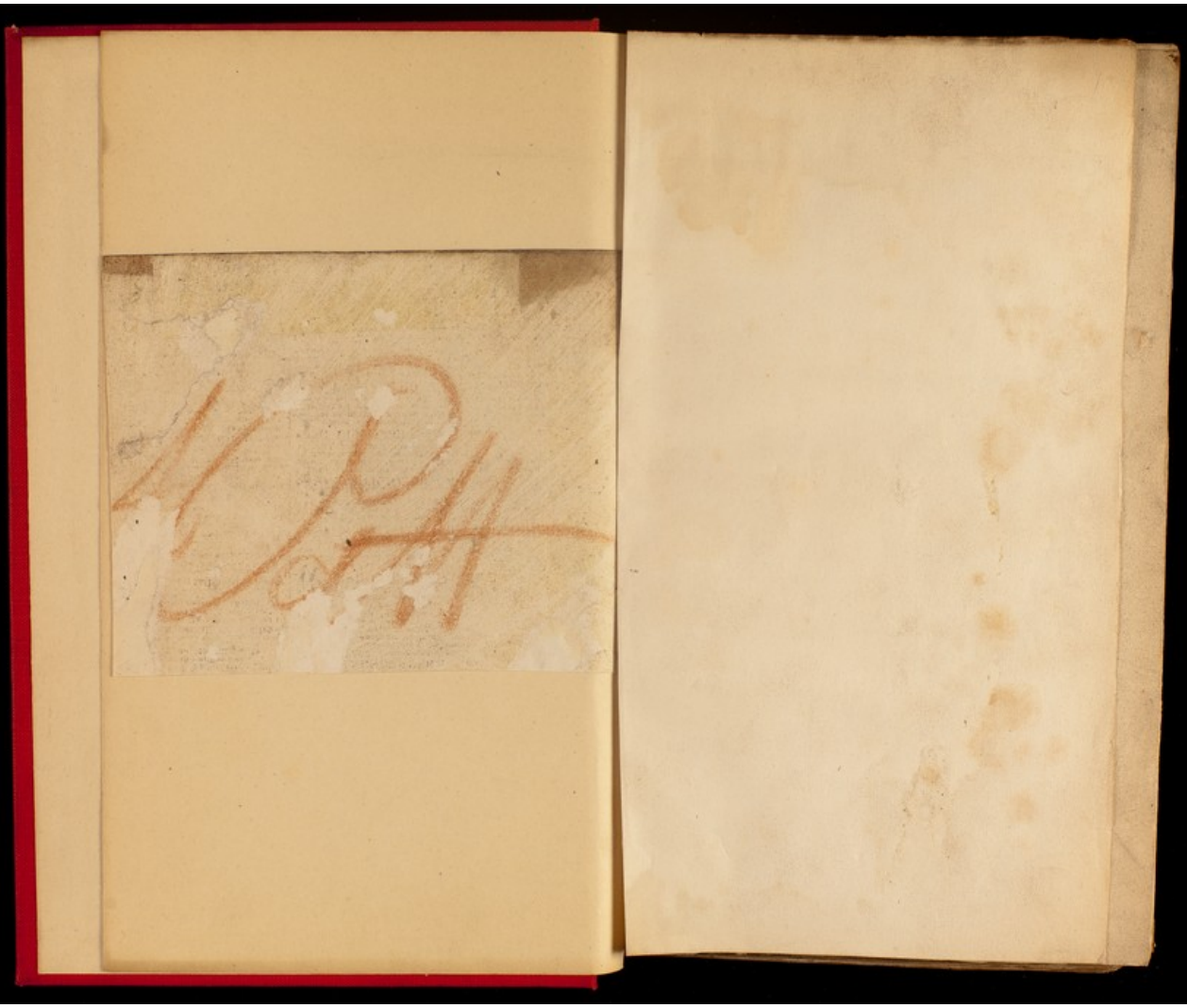

# A LETTER

TO

SIR JAMES M'GRIGOR, M.D. F.R.S. C.T.S.

Director General of Military Hospitals, &c.

ON

THE SANITARY MANAGEMENT

OF

# THE GIBRALTAR FEVER.

BY

DAVID BARRY, M.D. K.T.S.

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Physician to the Middlesex Infirmary and Dispensary,
&c. &c. &c.

"Salus populi, Suprema lex."

LONDON:
THOMAS WILSON, PRINCE'S STREET.
1830.

# A LETTER

TO

SIR JAMES M'GRIGOR, M.D. F.R.S.

&c. &c. &c.

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SIR: Since my return from the mission on which I had the honour of being sent by you, to Gibraltar, in 1828, when the black-vomit yellow fever raged there with such frightful mortality, it has often occurred to me that a great saving of human life might be effected, on any future similar occasion, by the timely issue, as a standing order, of a well-digested code of sanatory instructions, based on the general, and local history, of the disease, commensurate with the actual state of science, and sanctioned by the constituted medical authorities of this country. Why the government has not already called on some of these learned bodies to legislate, publicly, on this important subject, I know not. The diversity of professional opinion, the discrepancy of alleged facts, and perhaps a disinclination to brave, gratuitously, the rancour of party criticism, may have contributed to deter them from a spontaneous effort to form a Code Sanitaire. Be this, however, as it may, the medical officer, whenever he has had to contend with this dreadful scourge, has generally found himself taken unprepared, and always unprovided with any authorised system of medical police to guide him in his difficulties, to save him from indecision and error, from useless, and perhaps pernicious, experiment.

It was with a view to lead towards a remedy for this evil, that I have ventured to draw up the few sanatory suggestions which I now take the liberty of submitting to you and Sir W. Franklin, for your approval. They aim at but one

object—to save the susceptible from being attacked by the disease; and in the present state of our knowledge of it, none will deny, that prevention is better than an attempt to cure. They were forced upon my attention chiefly during my late residence in Gibraltar. What I then observed at the bedside of the sick, and in the dead house: the facts which came to my knowledge, during an active participation of five months, in 1829, in the labours of the three commissions appointed to investigate the history of the disease on the spot: the results, in short, of the most laborious and minute inquiries ever accomplished on any similar occasion, have impressed the fullest conviction on my mind, that the means by which the march of this epidemic may be effectually arrested, and the people saved from its ravages, should it again break out in that fortress, need be no longer doubtful.

From the measures which you have long since adopted, to favor the advancement of science amongst the medical officers of the army, and from the satisfaction with which you have always viewed their efforts to promote that advancement, and to contribute to the good of humanity, I feel confident that my little outline of a Code Sanitaire for Gibraltar, will be indulgently received, and that my motives for attempting a task, which might have been so much more ably executed by many others, will be favorably appreciated.

I have the honour to be, Sir, your most obedient and most humble servant,

DAVID BARRY, M.D.
Physician to the Forces.

*Welbeck street; 14 July, 1830.*

To Sir James M'Grigor, Director General, &c.



## *On the Sanatory Management of the Gibraltar Epidemic Fever.* By David Barry, M.D. &c.

There are two important benefits, which society seems to have a right to expect from the judicious application of medical science to municipal and military police, viz.

1st. The prevention, or warding off, of epidemic disease.

2d. The arrest of its spread, should it unfortunately occur, either from the inefficiency, or neglect of preventive measures.

The smaller and the more circumscribed the community, the more easily accomplished these objects appear to be, and the greater the confidence with which their attainment is looked for. All the arrangements hitherto adopted in Gibraltar, with a view to the accomplishment of either of these objects, have been based on one, or other, of the following sets of opinions as to the nature of the disease with which that territory has been so often afflicted, within the last twenty-five years.

1. That it is only a grade of the ordinary remittent fever, subject to all its laws, never contagious, nor imported; that whenever it has hitherto appeared there, it has been invariably generated within the territory, by a particular combination of local circumstances, independently of introduction from without; that it occurs there sporadically every year; that it is propagated by the influence of causes, to which all are alike exposed, independently of contagion, direct or indirect.

2. That it does not belong to the class of remittent fevers, but is a disease of a peculiar nature; that it never attacks the same individual more than once, during life; that it is contagious, and therefore capable of being imported and propagated, at certain seasons of the year, amongst a population previously healthy, by the introduction of one, or more, infected persons, or things; that it is not found sporadically in the territory, and that it never originates there.

3. That whether the disease be only a grade of the ordinary remittent fever, or one of a peculiar nature, yet that it may originate in causes purely local, either in reference to particular spots of the territory, or to some ship in a foul state.* But that it may become contagious, that is, be propagated directly by emanations from persons sick of the disease, or indirectly by means of their clothes, or other effects, under circumstances favorable to such propagation.

These propositions embrace, I believe, the tenets of all

* Audouard, Recueil des Memoires, &c.

the parties hitherto formed on the subject of the Gibraltar fever. Each set of opinions has its respective medical and lay abettors. Each has been, and may again be, exclusively acted on, in the season of calamity, as the views of the principal medical officer, for the time being, may incline. Certain it is, however, that they cannot all be correct, nor equally conducive to public safety.

Whoever directs preventive measures, under the conviction that the first set of opinions is alone well founded, will, of course, place at nought all consideration of danger from abroad, and direct his attention solely to internal arrangements. These come under the heads of municipal improvement, cleanliness and ventilation, removing all sources of unwholesome effluvia, distribution and lodging of the population, limitation of its numbers, wholesomeness and abundance of food and water, proper clothing and occupation, &c. Under the conviction of this doctrine, all vigilance, observation, and purifying, of persons and things arriving from the outside, are perfectly useless, in a sanatory point of view, and being injurious to commerce, ought, on the same principle, to be discontinued.

The abettors of the second set of propositions would naturally recommend active, and well-regulated, quarantine establishments, and would consider them of primary importance towards preventing the first appearance of the disease. They would look to internal sanatory police, as calculated to promote general health and comfort, and to check contagion, rather than to prevent the local generation of this peculiar malady.

In Gibraltar, where there are no purifying lazarettos, and where the limited extent of territory, and other peculiarities, preclude the possibility of such establishments, precautionary measures, until very lately, have chiefly consisted in protracted quarantine, immersion in water, and careful ablution of every thing belonging to the crew and passengers of ships arriving from suspected places, before they were admitted to what is termed *pratique*, or free intercourse with the community.

Ships from yellow-fever countries, whatever might have been the state of health of their crews, during the passage, were seldom refused admittance into Gibraltar, up to last summer, or into Cadiz, up to the last occupation of that city by the French. Free intercourse, however, with the shore was interdicted for a greater or less number of days, until the quarantine department had reported that their admission to pratique would not be likely to endanger the public health. By a late regulation in Gibraltar, it was



ordered that, in the cases of ships, in which one or more persons had died on the passage, as these deaths are always presumed to have occurred from yellow fever, health guards should be placed on board, on their arrival, for the alleged purposes of more effectually preventing intercourse with the shore, and of enforcing the observance of certain orders as to the manner of landing the cargo. This last operation was conducted upon the following plan: The articles considered incapable of conveying the seminium of the disease from the ship to the shore, were allowed to be landed after ten, fifteen, or twenty days' observation, whilst the crew, passengers, and their effects, were retained on board some days longer.

Although deaths had frequently occurred on board ships, on their passage to Gibraltar, from South America, and the West Indies, but particularly in 1828, when as many as ten died in different ships, on their passage from these countries during the summer; yet, I believe, the only instance in which health guards were stationed on board any of them, was in the case of the Dygden, a Swedish ship. She arrived on the 27th June of that year, having had nine persons sick of fever on her passage, of which two died; commenced landing her cargo on the 17th July; had a man reported sick on the 24th; took health guards on board on the 27th, and was admitted to pratique on the 6th August, when two more sick men were landed from her, and sent to the civil hospital, one as a broken arm, the other as intermittent fever.

In a free port, such as Gibraltar, where every thing is admitted indiscriminately, where smuggling outwards is encouraged, and is indeed the very soul of its trade; where even the obvious and elementary purification of the suspected, and their goods, by water and air, appears to have been sometimes omitted, it need not be wondered at, that the very lax measures, just detailed, should prove ineffectual against the introduction of a disease capable of being caught by personal intercourse, or conveyed in foul clothes or bedding. Indeed, if we admit this mode of infecting a healthy community to be possible, we must be surprised, not that the disease has appeared so often within a few years in Gibraltar, but that it should not have shown itself whenever local circumstances happened to have been favorable to its propagation.

The French, during their late occupation of Cadiz, aware of the laxity with which sanatory, and custom-house guards generally perform their duties, and of the temptations to which inadequate pay, on one side, and commercial avidity,

on the other, must expose them, determined not to intrust the health of their garrison to such hands. They, therefore, absolutely refused to permit vessels from the Havannah, or other yellow fever countries, to enter the harbour, under any pretext whatever, from June to the middle of October, and obliged them to proceed to Mahon, there to undergo a complete purifying quarantine. If the disease, as suspected, had hitherto been introduced into Europe, by South American and West Indian ships, it is evident, that this measure, of all others, is the best calculated to prevent its importation in future. A similar measure was adopted in Gibraltar in 1829, and, if fairly persisted in, will go far towards deciding the long-agitated questions of importation and local origin. It is to be feared, however, that the insatiable cupidity of commerce, ever ready to stake human life against the prospect of gain, will find means to set aside this salutary regulation, long before its preventive influence would be much more necessary, than at the close of a destructive epidemic.

Whatever truth there may be in the third set of propositions, they are not likely to lead to any thing very efficient in the way of preventive measures, because, as ordinary fevers will occur in spite of the strictest quarantine and best-regulated internal arrangements, and may become contagious, the conviction must result, according to this view of the disease, that the breaking-out of an epidemic is nearly, if not entirely, beyond human control. Little or nothing, therefore, will be done under this belief, except to save appearances with the authorities and the public, until the disease has spread its roots amongst the population, and, even then, there will be a weakness and unsteadiness of purpose, corresponding to the vagueness of the opinions.

The very success of measures, of a purely preventive nature, in warding off the approach of distant danger, seems to have a tendency to excite doubts as to their real utility, by lulling the public mind into a persuasion, that there had been no danger to be apprehended. Whenever this false security produces a relaxation of vigilance, and the disease happens to reappear during this abandonment of jealous precaution, sophistry suggests that it is a mere coincidence, and boldly recommends yet another trial of the dreadful experiment.*

*¿Now that commercial intercourse between the British West Indies and the continent of America has been thrown open by both governments, it is highly probable, that we shall soon hear of the arrival of an infected ship at one or more of the islands, and of the breaking out of the yellow fever, "by the merest accident in the world," about the same time. The long exemption from this dreadful scourge enjoyed by the windward portion of these colonies, since the year 1821, renders this deplorable event doubly probable.



We shall now leave this branch of the subject, and proceed to the consideration of those measures of sanatory police, which have for their object, *the arrest of the disease, at any period of its progress*, but more particularly at its commencement.

What has experience taught us with regard to this disease, upon which efficient sanatory proceedings may be established?

1. We know that, up to the year 1730, the disease was unknown in Europe, and that, since that period, it has appeared in Cadiz and other parts of the south of Spain many times, in an epidemic form, at intervals of various length; that it has visited Gibraltar five times, including its first appearance there in 1804, at intervals of five and a half, two and a half, half a year, and thirteen and a half years.

2. That it never begins to show itself, at least in an epidemic form, in Europe, before the middle of summer, nor after the end of autumn, and that it does not continue its ravages after the cold of winter has fairly set in.*

3. That it never attacks the same individual a second time, however exposed that individual may be to its influence.

4. That, when once it has taken root, it spreads most fatally and rapidly in a close, unagitated atmosphere, under certain circumstances of heat, season, and susceptibility of persons.

5. That, in the immediate vicinity of the first sick of the disease, persons are much more apt to be attacked, than at distant points.

6. That those engaged in the attendance of the sick, and those who are most in the same rooms, or buildings, with them, are more liable to be attacked, than those totally unconnected with them.

7. That centers, or foci, of peculiarly active infection, or contagion, may be formed by the accumulation of persons labouring under the disease, in sheltered, ill-ventilated places; as, for example, in the naval hospital in Gibraltar.

8. That the disease is generally, if not always, confined to a known and limited spot, or district, for days, nay even weeks, after its first breaking out; and that it spreads gradually, often appearing to follow personal removal from one place to another, leaving intervening places free.

