases of the former disease; and we are assured by Dupuy and others, that many of the bones of the limbs and body have proved extensively diseased in horses that have for a length of time been afflicted with farcy.

TREATMENT OF GLANDERS AND FARCY.

VETERINARY surgeons are taunted with glanders being the *opprobrium* of their art—a bane for which they possess no antidote—and they feel the taunt to be too true to admit of reply: they reluctantly and sorrowfully and reproachfully condemn a noble animal, in the apparent enjoyment of health and strength, to slaughter, because he has a disease upon him, though it be seemingly only in his nose, for which they know of no remedy, and because that disease is likely to spread from him to other horses; nay even, through possibility, to man himself. Although veterinary science, however, has hitherto failed in discovering any cure for glanders, it may certainly be said to have elicited a course of medical treatment which oftentimes proves of essential service in cases of *farcy:* why farcy, which we have found to be in nature nowise different from glanders, should be at times curable, and glanders in its acute and confirmed stages never so, will be pointed out when we come to consider their respective therapeutics. And though our art proves unavailing in the *removal* of glanders, yet have we sufficiently good reason to boast of the *prophylactic measures* it has devised and put into practice. This leads us to make a division of the treatment into prophylactic and therapeutic.

Prophylactic Treatment.

To form a judgment of the efficiency of our prophylactics we have no more to do than to institute a comparison between the existence of glanders and farcy at the present day and their prevalence in times past. The day was when in almost any large horse establishment, certainly in most public horse markets, such as Smithfield and others, one was almost sure to meet with a glandered or farcied subject: the metropolitan horse-slaughterers' yards were never without them, and most loathsome spectacles the poor wretched creatures presented, tied up as they were for days together without food, breathing hardly and stertorously through their plugged-up nostrils, waiting their turn for the poll-axe.

Where, however, in our own days—thanks to the general diffusion and utility of the prophylactics we are about to mention—are we to look for such disgusting pitiable scenes as these?—nay, now-a-days, it is hard to know sometimes where to go to obtain glanderous matter for the purposes of experiment. Let us but for a moment pause to consider what the losses of large coach and post and job establishments, breweries and coal-yards, used to amount to annually through glanders and farcy, and compare those accounts with their present casualties from the same causes!—or let us turn over the horse statistics of our cavalry or ordnance! Frightful, to our own knowledge, have been such losses in our public departments; as nothing, compared with what they formerly were, are the same casualties at the present day.

That the principal excitants of glanders and farcy are *contagion* and the *miasm of the stable*, appear among veterinarians of our own day to be pretty universally admitted, other causes being but occasional or incidental. Coleman, indeed, shut contagion all but out from his causative agents, ascribing all the mischief to "the poisoned atmosphere of the stable." He presumed the virus or poison of glanders to be "bred" as well as "diffused in an atmosphere rendered impure by repeated respiration and by effluvia from the dung, urine, and perspiration." A confined atmosphere in a foul stable being the *fomes* of the miasm or contagion, the remedy for prevention became evident. It was not sufficient for a stable to be drained and kept clean; it was necessary that there should be a continual change of its atmosphere kept up—that the air which its inhabitants had once breathed, and which had become heated and carbonized, should not enter their lungs a second time. This was Coleman's principle of proceeding in his prophylactic measures—this reasoning it was, supported by a host of facts, that laid the foundation of his grand scheme of ventilation; and the records both of our cavalry and ordnance will triumphantly shew how successful the scheme has proved, to say nothing about the benefit private studs and establishments have derived from having, late though many of them did have, recourse to the same. Coleman's plan of ventilation was to make apertures in the roofs of stables, or in the most elevated parts, and especially in the corners,

of their side-walls, through which the heated and impure air might find escape; as well as apertures in the lowermost possible situations through which fresh (pure) air might find ingress to replace what had escaped above. Sound, however, as Coleman's theory was upon general principles, it was not found in all situations to hold good in practice; for wherever a current of air or a strong wind sets against stables, it will be found that even through the *upper* holes of that side air will rush in, while through the lower of the opposite side of the stable rarefied air will escape. Still, however, Coleman's general reasoning was sound and applicable. And as a proof of it, we know that he, in numerous instances, succeeded in rendering stables wholesome which had been notoriously the reverse; the consequence of which was the banishment, from such abodes, of diseases of the most malignant and fatal description, in particular of farcy and glanders.

That such were the facts, such the results, can be sufficiently proved by the veterinary annals of the army and ordnance departments. The only question for us, as professional men, to consider is, whether Coleman's premises and deductions in regard to the said facts were sound—whether, as he so confidently asserted, the evil *wholly* arose from what he called "a poisoned atmosphere," i. e. an atmosphere in which a poison had been "bred," or whether the atmosphere had not become "poisoned" through *contagion?* Coleman's assumption that every horse, at the time he became an inhabitant of a stable of this description, was sound in constitution—free from the *seeds* of disease—could not be proved; and since he did not believe that contagion could operate save through *actual contact*, he took little or no heed of any such influence in forming his theory of the effects of ventilation; but unhesitatingly ascribed all, as has been already stated, to the poison or miasm generated in the stable. Without any desire to detract from the benefits derived from ventilation, we cannot shut our own eyes to the good that has evidently resulted from a superior stable regimen, from the superior management altogether of horses in a state of domestication; neither can we pass by without remark the great attention that has all along been paid to the immediate separation and removal of the tainted subject from his sound companions: the

very shadow of a symptom of glanders or farcy (or of any other contagious or malignant disease) having been, with veterinary surgeons, sufficient to cause the instant separation of the patient; and this is a circumstance which alone, we can entertain no doubt whatever, has tended very materially to the prevention of the spread and multiplication of cases of glanders and farcy.

From these observations we gather that the prophylactics against the generation and spread of glanders and farcy, are, 1st, VENTILATION OF STABLES; 2dly, CLEANLINESS, in which is included the *draining* of them; 3dly, The immediate and complete SEPARATION OF THE SICK FROM THE HEALTHY. To enter here, farther than has already been done, into the subject of ventilation, would, if not out of place, occupy more of our space than we could possibly afford it; neither can we, nor perhaps need we, enter into any details of cleanliness, or draining, or paving: it seems right, however, to remark, in regard to the segregation of a horse having or suspected of having glanders or farcy, that his separation can neither be too early nor too complete: to satisfy every doubt respecting contagion, he should be placed at such a distance from his associates in health, and in such a situation that no *direct* atmospheric communication can exist between their habitations. And moreover, his pail, halter, bridle—even harness and saddle too perhaps—ought to be restricted to the patient's use, or not used among other horses until such time as they had undergone the necessary purification. Likewise the groom looking after the glandered subject should be careful not to allow himself or his clothes to become the medium of contamination between the diseased and the healthy. These precautions may, by some people, be thought to be strained beyond what experience has found to be requisite: I would, however, for my own part, rather run the risk of having an imputation of this kind cast upon me than suffer any doubt to remain lurking in my own mind of the full sufficiency of any prophylactic measures I might have recommended. In large establishments, where many valuable horses are stabled together, we can hardly exercise too much nicety and fastidiousness on the occasion of any contagious disease, and especially of such a one as glanders and farcy, breaking out amongst them.

Therapeutic Treatment of Glanders.

HAVING got our patient lodged in some secluded habitation, our next consideration is, what is to be done with him, or rather for him? Should his attack turn out to be *acute glanders*, death, through suffocation, will so soon end his days that it seems a pity the poor sufferer should be allowed to labour out his existence; indeed, humanity ought to forbid it, and at once blow the wretched creature's brains out with a pistol-shot. Leblanc says he has, on several occasions, performed tracheotomy for such subjects, but has failed in affording any permanent relief. And there is nothing that I know of that will, in any material or marked degree, ameliorate their horrid condition.

In the present state of our knowledge of the therapeutics of glanders, the only varieties admitting of treatment are the *sub-acute* and the *chronic:* the acute, as we have just seen, running its course too hurriedly and fiercely to admit of any check from medicine. In its less virulent forms, occasionally as sub-acute but oftener as chronic, the disease has been known to disappear under medical treatment, and oftentimes to the delusion of the director of that treatment, who has naturally inferred that his prescriptions had worked the cure, when in point of fact, as subsequent experience has proved to him, the patient has recovered under the influence of the *vix medicatrix naturæ*. Nevertheless, in one form or other, glanders has been the subject of treatment from the earliest times down to the present, every experimentalist varying his plan of procedure, directing it to the parts diseased or else to the system generally, in accordance with whatever notions he happened to entertain concerning the nature of the disease.