9. That it spreads but very rarely, if at all, in an open,

* From the summer to the winter solstice, that is, as long as the days continue to become shorter, is the season during which alone, yellow fever has ever been known in an epidemic form, in Europe.

fresh, well-ventilated country, where the air is constantly agitated and renewed, and where the sick can be widely separated from the healthy.

The sanatory history of the five Gibraltar epidemics affords a most instructive, practical lesson, as to the comparative value of the measures adopted to check their respective progress, and also as to the apparently comparative correctness of the medical opinions, on which these measures were based.

At the breaking out of the first, the terrible epidemic of 1804, the chief medical officer was exclusively guided, in his arrangements, by the set of opinions marked No. 1. The rifeness of the prevailing fever was, at first, attributed to eating melons and drinking water. At a later period, the fumes of a lime kiln, then, and still, burning in the town, were accused of promoting the excessive mortality. The destroying march of the disease, however, did not experience the slightest sanatory check, until it had carried off some thousands of the population, and attacked the doctor himself, the conscientious supporter of non-contagion and local origin. In the month of October, at the very acmé of this dreadful epidemic, Dr. Pym became the chief medical officer. Even at that very early period of our acquaintance with the disease in Europe, he held the opinions marked No. 2, of which he may be styled the founder. The sanatory measures which he recommended were based upon these opinions, and the result, even of their late and partial application, was, that 1,200 of the military, (which at the beginning of the epidemic amounted to 4,200,) were saved from being attacked: whilst of the civil population, amounting to 14,000, only twenty-eight individuals escaped infection.*

In 1810, the disease was publicly known to have arrived in the bay from Carthagena, on the 19th September, on board certain transports; and, though closely watched by Dr. Pym, then also at the head of the medical department of the garrison, it found its way on shore on the 20th of October, thus affording him a fair opportunity of trying the efficiency of measures founded on his peculiar doctrines. He acted, on this occasion, on the same principles as he had done in 1804, and, by his admirable promptitude and decision, confined the ravages of the pestilence on shore to about a dozen victims.

In the year 1813, the first case of the third epidemic of Gibraltar occurred on the 12th of August, in the person of a

* Observations on the Bulam Fever, by Dr. Pym, p. 27.



man who had arrived the day before from Cadiz, where the disease then prevailed. He died on the 19th.* From the 3d to the 10th September, nine deaths had taken place: on that day, my esteemed friend, John Cortez, a Spanish surgeon, long resident in the garrison, than whom there are but few more observant, and none more honourable, recognised, in two patients, the disease which he had already witnessed in both the former epidemics. He immediately gave the necessary information to the chief medical officers, but the Board of Health, which had been established since May, distracted, as it would appear, by the discrepancy of medical opinion, delayed the adoption of vigorous measures. In the mean time, the disease took root, and carried off, before the end of November, one thousand victims. The sanatary arrangements adopted, though too late, were not quite ineffectual: they were based upon the second set of propositions, and succeeded, by insulating the dockyard, in saving nearly the whole of its inmates from being infected. A foul lazaretto was established on the 19th September, on one of the north glacis, in which Mr. Cortez remained shut up, in charge of the sick, to the 23d December following, and thus acquired a practical experience of the disease, of which few can boast.†

In 1814 the disease again broke out, was again first recognised by my vigilant friend Cortez, so early as July, and after a long and deadly struggle, was fairly beaten out of the field before the end of October, by the prudent and energetic dispositions of Mr. Inspector of hospitals Frazer, then chief medical officer. It is needless to say, that his arrangements were based on the second set of propositions. They would most probably have been completely successful, and have stifled the disease at its very commencement, had not the owner of the house first infected concealed some of its inmates from the medical, and police inspectors, to prevent their being sent to the neutral ground. The persons thus concealed were Barbary Jews, and furnished the next cases that occurred in the town, after the sick and the suspected had been sent into the lazaretto camp.‡

* Vide the obituary register of the Roman Catholic church of Gibraltar, and the books at the Quarantine Office.

† Vide Letter on the Gibraltar Fever, by W. W. Fraser, p. 8.

‡ These particulars I have from Mr. Cortez, who considers the breaking of the disease, in 1814, due to *reproduction*. Domingos Moreno, a Portuguese, was attacked, on the 27th July, and became his patient. He died on the 4th August, and was opened by Mr. C. Two days previously to his death, he confessed that, at the burning of infected articles, the year before, he had purloined some clothes, which he still preserved in his chest.

In the year 1828, after an interval of nearly fourteen years of uninterrupted public health, the disease again broke out in Gibraltar. It was viewed by the then chief medical officer, at its commencement in August, and during the early period of its progress, in the same light that it had been viewed in 1804, that is, exclusively upon the principles of the first set of opinions. In the measures recommended towards the middle of its destructive career, there seems to have been a strong belief of contagion; but not the slightest check was put to its ravages, except that produced by the diminution of its proper food, until, as in 1804, Dr. Pym was once more placed at the head of the medical administration of the garrison. At this time, the official reports of the progress of the disease exhibited the most alarming numbers in their columns: although the daily deaths, and fresh attacks, had diminished. This was owing to the convalescents having been, for some weeks, allowed to accumulate. These, as they quitted the hospital, were at first sent on board a transport, and when this would hold no more, into sail lofts, and tents in the dockyard. In fact, no man, after having once entered the sick ward, whether he lived or died, was permitted to return to his corps, nor to duty of any kind, notwithstanding the strong remonstrances of regimental commanding officers on the subject. This injudicious measure, the result of a vague, undefined dread of contagion, was said to be based on something which was termed "*plague precaution.*" Dr. Pym, immediately on taking charge, reduced the convalescents to the very minimum, by discharging a great number of them, to be employed in the town, on the duties most likely to endanger the health of the, as yet, unattacked soldier.

I need not inform you, sir, of the rapid reduction of the sick list which followed this arrangement. The records of your office will furnish the proof, and, if these were wanting, the whole surviving population, civil and military, would testify, with one voice, as to the striking amelioration of public feeling, the restoration of confidence, and immediate quieting of the public mind, which Dr. Pym's measures produced, at that period of deep and dreadful agitation.

The melancholy experience of these five epidemics, by which nearly ten thousand persons were swept off, has fully proved that the disease, whatever may have been its origin, if left to itself, under certain circumstances, *will spread and kill*, yet that much may be done, even in the



limited territory of Gibraltar, towards diminishing the number of its victims, by proper sanatary arrangements. But as these arrangements necessarily entail great inconvenience upon individuals, and often on the whole community, it becomes highly desirable that they should not be resorted to, except on a full conviction of their necessity. On the other hand, as their efficiency must, in great measure, depend on the promptitude with which they are applied, no means should be omitted which can contribute towards the determination of the moment, when further delay in their adoption would become dangerous and culpable. That moment will have arrived, when one, or more, cases of the disease have been proved to exist within the territory. It therefore becomes a matter of the very highest importance, *not only to be able to distinguish this disease from every other*, but also that such measures should be taken as will ensure to those whose experience enables them to make this distinction, an early view of all suspicious cases. Here, then, another set of precautionary measures come into action, such as the division of the town and territory into small districts; the appointment of medical, and lay-inspectors to each;* enjoining the heads of families, under certain penalties, to report to the inspectors of their district any febrile attack occurring in their families, during the suspicious season, within twenty-four hours after its commencement; enforcing similar reports to the chief medical officer, from all civil practitioners, as to their patients; strictly preventing the burial of the dead, under any pretence whatever, before they shall have been examined, at least externally, by an appointed medical officer.†

But it may so happen, that the chief medical officer has never seen the disease; or that he is impressed with the belief, that it is identical with the ordinary remittent, autumnal fevers of the country, or, having seen it, he may not have sufficiently marked its distinctive characters; or, in fine, he may have allowed himself to conclude, that there are no signs, nor characters, peculiar to it.

*The early detection, and confident, full recognition of the disease, if possible, in the very first subjects attacked by it, are the cardinal points upon which the prevention of its spread depends.* Thousands of lives may hang on the decision of the

* Both these prudent arrangements have been amongst the standing orders of the garrison, every summer and autumn, since 1813.

† These important precautionary regulations were submitted to Sir George Don, by Dr. Pym, in the spring of 1829, in his code of quarantine arrangements.

medical authority, at this moment. His responsibility is truly awful, and he should be well prepared for the important duty he has to perform. To illustrate this, and to place in a strong light the fatal consequences that would be likely to result from mistaken views, or inexperience, on the part of those to whose professional opinions the lay-authority always appeals, on such occasions: I shall take the liberty of giving the following brief sketch of the breaking out and early progress of an epidemic, which actually occurred, not long ago, in the south of Spain. The facts recorded are taken from the most authentic sources.

In the beginning of August, three or four persons are reported to have died suddenly. Apoplexy, childbirth, and accident, are assigned as the causes of these deaths. Young medical men are sent to examine the bodies, and are either refused permission by the friends, or having superficially examined one, or two, make insignificant reports. The public health is apparently in the most satisfactory state, and had been so for several years. One, two, half a dozen persons, are reported as ill of fever: they are seen without loss of time, by the principal medical officer, and those most in his confidence. It is nothing more than the ordinary fever of the season, and of the country. One, or two more deaths take place; but indigestion, from eating unwholesome food, is assigned and received as the cause. Ten, or twelve, new cases of fever are reported; but they are pronounced to be merely the autumnal, bilious remittent, which occurs every year, and from which, as every body knows, there could be nothing to fear. The old nurses, however, who had seen former epidemics, begin to whisper abroad, that black vomiting and yellow skins have been observed; that the fever seems to spread in families, and amongst persons closely connected; that three or four, whom they name, cannot recover; the words *epidemia*, and *vomito negro*, are heard in suppressed whispers. But still the men of science, scorning to be influenced by old women, and ashamed, perhaps, to retract their opinions, insist that the disease is nothing else than the bilious remittent; that it has been produced by the foul state of certain drains and privies. Scavengers, fumigators, and purifiers of all descriptions, are immediately put into requisition; chemical compounds are thrown into the supposed sources of malaria and pestilence; the temples of the goddess Cloacina are ordered to be nailed up, and all the outlets of infectious effluvia to be hermetically sealed.

In the mean time, ten or a dozen fresh cases of fever, and



one or two more deaths, are reported. Expurgating measures are urged [with redoubled vigor: yellow eyes and skins, with dark vomiting, become every day more common. The public has taken alarm, and the chief physician states officially, that bilious remittent fever, sometimes, puts on the appearance of yellow fever; but still, that the public health is not below par, and that no apprehension need be entertained of epidemic disease.

It was now September: more than three weeks had elapsed, eight or ten deaths had taken place, and forty or fifty cases of fever had been reported. Every body, except the doctors, was persuaded that an epidemic had already commenced. Public rumor becomes the vehicle of truth: prudent people begin to emigrate; the neighbouring towns catch the alarm; medical men, acquainted with the disease, are sent to examine and report upon its nature, and the infected city is excommunicated by a printed bann and a sanatary cordon, as having a pestilential disease within its walls, before its own authorities were officially aware of the fact, that such disease had broken out.

This blow, severe as it must be considered, was but the least important of the evils resulting from the first cases having been mistaken, or overlooked. A whole month had been lost, not a single sanatary step had been taken, at least no step at all useful, whilst during that time the disease was fixing its roots deeply amongst the population. Hurried and tumultuary measures were now resorted to. Many of the inhabitants were forced, in the open day, to quit their dwellings, knowing, for some hours before, that they were to be so forced.* Great individual hardship and inconvenience were the consequence: some had already fled to other districts of the town, to avoid being sent into camp, and some, under various pretexts, were permitted to return to their dwellings, in a day or two after they had been encamped with their families.

It is almost unnecessary to add, that, under such management, the disease spread with fatal, and rapid strides, and that it destroyed many hundreds of valuable lives, before the end of autumn.

* Two motives always actuate the Spaniard and the native of Gibraltar to conceal, or dissimulate, by every possible artifice, the existence of yellow fever in their families. 1st. To avoid the inconvenience of being sent into the lazaretto camp, and other sanatary annoyances. 2dly. As the older members of the family have generally acquired immunity for themselves, by having had the disease in some former epidemic, they are averse to their children being deprived of the present opportunity of acquiring a similar immunity, knowing that, at their age, the risk of death is less than it will ever be afterwards, if so exposed to infection.

I have said, in another part of this letter, that the early detection, and steady recognition, of the disease, if possible, in the very first subjects attacked by it, are the cardinal points, on which the prevention of its spread depends. Supposing, then, that all persons attacked by febrile disease, during the suspicious months, are honestly and promptly shown to the chief medical officer; how is he to distinguish this peculiar disease, from the ordinary fever of the country?

1st. The Gibraltar fever never attacks the same individual a second time. This invaluable fact, now established on the firmest basis, and subscribed to by the very warmest supporters of non-contagion and local origin,* divides the population, at once, into two most important sanatary classes: the susceptible and the non-susceptible. If, then, there be satisfactory evidence, that the person reported as labouring under fever has already suffered an attack of the disease, in any former epidemic, we may dismiss all apprehension. The indisposition, whatever it may be, is not the Gibraltar fever. If, on the contrary, it be quite certain that the subject of febrile attack never has had the yellow fever before, or if the evidence on the subject be doubtful, there is cause for suspicion, and therefore for extreme vigilance on the part of the medical authority. The unwilling acknowledgment of the axiom, on which these conclusions are founded, wrung, at last, by dearly-bought experience, from the abettors of the first and third sets of opinions, affords a pledge of wiser management in future, and adds another wreath to the imperishable laurels which Dr. Pym, the practical founder of the axiom, had already gained by its successful application to the saving of human life, and human suffering.

2. We shall suppose the person attacked to be of the susceptible class, and the first symptoms, a sense of cold, or shivering, frontal headach, pains in the back and limbs, flushed cheek, injected eye, nausea, or vomiting the ordinary contents of the stomach, yellowish white, moist tongue, quickened pulse, constipated bowels; succeeded by alternate chills and flushings, heat of skin, short and sparing sweats, if any, sleep none, or uneasy and interrupted; vomiting of bilious matter, pains something like rheumatic; tongue deeply coated, creamy; thirst none, or moderate; eyes much injected, cheeks flushed; the whole countenance sometimes bloated and livid, with somnolence; an appearance of being drunk; urine high coloured; tenderness and sense of tightness about the epigastrium, and margin of the diaphragm. These symptoms continue, with little or no abatement, though variously combined and modified, from twenty-four to seventy-two hours. Whilst they persist, the patient is still in the first or febrile stage of the disease: their mitigation constitutes the commencement of the second, or apyrectic stage.

* Vide Wilson's Historical Sketch in the Lancet, vol. ii. June 12, 1830, p. 425.



If this case be the first, or one of the first that has occurred, no precise determination, as to its nature, can be arrived at, whilst the symptoms have so little to distinguish them from those we meet in ordinary fevers. One or other of the exanthemata may be coming on, or the disease may assume the regular, remittent, intermittent, or mild continued type. The class, however, to which the patient belongs, the season of the year, and, perhaps, some recent occurrences connected with the individual, or the territory, will tend strongly to fix suspicion on such a case.

3. We shall go on, and suppose that no eruptive disease follows the fever we have noticed. The violence of all the symptoms subsides within a few hours; the vomiting ceases; the pulse and skin become nearly natural, or quite so; the pains diminish, the patient expresses himself much relieved, talks of getting out of bed, and perhaps calls for food. This change constitutes the second stage of the disease, the termination of the febrile paroxysm. If the case be about to terminate favorably, the amendment, once begun, continues, and the patient, after the sixth or seventh day, often much sooner, according to the previous train of symptoms, may be pronounced clear of all danger. But the very recovery of such a patient, without a second febrile paroxysm, renders the case doubly suspicious, by depriving it of all analogy with intermittent or remittent fevers. Should three or four other cases, similar to this, occur about the same time, in the same family, or amongst persons closely connected by neighbourhood or intimacy, they would be almost enough to mark the commencement of an epidemic: but we are never left long in doubt.

4. Let us imagine that one of the first cases is about to terminate fatally; some, or all, of the following phenomena will be noticed before death. After the apparently favorable change, which constitutes the second change, has continued for six, twelve, or twenty-four hours, the white of the eye becomes yellow, is still deeply injected, perhaps ecchymosed; the countenance assumes a dirty, leaden hue, and haggard aspect; livid blotches are noticed on various parts of the body; the stomach refuses food; vo-

miting returns; the neck and breast put on a cadaverous yellow tinge, such as is often seen in the dissecting room; there is great sensibility, sometimes excruciating pain and sense of heat, at the pit of the stomach; we find the skin colder than natural; the extremities like marble; dark brown, flakey matter, blackish, or black liquid, are thrown up; there is oozing of blood from the gums; the teeth are covered with dark sordes; the pulse sinks, becomes almost imperceptible; there is hiccup, the most pitiable restlessness, incessant tossing of the head and limbs; urine is no longer secreted; delirium often precedes death by some hours; there is sometimes coma and low muttering, subsultus.* Often the patient is perfectly collected to the moment of dissolution, which generally takes place from the third to the seventh day,

5. If the subject that has died under a train of symptoms, such as those I have just described, be examined after death, the following appearances, or the greater part of them, will be found. The body, though it should not have been yellow during life, will probably become so after death; the livid, or mahogany-coloured patches are sometimes found to have disappeared, or to have changed their position; blackish liquid in the stomach, or bowels, or both; the cardiac lining of the œsophagus red, and stained a shining black, as if japanned; ecchymosed spots, of various sizes and shades of red, on the mucous membrane of the stomach and duodenum. The ulcerated and elevated patches, so usual in the small intestines, in ordinary fevers, are never found in this. The liver either of a uniform fawn or yellow colour, or partly of this colour and partly natural, looking as if it had been partially boiled; its consistence and volume but little changed; the urinary bladder empty, or containing but a few drops of liquid. The other organs healthy, or so inconstantly and slightly altered in structure, as to afford very little worthy of record. Rather a paucity of blood, black and thin. Should the face have been livid after death, as is not unfrequently the case, the opening of the descending cava, or subclavian vein, during the dissection, immediately removes the livor, and leaves a pale yellow, if the head be but slightly elevated.

A single fatal case, such as I have described, carefully watched through its progress, in Gibraltar, during the months of August, September, or October, or a single dissection resembling that just detailed, though the subject should not have been seen, professionally, before death,

* Sometimes spasmodic death, as if produced by strychnia, or upas-tieuté poison.



ought to be quite enough to determine the medical authority to recommend the adoption of the most active measures. But let us suppose that the first six or eight cases have recovered, without manifesting any of the symptoms of the third stage, (which is highly improbable,) it may be urged that these have been only so many slight attacks of feverish indisposition: granted. If, however, those only are attacked, who had never passed the disease before, members of the same family, their visitors, or neighbours; if there be no second paroxysm of fever; if there have been no precursory symptoms; if the bowels be costive, instead of lax, as at the commencement of ordinary fevers; if the headach, the injection of the eye, the coating of the tongue, the flush of the cheek, expression of the countenance, and the general pains, possess the peculiar characters so familiar to those who have witnessed other epidemics, there are the very strongest grounds for suspicion, even before a single death shall have occurred. But yellow eyes, passive hemorrhages, dark vomiting, speedy dissolution, and post-mortem appearances, will quickly remove all uncertainty.

The very first cases of fever, then, that occur about the end of summer and the beginning of autumn, must be carefully observed and faithfully recorded. The subjects of the very first deaths must be minutely examined, and the appearances on dissection accurately taken down in writing, on the spot, and testified by all present. If the *ensemble* of the history, symptoms, and anatomical characters, be such as I have attempted to describe, the real Gibraltar epidemic, or yellow fever, or *vomito prieto*, or Bulam fever, has actually commenced, and will, in all human probability, spread, if efficient measures be not quickly adopted to check its progress.

Under these dreadful circumstances, the safety of the community must not be sacrificed to medical sophistry. The chief health officer is bound, as he values human life, to report immediately to the lay authority, and submit to him the authentic records of the suspicious cases and their dissections. Whatever may be his own views as to the nature of the disease, whatever name, source, or cause he may think proper to assign to it, it will spread, it will destroy hundreds, (and it matters but little whether by contagion, or malaria,) if it be not crushed in the egg. Experience has happily taught us the means by which it may be crushed, at this stage of its progress, and the chief medical officer, who does not know when to recommend,

and how to apply, these means, is shamefully unfit for, and unworthy of, the high trust reposed in him.

Whenever medical men have tried to check the destructive march of this disease by merely attempting to cure those attacked by it, or by purifying the spot occupied by the sick, they have invariably failed, and most miserably too. It seems to laugh at remedies, and but too often destroys both the patient and his doctor. *The prevention of attack is the only source of safety.* This is the principle on which Dr. Pym has always acted, and he, beyond all question, has done more towards saving his fellow-creatures from this dreadful scourge, than the whole profession put together, from the days of Hippocrates to the present hour. Indeed, I know of nothing, practically useful, that has been done or established on this subject, except by him, or after his precepts and example. The following are the measures by which he put an end to the incipient epidemic of 1810, in Gibraltar, in the month of October; the season at which, whenever the disease has hitherto prevailed there, its spread and its mortality have been the most remarkable.

Having recognised the fever in the very first individuals attacked on shore, he reported the fact to the lieutenant-governor, without the loss of a single moment, and obtained from him the most ample authority, to take whatever steps he might think necessary to prevent its spread. Not a whisper of alarm was allowed to transpire, lest the sick, or the suspected, should scatter themselves over the territory, to avoid the rigour of sanitary arrangements. "I was aware," says Dr. Pym, "from what I had seen in 1804, that the only way of cutting short the contagion, was by the most prompt and decisive measures, to separate the sick from the healthy, and to prevent any communication between those persons who might be suspected of having imbibed the disease, and the other inhabitants."* Tents were pitched during the day, on the neutral ground, as if for military purposes; and in the dead of the night, when the air was cool, and the streets deserted, a cordon of troops was thrown round the infected district. Persons, who had already passed the disease, conducting carts provided for the purpose, carried off the whole of the sick and the suspected, and deposited them in the tents, on the neutral ground, (now declared to be a lazaretto,) outside the walls of the fortress, where their wants were ministered to, by unsusceptible attendants.

* Vide Observations on the Bulam Fever, p. 50.



The contaminated district was kept in strict quarantine for fourteen days, and its inhabitants inspected daily, by a medical officer. Persons showing symptoms of the disease, of whom there were several within a few days, ("all neighbours of the first family attacked,") were, of course, sent to the lazaretto, whilst their houses and effects were made to undergo suitable expurgation. "Some cases of black vomit having occurred in the 4th and 7th veteran battalions, then forming part of the garrison, these corps, with their whole hospital establishments, were immediately sent into camp. "Very few men," continues Dr. Pym, "were reported sick after the regiments moved into quarantine; three of them, however, were taken ill in the same tent. Six died from the disease, who were all taken ill in the same barrack room."

I cannot help noticing here a very remarkable case, showing, in the strongest light, the danger of permitting the healthy to use infected bedding. The only member of the first family attacked, who continued healthy from the beginning, was seized on the fourth day after his return to his habitation, and died with black vomiting, in less than seventy hours' illness. Upon inquiry, it was ascertained that the inspector of the district had neglected to wash and purify the bed which this young man slept upon, and which had been used by some of his family, when the disease first made its appearance."*

With this case ended the epidemic of 1810, and thus, by the prompt and judicious separation of the contaminated from the susceptible, the disease was arrested, and the people saved, at a season of the year, too, when (as we now know) this disease usually attains, in Europe, the very acmé of its pestilence and mortality.

If the vigor and promptitude of the medical arrangements adopted during this epidemic, the steadiness of the principles upon which they were based, and the salutary results that followed their application, be contrasted with the vagueness of certain theories, and the disastrous indecision manifested in 1804, and in the other epidemic of which I have already drawn a sketch, there can, I presume, be no hesitation as to the choice of measures, on similar occasions, in future.

I shall now take the liberty of submitting a series of sanitary instructions, founded on the experience of the past, which, if promptly and faithfully acted on, would, I

* Vide opus cit. p. 53.

have no doubt, either completely stop the spread of any future epidemic of yellow fever in Gibraltar, or at least effect a large saving of human life. Although these instructions are made to refer, in the present instance, to that garrison only, they will be found equally applicable, with slight local alterations, to any of our other colonies, which may hereafter be visited by a similar calamity.

1. Let us never lose sight of the grand, inestimable facts, that the Gibraltar fever, in its former visitations, has rendered one portion of the population the invulnerable protectors of the other portion from its own future attacks, and that each individual, as he passes through its ordeal, is not only rendered safe himself, but becomes capable of being made a source of safety to many others.

2. When the disease shall have been proved to exist within the fortress, during the hot months, let the sick and the suspected be immediately removed without the walls, as nearly as possible in the manner practised in 1810, and there kept effectually separated from the healthy, unsuspected, susceptible part of the inhabitants.

3. Let the infected houses and goods be kept in strict quarantine, and purified by water, air, fumigations, and every other means that may be thought advisable; great care being taken that these expurgatory measures be executed by non-susceptible persons.

4. Let no time nor labour be thrown away, at this most important crisis, on cleansing drains or privies. Experience has already proved, most fully, both in Cadiz, in the great epidemic of 1800,* and in Gibraltar in 1828, the perfect inutility, nay, the absolute mischievous tendency of this measure, when adopted after the fever has commenced, with the view of arresting its propagation.

5. Should the infection appear to spread within the territory, notwithstanding the removal of the first sick, all theories must be abandoned, and one maxim must, alone, guide all our measures, viz. *that the disease will stop as soon as the susceptible are separated from contaminated places, persons, and things.*

6. Since, however, it would be obviously impracticable to remove all the susceptible from the fortress, at once, when an epidemic breaks out after a long interval of public health, and when, besides a large portion of the civil population, the whole garrison may belong to this class, as was the case in 1828, we must send outside the walls all move-

* Vide Vilalba (Epidemiologia Espanola), ann. 1800.



able foci and fomites of contagion, and as many as possible of those capable of being affected by such as cannot be removed.

7. The civil hospital, which stands nearly in the center of the town, should be transferred, with its whole establishment, to the neutral ground, to serve as the nucleus of a civil lazaretto, on the very first breaking out of the disease. Regimental hospitals, also, should be sent out, as the corps to which they belong happen to be attacked.

8. No family, after having been once contaminated, should be allowed to remain an hour in the fortress, particularly at the commencement of an epidemic. Temporary emigration should be encouraged, amongst the civilians, by every possible means, and the whole susceptible population, civil and military, should be scattered over the neutral ground, the ships in the bay, Windmill hill, and Europa flat, as widely as the circumstances of the fortress, and the limited extent of the territory, will admit.*

9. Whenever a regiment becomes contaminated, it should be immediately encamped outside the fortress, if it can be spared: if it cannot, on Windmill hill, or Europa flat. There are no other situations within the walls, where the atmosphere is not close and sultry during the summer and autumn, and therefore improper for encampments.

10. The sanitary division of the healthy into the susceptible and the non-susceptible, naturally dictates the classification of the sick into the decided epidemic, the suspected, and the unsuspected. There should, therefore, be three distinct hospital establishments, viz. 1. The foul lazaretto, for pronounced cases. 2. The lazaretto of observation, for those cases which may, or may not, turn out to be epidemic. 3. The free or clean hospital, for accidents and non-susceptible sick. All the attendants of the first and second establishments, medical, clerical, and others, should be kept, if possible, in quarantine.

11. The bed, bedding, and every thing personal to the sick soldier, sent to either of the two first hospitals, should follow the fortunes of their owner. If the sick man should happen to die, his effects will thus remain where they can do no further mischief, viz. in the foul hospital: should he survive, they accompany him to the convalescent depôt, and thence, after having undergone the most careful ablu-

* It is much to be regretted, at least, in a sanitary point of view, that a larger territory was not attached to Gibraltar, when its possession was secured to England by treaty. The high ground, about the Queen of Spain's Chair, would be a most desirable situation for an epidemic encampment.

tions, fumigations, &c., to the suspected quarter within the fortress, on his return to duty.

12. Hospital bedding, properly so called, should be used, as in time of public health, in the clean hospital only. This, of course, implies that the bed and bedding of the unsuspected sick need not be removed from the tents, or quarters of the healthy.

13. There should be three descriptions of camps and quarters, corresponding to the hospital establishments: the foul, the suspected, and the clean, or free. These should be kept distinct during the epidemic.

14. Convalescents, from the foul and suspected hospitals, should be returned to the fortress, as soon as possible after their recovery, placed in suspected quarters, and appointed to the lightest duties at first, distinct from the uncontaminated, until the return of public health.

15. The guards, and all other duties within the town and in the sheltered situations of the territory, should be reduced to the minimum consistent with the safety of the fortress; and, as soon as the original and convalescent nonsusceptible soldiers are sufficiently numerous to perform these duties, the susceptible should no longer be permitted to participate in them.

16. The building called the naval hospital, which, during the most fatal period of the late epidemic, was crowded with military sick, being constructed in the form of a hollow square, at the bottom of a close and deep ravine, should be abandoned as an hospital, on the very first breaking out of any future epidemic. It might, perhaps, be advantageously occupied as a station for nonsusceptible convalescents.

17. The epidemic sick should, as far as practicable, be treated in detached tents, huts, or sheds, so placed and constructed as to admit of the most perfect ventilation.

18. It will not be enough for the protection of the susceptible, nor for the benefit of the sick, that the latter be sent outside the gates, to the north front. They must be so placed as not to be sheltered by the projections of the rock, nor by the outworks, from the currents of cool air which constantly sweep round that face of the mountain, either from the Mediterranean to the bay, or in an opposite direction, whatever point the wind may blow from elsewhere. No spot, therefore, inside the line of the Orillon ditch and Bayside barrier, should be occupied as an epidemic hospital.

19. As the limits of the territory stand defined at



present, on the land side, the most fitting situation for the epidemic sick, on the north front, would be the north-eastern angle of the neutral ground; for the suspected sick, a space near the former to the westward; for the unsuspected sick, still further to the westward: the three establishments to be placed in *echelon*.

20. Should it so happen that the troops in garrison cannot furnish a sufficient number of nonsusceptible orderlies for the service of their own epidemic sick, civil attendants of that class must be employed from the beginning.

21. In the pitching of tents, and particularly in the erection of boarded sheds, care must be taken that they be not huddled too closely together, and that they be so placed with regard to each other, as to allow a free passage for the currents of air mentioned in 18. Nothing tends more effectually to prevent the propagation of disease than open space, and perfect ventilation.

22. As the town was evidently the centre, from which infection emanated during the first six weeks of the late epidemic, it would be advisable, on any similar occasion in future, immediately on the first appearance of the disease, to cut off all communication with the south, by shutting the gates on that side, and to preserve these two parts of the garrison perfectly distinct, at least as long as the people of the south might continue to afford no proofs of being infected. This measure I conceive to be easily practicable, and perfectly compatible with the safety of the fortress.

23. The first and most important steps towards the saving of human life, on the breaking out of this disease, being its early detection, and the firm, unhesitating announcement of its existence to the proper authority. The chief medical officer should, himself, visit and observe every case of febrile indisposition occurring within the territory from the 15th of June to the 15th of November; and should see every dead body, and have it opened in his presence, if necessary, during that period.

I shall conclude by observing, that this disease has preserved the most perfect uniformity of character, in all its visitations to Europe, from its first appearance in 1730, to its latest, the year before last.* That whether it has been, upon these occasions, of indigenous or foreign origin; whether it be propagated by contagion, by malaria, by meteoric influence, or by all these causes, it will spread under certain circumstances, (at least in Gibraltar,) more

* Many acknowledge the reality of two species of yellow fever: one mild, sporadic, noncontagious; the other malignant, epidemic, and contagious.

rapidly and fatally than the plague itself. That multiplied experience has now taught us what these circumstances are, and how they may be avoided by sanitary arrangements, such as I have endeavoured to point out in the foregoing observations.

May I be permitted to hope, sir, that, should these observations meet your approbation, you will bring them, honoured by that sanction, to the notice of those who officially preside over the general welfare of our colonies and garrisons abroad, in order that they may be made available to the general cause of humanity.

I have the honour to be, Sir, your most obedient and most humble servant,

DAVID BARRY, M.D.
Physician to the Forces.

To Sir James M'Grigor, Director General, &c.

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*Note extracted from the London Med. and Phys. Journal, for December* 1830.