VEGETIUS, in his *methodus medendi*, considered it necessary to *purge the head* of the horse, in order to rid it of its "stinking and thick humours;" for which purpose he prescribed a mixture of oil, adeps, and wine, and directed it to be poured into the nostrils; and further ordered, that *the horse's head should be bound to his foot*, with the intention that, as he stepped along, "all the humours might drop out*."

* Op. cit., at p. 253.

SOLLEYSELL, considering the state of medical veterinary knowledge at the time he wrote, manifests here, as in so many other instances, extraordinary sagacity and penetration. He tells us that, in glanders, by the use of "good remedies," a cure even *might* be effected "if the lungs were not already wasted;" adding, that "God alone can restore a consumed part." Although, however, he made use in his practice both of *injections* up the nose and of *fumigations*, and of applications as well both of the *actual* as the *potential cauteries* to the "kernels" under the jaws, and occasionally excised them—a practice he found afterwards to be of no effect—and although he administered internal "remedies" to boot, it is evident he entertained very meagre hopes of cure; for he warns us, that "when a farrier undertakes to *cure* a horse of the glanders, you may conclude that hardly he will be able to perform his promise, or that the disease is really not what you imagine it to be*."

LAFOSSE, finding the nose and sinuses of the head to be the locality of glanders, and concluding, from the absence in general of appearances of disease elsewhere, that the malady was confined exclusively to the head, "from thence," to use his own words†, "considered of a proper method of cure; and after a great many reflections I concluded," says he, "in favour of the TREPAN; that, by the help of a syringe, one might inject proper and convenient remedies into the nose."—Doubting at first "whether the horse could bear the operation of the trepan," fearful of the result of his experiment, Lafosse commenced the operation on one side only; afterwards, however, he performed it on both sides, and was "agreeably surprised to find that horses that had *holes cut through their skulls* preserved every sign of health"—and that the apertures he had made evinced "a good disposition to heal and grow up." A very few years of additional experience, however, evidently shewed Lafosse the inefficacy of the trepan; for we find

* Op. cit., at p. 198.

† "A Treatise on the True Seat of the Glanders in Horses; together with the Method of Cure. By M. LAFOSSE, Master Farrier of Paris, and Farrier to the King's Stables." The Translation and Notes by H. BRACKEN, M.D. London, 1751.

him, in a subsequent publication*, calling to his aid, when "glanders is *confirmed*"—"emollient decoctions thrown up into the nostrils, carefully pushed into the frontal sinuses, and repeated thrice a-day for a week;" and, likewise, "fumigations," which would come into practice, he adds, "if their good effects were better known." With his trepan and all its auxiliaries, Lafosse in the end finds himself forced to confess "there is no answering for the cure," that depending "on the *stubbornness* of the disease;" for, as he appears now to have discovered, besides "confirmed glanders," there are "*six other kinds* of discharges by the nostrils, of which *four are incurable.*"

BRACKEN and BARTLETT were both advocates for the trepan, praising Lafosse for his discoveries and efficient method of cure; but GIBSON† had no faith in the remedies. "Glanders," he said, was "so generally fatal," he had no occasion to "spend much time in laying down any method of cure." He scouts the notion of getting rid of the disease through "destroying the kernel under the jaw with the actual or potential cautery," and so "cutting off the supply of matter that feeds the distemper;" adding, that glanders is "rooted in the blood," and therefore cannot be removed by any other than "*inward* means;" which "means" he gives an account of in the narratives of the cure of two cases of glandered horses belonging to the "First troop of Guards." These cases, however—one of which baffled all attempts for a period of six or seven months—as our author remarks on them, only "shewed the difficulty and trouble of curing glanders, even where *the symptoms are favourable;* for among the many glandered horses I have seen," he adds, "perhaps *not one in fifty* was to be meddled with; therefore *I should never advise any body that has a horse* TRULY GLANDERED *so much as to* ATTEMPT *a cure.*"

Few of us now living can give wholesomer counsel than this. Let any person who professes to "cure" glanders but have his cases proved by three such simple tests as follow, and the results,

* Observations and Discoveries made upon Horses, &c. By the Sieur LAFOSSE, Farrier to the King of France. London, 1755.

† Op. cit., at p. 257.

even should they fail to undeceive him, will surely satisfy those who may be misled by his representations:—1st, Let the cases be proved to be genuine or confirmed glanders; 2dly, Let such horses as appear to have been "cured" be kept or watched for such a length of time afterwards as will satisfy competent men that no relapse is likely to occur; and, 3dly, Let it be demonstrated that the "remedy" will take like good effect in all other cases of glanders and farcy, barring only such as, from organic disease of the lungs or other vital parts, or from extreme age or debility of constitution, cannot be expected to derive the same benefit from the antidote.

Supposing a veterinary practitioner called on to treat a case of glanders, it becomes his duty, to the extent within his power, to ascertain whether the case—supposing any doubt impend over it—be one of glanders or not. I have already observed that treatment for *acute* glanders is (unless we know of any specific) altogether out of the question; therefore the case before us we will suppose to be either of a dubious sub-acute character, or altogether chronic in its nature. The patient appears in excellent health and spirits; indeed, were it not for the trifling running from his nose and the inconsiderable glandular swelling under his lower jaw, he would to appearance ail nothing whatever. It seems a pity and a shame to put such an animal to death. And, besides, he is "such a favourite"—"something *must* be done for him!" The first thing to be done, I repeat, is to ascertain if the disease really be *glanders*. Inoculation of another (valueless or condemned) horse, or of an ass, will probably set this question at rest. Or, the frontal and maxillary sinuses may be bored into and examined, through the introduction of a feather into their cavities, or by syringing of tepid water into them: should the feather return smeared with matter, or the water flow through the nostrils bringing matter along with it, in the absence of any known disease producing such a secretion within the sinuses, the case may be at once pronounced upon. Supposing the evidence to turn in favour of the discharge being of a glanderous nature, what steps are next to be taken by the medical attendant? The utmost that can be said in favour of the prospect of a fortunate result is, that the

annals of veterinary medicine contain several cases of recovery under treatment of various and different kinds, and that the patient in question, so long as the disease increases not beyond its present mild form, may, it is just possible, add another to that number. But what is to be the *methodus medendi?* Shall we attack it as a *general* disease or simply deal with it as a *local* affection?—or shall we essay what can be done in these ways combined? Let us first consider

GENERAL TREATMENT. In respect to regimen I would have the horse comfortably lodged, well groomed, and well fed. I think it not only impolitic but dangerous even to disturb, in any material degree, that (good) health which he, to all appearances, is in the present enjoyment of. Supposing any local inflammatory action or fever that may exist not to be of a character—which in the sub-acute and chronic forms of the disease we do not expect to find it is—to require any antiphlogistic treatment, I would not deplete or debilitate my patient: I would neither bleed nor purge him. And what medicine I gave, should be of a tonic or astringent character; *astringent* so far as regards any action it might have on the mucous tissues: I say this because it will be found, when we come to examine the various "specific remedies" we have had recommended for the cure of glanders, that they mainly or wholly owe their anti-glanderous properties to their influence upon the secretions of these parts.

As well in other countries as in our own have persons—veterinarians and others—come forward with "cures for the glanders;" and there, as well as here, have learned societies and colleges (not to mention the credulous public) been ready and weak enough to approve and reward such pretensions without waiting until the "discoveries" had been submitted to the examinations and tests of persons who were alone capable of appreciating them. In the last century the Royal Academy of Science vouchsafed their approbation to Lafosse for his discoveries of the seat, nature, and *cure* of glanders. In the present century, the Royal Society of Agriculture in France have publicly eulogized Professor Collaine, of the Milan veterinary school, for his successful practice against glanders, with *sulphur* as his specific; and our own Veterinary College

have rewarded Professor Sewell for the same, with *sulphate of copper* for his specific. In later times still, in France, *chloride of sodium* (common salt) has received favourable notice from the Royal Agricultural Society. It is hardly requisite to add, that, had any one of these "remedies" turned out to be curative of glanders, we should not, at the present hour, be painfully compelled, as for hundreds of years our ancestors have been, to doom unfortunate glandered patients to a premature and opprobrious death.

SULPHATE OF COPPER (*blue vitriol*) has had in our own country, for a great many years, a sort of established reputation among veterinary surgeons as a remedy for glanders and farcy. I believe that it was introduced into our "farcy ball" by the late Professor (Coleman); and, though he never ascribed to it any *specific* virtues, the result was, that a good many of his pupils—my father among the number—were in the habit of administering it in glanders and farcy, on the belief of some supposed benefit derived from its use, in all cases where medicine was given save such as were devoted to experiments with some new remedy or untried medicine. Professor Sewell, however, has not hesitated to declare it to be, administered in a *fluid* instead of a solid state, "a remedy for glanders." His words are—"Although there are practitioners that condemn this, more bear me out. I have a horse that has been cured now (1827) four years. Many of the profession have attempted to accomplish this by medicine in a *solid* form; but the same quantity which, so given, would inflame the stomach and bowels and destroy the animal, may be exhibited innocuously *in a state of solution:* and it succeeds best when the solution contains some mucilage, as gum arabic*." As a general dose, Mr. Sewell recommends six drachms of the salt in two or three pints of water thickened with mucilage. Mr. Youatt thinks—and I quite agree with him—that this is much too large a dose: from half-a-drachm gradually increased to two drachms, and given twice a-day if required, being a much likelier dose to have a tonic operation, and, in the words of Mr. Youatt†, "sustain the system against the

* Mr. Sewell's "Introductory Lecture," in THE VETERINARIAN for 1828.

† See Mr. Youatt's "Lectures," in THE VETERINARIAN for 1832.

insidious effects of this long-continued irritation; or excite another and healthier and more powerful action, and before which the other must succumb." And, moreover, Mr. Youatt thinks that, while the copper answers this end, it "has a peculiar local determination to the Schneiderian membrane;" and, also, that its effect "in healing abrasions and arresting nasal gleet is undeniable." The following case, sent me by my relation, Mr. Charles Percivall, exhibits all the appearances of recovery from the employment of sulphate of copper in solution:—

While I was (veterinary surgeon), says my cousin, in the Enniskillen Dragoons, a squadron of the regiment, then stationed in Ireland, became detached for upwards of a fortnight; during which time the horses were cantoned in filthy close stabling, wherein glandered horses were known frequently to have stood on former occasions, glanders being no uncommon occurrence in this part of the country. On the return of the squadron to head-quarters, one of the finest horses belonging to it—in perfect health at the time he went out—was brought to me on account of a copious discharge from his off nostril, accompanied by extensive ulceration upon the same side of the *septum nasi*, and tumefaction of the off submaxillary lymphatic glands. He was immediately shut up in a box appropriated for contagious subjects, bled (being in high condition), and had his glands blistered; and was ordered to take, daily, half an ounce of sulphate of copper in solution, a dose that was afterwards increased to an ounce. On the ninth day, being off his feed, the medicine was discontinued. On the eleventh it was resumed. On the fifteenth, for the same reason as before, it was again omitted. On the seventeenth the dose recommenced with was ʒvj, which he continued to take with but few omissions until the fifty-seventh day. By that period the ulcers, which for some time past had been gradually growing cleaner and healthier, were quite healed; and the discharge from the nose, which likewise had been for some time diminishing, had also ceased. Apprehending, nay, looking for a relapse, the animal was still detained in the infirmary box, and kept there for two months longer before he was allowed to rejoin his troop. Twelve months afterwards my cousin left the regiment; up to that time the horse continued free from disease.

THE SULPHATE OF IRON is a favourite medicine with Mr. Turner, of Regent-street. He prescribes it, "not in nauseating, overwhelming doses, but dissolved in the water (the horse drinks) in his bucket suspended in his box, so that the patient may drink a little at a time, and as often as he pleases. Mr. Turner in-

forms us, that the horse not only soon becomes habituated to the brackish flavour of the iron, but even prefers the drugged beverage to his ordinary drink*.

CANTHARIDES, as a medicine possessing singular efficacy in glanders, are in great estimation with Mr. Vines. "The medicine I have found of the greatest service," writes this author†, (in his chapter on the "Treatment of Glanders and Farcy," Section, "Remedies to be employed") "whether alone or in combination, has been *cantharides*. They appear to me, when given internally, to act on the system in two ways:—first, by stimulating the vascular surface of the inner coat of the stomach and intestines, thus promoting the greater formation as well of gastric juice as of the other fluids; and also increasing the appetite and digestion, and consequently forming a greater quantity of chyle, or new white blood. Secondly, by absorption, their active properties being taken into the circulation, and producing in a very short time *a material change in the mucous membrane and ulcers of the nose*, as well as in the ulcers of the skin." Mr. Robertson (Mr. Vines informs us), a surgeon, has published an excellent work on the efficacy of cantharides for gleets or affections of the urethral membrane, and for unhealthy sores in the skin; and that he (Mr. R.), twenty years ago, recommended its use at the Veterinary College, where it failed, Mr. Vines says, "from its having been given *in too large doses* (drachms)." * * * The principal precautions to be attended to in using cantharides internally in the horse are, not to administer them either at the *commencement* or *early stages* of inflammatory diseases, or in too *large quantities for a dose*, or too *frequently to repeat them*. For they are only proper to be used, and ought not otherwise to be administered, but when the symptoms of disease are of a *chronic*, or slow form and nature; that is, when the system is either in a *state of debility*, or approaching to it," &c. * * * The doses are—"for a middle sized saddle-horse four grains; for a large carriage or dray horse six grains, in fine powder," made into a ball, with ginger, gentian, &c. "A ball

* From Mr. Youatt's "Lectures," VETERINARIAN for 1832.

† Op. cit., at page 215.

may be given every day, or every other day, either in the evening or morning." Should the horse's appetite amend, and he appear going on well, after a week, ten days, or a fortnight, the dose may be augmented a couple of grains; but after another like interval the medicine had better be suspended for a few days or a week, when the first doses may be resumed, and after a week increased to ten and twelve grains.

IODINE (the mineral) has been exhibited by myself in farcy and glanders, but with no sign of benefit from it. The iodide of potassium has been given in very large doses, varying from a drachm to an ounce (not, however, as a remedy for glanders), by Professor Dick, but with no appreciable effect, save an unusual indifference about drink. Inefficacious, however, as iodine has proved by itself, in combination with copper, in the form of the

DINIODIDE OF COPPER, it appears to have become, in farcy in particular, of indubitable service. For the introduction of this medicinal agent into our pharmacopœia we are indebted to Mr. Morton, Professor of Chemistry at the Royal Veterinary College. "The well known fact," says Mr. Morton, "that the salts of copper rank among the most valuable tonic agents for the horse, and that all the mineral tonics, in order to produce their effects, are taken up into the circulation, coupled with the equally well known influence of iodine on the absorbent vessels, first led me to think that a combination of these agents would be of service in farcy. The kindness of my friends, Professor Spooner and Mr. Daws, enabled me to put the subject to the test of experiment, the result of which fully confirmed my expectations. Since then, I have received numerous communications bearing testimony to the benefits derived from its employment, so that it has now become an established article of the veterinary materia medica."—"It has been found of service in farcy, chronic œdematous enlargement of the legs, and those affections simulating glanders. It may be given in doses from ʒj to ʒij daily, combining it with the root of gentian and some carminative, as pimento or Cayenne pepper. Cantharides in small doses may be advantageously combined*." From

* Manual of Pharmacy for the Student of Veterinary Medicine. By W. J. T. Morton, Lecturer on Veterinary Materia Medica, 3d edit. 1844.

some cases related by Mr. Lord, V.S., of Parsons Town, Ireland, it would appear that the iodine and copper pharmaceutically united are equally efficient with the chemical preparation. A working horse, old and out of condition, whose symptoms were "evidently farcy, terminating in glanders," was brought to Mr. Lord on the 12th of August, 1842, who made up for him a dozen and a half powders, composed of the sulphate of copper in combination with iodide of potassium, ordering one to be given daily, and that the patient should have as much clover and vetches as he would eat. He saw nothing more of his patient until the 4th of September, when, to his utter astonishment, the poor man (his owner) came, leading his horse, which was as well as ever: "the ulcers in the nostrils, the discharge, and the (farcy) buds, having quite disappeared*." Passing from the accounts of others to

THE RESULTS OF MY OWN OBSERVATION AND EXPERIENCE,

I would it were in my power to present my reader with an antidote as effectual as our prophylactic measures have proved against the horrible and fatal disease whose causes and nature we have been investigating. Few men in the veterinary profession have, perhaps, had greater opportunities than myself afforded them of making observations and experiments on cases of glanders and farcy; all, however, I regret to be forced to add, has turned to little amount—glanders, *confirmed glanders*, has baffled every effort. What the practice I enjoyed under my father, who was for thirty years the Senior Veterinary Surgeon to the Ordnance, and had the superintendence of one of the largest horse infirmaries in the country, an establishment that received weekly official visits from the late Professor Coleman—I say, what this practice amounted to may be best learnt by inspection of the subjoined abstract from the Sick Registers of the infirmary, including a period of eight years:—

* VETERINARIAN for 1842.