The Editor is enabled to state, from authority, that Sir James M'Grigor, the Director General of the Army Medical Department, and Sir William Franklin, to whom the above sanitary rules were submitted before they were sent to press, have forwarded a manuscript copy of them to the General commanding in chief, with a letter expressive of their approbation.

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J. and C. Adlard, Printers, Bartholomew Close.

DISPUTATIO MEDICA

INAUGURALIS

DE

# MORAE INDICTIVAE, IN PESTE ARCENDA, UTILITATE.

To
Mr Cowan
with kind regards of
J McGregor

# DISPUTATIO MEDICA

INAUGURALIS

DE

# MORAE INDICTIVAE, IN PESTE ARCENDA, UTILITATE;

QUAM,

ANNUENTE SUMMO NUMINE,

EX AUCTORITATE REVERENDI ADMODUM VIRI,

D. GEORGII BAIRD, SS. T. P.

*ACADEMIÆ EDINBURGENÆ PRÆFECTI;*

NECNON

AMPLISSIMI SENATUS ACADEMICI CONSENSU,

ET NOBILISSIMÆ FACULTATIS MEDICÆ DECRETO;

**Pro Gradu Doctoris,**

SUMMISQUE IN MEDICINA HONORIBUS AC PRIVILEGIIS,

RITE ET LEGITIME CONSEQUENDIS;

ERUDITORUM EXAMINI SUBJICIT

ALEXANDER MACGREGOR,

Anglus.

*IV. Id. Julii, hora locoque solitis.*

---

EDINBURGI:

EXCUDEBAT JACOBUS WALKER.

MDCCCXXXIII.

ILLUSTRISSIMO VIRO,

JACOBO McGRIGOR, BARONETTO,

EX CAMDON HILL, IN COMITATU MIDDLESEX,

M. D. S. R. S.

COLL. REG. MED. LOND. ATQUE EDIN. SOCIO,

TURRIS ENSISQUE EQUITI COMITI,

PROVINCIAE MEDICAE COPIARUM BRIT. PRAEFECTO

GENERALI,

BRIT. REGIS MEDICO EXTRAORDINARIO,

&c. &c. &c.

HOC TENTAMEN,

SUMMAE SUAE ET VIRI ET MEDICI

OBSERVATIONIS ATQUE AMORIS TESTIMONIUM,

D. D. D.QUE

ALEXANDER MACGREGOR.

# DISPUTATIO MEDICA

INAUGURALIS

DE

# MORAE INDICTIVAE, IN PESTE ARCENDA, UTILITATE.

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Quo tempore primum morbus ille, qui hodie Pestis appellatur, ab aliis Febris formis distingui coeperit, admodum incertum est. Loquitur quidem Moses de Variis Pestilentiae generibus, inter quae non absimile est veram Pestem saepe comprehensam fuisse; quoniam " more Aegypti," inquit, accedere solet, beneque cognoscitur quam sit, semperque fuerit, ista regio Pesti opportuna. A Graecis etiam atque Romanis omnes pene Febres

Epidemicae ad Aegyptum et Aethiopiam referri solebant, id quod verisimile reddit has gentes quoque veram Pestem non ignorasse; quamvis dubitari non potest quin multae Pestilentiae, quae variis temporibus Peloponnesum *, Trojam †, Romam ‡, Athenas §, atque Syracusas ‖, vastabant, ad alias Febris formas, potius quam ad veram Pestem, maximeque ad Remittentes atque Intermittentes, pertinerent. Constat quoque nullam Febrem, quae verae Pesti temporum recentiorum bene respondet, a Graecis Romanisve Medicis descriptam fuisse; sed videntur priores eandem sub generali nomine Τυφος, posteriores autem sub nomine Febris Pestilentis aut Pestilentiae, inclusisse, idque praecipue cum non paucos alios morbos satis inter se discretos, veluti Rubeolam, Scarlatinam, Variolam, aliosque multos, eodem modo simul comprehendere manifeste consueverint.

Hucusque nulla suspicio habita fuisse videtur aut Pestem, aut quidem ullum alium morbum, ex

* A. C. 1300. † A. C. 1280. ‡ A. C. 717 ad 453.
§ A. C. 431. ‖ A. C. 404.



Contagio oriri. Ab antiquissimis temporibus soliti erant homines omnes morbos Pestilentes, aut protinus ad Dei iram, aut ad actionem duarum Dirarum (quae, secundum Mythologiam profanam, prope JOVEM semper versantur,

"Siquando Lethem horrificam morbosque Deûm rex
Molitur,")

referre; eademque opinio inter barbaras gentes etiam hodie acceptissima est. Putaverunt quidem aliqui MOSEM credidisse Lepram morbum Contagiosum esse, ex curiosis praeceptis quae reliquit ad affectos purificandos; sed similia quaedam inculcat in aliis affectibus quos Contagiosos existimare non potuit; atque ita DAVID, post quadringentos ab eo annos, Lepram enumerat inter eos morbos qui ex ira Dei protinus nascuntur. Inceperant interim Philosophi Aegyptiaci morbos Pestilentes ad vitiatam aliquam aëris conditionem referre, quam credebant ex flatibus Typhonis, (Ariditatis Genii, qui subinde Humiditatis Genium superavit,) proficisci; parique ratione dicitur ab HESIODO, Hydram illam quae Lacum Lernaeum habitabat, quaeque ab HERCULE devicta est, ex Typhone atque Echid-

na progenitam fuisse. Haec omnia cognitionem unius certe causae morborum Pestilentium—Miasmatum ex paludibus scilicet—non obscure indicant; idemque evidenter HOMERO innuitur, qui Pestilentiam notabilem, exercitum Graecum Bello Trojano vastantem, ad APOLLINIS tela, in paludosas ripas Scamandri atque Simois conjecta, tribuit. Neque solum Poëtae suo modo, sed Philosophi, citra ullam fabulam, eandem opinionem brevi inculcare coeperunt; maximeque THALES, PYTHAGORAS atque EMPEDOCLES, ex quibus proximus ab Agrigento pestilentem morbum bis depulisse, paludum Miasmata superando, dicitur.

Veruntamen nondum Contagium, ita recte dictum, hominibus cognitum fuisse videtur. Innuit primum tale aliquid SOPHOCLES, postque eum THUCYDIDES, in descriptione sua celeberrimae Athenarum Pestilentiae, quae anno A. C. 431 accidit; similique modo de hac morborum causa loquuntur ARISTOTELES, PLAUTUS, LUCRETIUS, VIRGILIUS, OVIDIUS aliique non pauci ex Poetis atque Philosophis, sed (quod maxime mirum est,) nemo ex Medicis praeter ARETAEUM, CAELIUM, GALENUM et ÆGINETAM, eosque brevissime et admodum obscure. Videntur autem omnes Medici tunc temporis HIPPOCRATEM ita sequi, ut, praeter Coela Tempestatesque atque alia similia, alias morborum causas vix aut ne vix quidem agnoscere possent. Insuper quodammodo dubium est ecqua exempla verae Pestis, aliorumve morborum evidenter Contagiosorum, istis temporibus accidere solerent; certoque utique constat Pestem Epidemicam multo magis post Constantinopolim conditam, quam unquam antea, saeviisse. Secundum FALCONER, ut unum ex maxime terribilibus exemplis, ita omnium primum Pestis Epidemicae anno P. C. 543 occurrit, sub quo non pauciores quam decies mille hominum Constantinopoli quotidie perierunt; postque hoc alia multa, sed minus gravia, ad annum 1348, quum demum omnium gravissimum orbem terrarum vastavit. Incepit hoc, uti dicitur, in India Orientali, unde proficiscens, ut canit FRACASTORIUS,



"Assyriae gentes, et Persidas, et quae
Euphratem Tygrimque bibunt, post tempore parvo
Corripuit, ditesque Arabes, mollemque Canopum.
Inde Phryges, inde et miserum, trans aequora vecta,
Infecit Latium, atque Europa saeviit omni."

Quadrennium flagravit, atque uno anno non pauciores quam triginta et duo millia millia hominum rapuisse dicitur, citra Christianos, ita ut totum mundum brevi depopulare minaretur. Hoc tempore autem opiniones hominum de Contagio, ut Morborum Epidemicorum causa, quodammodo firmiores esse coeperunt. Ostenderant longe antea Rhazes, Avicenna, Avenzoar, aliique Arabes Contagiosam naturam quorundam certe morborum, maximeque Rubeolae Scarlatinaeque et Variolae; dixeratque Cedrenus, qui saeculo undecimo vixit, id Contagium per fomites (uti vocantur) vehi posse; quo tandem factum est ut leges aliquae variis gentibus latae sint ad Contagium arcendum. Eo igitur tempore, de quo proxime locutus sum, statuta aliqua Venetiis aliisque locis hoc consilio habita sunt; sed non fuit ante annum 1495, dum Neapoli Pestis Epidemica saeviit, quod primae definitae leges, quae recte Mora Indictiva appellare potest, Venetiis latae sunt. His legibus constitutum est ut omnes homines et mercaturae ex locis suspectis venientes, antequam in urbem acciperenter, certo tempore integram ventilationem



subirent; cumque anno 1603, Pestis Epidemica Londinum infestaret, ut creditum fuit, ex Contagio a peregrinis locis per mercaturas devecto, similes leges tandem in Britannia nostra latae sunt, eaedemque (sed non quidem sine multis mutationibus) ad nostra usque tempora invaluerunt. Huc contulit quoque opinio anno 1547 a Fracastorio prolata, Febrem Typhum, quae tot nominibus Pestem repraesentat, manifeste Contagiosam esse; itidemque sententia Baconi nostri, qui eidem causae tribuit memorabilem illam Febrem quae Oxoniae, anno 1579, in carcere occurrit; ita ut summus metus Contagii tunc temporis omnium animos occuparet, summaque solicitudo ab eodem quam maxime praecavendi. Praevaluit iste metus salutaris donec, anno 1819, ex asseverationibus praecipue Maclean, Pestem morbum Contagiosum non esse, ideoque per fomites propagari non posse, agitata est quaestio in Senatu Britannico ecquid mali accedere potuerit si Mora Indictiva non diutius inculcaretur; sed ex viginti et sex summae existimationis Medicis, qui hoc tempore citati sunt, duo solum (quorum unus ipse Maclean fuit) hoc

tuto fieri posse judicarunt, neque alia generalis opinio fuit cum, anno 1824, eadem quaestio renovata est.

Haec igitur de ortu atque progressu opinionum quod ad variorum morborum, atque praecipue Pestis, Contagiosam naturam: superest nunc ut pauca dicam de verisimilitudine earum opinionum, atque ita de utilitate Morae Indictivae in Peste ab oris nostris arcenda. Dividitur autem, ut mihi videtur, tota quaestio in duas partes, ita ut in priore considerari debeat quam bene respondeat eorum opinio qui credunt Pestem morbum Contagiosum esse, eundemque per fomites vehi posse, cognitis naturae legibus; in posteriore autem, quemadmodum quadret eorum experientiae qui plurimis occasionibus usi sunt ipsum morbum animadvertandi: hoc ordine igitur reliquum argumentum quam brevissime possum pertractabo.

Pestis ergo, ut qui tam saepe morbus Epidemicus sit, necessario aut infectiosa, aut contagiosa, esse debet; quod ubi dico, id discrimen significo quod a Bayley primum, anno 1796, propositum est, qui eos morbos infectiosos appellat, qui ex



aëre generaliter vitiato plures simul afficiunt, sic tamen ut nunquam ab aliis ad alios propagantur, eos autem contagiosos, qui, integro generali aëre, a corporibus corruptis ad sana corpora feruntur. Prioris generis Febres Intermittentes sunt, quae, utcunque multos simul in iisdem regionibus male habeant, nunquam, ut videtur, ab uno homine ad alios communicantur; posterioris autem generis Rubeola, Scarlatinaque et Variola, quae non paucos saepe simul in iisdem locis vexant, sed nunquam ex aëre generaliter vitiato proficisci existimantur. Fortasse vero tertium genus morborum est, medium quasi inter haec duo, et ad quod Febris Typhus, Febris Flava, Dysenteria aliique multi morbi pertinent, siquidem initio excitantur saepe generaliter corrupto aëre, postea vero exhalationibus ab aegrorum corporibus propagantur; atque huic capiti referri, uti mihi videtur, Pestis debet. Non ignoro quidem Maclean, Webster, Adams aliosque non paucos negare tales morbos, aut existere, aut existere posse; neque enim, inquiunt, aliqui morbi unquam ex Contagio nascuntur qui nasci ex aliis causis possunt. Sed aliud

est affirmare aliquid, aliud comprobare. Bene cognitum est corpus humanum, etiam in sanitate, vapores perpetuo exhalare qui plus minusve perniciosi sunt; maximeque verisimile est a priori istos vapores in gravi morbo (ex quacunque causa hic ortus fuerit) ita corrumpi posse, ut alios afficiant morbo ei simili qui istam corruptionem fecit.

Quae sit Miasmatum, sive Infectionis, sive Contagii, natura ex toto nescimus—ex effectibus eorum solum ipsa cognoscimus. Olim quidem, ubi mos fuit omnes propemodum morbos ad putrescentem sanguinis conditionem referre, vulgo existimatum est haec Miasmata ejusdem naturae esse atque illi spiritus qui ex rebus putrescentibus oriri solent; nullusque finis ideo est fabularum de morbis Epidemicis qui ex talibus spiritibus subinde nati sunt. Suspicatus est primum, ut videtur, Van Swieten hanc sententiam falsam esse; abundeque ostenderunt postea Chisholm, Bancroft, Ozanam, Ferguson aliique multi hos spiritus in sua propria natura nihil incommodi movere, tumque demum nocere si fastidium movent, aut si tam sunt copio-



si, ut purum aërem intercludant, atque ita Asphyxiam excitent. At Miasmata neque fastidium movent, nec metum Asphyxiae, et tamen quam sunt ista perniciosa! Insuper, novimus quae sit chemica priorum Spirituum natura, possumusque, ubi volumus, easdem arte imitari; sed frustra conati sunt Berard, Cavendish, Davy, Fontanelle, Moscati aliique chemici Miasmatum principia deprehendere, nec potest aliquis similia ullo modo sibi conficere. Constat enim hodie haec Miasmata neque ex Sulphure, neque ex Arsenico, neque ex Hydrogenio, Hydrogeniove Phosphorato, aut Acido Carbonico, uti aliquando existimatum est, componi; neque quidem, ex paludibus maxime perniciosis, aut valetudinariis confertissimis accepta, ullo modo, quod ad sensus nostros aut analysin, a purissimo aëre, rusticis arvis collecto, distare. Quid igitur credere de his rebus licet, nisi quod constant ex principiorum inter se tali conjunctione qualem Chemici neque imitari, neque deprehendere ullo modo possunt; cumque omnia propemodum nostrorum temporum Chemici possint, nisi ut corporum organicorum secretiones con-

ficiant, quid colligere licet nisi quod haec Miasmata corporibus organicis, vegetabilibus pariter atque animalibus, secernuntur? Supra diximus praecipuos fontes horum Miasmatum aut paludes, aut aegrorum corpora esse; quamque sint plerumque circa paludes plantae corruptae, ostendit tumidus earum parumque sanus aspectus, ut non minus vitiari harum secretiones in istis locis existimare liceat, quam animalium, ubi gravi aliquo morbo laborant.

Haec igitur si conceduntur, non absimile erit omnes morbos eo saepius Contagio propagari, quo magis secretiones corporis in progressu eorum vitiantur; cumque in nullo morbo magis (non in ipsa Variola) hoc accidere soleat quam in Peste, sequitur ut a priori crederemus hunc morbum vehementer quidem Contagiosum fore. Nescio an liceat hic adducere, veluti argumentum pro Contagiosa Pestis natura, atque adeo pro hujus morbi atque Variolae similitudine, quod dicitur posse arte moveri, indito in vulnusculum sani hominis pure ex bubonibus aegrorum accepto. Hoc primum factum fuisse videtur a Samoilowitz anno 1771,



posteaque a Deggio, Chirurgo Russico; neque defuerunt in recentibus temporibus imitatores, siquidem Whytt, Valli, Desgenettes aliique in se ipsos idem nuper experti sunt. Eventus autem horum experimentorum non tales fuerunt ut aliquid inde colligere recte possimus: Whytt enim et Valli morbum ita accepisse videntur, dum Desgenettes nullo modo affectus est; et, quod ad priores, oblivisci non debemus eosdem aliis morbi causis simul objectos fuisse, ita ut admodum dubium sit an ex indito veneno eundem revera acceperint.

Sed quamvis conceditur in Peste vapores aliquos a corpore protinus emitti qui eundem morbum sanis injicere possunt, oritur quaestio an isti vapores possint ita vestibus aut supellectili adhaerere, ut, longinquis locis advecti, morbum, etiamnum post longum tempus, excitent. Hujus rei nulla suspicio, ut videtur, fuit ante saeculum undecimum; neque tunc temporis ultra Variolam aliosque quosdam morbos, qui in Europam ex Syria, redeuntibus ex Bellis sacris copiis, advehi videbantur, tetendit. Mox vero, ut supra ostendimus, de Peste

etiam idem existimari coepit ; cumque consideramus eas morborum similitudines quas proxime annotavi, difficile certe erit id alteri negare, quod alteri plerumque sine ulla dubitatione tribuitur. Dum Contagii (cujuscunque generis id sit) naturam ex toto ignoramus, parum licet certe affirmare hoc in ullo exemplo occurrere non posse ; et si potest post breve tempus, nulla causa esse videtur cur non possit post satis longum tempus ut veniat navis a Turcia aut Aegypto ad oras nostras. Abunde constat plura corpora aërea rebus spongiosis aut porosis absorberi posse ; et, siquando materia Contagii variis mercaturis forte absorpta fuerit, eaedemque mercaturae postea tam arcte inter se compressae sint, ut liber aëris afflatus non permitteretur, nihil impedit quin credamus Pestilentiam posse, post ullum pene tempus, nobis ita vehi.

Verum aliud est indicare hanc opinionem a priori non absimilem esse ; aliud ostendere eandem experientiae summorum virorum optime respondere. Ut omittam autem omnes eos, qui, ante annum 1604, (quum demum Mora Indictiva apud nos, inculcata est,) crediderant Pestem morbum



Contagiosum esse, eandemque per fomites communicari posse, plurimi, iique summae existimationis viri in eandem sententiam postea descenderunt. Ex his enumerare praecipue licet SENNERTUM atque DIEMERBROECK, qui Pestem Nimerguensem, anno 1636, descripserunt ; simulque ALPINI, qui, paucis postea annis, opus suum de Medicina Ægyptorum, apud quos Pestis Endemicus quasi morbus est, edidit. Secutus est HODGES, qui terribilem illam Pestem, quae Londinum anno 1665 vastavit, tam bene descripsit ; etiamque MEAD, qui opus suum de Contagio Pestis anno 1720 vulgavit, et JOSEPHUS BROWN, aliique plures, qui hoc tempore idem argumentum tractarunt. Eadem quoque opinio fuit optimi viri HOWARD, cujus tanta fuerat in hac re experientia ; itidemque PATRICII RUSSEL, qui tam diu locis Pestilentibus ipse vixerat, quique in opere suo, anno 1791 edito, plurima exempla communicationis (uti videbatur) Pestis ab aliis locis ad alios per fomites narrat. Neque omittere licet VOLNEY atque JACKSON, quorum prior in descriptione sua Syriae, posterior autem in historia sua Morocco, in eandem sententiam, quod ad

Pestis contagiosam naturam, descenderunt; neque certe minor fides prudentibus Viatoribus quam Medicis debetur, in re aliqua ubi tantum ex experientia, tantillum vero ex ratiocinatione pendet. Testis etiam JACKSON fuerat memorabilis illius Pestis quae magnam partem Africae Septentrionalis, anno 1799, vastavit, tum cum Febris Flava per totam pene Europam Australem pari modo flagravit; optimumque argumentum esse videtur utilitatis Morae Indictivae, quod Gibraltar, ubi haec summa sedulitate servata erat, inter duas istas Pestilentias diu intacta fuit. In eandem partem secuti sunt HAYGARTH, qui leges generales Contagii optime scrutatus est; atque M^c^GRIGOR, cujus, ut occasiones de hac re recte judicandi plurimae fuerunt, ita judicium ubique optimum est. Insuper FAULKENER atque CALVERT, qui Pestem Maltae, anno 1812, descripserunt, eandem Contagio in plurimis exemplis referre non dubitarunt; idemque arbitrati sunt alii multi, de aliorum locorum Pestibus Epidemicis scribentes, sed quorum ipsa nomina hic citare nimis longum foret. Praetermittere tamen nolo OZANAM laboriosum, qui historias non



pauciorum quam triginta exemplorum Pestis Epidemicae, post Moram Indictivam primum statutam, collegit; quique ubique hunc morbum veluti Contagiosum describit, hasque leges veluti salutares.

Adversus has auctoritates, uti mihi quidem videtur, testimonium PYE, qui contra MEAD de hac quaestione scripsit, vel MOSELEY, MACLEAN, WEBSTER, ASSALINI aliorumque aliquorum, qui recentioribus temporibus Pestem nullo modo Contagiosam esse affirmarunt, parum valere debet. Constat quidem morbum saepe non occurrere, tum cum, si Contagiosum esse arbitramur, fieri vix potuit ut non occurreret; veluti inter ipsorum aegrorum ministros, eosque qui interdum morientium et mortuorum vestimentis se induerunt, aliisve modis Contagio se objecerunt. Veruntamen non major immunitas esse videtur, in his exemplis, a Peste, quam, in multis aliis, ab aliis morbis satis manifeste Contagiosis; multoque plus tribuere, mea quidem sententia, debemus uni exemplo, in quo Pestis ex Contagio orta fuisse videtur, quam viginti, in quibus Contagium morbum non excitavit. Quae sit

unquam harum immunitatum causa explicare non possumus, sed non videtur mihi fidem nostram in Contagii potestate labefactare debere, quod aliquando nullum malum movet. Quid enim? Nonne Frigus, Calor aliaeque omnes morborum causae modo homines opprimunt, modo plane intactos relinquunt? Colligo igitur, ex praedictis omnibus, Moram Indictivam summopere salutarem esse, eandemque neque multum decurtari, neque minus curiose quam antea servari debere; multo enim minus nocet mercaturam in mille exemplis quodammodo impedire, quam, sublatis his impedimentis, Pestem semel in Britanniam nostram inferre.

FINIS.

Sir James Mc Grigor
from the Author

CONTRIBUTION

TO

# STATISTICS OF THE ARMY.

By HENRY MARSHALL, Esq.

Deputy Inspector-General of Army Hospitals.

(*From the Edin. Med. and Surg. Journal, No.* 117.)

## No. II.

THE leading object of these contributions is to collect facts for the investigation of the mean ratio of the number of the sick of the British army in different stations, the ratio of deaths, and the ratio of the decrement of the army by invaliding. I am well aware, that facts are chiefly of importance from their arrangement and the purpose to which they are applied. Facts, like the materials of a building, may, however, be collected by one person, and the edifice be erected by another. "A correct

return of the sick of armies or other classes of the community, continued through a series of years, cannot be otherwise regarded than as documents of importance. They not only afford to physicians information on the subject of health and disease, and relative mortality among diseases, but they supply very valuable and accurate materials for enabling statesmen and general officers to form accurate calculations, whether relating to productive domestic labour, or destructive foreign war." (*Dr Robert Jackson.*)

The statistics of the relative frequency and fatality of particular diseases in the army, is a distinct and a highly important branch of this subject, which deserves a very full consideration. Statistical tables, which are constructed upon an extensive scale, are eminently calculated to illustrate many important circumstances connected with the prevalence of diseases and the health concerns of an army. Generally speaking, accurate records of the progressive increase or diminution of the ratio of mortality throughout the army serving in the different stations at home and abroad, would alone be of great utility for political purposes, but, as I have before observed, statistical records are comparatively of little use unless they are simple and uniform in their construction.

*Stations of the British Army.*

Usual Distribution of Troops of the Line.

| | | Cavalry Regts. | Infantry Regts. | Depots. |
|---|---|---|---|---|
| Home Stations. | 1. Great Britain, - | 14 | 14 | 27 |
| | 2. Ireland, - - - | 8 | 20 | 19 |
| Foreign Stations. | 1. India, - - - | 4 | 20 | |
| | 2. Ceylon, - - - | | 4 | |
| | 3. Mauritius, - - | | 4 | |
| | 4. Gibraltar, - - | | 5 | |
| | 5. Malta, - - - | | 4 | |
| | 6. Ionian Islands, - | | 6 | |
| | 7. Windward and Leeward Islands, | | 11 | |
| | 8. Jamaica & Honduras, | | 5 | |
| | 9. North America, | | 8 | |
| | 10. Africa, (W. Coast,) | | | |
| | 11. Cape of Good Hope, | | 3 | |
| | 12. New South Wales, | | 3 | |

Home Stations.

*Great Britain.—Scotland.*

Return of the mean strength of the troops employed in Scotland from the years 1816 to 1822, inclusive, the proportion of sick per cent., the number of deaths, and the proportion of mortality per cent. of the mean strength.



| | Mean Strength. | Average proportion of sick. | No. of deaths. | Proportion of deaths. |
|---|---|---|---|---|
| 1816, | 2591 | 4.7 | 38 | 1.4 |
| 1817, | 3143 | 3.2 | 19 | 6 |
| 1818, | 2939 | 3.5 | 19 | 61 |
| 1819, | 2714 | 3 | 33 | 1.2 |
| 1820, | 4853 | 3.3 | 61 | 1.2 |
| 1821, | 2903 | 3.5 | 39 | 1.3 |
| 1822, | 1680 | 4.4 | 21 | 1.2 |
| Mean of—— | | — | — | — |
| 7 years, | 2975 | 3.6 | 33 | 1.1 |

Foreign Stations.—India. I.

Return of the strength of His Majesty's forces serving in Bengal, the number of deaths, and the proportion of decrement by death per cent., the number invalided, the proportion per cent. invalided, and the stations where the troops were quartered, from the 21st December 1825, to the 20th December 1826.*

| Corps. | Strength. | Died. | Ratio per cent. by death. | Invalided. | Ratio per cent. of men invalided. | Tot. decrm. by death and invaliding. | Stations. |
|---|---|---|---|---|---|---|---|
| 11th Drag., | 567 | 39 | 6.5 | 11 | | | Cawnpore. |
| 16th Do., | 644 | 15 | 2.3 | 16 | | | Meerut. |
| 13th Reg., | 600 | 82 | 13.6 | 1 | | | Dinapore. |
| 14th Do., | 972 | 49 | 5 | 66 | | | Riv. Ganges. |
| 31st Do., | 871 | 111 | 12.7 | 9 | | | Meerut. |
| 38th Do., | 527 | 76 | 14.4 | 5 | | | Cawnpore. |
| 44th Do., | 619 | 51 | 8.2 | 99 | | | Ghazeepore. |
| 47th Do., | 650 | 104 | 16 | 53 | | | Fort Wil. |
| 59th Do., | 823 | 54 | 6.5 | 40 | | | Burhampore. |
| 87th Do., | 620 | 107 | 17.2 | 74 | | | Fort Wil. |
| Detach. of His Majesty's Reg. from Europe, | 1083 | 86 | 7.9 | 1 | | | Chinsurah. |
| Mean of 1 year, | 7976 | 774 | 9.7 | 379 | 4.7 | 14.5 | |

* Vide Dr Burke's General Abstract of the Annual Return of the Sick of His Majesty's Forces serving in the Presidency of Bengal for the year 1826.—(Annesley's Researches on the Diseases of India.)

These troops had in general been actively employed in 1825, either in the Burmese territory or at the reduction of Burtpore. Some mistake has crept into the report of the mortality of the 13th regiment; for, instead of 82 deaths, the number stated, 88 men died at the head quarters of that corps in 1826, and 46 not at head quarters, making altogether a decrement of 134 by death, or 20.8 per cent.

Return of the effective strength of the European branch of the Madras army, the number of deaths, the number discharged or invalided, and the ratio of decrement by deaths, &c. per cent. per annum, from the year 1815 till the year 1821 inclusive. *

| | Effective strength. | Died. | Rate per cent of deaths. | Discharged or Invalided. | Rate per cent. discharged, &c. | Tot. decrement by death and disabilities. |
|---|---|---|---|---|---|---|
| 1815, | 13641 | 722 | 5.3 | 528 | | |
| 1816, | 13526 | 582 | 4.3 | 477 | | |
| 1817, | 13131 | 771 | 5.8 | 529 | | |
| 1818, | 13129 | 1269 | 9.6 | 490 | | |
| 1819, | 13376 | 963 | 7.2 | 527 | | |
| 1820, | 10816 | 635 | 5.8 | 482 | | |
| 1821, | 10527 | 618 | 5.8 | 277 | | |
| Mn. of 7 yrs. | 12592 | 794 | 6.3 | 486 | 3.7 | 10.1 |

The strength of this return is much too high, inasmuch as it comprehends the actual strength of corps on the 1st January each year, and the number of recruits and transfers that joined during the year. The ratio of deaths will therefore be considerably lower than it ought to be, as the conclusions should be drawn from the mean strength, not the highest strength. In this instance, however, the strength stated in Mr Annesley's returns are higher even than the highest strength during the year.

I am unable to collect from Mr Annesley's documents the mean ratio of sick in the European branch of the Madras army during the period embraced in his returns. He states, and I have no doubt with great accuracy, the number of men admitted into hospital, and the number discharged, or, as he denominates this class, "cured," but these data are not adequate for deducing the average number of men unfit for duty. This important fact may be easily ascertained by dividing the number of diets in an hospital during a month by the number of days of the month.

* Vide Annesley's Sketches of the Diseases of India.





Although Mr Annesley's tables do not afford the requisite data for deducing the mean ratio of sick in the Madras army, he states in the text of his work that the general ratio of sickness in European regiments, unless under very extraordinary circumstances, or during a very sickly period, is seldom above 10 per cent.; this rate is termed healthy, and any thing above it is considered sickly.

A knowledge of the mean ratio of sick may be made available by a commanding officer to estimate the proportion of duty-men he may reckon upon, as also the extent of hospital accommodation, and the number of medical officers that may be required.