Abstract of Cases of Glanders and Farcy, from 1810 to 1818.

Year.	Disease.	No. of Cases Admitted.	No. Cured.	No Relieved*.	No. Died.	No. Destroyed.	Totals in each Year.
1810	Glanders	31	3	1	1†	26	45
	Farcy-Glanders	3	—	—	1	2	
	Farcy.	11	5	6	—	—	
1811	Glanders	31	3	4	2	22	43
	Farcy-Glanders	6	2	—	—	4	
	Farcy.	6	2	4	—	—	
1812	Glanders	25	2	—	6	17	31
	Farcy-Glanders	2	—	—	—	2	
	Farcy.	4	1	3	—	—	
1813	Glanders	34	1	2	5	26	59
	Farcy-Glanders	11	1	1	4	5	
	Farcy.	14	3	10	1	—	
1814	Glanders	31	4	3	1	23	66
	Farcy-Glanders	8	—	1	—	7	
	Farcy.	27	6	17	1	3	
1815	Glanders	19	4	2	—	13	44
	Farcy-Glanders	11	—	2	—	9	
	Farcy.	14	6	8	—	—	
1816‡	Glanders	9	1	—	—	8	11
	Farcy-Glanders	—	—	—	—	—	
	Farcy.	2	—	1	—	1	
1817‡	Glanders	—	—	—	—	—	1
	Farcy-Glanders	—	—	—	—	—	
	Farcy.	1	1	—	—	—	
1818‡	Glanders	4	1	—	—	3	7
	Farcy-Glanders	2	—	—	—	2	
	Farcy.	1	—	1	—	—	
	General Totals.	307	46	66	22	173	307

* Some of the "relieved" cases of farcy were returned "incurable."

† This horse died from pneumonia.

‡ The decrease in these three years was owing to the reduction of the army after the battle of Waterloo.

N.B.—Several of the cases of glanders here set down as "cured" and "relieved," stood entered on the register as "*incipient* glanders."

In the horses whose cases are enumerated in the foregoing tabular statement glanders and farcy presented itself in all its forms, phases, and stages, and the patients, in by far the majority of instances, were brought into the infirmary immediately any sign of disease presented itself: there was, consequently, every advantage afforded for treatment, and treatment of every kind and mode that could be devised was, at the suggestion either of Professor Coleman or of my father, sometimes of myself, put fairly and fully to the test, for the most part under my own daily, and on many occasions hourly, visits to the patients. The following medicines were tested, all of them as internal remedies, some few externally as well:—Preparations of mercury, arsenic, copper, iron, lead, zinc, silver, antimony, barytes: manganese, sulphur, ammonia, fused potash, nitrous and prussic acids, chlorate of potash: aconite, belladonna, cantharides, catechu, cayenne pepper, cinchona and oak bark, yew leaves, copaiba balsam, cocculus indicus, cubeb pepper, digitalis, elaterium, euphorbium, gamboge, hellebore, hemlock, henbane, mezereon, opium, snake root, stavesacre, sumach, stramonium, tobacco, valerian, wormwood.

Among the mineral substances experimented on, *barytes* commanded our greatest attention. Indeed, at one time so sanguine were our expectations concerning it that I drew up a paper on its efficacy in glanders*: as with other asserted "remedies" and "cures," however, subsequent experience shewed the apparent success derived from its use to be incidental or circumstantial; and now it stands with me much, perhaps, in the same estimation in which the sulphate and the diniodide of copper and cantharides stand with their respective advocates.

Among the vegetable productions, *stavesacre*, the *balsam of copaiba*, *cubeb pepper*, and *cayenne pepper*, obtained the most favourable reports. It was evident, however, that the apparent—indeed, in some cases resembling nasal gleet, actual—benefit accruing from the use of these medicines was ascribable to their well-known action upon the mucous surfaces: in fact, it was from their acknowledged efficacy in gonorrhœa in the human subject

* Which paper was read, in the year 1824, to the Veterinary Medical Society, at the Veterinary College.

that the three latter of these (the copaiba and the two peppers) were prescribed in cases of glanders. And, to a certain extent, they were found to answer our expectations. I subjoin some cases of recovery, some of amendment, from glanders—I will not say of "cure"—under the administration of these four last-mentioned agents:—

Recovery under the Use of Barytes.

Case I.—*July* 1816. Black gelding, seven years old, in good condition. Farcy in near hind leg; a little flux of a muco-puriform nature from the near nostril, and a small ulcer upon the Schneiderian membrane; submaxillary gland swollen. Chloride of barium (muriate of barytes) 3ss, made into a common-sized ball by the admixture of meal and molasses, increased to 3iss, daily. At the end of twenty-one days the patient was discharged "cured."

Case II.—*June* 1817. A brown mare, seven years old, in fair condition. Flux from both nostrils; one ulcer apparent within the off nostril, and two within the near. Chloride of barium 3i, increased to 3iss, in ball as before, daily. Took the medicine for sixty-eight days. Discharged "cured."

Re-admitted in September 1817, with muco-puriform running from both nostrils, and tumefied glands, but no ulceration. Chloride of barium 3i, increased by degrees to 3iij, daily, for twenty-five days. Discharged again; but admitted for the third time in the following month (October) for farcy in the off hind leg. Took the medicine again for seven days. Discharged "cured," and went away out of any farther cognizance.

Case III.—*August* 1818. Chestnut gelding, seven years old, in low condition, having a foul discharge from the near nostril alone, with tumefied gland. To this horse was given the oxyde of barium (*olim*, the pure or caustic barytes), in doses of ℈i and ℈iss. Latterly, he took the liquor of chloride of barium (the solution of the muriate of barytes). Altogether, he took the medicine for seventy-one days. Discharged "cured."

Case IV.—*September* 1818. A brown horse, in health, was inoculated with matter procured from the horse-slaughterers' at Cow Cross, for the purpose of producing glanders. On the fifth day afterwards two large ulcers made their appearance within the near nostril (in which he was inoculated), and there was muco-puriform discharge from it, and adhering to it. The gland of the same side was swollen, and there was a nodous cord of tumefied lymphatics, as large as a person's wrist, running from the affected *ala nasi* along the side of the jaw into the gland. This horse took the oxyde of barium in doses of ℈i and ℈iss during thirty-two days, at the expiration of which period he was sent away "cured*."

* This horse's case will be found related, *at length*, at page 221.

Recovery and Amendment under the Use of Stavesacre.

Case I.—*June* 1813. A bay horse, five years old, in good condition and of apparently sound constitution, having the submaxillary lymphatic glands upon both sides enlarged, with two small ulcers and one large and spreading, within the near nostril; none visible within the off. He took stavesacre seeds, in doses of ʒij, daily, augmented to ʒi, four times a-day, for thirty-one days, and was then discharged, apparently free from disease.

Case II.—*June* 1813. A black horse, fourteen or sixteen years old, has his submaxillary lymphatic glands swollen on both sides; one large and very foul ulceration, and three small ulcers, visible upon the near side of the *septum nasi*; also some ulcerations high up, and consequently less distinct, upon the off side. Not a great deal of discharge from the nose, and no farcy. Took stavesacre seeds, commencing with half-ounce doses and ending with ounce doses, repeated four times a-day. Was taken away on the seventeenth day of his treatment, by his owner, in consequence of the disease having disappeared from the off side of the nose, and being in an evident state of amendment upon the near side, and the glandular enlargements under the jaw having subsided into a state of general thickening, such as is left after the repeated application of blisters.

Case III.—*July* 1813. A black horse, rather low in condition, but in apparent health, excepting that he had enlargement of his off submaxillary lymphatic gland, and had four superficial ulcers, about the size of peas, visible upon the same side of the *septum*, high up, commenced with taking an ounce of the seeds of stavesacre three times a-day, and continued the medicine for twenty-four days, latterly taking two ounces morning and evening. The disease, during the second week and part of the third week, seemed diminishing and leaving him: it relapsed, however, and became more virulent than before.