Return of the mean strength of the 17th Dragoons, the mean annual number of deaths, the proportion of deaths per cent. per annum, from 1809 to 1822 inclusive.

| Period. | Strength. | No. of deaths. | Proportion of deaths. | Stations. |
|---|---|---|---|---|
| Mean of 14 years, | 730 | 57 | 7.8 | Bombay presidency chiefly in Kairah. |

Return of the strength of the 13th Light Infantry, the number of deaths, the proportion of mortality per cent. of the strength and the stations where the regiment was employed from May 1823, when the corps landed in India, till the 31st December 1829.

| | Strength. | Deaths. | Prop. of deaths per cent. | Where employed. |
|---|---|---|---|---|
| 1823, | 828 | 48 | 5.7 | Calcutta. |
| 1824, | 770 | 338 | 43.8 | Rangoon. |
| 1825, | 409 | 151 | 36 9 | Ditto. |
| 1826, | 643 | 134 | 20.8 | Burhampore and Dinapore. |
| 1827, | 990 | 60 | 6. | Dinapore. |
| 1828, | 888 | 96 | 10.8 | Ditto. |
| 1829, | 823 | 109 | 13.2 | Ditto. |
| Mean of 7 yrs. | 764 | 133 | 19.6 | |

Return of the mean strength of the 34th Regiment, the number of deaths, the proportion of deaths per cent., and the stations where it was employed, from January 1803, till January 1823.

| | Strength. | Deaths. | Prop. of deaths per ct. | Where employed. |
|---|---|---|---|---|
| 1803, | 1070 | 32 | 3. | At sea & Ft. St Geo., Madras. |
| 1804, | 1062 | 88 | 8.3 | Fort St George. |
| 1805, | 1090 | 52 | 4.7 | Wallajabad. |
| 1806, | 1053 | 120 | 11.3 | Gooty. |
| 1807, | 1041 | 96 | 9.2 | Ditto. |
| 1808, | 1007 | 34 | 3.2 | Ditto. |
| 1809, | 883 | 26 | 2.9 | Ditto and Bellary. |
| 1810, | 851 | 115 | 13.5 | On field service. |
| 1811, | 823 | 170 | 20.6 | Camp at Jaulnah. |
| 1812, | 756 | 35 | 4.6 | Secunderabad. |
| 1813, | 728 | 64 | 8.7 | Ditto. |
| 1814, | 706 | 39 | 5.3 | Ditto. |
| 1815, | 803 | 119 | 14.3 | Seringapatam. |
| 1816, | 927 | 42 | 4.5 | Vellore. |
| 1817, | 872 | 61 | 7. | Ditto. |
| 1818, | 915 | 138 | 15. | Ditto and on field service. |
| 1819, | 579 | 33 | 3.8 | Bengalore. |
| 1820, | 853 | 34 | 4. | Ditto. |
| 1821, | 820 | 43 | 5.2 | Fort St George. |
| 1822, | 768 | 42 | 5.4 | Ditto. |
| Mean of 20 yrs. | 895 | 69 | 7.7 | |

Return of the mean strength of the 45th regiment, the number of deaths, and the proportion of decrement by death per cent. the number invalided, the ratio per cent. invalided, and the stations where the corps was employed from 1819 to 1830 inclusive.

| | Strength. | Died. | Ratio of decrement by death per cent. | Invalided. | Ratio of decrement by invalidiing per cent. | Total decrement by death and invalidiing per cent. | Stations. |
|---|---|---|---|---|---|---|---|
| 1819, | 699 | 21 | 3. | | | | On board ship, Colombo, Ceylon. |
| 1820, | 689 | 38 | 5.5 | | | | Kandyan Provinces. |
| 1821, | 710 | 24 | 3.4 | 6 | | | Trincomalee. |
| 1822, | 692 | 46 | 6.6 | 30 | | | Colombo. |
| 1823, | 630 | 26 | 4.1 | 45 | | | Colombo. |
| 1824, | 565 | 103 | 18.2 | 35 | | | Do. and Kandy. |
| 1825, | 512 | 95 | 18.5 | 25 | | | Kandy, Madras. |
| 1826, | 574 | 180 | 31.3 | 16 | | | Madras, Rangoon. |
| 1827, | 922 | 120 | 13. | 16 | | | Rangoon, Martaban |
| 1828, | 918 | 40 | 4.3 | 39 | | | Moulmeyn. |
| 1829, | 1004 | 38 | 3.7 | 42 | | | Do. |
| 1830, | 959 | 26 | 2.7 | 15 | | | Do. |
| Mn. of 12 yrs. | 738 | 63 | 8.5 | 22 | 3 | 11.5 | |



In this return, I have not considered it necessary to separate the service of the regiment in Ceylon from the period of its belonging to the establishment of the Honourable the East India Company.

Ages of the Fatal Cases.

| Ages. | 1819. | 1820. | 1821. | 1822. | 1823. | 1824. | 1825. | 1826. | 1827. | 1828. | 1829. | 1830. | Total. | Relative prop. of deaths in each period. | Relative prop. of deaths in each year of a period |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| From 18 to 20. | 3 | 3 | ,, | 1 | ,, | 5 | 15 | 73 | 62 | 2 | ,, | ,, | 164 | 21.6 | 10.8 |
| —— 20 to 22. | 3 | 8 | 9 | 3 | 3 | 6 | 3 | 12 | 15 | 7 | 5 | 2 | 75 | 10. | 5. |
| —— 22 to 24. | 5 | 6 | 4 | 7 | 6 | 7 | 4 | 13 | 8 | 4 | 12 | 4 | 77 | 10.1 | 5. |
| —— 25 to 30. | 2 | 6 | 5 | 23 | 13 | 44 | 35 | 43 | 17 | 10 | 5 | 4 | 213 | 28.2 | 5.6 |
| —— 30 to 35. | 10 | 10 | 4 | 7 | 3 | 30 | 29 | 22 | 13 | 12 | 11 | 12 | 163 | 21.5 | 5.3 |
| —— 35 to 45. | ,, | 5 | 2 | 5 | 2 | 11 | 9 | 12 | 5 | 5 | 5 | 4 | 65 | 8.6 | .8 |
| | 21 | 38 | 24 | 46 | 26 | 103 | 95 | 180 | 120 | 40 | 38 | 26 | 757 | 100.0 | |

By this table, it appears that 21.6 per cent. of the whole number of deaths occurred among men under twenty years of age; and that, while the ratio of deaths in each year of age under twenty was 10.8, it was not higher at any other time of life than 5.6. Six and one-half men died in each year of age, from thirty-five to forty-five; while eighty-two died in each year of age, from eighteen to twenty. The conclusion is obvious; namely, that men who have reached the prime of life are much better able to endure the fatigue and privations of a military life, than youths who have not attained twenty years of age. The mortality which occurred in 1826 and 1827, was supposed to have been increased on account of bad accommodation and innutritious diet. The barracks were only temporary huts, constructed of bamboos, and not water-proof. The rations consisted of biscuit, which was generally mouldy from the excessive moisture of the climate, salt beef or pork for four days, and buffalo beef for the other three days of the week. Many of the men were affected with scurvy, which disease was also often combined with dysentery. The barrack accommodation was rendered more comfortable by 1828; and the diet of the men was also greatly improved.

Return of the mean strength of the 65th Regiment, the number of deaths, the proportion of deaths per cent. the number invalided, and the ratio per cent. invalided during the period this regiment belonged to the Honourable East India Company's establishment, or from 1801 till 1822 inclusive.

| Period. | Strength. | Deaths. | Ratio of Deaths. | Invalided. | Ratio of men invalided. | Total decrement by deaths and invalidiing per cent. |
|---|---|---|---|---|---|---|
| Mean of 22 years. | 971 | 64 | 6.5 | 18 | 1.8 | 8.4 |

Return of the mean strength of the 69th Regiment, the number of deaths, distinguishing the deaths by disease from those that happened in the field, the proportion of deaths per cent. by disease to the whole number; as also the stations where the regiment was employed, from the 1st August 1805, to the 1st January 1820.

| | Mean Strength | Killed. | Died by disease | Prop. of deaths per cent. by disease to the mean strength. | Where employed. |
|---|---|---|---|---|---|
| 1805,* | 987 | ,, | 62 | 6.2 | Poonamalee, Wallajabad, Vellore. |
| 1806, | 872 | 80 | 67 | 7.6 | Vellore and Fort St George. |
| 1807, | 724 | ,, | 71 | 9.8 | Trichinopoly. |
| 1808, | 729 | ,, | 62 | 8.5 | Do. |
| 1809, | 803 | ,, | 89 | 11.0 | Do. and Fort St George. |
| 1810, | 788 | 5 | 36 | 4.5 | Fort St Geo. at sea, Isle of Bourbon. |
| 1811, | 811 | 14 | 155 | 19.1 | Madras, Island of Java. |
| 1812, | 812 | ,, | 90 | 11. | The Isle of Goa. |
| 1813, | 848 | ,, | 74 | 8.7 | Do. Do. and Seringapatam. |
| 1814, | 813 | ,, | 58 | 7.1 | Seringapatam and Bellary. |
| 1815, | 785 | ,, | 37 | 4.7 | Bellary. |
| 1816, | 745 | ,, | 37 | 4.9 | Ghooty and Bangalore. |
| 1817, | 937 | ,, | 38 | 4. | Bangalore. |
| 1818, | 971 | ,, | 84 | 8.6 | Do. |
| 1819, | 1037 | ,, | 65 | 6. | Cannanore. |
| Mean | | — | — | — | |
| 15 yrs. | 844 | | 68 | 8.5 | |

Return of the mean strength of the 1st Battalion of the 78th Regiment, the number of deaths, the proportion of deaths by disease per cent. per annum, and an account of the stations where the corps were employed, from its arrival in India (16th February 1797,) till the 24th December 1815.

| | Mean Strength. | Killed in the field. | Died by disease. | Propor. of deaths by disease per cent. | Where employed. |
|---|---|---|---|---|---|
| 1797, | 1149 | ,, | 115 | 10.0 | Fort Wm. & Burhampore |
| 1798, | 1010 | ,, | 79 | 7.8 | Allahabad & Cawnpore. |
| 1799, | 974 | ,, | 58 | 5.9 | Cawnpore & Fort Wm. |
| 1800, | 950 | ,, | 53 | 5.5 | Fort William. |
| 1801, | 951 | ,, | 45 | 4.6 | Do. |
| 1802, | 940 | ,, | 78 | 8.3 | Do. |

* From 1st August to 31st December.



| | | | | | |
|---|---|---|---|---|---|
| 1803, | 857 | 47 | 119 | 13.8 | In the field. |
| 1804, | 744 | ,, | 145 | 19.4 | Bombay. |
| 1805, | 694 | ,, | 80 | 11.5 | Do. |
| 1806, | 749 | ,, | 38 | 5.0 | Do. |
| 1807, | 677 | ,, | 24 | 3.2 | Island of Goa. |
| 1808, | 781 | ,, | 34 | 4.3 | Do. |
| 1809, | 825 | ,, | 54 | 6.5 | Do. |
| 1810, | 1064 | ,, | 43 | 4.0 | Do. |
| 1811, | 941 | 28 | 184 | 19.5 | At sea and in Java. |
| 1812, | 748 | 6 | 192 | 25.6 | Java. |
| 1813, | 699 | ,, | 81 | 11.7 | Do. |
| 1814, | 684 | ,, | 80 | 11.6 | Do. |
| 1815, | 644 | ,, | 33 | 5.1 | Do. |
| Mean of | — | — | — | — | |
| 19 yrs. | 846 | | 96 | 11.3 | |

Whenever my materials enabled me to separate the number of men who were killed in action from casualties by disease, I have done so, for the purpose of rendering the circumstances of corps as similar as possible, and thereby easily compared.

## 2. Ceylon.

Return of the mean strength of the 19th Regiment of Foot, the number of deaths, the proportion of deaths per cent. the numbers invalided, and the proportion per cent. invalided, from the 28th April 1796, till December 1819.

| | Strength. | No. of deaths. | Propor. per cent. of deaths. | Invalided. | Proportion per cent. invalided. | Total decrements by death and invaliding. | Where employed. |
|---|---|---|---|---|---|---|---|
| 1796, | 1035 | 20 | 1.9 | ,, | ,, | ,, | At sea, Cape G. Hope, and Colombo. |
| 1797, | 1030 | 46 | 4.4 | ,, | ,, | ,, | Colombo, Ceylon. |
| 1798, | 1002 | 26 | 2.5 | 22 | ,, | ,, | Colombo. |
| 1799, | 941 | 90 | 9.5 | 2 | ,, | ,, | Colombo, and on service in India. |
| 1800, | 882 | 72 | 8.1 | 13 | ,, | ,, | Trincomalee. |
| 1801, | 854 | 39 | 4.6 | ,, | ,, | ,, | Do. |
| 1802, | 905 | 46 | 5. | 21 | ,, | ,, | Do. |
| 1803, | 843 | 338 | 40. | ,, | ,, | ,, | Kandy and Trincom. |
| 1804, | 642 | 128 | 19.9 | 12 | ,, | ,, | Trincomalee. |
| 1805, | 528 | 44 | 8.3 | 27 | ,, | ,, | Do. |
| 1806, | 451 | 12 | 2.6 | 12 | ,, | ,, | Colombo. |
| 1807, | 793 | 20 | 2.5 | 7 | ,, | ,, | Do. |
| 1808, | 828 | 17 | 2. | 9 | ,, | ,, | Do. |
| 1809, | 796 | 45 | 5.6 | 42 | ,, | ,, | Peninsula of India. |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1810, | 776 | 39 | 5. | 29 | ,, | ,, | Colombo. |
| 1811, | 729 | 17 | 2.3 | 15 | ,, | ,, | Do. |
| 1812, | 785 | 14 | 1.7 | 27 | ,, | ,, | Do. |
| 1813, | 938 | 20 | 2.1 | 11 | ,, | ,, | Do. |
| 1814, | 910 | 67 | 7.3 | 45 | ,, | ,, | Trincomalee. |
| 1815, | 1142 | 114 | 9.9 | 63 | ,, | ,, | Do. |
| 1816, | 1019 | 38 | 3.7 | 60 | ,, | ,, | Do. |
| 1817, | 930 | 91 | 9.7 | 57 | ,, | ,, | Do. |
| 1818, | 748 | 114 | 15.2 | 26 | ,, | ,, | Kandyan Provinces. |
| 1819, | 598 | 41 | 6.8 | 57 | ,, | ,, | Do. and Galle. |
| Mean 24 yrs. | 837 | 62 | 7.4 | 24 | 2.8 | 10.2 | |

The statement of the number of deaths in the year 1803, includes a number of men who were massacred at Kandy in that year. The exact number of casualties which occurred by this means is unknown. It will appear by this return, that the mean ratio of mortality among troops is much higher at Trincomalee than it is at Colombo, although the causes of the difference are not very obvious.

Return of the mean strength of the 73d Regiment, the number of deaths, the ratio of decrement by death per cent., the number invalided, the ratio of loss by invaliding per cent., and the total decrement by death and invaliding, from the 1st January 1818, to the 31st December 1820.

| | Strength. | Died. | Ratio of decrement by death. | Invalided. | Ratio of loss by invaliding. | Total loss by death & invaliding. | Where employed. |
|---|---|---|---|---|---|---|---|
| 1818, | 864 | 356 | 41.2 | ,, | ,, | ,, | Kandyan Provinces. |
| 1819, | 566 | 160 | 28.2 | 53 | ,, | ,, | Kandy, Trincomalee. |
| 1820, | 533 | 38 | 7.1 | 52 | ,, | ,, | Trincomalee, Galle. |
| Mean 3 yrs. | 654 | 184 | 28.1 | 35 | 5.3 | 33.4 | |

This is a very high ratio of decrement in a corps by death and invaliding. As I served with the 73d Regiment during the above period, I had a good opportunity of obtaining exact returns; and therefore I feel confident that the conclusions are quite correct. For the satisfaction, however, of my readers, I have subjoined a monthly abstract of the strength of the 73d Regiment, and the deaths which occurred in the corps during the years 1818, 1819, and 1820.



| | 1818. | | 1819. | | 1820. | |
|---|---|---|---|---|---|---|
| | Strength. | Died. | Strength. | Died. | Strength. | Died. |
| January, | 996 | 3 | 609 | 7 | 614 | 3 |
| February, | 989 | 9 | 577 | 10 | 548 | 4 |
| March, | 984 | 4 | 570 | 6 | 544 | 3 |
| April, | 973 | 11 | 542 | 27 | 539 | 4 |
| May, | 947 | 34 | 518 | 19 | 536 | 3 |
| June, | 916 | 31 | 496 | 23 | 517 | 2 |
| July, | 899 | 17 | 490 | 19 | 516 | 1 |
| August, | 860 | 35 | 474 | 14 | 511 | 5 |
| September, | 776 | 86 | 606 | 5 | 508 | 3 |
| October, | 706 | 68 | 634 | 10 | 500 | |
| November, | 683 | 21 | 630 | 7 | 536 | 6 |
| December, | 647 | 34 | 617 | 13 | 532 | 4 |
| | | 356 | | 160 | | 38 |

The very high ratio of mortality which took place in 1818 may, in a great measure, be attributed to excessive fatigue during the insurrection of the Kandyans, scanty and innutritious diet, great exposure to variations of temperature and inclemencies of weather, and insalubrious stations. A small portion only of the mortality of the regiment was occasioned by instruments of war. Of the different classes of troops employed, only fifty-eight men were killed on the field in 1818.