Recovery under the Use of Balsam of Copaiba.

Case I.—*May* 1826. A bay mare that had a copious defluxion from the off nostril, with a swelling of the submaxillary gland of the same side, nowise interfering with her general health, took Cayenne pepper for nine days, and left the infirmary "cured." In the October following she returned with the same kind of discharge, but now from the *near* nostril, and accompanied by fetor and swelling of the glands of the same side. On this occasion had administered to her half-ounce doses of the copaiba balsam, made into balls with *farina*, thrice a-day. On the ninth day from commencing the balsam her discharge had ceased, and with it had gradually subsided the submaxillary tumefaction. On the fourteenth day she left the infirmary, "cured."

Case II.—*August* 1826. A bay horse, low in condition, was admitted for "catarrh," for which, along with other treatment, he had been rowelled under the jaw. So long as the rowel continued in full action the discharge from the

nose diminished, but returned as soon as the rowel was taken out. There seemed to be something besides a mere catarrhal condition of the pituitary membrane, and it was determined to try copaiba in the case. Half-ounce doses were given daily for thirteen days, when the patient was discharged, "cured."

Recovery under the Use of Cubeb Pepper.

Case I.—In *October* 1826, a brown horse, four years old, and of apparent healthy constitution, was admitted with "incipient glanders and swelled hind leg." The swollen limb, however, was afterwards found to have arisen from injury. There is a tolerably profuse discharge from the near nostril, and a lobulous tumefaction underneath the jaw, on the same side. He was ordered to take half an ounce of cubeb pepper, made into a ball with molasses, three times a-day; which afterwards was increased to an ounce, though the medicine was every now and then discontinued for a day or so, on account of the appetite failing. Altogether, he continued taking the pepper for a month, during which time the nasal discharge varied much, being at times little and then a good deal again: in the end, however, it became so trifling, and the diminution of the glandular swelling was such, that the patient was discharged, "cured."

Recovery and Amendment under the Use of Cayenne Pepper.

Case I.—*May* 1826. The same (bay) mare that afterwards, in consequence of relapse, took the cubeb pepper, on her first admission, which was on account of a copious discharge of healthy-looking purulent matter from her nostril, with tumefaction of the submaxillary gland of the same side, took Cayenne pepper, in drachm doses, twice a-day, and at the same time had the tumour under the jaw blistered. On the eleventh day her nose appeared clean, all discharge having ceased, and the tumefied gland much diminished. The medicine, however, was continued for a week longer; and then the mare left the infirmary, "cured," there remaining only some trifling enlargement under the jaw.

Case II. The black and grey cart-mares, the property of Mr. Selby of Wilmington in Kent, whose cases are, in so far as regards their origin, given at page 226, both took Cayenne pepper, commencing with two-drachm doses morning and evening, which were afterwards augmented to four drachms twice a-day, and, instead of being made up with *farina* and molasses, were compounded of farina and copaiba balsam. The black mare, although confirmedly glandered, received so much temporary benefit from the medicine—the nasal ulcerations healing under the influence of it, and the nasal flux ceasing—that she went to work again, appearing to all to be "cured." She, however, experienced relapse; and in the end was, together with the grey mare who had also taken the pepper, but with less benefit, put to death.

The foregoing cases, which have been selected from a large collection on account either of their favourable progress or issue—the very same medical treatment having in as probably great a number proved of no avail—have not been introduced here with any view of shewing, or inducing any body to imagine, that the author either *has* cured or *can* cure glanders: at the same time, such as they are, they are ready to be brought forward in support of his pretensions to the "discovery of a cure" for glanders being about as valid as those of individuals who have received either approbation or reward on account of such "discoveries," and not a wit more valid or worthy of consideration: the short and naked truth being, that the *cure* of glanders is hardly more advanced than it was in Lafosse's or even Solleysell's time. Horses have got rid of the disease under a very great variety of treatment, and on occasions when no treatment whatever has been employed; and the cases of recovery on record are sufficiently numerous to encourage us, under certain favourable circumstances, to make fresh experiments.

Whatever medicine we may choose to prescribe—and, as I said before, those of a tonic nature that possess, either in themselves, or are combined with others that have, some influence upon the mucous surfaces, are found in general to hold out best promise—there can be no doubt but that the cure may be assisted by injections, if not by fumigations.

Injections up the Nostrils and into the Sinuses of the Head I have repeatedly put into practice, sometimes with good effect, sometimes with no good result, rarely with any permanent benefit. The injections I have used have been principally such as are either caustic, escharotic, or astringent, in their nature. I have syringed up the nose both caustic and escharotic solutions of bichloride of mercury, nitrate of silver, sulphate of copper, zinc, &c.; and such astringent lotions as solutions of alum, infusion of oak bark, &c. &c.

Creosote, in human medicine, has received a high character as an injection. Dr. Elliotson says, that, by the sedulous injection of it in solution up the nostrils, he succeeded in removing all the symptoms of a case of chronic glanders in a few weeks. And

since, Mr. Ions, V.S., Waterford, has recorded an extraordinary case, in the person of his own son, in confirmation of the good effects of creosote. His son had been unwell from "a severe cold," attended by swollen tonsils and a small sore within the right nostril. While in this state he had occasion to examine a horse with acute glanders. The horse snorted his nasal discharge in his (son's) face. He wiped it with his handkerchief. This was followed by his feeling very unwell, his nose becoming obstructed through a profuse ropy glairy discharge, and his right eye slightly affected. Next, a large ulcer appeared upon the nasal membrane. The disease soon assumed a most alarming character. Mr. Ions urged the trial of creosote. It was conceded to. An ointment, composed of one drachm of creosote and seven of lard, was ordered, the slightest application of which produced such agonizing pain that it was immediately discontinued. Mr. Ions was determined it should be persevered with. There was now profuse nasal discharge having a most offensive smell, and, to all appearance, universal ulceration, with constitutional symptoms indicative of approaching death. Mr. Ions added two minims of creosote to an ounce of water, and injected the mixture up the nose. After the third injection almost a magical effect took place: the discharge all but ceased, and two days afterwards the ulcers commenced healthy action, and went on rapidly improving. They lost their chancrous character, and assumed a healthy granulating aspect. His diet was nutritious, but no solid food was allowed him. "He drinks a tumbler of good ale every day, and yesterday rode for an hour"*.

Supposing the disease to be seated within the nasal meatus, there is no more effectual way of applying the injection than through the nostril, with a syringe having a flexible tube of some length affixed to its nozzle, which tube may at pleasure be introduced either into the lower or upper meatus, and carried far up the nose or not, according to circumstances. Should it be our object to inject the sinuses, those cavities, of course, must be opened either by means of a small trephine or a bone-gimlet: injections into the frontal sinuses will run into the nasal and maxillary

* Veterinarian for 1843.

sinuses, and from the latter find exit through the middle meatus of the nose, with the exception of some small quantity which will, in the ordinary position of the head, lodge within their cul-de-sacs.

FUMIGATIONS, I have no hesitation in saying, are less beneficial as topical applications to the ulcered surfaces within the nose than injections. I have frequently used chlorine and other gases, as well as the fumes of nitric acid, the nitric oxyde of mercury, &c., but cannot say I have seen any decided good arise from them. The great use made of fumigation in such cases as glanders and farcy—and it is a highly important one—is as a means of disinfecting or purifying stables or other places which may have been inhabited by horses having such contagious diseases. "As a fumigating, disinfectant, and antiseptic agent, chlorine," says Mr. Pereira*, "stands unrivalled." * * "For destroying miasmata, noxious effluvia, and putrid odours, it is *the most powerful agent known.*" * * "The best method of fumigating a large building is that adopted by Dr. Faraday, at the General Penitentiary at Millbank. One part of common salt was intimately mixed with one part of the black or binoxyde of manganese; then placed in a shallow earthen pan, and two parts of oil of vitriol, previously diluted with two parts, by measure, of water, poured over it, and the whole stirred with a stick. Chlorine continued to be liberated from this mixture for four days." We could hardly devise a cheaper, readier, and more effectual process for the purification of infected stabling than this.

COUNTER-IRRITATION, in my hands, has never proved of much a vail in glanders. Some veterinarians advise us to introduce setons into the face, along the sides of the nasal bones; others, to blister the skin covering those parts: for my own part, I have found little or no relief conferred by either one or the other.