Return of the mean strength of the 83d Regiment, the number of deaths, the proportion of deaths per cent., the number invalided, &c. from the 1st January 1818, to the 31st December 1820.

| | Strength. | Died. | Ratio of Deaths. | Invalided. | Ratio per cent invalided. | Total decrement by death and Invaliding. | Where employed. |
|---|---|---|---|---|---|---|---|
| 1818, | 980 | 123 | 12.5 | 2 | | | Chiefly in interior of Ceylon. |
| 1819, | 843 | 85 | 10. | 46 | | | |
| 1820, | 792 | 27 | 3.4 | 116 | | | |
| Mean of 3 years, | 871 | 78 | 8.9 | 55 | 6.3 | 15.2 | |

### 3. Mauritius.

Return of the mean strength of the 82d Regiment, the number of deaths, and the proportion of decrement by deaths per cent. per annum, the number invalided, and the ratio per cent. invalided, from the year 1820 to the year 1831 inclusive, during which period this corps was employed in the Mauritius.

| | Strength. | Died. | Ratio of deaths. | Invalided. | Ratio of men Invalided. | Total decrement by death and Invaliding. |
|---|---|---|---|---|---|---|
| 1820, | 635 | 40* | | 27 | | |
| 1821, | 641 | 32 | | | | |
| 1822, | 590 | 23 | | 33 | | |
| 1823, | 552 | 16 | | 25 | | |
| 1824, | 532 | 14 | | 32 | | |
| 1825, | 515 | 8 | | 19 | | |
| 1826, | 513 | 18 | | 20 | | |
| 1827, | 471 | 9 | | 12 | | |
| 1828, | 500 | 21 | | 45 | | |
| 1829, | 478 | 20 | | 13 | | |
| 1830, | 492 | 23 | | 31 | | |
| 1831, | 490 | 6 | | 29 | | |
| Mean of 12 years, | 534 | 20 | 3.7 | 24 | 4.5 | 8.2 |

### 7. Windward and Leeward Islands.

Return of the annual ratio of mortality which occurred among the European Troops and African Corps employed in the Windward and Leeward Islands, and British Colonies on the coast of America, from the year 1803, till the year 1814 inclusive.

| | Ratio of mortality per cent. per annum. Europeans. | Africans. |
|---|---|---|
| 1803, | 11.1 | 2.7 |
| 1804, | 20. | 4. |
| 1805, | 20. | 6. |
| 1806, | 11.1 | 4.5 |
| 1807, | 9.7 | 6. |
| 1808, | 16.6 | 3.7 |
| 1809, | 14.2 | 4.3 |
| 1810, | 20.5 | 5.2 |
| 1811, | 12.5 | 6. |
| 1812, | 8.2 | 4.5 |
| 1813, | 6.8 | 5.2 |
| 1814, | 6. | 4.3 |
| Mean of 12 years, | 13.1 | 4.7 |

The data from which this return is compiled, will be found in a paper published by Dr Robert Jackson in the 1st Volume of the Transactions of the Medical Society of London.

* Including fourteen deaths from cholera. During the above period fourteen men were drowned, and seven committed suicide.



Abstract of the monthly sick returns of the troops which composed the garrison of Barbadoes in the year 1814.

| | Europeans. | | | | | Africans. | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Strength. | Sick. | Ratio of sick per cent. | Died. | Ratio of deaths per cent. | Strength. | Sick. | Ratio of sick per cent. | Died. | Ratio of deaths per cent. |
| January, | 2170 | 164 | 7·5 | 4 | | 827 | 59 | | 2 | |
| February, | 2032 | 153 | 7.5 | 6 | | 833 | 45 | | 1 | |
| March, | 2051 | 157 | 7.5 | 5 | | 833 | 46 | | 2 | |
| April, | 2096 | 165 | 7.8 | 7 | | 857 | 31 | | 6 | |
| May, | 1607 | 121 | 7.5 | 21 | | 868 | 47 | | 4 | |
| June, | 1576 | 109 | 7. | 3 | | 875 | 35 | | 4 | |
| July, | 1457 | 143 | 9. | 4 | | 873 | 51 | | 2 | |
| August, | 1570 | 125 | 7.9 | 5 | | 870 | 42 | | 3 | |
| September, | 1538 | 115 | 7.5 | 6 | | 866 | 42 | | 4 | |
| October, | 1545 | 117 | 7.6 | 8 | | 863 | 22 | | 3 | |
| November, | 1512 | 124 | 8. | 7 | | 857 | 22 | | 2 | |
| December, | 2134 | 187 | 8.5 | 8 | | 854 | 22 | | 6 | |
| Mn. strength & No. of sick. | 1774 | 142 | 8 | 74 | 4.1 | 856 | 38 | 8.5 | 39 | 4.5 |

*Vide* Dr Jackson's Outlines of Fever. According to the returns of the sick of his Majesty's army in Madras for the years 1808 and 1809, it would appear that the mean ratio of sick was 12.4 per cent.; and Mr Annesly states, that ten per cent. sick may be considered healthy. This return of the troops in Barbadoes shows that the ratio of sick was eight per cent., which is a considerably lower proportion than that of the sick of the troops in the East Indies. Perhaps there is commonly a higher ratio of sick among the troops in the East than in the West Indies, and a lower ratio of mortality.

### 8. Jamaica.

Return of the strength of the European troops employed in Jamaica, the number of deaths, and the annual ratio of decrement by death per cent. per annum, from the year 1812, till the year 1828 inclusive.

| | Strength. | Died. | Ratio of loss by death. |
|---|---|---|---|
| 1812, | 4826 | 474 | 9.8 |
| 1813, | 4128 | 371 | 8.9 |
| 1814, | 3902 | 322 | 8.2 |
| 1815, | 4331 | 336 | 7.7 |
| 1816, | 4235 | 434 | 10.2 |
| 1817, | 4322 | 317 | 7.3 |

| | | | |
|---|---|---|---|
| 1818, | 3025 | 230 | 7.6 |
| 1819, | 2969 | 754 | 25.4 |
| 1820, | 2546 | 301 | 11.8 |
| 1821, | 2885 | 310 | 10.6 |
| 1822, | 2400 | 441 | 18.3 |
| 1823, | 2476 | 155 | 6.2 |
| 1824, | 3150 | 235 | 7.4 |
| 1825, | 2644 | 777 | 29.3 |
| 1826, | 2237 | 176 | 7.3 |
| 1827, | 3083 | 636 | 20.6 |
| 1828, | 2700 | 192 | 7.1 |
| Mean of 17 years, | 3287 | 438 | 13.3 |

Abstract of the returns contained in this and the preceding contribution.

| | Stations. | Period. From | Period. To | Total No. years. | Strength. | An. mean No. of sick. | Mean ratio of sick. | An. mean No. of deaths. | Mean ratio of deaths. | An. mean No. of men invalided. | Mean ratio of men invalided. | Ann. loss by death and invalidings. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Home stations | 1. Great Britain. | | | | | | | | | | | |
| | Scotland, | 1816 | 1822 | 7 | 2975 | | 3.6 | 33 | 1.1 | | | |
| | 2. Ireland, | 1790 | 1828 | 32 | 36,921 | | 5.1 | 576 | 1.5 | | | |
| Foreign stations. | 1. India. | | | | | | | | | | | |
| | Bengal army, | 1823 | 1826 | 1 | 7976 | | | 774 | 9.7 | 379 | 4.7 | 14.5 |
| | Madras army, | 1806 | 1826 | 3 | 8717 | 1087 | 12.4 | 713 | 8.1 | | | |
| | Do. do. | 1811 | 1821 | 7 | 12,592 | | | 794 | 6.3 | 486 | 3.7 | 10.1 |
| | 17th Dragoons, | 1809 | 1822 | 14 | 730 | | | 57 | 7.8 | | | |
| | Royal Regt. 2d Bat. | 1807 | 1831 | 24 | 1067 | | | 92 | 7.6 | 37 | 3.1 | 10.8 |
| | 13th Regiment, | 1823 | 1829 | 7 | 764 | | | 133 | 19.6 | | | |
| | 34th do. | 1803 | 1823 | 20 | 895 | | | 69 | 7.7 | | | |
| | 45th do. | 1815 | 1830 | 12 | 738 | | | 63 | 8.5 | 22 | 3. | 11.5 |
| | 59th do. | 1806 | 1816 | 13 | 991 | | | 69 | 7.8 | 21 | 2.3 | 10. |
| | 65th do. | 1820 | 1829 | 22 | 971 | | | 64 | 6.5 | 18 | 1.8 | 8.4 |
| | 69th do. | 1803 | 1826 | 15 | 844 | | | 68 | 8.5 | | | |
| | 76th do. | 1797 | 1815 | 19 | 846 | | | 96 | 11.3 | | | |
| | 2. Ceylon. | | | | | | | | | | | |
| | 19th Regiment, | 1796 | 1818 | 24 | 837 | | | 62 | 7.4 | 24 | 2.8 | 10.2 |
| | 73d do. | 1818 | 1820 | 3 | 654 | | | 184 | 28.1 | 35 | 5.3 | 33.4 |
| | 83d do. | 1818 | 1821 | 3 | 871 | | | 76 | 8.9 | 55 | 6.3 | 15.2 |
| | 3. Mauritius. | | | | | | | | | | | |
| | 82d Regiment, | 1826 | 1831 | 12 | 534 | | | 20 | 3.7 | 24 | 4.5 | 8.2 |
| | 4. Gibraltar, | 1814 | 1831 | 17 | 3267 | | | 66 | 2. | | | |
| | 5. Malta, | 1824 | 1831 | 8 | 2226 | | | 34 | 1.5 | | | |
| | 6. Ionian Islands, | 1820 | 1831 | 13 | 3467 | | | 93 | 2.6 | | | |
| | 7. Windward and Leeward Islands, | 1803 | 1814 | 12 | | | | | 13.1 | | | |
| | Barbadoes, | 1814 | 1814 | 1 | 1774 | 142 | 8. | 74 | 4.1 | | | |
| | 8. Jamaica and Honduras, | 1812 | 1821 | 17 | 3287 | | | 438 | 13.3 | | | |



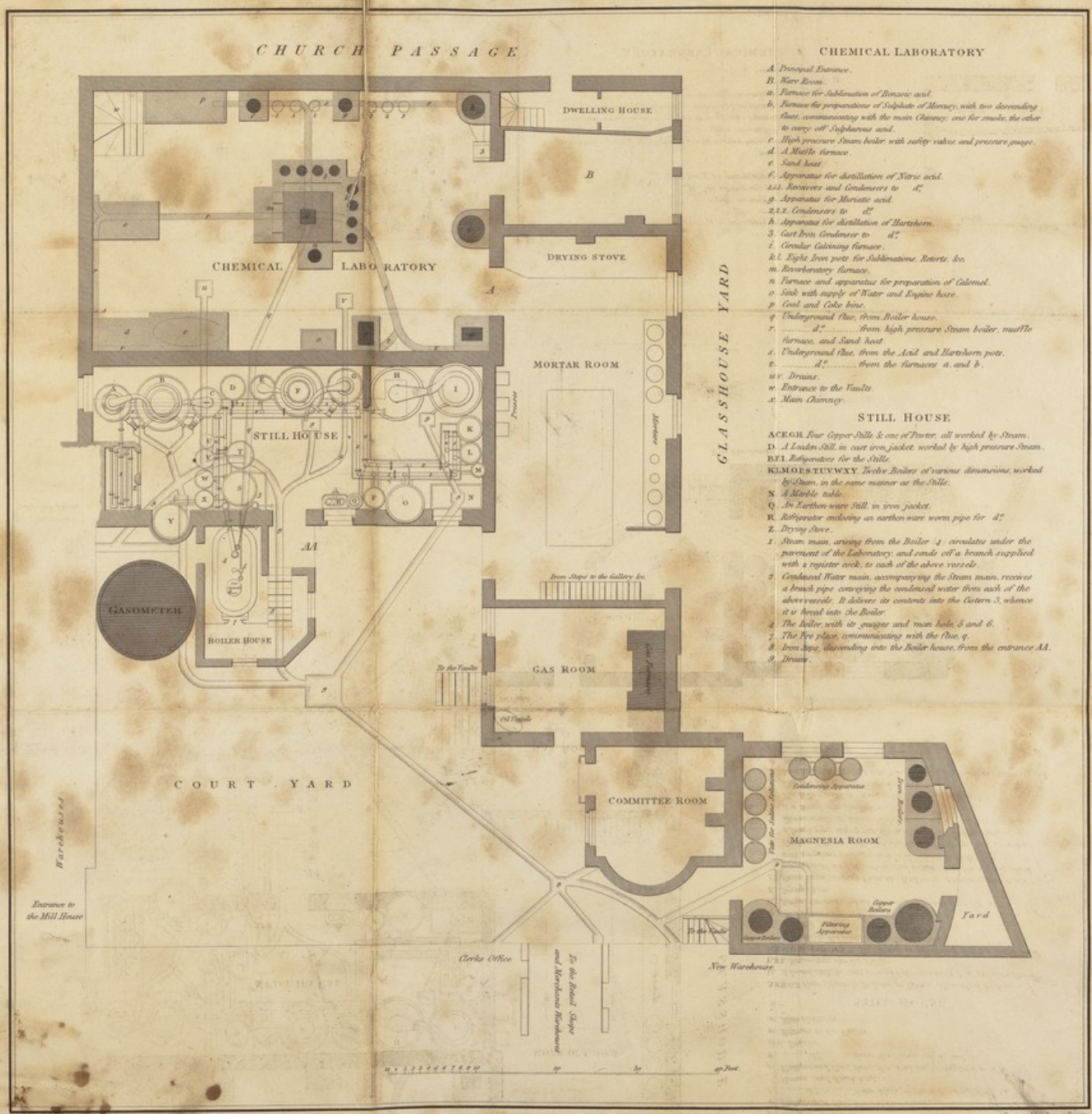
When the Annual Return of Casualties, which commenced in 1830, has been in operation for a considerable period, statistical records may be compiled that will solve many important problems, concerning which we are at present much in the dark, or completely ignorant. The utility of accurate returns in regard to the army is, I believe, universally admitted; and it is presumed their usefulness may be greatly enhanced by rendering statistical materials easily accessible to individuals in all parts of the world, who may be disposed to add to the stock of facts, and to make a practical use of them.

I am under great obligations to the Secretary at War, the Right Honourable Mr Ellice, for his kindness in affording me access to the documents in his office, and granting me permission to make use of the materials for the benefit of the public. I sincerely hope and trust that his liberality will be duly appreciated, and that his patriotic example will be generally imitated. I am also indebted to Major-General the Right Honourable Lord Greenock, for some interesting statistical materials of the army; and for which I beg to return him my best thanks.

PRINTED BY JOHN STARK, EDINBURGH.

## CHEMICAL LABORATORY

*Principal Entrance.*
*Ware Room.*
*Furnace for Sublimation of Benzoic acid.*
*Furnace for preparations of Sulphate of Mercury, with two descending flues, communicating with the main Chimney, one for smoke, the other to carry off Sulphurous acid.*
*High pressure Steam boiler, with safety valves, and pressure gauge.*
*A Muffle furnace.*
*Sand heat.*
*Apparatus for distillation of Nitric acid.*
*1. Receivers and Condensers to do.*
*Apparatus for Muriatic acid.*
*2.2. Condensers to do.*
*Apparatus for distillation of Hartshorn.*




## CHEMICAL LABORATORY

A. Principal Entrance.
B. Ware Room.
a. Furnace for Sublimation of Benzoic acid.
b. Furnace for preparations of Sulphate of Mercury, with two descending flues, communicating with the main Chimney: one for smoke, the other to carry off Sulphurous acid.
c. High pressure Steam boiler, with safety valve, and pressure gauge.
d. A Muffle furnace.
e. Sand heat.
f. Apparatus for distillation of Nitric acid.
i.i.i. Receivers and Condensers to d.°
g. Apparatus for Muriatic acid.
2.2.2. Condensers to d.°
h. Apparatus for distillation of Hartshorn.
3. Cast Iron Condenser to d.°
i. Circular Calcining furnace.
k.l. Eight Iron pots for Sublimations, Retorts, &c.
m. Reverberatory furnace.
n. Furnace and apparatus for preparation of Calomel.
o. Sink with supply of Water and Engine hose.
p. Coal and Coke bins.
q. Underground flue, from Boiler house.
r. ..... d.° ..... from high pressure Steam boiler, muffle furnace, and Sand heat.
s. Underground flue, from the Acid and Hartshorn pots.
t. ..... d.° ..... from the furnaces a. and b.
u v. Drains.
w. Entrance to the Vaults.
x. Main Chimney.