THE ENLARGED SUBMAXILLARY LYMPHATIC GLANDS may, however, when they come to lose their heat and tenderness, be blistered with considerable benefit, or they may be rubbed daily with iodine ointment. On their first appearance, and so long as they continue hot and tender, we cannot do better for them than confine a folded piece of linen cloth, wetted with cold water or

* Elements of Materia Medica. By Jonathan Pereira, F.R.S. & L.S.

some refrigerant lotion, upon them, which may easily be managed by attaching it above to the throat-latch of the halter, below to the nose-band.

COOL AND PURE AIR has appeared to have, in some instances, a restorative or curative influence on glandered horses. Persons unwilling to have their horses destroyed from the circumstance of their general health and condition being evidently so good, have come to the determination to turn them to pasture by themselves, there to "take their chance;" and on occasions the results have proved favourable. Mr. Youatt gives an account of some cases so left to Nature, in which, he says, he was "half-deceived, and willingly so." The opportunity, however, was given of subsequently tracing most of them, and the following proved the result:—"The predisposition to the disease remained; possibly, the very disease itself in an insidious form. In less than six months the discharge again appeared; the glands enlarged, and became once more adherent; chancres soon followed; glanders became fully re-established, and in a worse form than before; the malady speedily ran its course, and they (the patients) died*."

Therapeutic Treatment of Farcy.

While glanders has in all ages been regarded as an incurable disease, or as one from which the horse recovered—whenever he did happen to do so—more through the agency of the *vis medicatrix naturæ* than from any medical treatment he might have received, farcy, on the contrary, has been viewed, in certain of its forms and stages, as a disease susceptible of cure. It may at first appear strange that two such opposite opinions should be entertained concerning the curability of two diseases admitted in nature to be identical: when we come, however, to reflect that one has *dermoid* tissue for its seat, the other *mucous*, and that to the locality of the one we have free access, while the other remains concealed from our view, and for the most part is out of the reach of surgical means, any surprise we may have felt will, probably, in a great measure cease. In any case of ordinary disease, every medical man is well aware how much easier it is to

* Mr. Youatt's Lectures.

get a cutaneous sore to heal than one having for its bed secreting structure; how much more disposed the latter is to spread, to become what surgeons call *phagedænic*, than the former. Furthermore, should an ulcer in the skin acquire any unhealthy action or aspect, we can correct its morbid tendency by destroying its surface either by some escharotic application or by the actual cautery, and by such means create in its place a healthy granulating surface; but, should an ulcer deep-seated within the recesses of the nose take to chancrous spreading, in the first place how can we obtain any knowledge of its existence save through the quantity or quality of the nasal discharges?—and in the second, how are we to become acquainted with its exact situation?—and supposing this were possible, how are we to be sure of conveying our dressings upon it? The very circumstance of its concealment within the convolutions of the nasal *meatus*, clogged and obstructed as those passages often are by the collected inspissated discharges, must be adverse to its healing; since in the skin we always find ulcers do the best whose surfaces are left exposed to the influence of the air.

Mr. Youatt's pen, I find, many years ago, was engaged in solving the same question; and as this gentleman's solution differs somewhat from mine, I shall make no apology for introducing it here:—"Glanders," says this author, "*a simply local complaint*, bids defiance to all our means and appliances; yet when the virus has spread through the frame, and affected the greater part or the whole of the absorbent system, it is occasionally manageable. It is the very fact of its *spreading* that enables us to account for this. When it (the disease) is simply local, all its virulence is concentrated on one small surface, and no medicine can be brought to bear with sufficient power on the plague-spot; but, when it begins to spread, and before the tissues which it now involves are too much injured and disorganized by its poison, its intensity is diminished. As inflammation of almost every character becomes diffused, it less powerfully affects the individual portions over which it spreads; it is diluted—lowered; and now, as it becomes in some degree constitutional, it may be attacked with greater hope of success*."

* Mr. Youatt's "Lectures."—The Veterinarian for 1832.

So far as relates to the *constitutional* nature of farcy—it being in that respect identical with glanders, or rather one and the same disease as glanders—it is no more curable than glanders itself is: when we say we have "cured" a case of farcy, we mean we have succeeded in driving back or away the *local* disease; we have subdued the inflammation, reduced or dispersed the buds and swellings, and healed the ulcers—in fact, rendered the animal fit to resume his work; and so long as his constitution remains unaffected by the virus, and no fresh eruption makes its appearance, the horse may continue at work, and appear as though he were cured—if not in reality so. It must, however, be borne in mind—at all events, for some considerable time afterwards—that a relapse is not an unlikely occurrence, and that it is possible, if not probable, for him, at some future period, to end his days through glanders.

In the absence of any internal remedy which will act as a specific against farcy—counteracting, neutralizing, or expelling the virus—we have recourse to remedies of an ordinary kind, and place a good deal of dependence upon such as are local or topical in their operation. In so far as inflammation constitutes a leading feature of the disease, there can be no doubt but that an antiphlogistic plan is proper at the commencement of an attack of farcy. When a horse is brought with one of his hind limbs enormously swollen, hot and tense, and tender to pressure, and evincing evident pain and lameness, no veterinarian of any experience would hesitate a moment to bleed and purge. Could blood be drawn from the farcied limb, there can be no question about its being preferable to general blood-letting, as well on account of the better effect it would have on the limb as on account of the saving of strength to the animal, constitutionally: since, however, this cannot in the horse be put into practice—leeches and cupping-glasses proving inapplicable, and opening a vein in the diseased parts being highly inadvisable—we are forced to abstract blood from the neck or some remote part, to have an effect produced on the diseased limb through the medium of the system; and this is a great disadvantage we labour under, because while by the reduction of the constitutional powers we are benefitting the diseased part, we are, perhaps, thereby doing injury to the general system.

The beneficial effect that blood-letting does commonly have in a recent attack may be seen by a perusal of the case—an ordinary one—of the Colonel's charger*; in which it will be observed that, notwithstanding he was purging at the time, and it was a week after the disorder had shewn itself, a corded swelling arose in his thigh, which was put back by blood-letting, and a second and a third time repulsed by a repetition of the blood-letting; although, in the end, the swelling still returned and proceeded to suppuration and ulceration. Blood-letting, therefore, is certainly, in the early stage, the most likely means of bringing about *resolution* of the farcy-buds; and though we may fail in this object, still will the loss of blood often be found to retard or stay their progress, at all events for some time, and so, perhaps, render the attack milder than otherwise it would have proved. In acute cases, however, do what we will, and do it when we may, it too frequently turns out that no benefit results from our remedies: the disease has constitutionally set in, and will run its course in spite of us.

Walking Exercise is, in general, an indispensable accompaniment to any plan of treatment we may adopt. When the patient's limb is in the frightfully tumefied condition that has been described, and which it will be certain to run into should the animal be kept standing still, nothing so much assists the operation of medicine, and along with it proves so influential in reducing the tumefaction, as slow and steady walking exercise perseveringly kept up, and repeated, for an hour or half-an-hour at a time, twice, thrice, or four times a-day, according to circumstances. With a view of furthering this end, the patient may be placed in a roomy box: however capacious his apartment may be, it is seldom he feels disposed to move in it; but stands for ease in one place, never stirring his tumid painful limb but when compelled to do so.

The Diet, during the inflammatory, swollen, tender, and irritable condition of the farcinous parts, and so long as any febrile disorder of consequence reigns in the system, must be a *low* one: the febrile stage, however, once past—once the suppurative action commenced, the diet should be changed for a generous one, and

* Given at pages 230 and 231.

the horse at the same time be well groomed: I am convinced that, no more in farcy than in glanders, is it prudent, after the first violence of the inflammation is past, to let the patient live low, or suffer him in his stable-management to go neglected. His general health must, if possible, be maintained.

MEDICINE.—After the first brisk dose or two of cathartic medicine, supposing we still deem it advisable to occasionally clear out the bowels—which we certainly shall do so long as inflammation continues to harass the diseased parts, or whenever relapses occur—I prefer giving divided doses of cathartic mass in combination with diuretic mass. A simple and effectual formula is the common one of half-an-ounce of each mass, repeated every twenty-four hours, until the bowels shall have fully responded: the second ball not always accomplishing this—the third, generally.

Cathartics having been carried as far as is deemed expedient, the question presents itself—what is the next step to be taken? This is an important question; at the same time one that admits of such variation in the professional answer to be given to it, that I will venture to affirm, the inquirer shall go to a dozen veterinary surgeons and receive for answer the names of as many different remedies. For instance, if he were to go to Professor Sewell, he would be directed to administer large doses of sulphate of copper in solution; to Mr. Youatt, and he would be told to change the large for small doses; to Mr. Vines, and he would be ordered to give cantharides; to Mr. Turner, and he would be recommended to try the sulphate of iron in the animal's beverage*: lastly, let him come to me, and I should probably counsel him to make trial of barytes. Indeed, there hardly exists a medicine in the pharmacopœia of any potency that has not by one or another been tried or lauded as a remedy for farcy. Nothing can shew the insufficiency of our art more plainly than all this; the simple truth—lying in a nut-shell—being, as I observed before, that we are no more in possession of any *specific* remedy against farcy than we are of one against glanders. And in the absence of such a desideratum, we may say, as we did when on the treatment of glanders, that we seem to gain more by a tonic and astringent or

* Mr. Turner's prescription has been given in another place.

stimulant plan of proceeding than by any other known treatment. In fine, if we do but examine the various remedies which have, with any colouring of "cure," been from time to time held up to us, we shall find that the majority of them are of a description possessing these properties.

TONICS, then, and such as are known to be serviceable in glanders, are in general the most likely remedies to prove useful in farcy. I do not mean to assert that it is a matter of indifference whether for farcy we prescribe *copper* or *iron* or *mercury* or *barytes*. At the same time that I believe tonic and diuretic properties to be the leading requisites for a remedy for farcy to possess, I believe that some medicines possessing these virtues, either one or both of them, are to be preferred to others. As for *specifics* or antidotes for farcy, we certainly know of none. It is the circumstances of farcy so often assuming and continuing in a *local* form—confining itself to one hind (or fore) limb, of the *cutis vera* being its seat, and of the constitution, so long as it remains untainted by absorbed virus, being disposed to take on healthful action; I say, it is these several circumstances that enable us to arrest the course of the disease, as well as to remove any *sequelæ* of it, which may annoy or interfere with progression; and though perhaps, after all, topical applications, and exercise, and regimen altogether, have had a good deal of influence in working this amendment, yet, should the patient at the time happen to be taking any medicine, the amendment is commonly ascribed to that, and the medicine henceforth goes forth to the world as a *specific for farcy*. In this way may we account for the number of "specifics" we have had, first and last, for farcy beyond all other diseases; many medicines having got names as "curatives" when future trials of them have shewn that the real curative agent has been the VIS MEDICATRIX NATURÆ, powerfully operative in a sound condition of the constitution.

SULPHATE OF COPPER, DINIODIDE OF COPPER, SULPHATE OF IRON, MERCURY, IODINE, CANTHARIDES, BARYTES, all have their advocates, as remedies for farcy, as well as for their being remedial in glanders. In regard to their exhibition, the directions already given for their administration in glanders will equally

apply here; it being understood, as a general rule, that it is seldom expedient to prescribe any one of them—most of them being of a *tonic* nature—before the inflammatory action has been pretty well subdued in the farcinous parts through antiphlogistic agents; and that, in prescribing them, we should take care that the doses are not such, either in quantity or through repetition, as may tend to injure the general health of the animal, it being an object rather to support than depress. With these general observations I shall leave the selection of the remedy, and the dose, and the manner in which it is to be given, to the discretion of the practitioner, prepared as he is to undertake this part of the treatment by the directions already given in the case of glanders.

HURTREL D'ARBOVAL, after informing us that at the French veterinary schools preparations of sulphur and antimony, in combination with bitters and tonics, are considered the most efficacious remedies in farcy, makes the very suitable comment on such reports, that we no more possess any *specific* treatment for farcy than we do for any other disease; adding, to confine our prescriptions to the *same* therapeutic agents, is not the way to increase our knowledge of the best mode of treating farcy. On the contrary, says this writer, the treatment ought to be varied, not less on account of the *stage* of the disease than in respect to the *cause* that has given rise to it, to the idiosyncrasy of the patient, his age, condition, &c. The same authority sagaciously enters his protest against the employment of internal remedies of a kind or in a dose likely to prove irritating to the mucous lining of the alimentary passages.

LOCAL TREATMENT in farcy, is of as much or, perhaps, of more consideration than constitutional means. In glanders, as was observed on a former occasion, we are, in respect to the extent and nature of the local disease, as it were, working in the dark: we know neither the precise condition nor the exact situation of the ulcerations, and, consequently, run a risk of using some improper dressings, or applying them to some improper places; whereas, in farcy, all the local disease occurring under our cognizance, we prescribe topical remedies suited to the in-

flamed, tumefied, ulcerated, scirrhous, or other condition of the limb or diseased part, according to the requisites of the case.

So long as the tumefied parts continue hot to the feel and evince tenderness on pressure, and that the patient—supposing a limb to be the seat of disease—halts much upon it, such evidences shewing the presence of inflammation, it is unquestionably our duty to continue an antiphlogistic treatment. We will say, the patient has been well purged—has been, perhaps, blooded, and is still on low diet, and taking daily as much walking exercise as his farcinous limb will bear. In their inflamed condition the best application to the cords of farcy buds is a refrigerant or evaporating lotion; with this they ought to be sponged often enough to keep the surface (the hair) *wet*, the object being to repel or disperse the swellings. On this account this is to be preferred to fomentations and poultices: indeed, as for the latter, upon the limbs we have no means of securing their application.

As soon as all heat and tenderness have subsided in the buds—supposing that, instead of softening and suppurating, they evince a disposition to diminish and grow harder—we must alter our treatment of them. We must use lotions of a *discutient* character, or, in fact, any applications, liniments or ointments, having the effect of causing absorption of the swellings. Of this description are, *mercurial ointment* and *camphor*, *iodine ointment*, *blistering liniment* or *ointment*, &c. Indeed, when there appear signs of hardening and approaching insensibility in the buds, a blister is by far the best application; and, for my own part, I am very fond, in cases such as these, of using the *acetum cantharidis*: dipping a painter's brush in the blistering essence, and applying it after the manner a painter does his paint, upon the tumefactions; tying the horse up afterwards, or putting a cradle on him; and after an interval of twenty-four hours, sponging the blistered parts with warm water; an operation that should be repeated daily so long as any moisture or issue appears upon the surface. "Sweating blisters," like this, need not interfere with the patient's regular exercise; and as soon as one has "worked off" another may be applied; the repetition being regulated as well by the condition of the skin as by the demands of the case.

In cases in which no impression can be made upon the indurated buds, either by iodine or other ointment, or by blisters, it is a practice with some veterinarians to score them, or rather the skin in which they are enveloped, with the firing-iron. CHABERT, a French veterinarian, suggested that we should extirpate them: and D'ARBOVAL has adopted the farriers' practice of old, as being preferable when the situation of the buds admits of it, of destroying them by caustic. "Many of our common farriers," writes Gibson, "use arsenick or corrosive sublimate, after opening the buds, putting a small quantity into each, which answers in cases where there are but few, and these not situated near large bloodvessels, joints, or tendons. This they call *coring out the farcy*." In excising the buds, D'Arboval cautions us to be careful to cut away all the scirrhous cutis round about them, since, if left, it might engender a disposition to ulceration; and afterwards he recommends that the wounds be seared with the actual cautery. Buds that are superficial admit readily of extirpation; such, however, as are deep-seated can only be safely, or with any prospect of success, excised before they have spread into and become incorporated with the contiguous tissues.

In the majority of cases of farcy, however, it happens that, instead of diminishing in size and growing harder in consistence, the buds plump up and become soft, and at length turn into *pustules:* and once a pustule formed, it will ripen and burst, and turn into an ulcer. As soon, therefore, as we perceive that it is out of our power to prevent the suppurative stage, it becomes our duty to contribute all we can to its promotion. For this purpose, fomentations may be used to the parts; poultices likewise, could we manage to apply them. The patient's diet also must be improved in this stage: he should no longer feed on mashes, but have scalded oats, carrots, turnips, linseed, &c. When the pustules are ripe, some practitioners make a point of opening them; others suffer them to burst and discharge their contents spontaneously. The old or farriers' mode of opening ripe farcy buds is with the actual cautery, the heated *budding-iron;* and it is a practice still in vogue with many very respectable veterinary surgeons. In this manner the contents of the pustule are, as it were, *fried* by

the red-hot iron, while its base and interior altogether is destroyed, and the result is a slough, followed commonly by a superficial ulcer of larger dimensions than the original pustule, and presenting a healthy granulating surface; and this ulcer is in the end, under judicious management, very often got to heal. Should we suffer the pustule to burst of itself, we may still cauterize its base with the budding-iron; or, if we prefer it, we may rub it with pencillated lunar caustic: at all events, some caustic or strong escharotic dressing will be demanded; without it we shall never obtain what we so much desire—a healthy granulative action. The bottom of the ulcer once cleaned out, dressings of various kinds, depending upon its aspect—healing or spreading, sloughy, stationary, &c.—will be required by it afterwards: commonly, mild escharotic applications answer best, though, at times, stimulant or astringent ones appear preferable; in short, the selection of a dressing must be left entirely to the judgment of the practitioner. For my own part, I like water or spirituous dressings better than greasy ones, and have ordinarily observed the best effects from such as these:—*Solutions of lunar caustic*, of the *sulphates of copper and zinc*, and of *alum;* and the *tinctures of benzoin*, and of *myrrh with aloes*. The *nitric acid lotion* is an excellent dressing for sloughy sores; and the *solution of chloride of lime* an admirable one for such as secrete fetid or offensive matters. The ulcers should always be cleaned, and have any hairs shooting over their edges trimmed off, preparatory to their being dressed of a morning; and it tends to the preservation of them in cleanliness, and promotes their healing tendencies as well, to besprinkle their surfaces, immediately after dressing them, with some absorbent powder, some powder that will imbibe the discharges, correct any acrimony in them, and at the same time have some effect in restraining their production; and I know of no one that answers all these ends better than common (baker's) flour. It should be made as dry as possible before being used, and may, when required to be additionally astringent, have some powdered *alum* mixed with it. As a change, on occasions we may employ for the same purpose powdered *bark* or *calamine*. Mr. Turner recommends a strong *solution of sulphate of iron* to be plentifully applied over the

ulcerations, and well rubbed into the sound parts likewise*. And Mr. Blaine has found *sea-water* and saturated *solutions of common salt* good dressings; and speaks in favourable terms of *sea-bathing* for farcinous limbs, aided by "daily doses of sea-water†."

THE GENERAL TUMEFACTION of the farcinous limb must be counteracted, as advised before, by internal remedies and by exercise; there not being in general any occasion to remit either on account of the pustular or ulcerated condition of the swollen parts: indeed, as for the ulcers, they will be benefitted by any thing that tends to lower any inflammation there may be remaining in the limb, and that at the same time has the effect of reducing the size of it. Unless, however, we succeed early in the attack in effecting a decided reduction in the tumefied limb, it is not often we shall find ourselves able to accomplish more than a partial diminution of the general tumefaction when once the suppurative and ulcerative processes have become established, even supposing the disease in other respects to be proceeding favourably: when such, however, proves not the case, instead of growing less the limb will grow larger; shewing us, that our plan of treatment, whatever it may be, is not one adapted to the exigencies of the case, and consequently ought at once to be changed, supposing we are to continue treatment. But too frequently, however, in such cases as these, in order to save needless expense on the part of our employer, and our own credit as well, it will present itself as our duty to recommend to his master that our patient's days be summarily put an end to.

THE TUMEFIED LYMPHATIC GLANDS, in farcy as well as in glanders, will require treatment. By some French veterinarians their extirpation has been recommended with much assurance of success in farcy, notwithstanding the notorious failure of a like operation in glanders. M. Maurice, veterinary surgeon to the First Regiment of French Artillery, has not hesitated to assert that a "cure" in farcy may be effected by the extirpation and cauterization of the glands, providing they be in "a sound condition." For the disease in the hind limbs we are directed to excise *the*

* See Mr. Youatt's "Lectures," in THE VETERINARIAN for 1832.

† Op. cit., at p. 218.

inguinal glands; for farcy of the back, loins, or flanks, the glands in the flank; and for farcy in the fore limbs, neck, and shoulders, the *axillary glands.* M. Maurice makes mention of three hundred cases of farcy cured by such operations. And Renault has informed us that the practice has proved successful at the Veterinary School at Alfort.

Were there any sound reasons for supposing farcy to be, even on its first appearance, a *local* disease, undoubtedly we should not only be warranted in undertaking such formidable—or, if not formidable, painful—operations as these, but blameable if we did not have immediate recourse to them: when, however, we come to find we have too much reason for concluding that by the period of time at which the eruption shews itself in the thigh or elsewhere, the virus is absolutely in the system, how can we, in the face of such conclusions, perform operations of the kind, or even put credence in such accounts as have just been stated? I no more doubt that horses with farcy have recovered *after* such operations than I do that others have returned to health after taking copper or iron or barytes; between the POST *hoc* and the PROPTER *hoc,* however, there is all the difference in the world. It is absurd to think of extinguishing a disease proved to be constitutional by the extirpation or destruction of tumefied lymphatic glands and farcy buds.

The treatment proper for the enlarged glands is the same, in the various stages of disease in them, as has been recommended for the farcy buds: endeavouring in the first instance, by refrigerant and evaporating lotions, to abate inflammation in them, and so to effect their repulsion; and secondarily, when they come to lose their heat and tenderness, to apply blisters over them. It is in vain to try to "bring them forward" to a state of suppuration, like the ripening farcy bud: they are hardly ever known to take on the suppurative action.

By pursuing such a course of treatment as has been pointed out, we not so very unfrequently succeed in patching up the ulcerations and getting rid of the corded swellings in which they originate, and at the same time in so far reducing the size of the farcinous limb as to render the patient (his general health and condition being

good) capable of undertaking work; indeed, it is advisable that he should do so, since under the operation of slow or moderate work it often turns out that his limb experiences, by degrees, further reduction, and that his heath and condition by generous feeding improves. All, in fact, is likely to go on well so long as the animal experiences no return of his disease or fresh attack of it: should he do so, in the *same* limb or part even, it will much lessen the chances of his second restoration; and, should he do so in some *other* limb or remote part of his body, above all in the head, wearing the aspect of approaching glanders, we may bid adieu to any hope of recovery: it is pretty certain, then, that farcy in its worst form, or that glanders, before long will manifest itself. Even, however, when during treatment no relapse happens, when the patient has, in a manner answering our warmest expectations, recovered the use of his limb, and with it renewed health and strength; even, I say, then, does it but too frequently happen that at some remote period—and especially at a period when from any cause the patient's system is thrown into a state of irritation or derangement, or is labouring under depression or debility of any kind—the disease returns, and returns in a more aggravated or malignant form than before, and in the end consumes its victim. The following case, extracted from Professor Peall's work*, is excellently illustrative of this:—

A horse had been "severely affected with farcy," of which he "was cured;" and he remained well, "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; when, 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†."

The treatment of a case of farcy, no less unfortunately for ourselves than for our patients and their masters, is but too apt to

* Op. cit. at page 266.

† This case may be regarded as somewhat analagous to the one to which I have referred in a note at the bottom of page 251.

"drag its slow length along" beyond the period prescribed by reason and conscience for it to last: the owner of the horse gets weary of professional attendance, and the veterinary surgeon experiences both a sense of weariness and dissatisfaction at finding the progress towards amendment, if any, of so tardy a nature. The patient is not in that hopeless condition that calls for the knacker; he is by no means fit, or *safe* even, to go to work, and he is "eating his head off," and taking or using medicine, the expense of which he may never repay. What is to be done in such a dilemma as this? Should the season of the year be favourable, *pasture* offers a resource likely to prove serviceable, certainly pleasant, to the animal, and one that the medical attendant will, with satisfaction to himself, if not with benefit to his patient, recommend. A change of diet, from dried to green and relaxing food, living in the open air, and the constant exposure of the farcinous limb to a lower temperature than that of the stable, together with the walking exercise the animal is from time to time taking upon it, all has a tendency to do good, and on occasions proves of eminent service. In particular *salt* marshes have been regarded as beneficial, and apparently not without reason. Whenever and wherever the patient may be turned out to grass, he ought to have no companions save any as might happen to have on them the same disease as himself: it would be highly imprudent, nay, full of danger, to suffer him to run with healthy horses. In situations where or seasons when pasture cannot be procured or resorted to, it is desirable to soil the patient in his box: vetches or rye, or, in the winter season, carrots or Swedish turnips, become a desirable change of diet for him. There arrives a period, in cases of this protracted and indolent stage of farcy, when the resources of medicine seem to be exhausted, nothing that is administered doing any good, and this is a period when the disease is judiciously "left," as our common phrase goes, "to nature," to take, uninterfered with by art, its spontaneous course.