## STILL HOUSE

A.C.E.G.H. Four Copper Stills & one of Pewter, all worked by Steam.
D. A London Still, in cast iron jacket, worked by high pressure Steam.
B.F.I. Refrigerators for the Stills.
K.L.M.O.P.S.T.U.V.W.X.Y. Twelve Boilers of various dimensions, worked by Steam, in the same manner as the Stills.
N. A Marble table.
Q. An Earthen-ware Still, in iron jacket.
R. Refrigerator enclosing an earthen-ware worm pipe for d.°
Z. Drying Stove.
1. Steam main, arising from the Boiler 4, circulates under the pavement of the Laboratory, and sends off a branch supplied with a register cock, to each of the above vessels.
2. Condensed Water main, accompanying the Steam main, receives a branch pipe conveying the condensed water from each of the above vessels. It delivers its contents into the Cistern 3, whence it is forced into the Boiler.
4. The Boiler, with its gauges and man hole 5 and 6.
7. The Fire place, communicating with the flue, q.
8. Iron Pipe, descending into the Boiler house, from the entrance AA.
9. Drains.

Engraved by James Basire.

# PATENT ENEMA APPARATUS

MANUFACTURED AND SOLD BY

## JOHN READ,

*No. 35, REGENT CIRCUS, PICCADILLY.*

---

*LONDON:*

PRINTED BY W. GLENDINNING, 25, HATTON GARDEN.

1829.

# DIRECTIONS

FOR USING

# Read's Patent Self-Injecting Instrument.

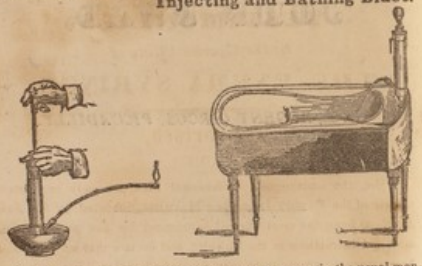
## Self Administration.

Screw the flexible tube to the side branch of the Syringe, next insert the Ivory bulb socket into the opposite end of the tube, and screw one of the Ivory pipes into it in an upright direction, (as shewn in the cut) Apply a little oil to the pipe, *pass it through the opening in the oval pad,** introduce it gently into the bowel and sit down upon it; lastly, place a basin containing the fluid, upon a chair opposite and inject its contents, by slowly working the piston.

## Administration by an Assistant.

Fix the apparatus as described in the above paragraph, substituting the *flat* Ivory socket in lieu of the bulb and pad. The patient should recline upon the right side, and the tube may be passed under the bed clothes or other covering without any exposure of the person.

## Injecting and Bathing Bidet.



The Bidet is not only adapted for general purposes in the usual manner but in being combined with the Injecting Syringe, possesses a greater efficacy than either of them separately. At the front of the vessel is a metallic basin (to hold about three pints) with a pipe, upon which the Syringe is to be fixed. From this basin, water or any other liquid that may be thought necessary, (for female injection particularly) may be pumped, which, being discharged into the back part of the vessel, allows a current of fresh liquid as long as the syringe is kept in action and the basin supplied. In the same manner Enema Injections are used. Another great advantage of this combined apparatus, is, that the syringe being fixed, requires but *one* hand of the operator, whilst

* This pad, which only belongs to the *improved* Instrument, has given the greatest satisfaction, and is highly approved of by the faculty. The prices of the various Injecting Instruments are as follows:

| | | | |
|---|---|---|---|
| White Metal Syringe, resembling Silver | 4 | 10 | 0 |
| Improved Brass Ditto | 2 | 14 | 0 |
| Common Brass Ditto | 2 | 4 | 0 |
| Britannia Metal Ditto | 1 | 14 | 0 |
| Pewter Ditto | 1 | 4 | 0 |
| Bathing Bidet fitted up with the Improved Brass Syringe | 5 | 5 | 0 |

The Britannia Metal and Pewter Syringes *cannot be warranted*; these Metals being *soft* the Instruments of course soon become defective, and, therefore, although cheap at the first cost, are dear in the end, from the short time they last. The improved Brass Syringe is the one in greatest demand and is the most useful.



the other may be employed to direct and fix the injecting pipe; a circumstance superseding the necessity of any assistance, which, to females, is an important consideration.

## GENERAL DIRECTIONS.

If the piston slides too easily, wind a thread of cotton or tow round it, if it be too tight smear it with a little sweet oil or pomatum. After using the syringe, pump a little warm water through it, which sufficiently cleans it. The valves may be cleaned with the feather of a pen. If any of the joints leak, put a fine thread of tow round the screw with a little tallow or suet. In screwing on the tubes, take hold of the brass sockets. The heat of the fluid used as an injection should be about 106° Fah.

# TESTIMONIALS

*Of the Superior Utility of*

# THE ENEMA SYRINGE.

## Authorised.

(COPY.)

"We, the undersigned Professional Men, strongly recommend the use of the PATENT INJECTING MACHINE, invented by *Mr. John Read*, as being the most efficient Instrument for the purpose of removing Obstructions in the Bowels; and declare that we have had, by experience, proofs of the most decided advantage it has over every other Instrument within our knowledge, invented for the same purpose."

| PHYSICIANS. | SURGEONS. |
|---|---|
| "Robert Montague Wilmot, M.D. Hastings. | William Duke, Hastings. |
| Robert Watts, M. D. Cranbrook. | Thomas B. Saterley, do. |
| Robert Chisholm, M.D. Physician to the Kent and Canterbury Hospital. | George Taylor, do. |
| William Chandler, M. D. Surgeon to the Kent and Canterbury Hospital. | James Dutton, do. |
| N. A. Davies, M. D. East India Company's Service, Brompton. | Robert Ranking, do. |
| William Hart, M. D. Cavalry Depot, Maidstone. | Charles Stephen Crouch, do. |
| Henry Sully, M.D. Surgeon to the Public Infirmary, Wiveliscombe. | Robert Watts, Battle |
| —— Smith, M. D. Maidstone. | James Watts, do. |
| J. F. Dale, M. D. Liverpool. | Stephen Monkton, Brenchley. |
| ——Hamilton, M.D. Finsbury Square | Jonathan Monkton, do. |
| | Samuel Newington, Goudhurst. |
| | Charles Newington, Ticehurst. |
| | Edward Morris, Tunbridge. |
| | Richard Thompson, Rochester. |
| | Avery Roberts, Lewes. |
| | Henry Verral, do. |
| | John Vine, East Peckham." |

## Extracts from Medical Publications.

*Medical Repository, New Series, p.* 944.

"I have had many other Cases, says Dr. Chisholm, where Read's Machine was of infinite service, and I think every Medical Practitioner should have one in his possession."

*Medico-Chirurgical Review, Vol.* IV. *p.* 742.

"For many months past we have been in the habit of employing Mr. Read's Patent Injecting Apparatus, which is so small as to be carried in the Waistcoat Pocket, and so powerful as to throw fluids to a great distance. The object of our present notice, however, is to inform our readers that Mr. Read has adapted to the Instrument a flexible elastic Tube, most admirably calculated for throwing Fluids into the Stomach, and then extracting them in Cases of Poisoning. We have attentively examined the Instrument, and we know it is approved of by Sir Astley Cooper, and some of the first Surgeons of the Metropolis; we think it of so much importance, that we seriously recommend it to every private Practitioner."

*Sketch of the Utility of Enemas,*

By Mr. SCOTT, Surgeon, &c.

"LAVEMENT MACHINES."

"No means hitherto devised appear to me to combine all the qualities necessary to such a contrivance, equally with the Instrument invented by Mr. John Read, which is a small pump, only three quarters of an inch in diameter and three inches and a half in length, receiving about a table spoonful of liquid. The Patentee has also fitted the pump to a Bidet, which materially facilitates the operation of self-injection, particularly as to convenience and cleanliness*."

* "The value of this Bidet Pump is truly inestimable, affording the means of ablution (and of using medicated liquids also) peremptorily necessary in many female disorders. In fact, such is the nature of the human economy, that no female can lack such an apparatus without a neglect of her person, which may produce disagreeable effects. In the married state it is still more necessary, and should on no account be dispensed with by those whose circumstances place the means of comfort and cleanliness within their reach."



After detailing his opinion of the various Instruments sold for this purpose, the Author thus proceeds:—

"None of these objections apply to Read's Syringe, the peculiar mechanism of which prevents it from becoming deranged, whilst the simplicity of its construction and action, enables even a child to use it readily and without embarrassment. An invalid may easily employ it without the presence of a second person; or in cases of severe illness, the tube being passed under the bed clothes, the instrument may be worked by an attendant without the slightest exposure of the person of the patient."

"Notwithstanding the small size of this instrument, a large quantity of fluid may be injected in a very short space of time; in fact it may be made to pass with a velocity not requisite in any case, *viz.* at the rate of *three quarts per minute.* An erroneous notion prevails with regard to the comparative power of large and small Enema Syringes, it being generally imagined that obstruction may be overcome more certainly with a bulky instrument. Such a conclusion is at variance with mechanical principles, for it is a fact well ascertained in experimental philosophy, that as you lessen volume you diminish friction, and in proportion to the diminution of friction is the increase of power; in this view, therefore, Read's Syringe is unrivalled."

In the above Treatise, a variety of Recipes for preparing Lavements are given, from which the following are taken.

## "Receipts for preparing Lavements."

*Common Domestic Lavement for Costiveness.*

Dissolve a large tablespoonful of salt, and the same quantity of moist sugar in a pint of water gruel.

OR

Take of table salt, half a spoonful, dissolve it in a pint of warm water, and add a table spoonful of treacle or honey.

OR

Dissolve a teaspoonful of soft soap in a pint of warm water.

The above are eligible forms for clysters in cases of a simple kind; but for mere costiveness or habitual irregularity, Warm Water only to the quantity of two or three pints is the best and most readily procured remedy, and may be used every

morning, or every other day, as may be necessary.* If READ's pump be used it ought not to be worked too quickly, but a few seconds should elapse between each stroke of the piston, which allows the bowels to receive the fluid without contracting too suddenly upon it.

*A Purging Lavement.*

Take of Senna leaves, an ounce; boiling water, a pint, let them stand half an hour in a covered vessel, and to the strained liquor add, Castor oil and Glauber's salts, of each an ounce.

The above is an active purgative enema, and calculated to open the bowels in paralytic and apoplectic diseases, or in any case where they are so torpid as to require a stimulus more powerful than the common domestic Lavement, also to assist the operation of cathartic medicines where the bowels are moved with difficulty.

*An active Lavement in obstinate Obstructions.*

Boil three drams of extract of bitter apple, and a dram of aloes, in three pints of water for twenty minutes, then strain and add castor oil and Epsom salts, of each one ounce.

*Lavement for Bilious Colic.*

Take of Venice turpentine, and linseed oil, of each one ounce, rub them with the yolk of an egg, and add gradually three quarters of a pint of water gruel.

OR

Mix two tablespoonsful of the spirit of turpentine with the yolk of an egg, add a tablespoonful of tincture of asafœtida, then boil half an ounce of bruised aniseeds and the same quantity of camomile flowers and of Castile soap, in a pint and a half of water till reduced one half, and mix all together. This enema is of great use also in fits of the gravel and stone.

*Lavement for Piles.*

Put an ounce of Oak bark (bruised) into a pint and a half of water, and boil to one half, then strain and add a dram of alum.

Where piles are large and the parts relaxed, the above may be used every day.

*Lavement for prolapse of the Bowel.*

Take of galls and oak bark (both bruised) of each two drams, water, half a pint; boil to one half and strain, then add ten drops of laudanum.

This complaint is very frequent with children, and requires that the bowels should be kept regularly opened by the daily administration (if necessary) of the common domestic Enema and the use of the preceding astringent lavement as often as the gut descends, which should be replaced with a soft napkin wetted in cold water. For this complaint as well as for piles, cold water alone is an excellent astringent lavement, and gives instantaneous relief.

* It is a curious chemical fact, that *Caoutchouc* which is dissolved with more difficulty, perhaps, than any other substance in nature, should be *slowly decomposed* by the action of *Oil*, and, therefore the flexible tube of the Apparatus is liable to injury by Oily Injections. Mr. SCOTT, in his treatise on the treatment of disorders by Lavements, remarks, that Oil is an *unnecessary* ingredient in these applications, when used simply as a domestic remedy for the relief of Costiveness; *Warm Water only* being sufficient and even preferable. In Medical cases, however, such an addition is often required, and for the convenience, therefore, of Professional Gentlemen, and such persons as from peculiar circumstances are compelled to use Oil, I have manufactured a Patent *Leather* Tube which resists the action of oily liquids, and which may be had with the apparatus by special direction to that effect.



*Lavement for Purging.*

Take conserve of roses, one ounce; dissolve in half a pint of warm water, and add spirit of cinnamon two ounces, confection of opium one dram.

This injection is proper in purgings of long standing, such as Chronic dysentery, &c.

OR

Take of starch jelly, half a pint, laudanum, one dram. Mix.

This lavement is very proper for relaxation of the bowels in infants as well as adults, but the quantity of laudanum must correspond with the age of the child, from five to ten drops being sufficient for an infant under two years old. This injection is also highly useful in assuaging the pain occasioned by violent fits of the gravel or stone, particularly if joined with the use of the warm bath.

*Lavement for Convulsions in Child-bed Women.*

Take of asafœtida two drams, opium 6 grains, gruel one pint.—Mix.

*Lavement for Flatulent Colic.*

Take of camomile flowers, one handful; bay berries and juniper berries, (bruised) of each an ounce; sweet fennel seeds and cummin seeds, of each half an ounce; water, one pint. Simmer gently until only one half remains, to which add, oil of aniseeds, two drams; tincture of asafœtida, a table spoonful, and 40 drops of laudanum.

*Lavement for Spasms of the Bowels.*

Take of tincture of asafœtida, half an ounce; laudanum, 40 drops; gruel, half a pint.—Mix.

*Lavement for Hysteric Colic.*

Take of rue, pennyroyal, and camomile flowers, of each a handful; seeds of henbane and white poppies, of each half an ounce. Boil them in a pint of water to half a pint, and add one dram of asafœtida, two drams of Venice turpentine (mixed with the yolk of an egg) and a spoonful of moist sugar.

*Lavement for Painters' Colic.*

Infuse a dram of tobacco in a pint of boiling water, in a covered pot for fifteen minutes, then strain and throw up half the quantity, and the remainder in half an hour afterwards, if necessary.

*Lavement for Round Worms.*

Take of bitter apple, half a dram; savin and rue, of each a handful; camomile flowers, one ounce; water, one pint and a half. Boil to a pint, and add, oil of wormwood, twenty drops; syrup of damask roses, an ounce.

*Lavement for Thread Worms.*

Take two drams of powdered aloes, and boil in a pint of milk until dissolved.

*Lavement for Tape Worm.*

Dissolve a grain of corrosive sublimate in a gallon of distilled water,—throw up a quart every night, and on the fifth morning take a smart purge to bring away the worm.

*Strengthening Lavements.*

Take of Peruvian bark, in coarse powder, one ounce; cinnamon bark, bruised, ½ dram; water, three quarters of a pint; boil to half a pint and strain. This

quantity may be injected three or four times a day, in all cases where the administration of bark is necessary.

OR

Take of extract of bark, a dram; water, a teacupful; Laudanum, eight drops. Mix—This is a very useful manner of administering bark where the stomach rejects it, and may be adopted in all cases of children, reducing the dose of laudanum to 4 drops. This injection should be repeated 3 or 4 times a day.

*Nutrient Lavements.*

Cut a pound of *lean* beef into very thin slices, and put it into a quart of cold water,—simmer it very slowly until one half is consumed; then thicken it with hartshorn shavings, or with arrow root—throw up a teacupful every two or three hours.

OR

Dissolve a glass of jelly, (or half an ounce of isinglass,) in half a pint of milk—throw up half this quantity, and repeat it frequently.

By means of these injections the constitution may often be supported, when no food can be received by the mouth.

*Scale of Quantity.*

The proportion of fluid for dissolving the active ingredients of clysters is usually regulated by the age of the patient, agreeably to the following scale.

| | |
|---|---|
| For Infants, an Enema should not exceed .... | 2 ounces. |
| A Child of six years old ..... | 4 ounces. |
| A Youth of fourteen..... | 8 ounces. |
| An Adult..... | From 10 to 16 ounces. |

Two Tablespoonsful are equal to an Ounce.



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# THE DEMONSTRATOR;

BEING AN EXPLANATION

OF

# THE DISSECTOR

OF

## THE HUMAN BODY.

BY

R. DEWEY FORSTER, SURGEON.

*IN SIXTEEN PARTS.*

PART I.

LONDON:
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MACHLACHLIN AND STEWART, EDINBURGH, & FANNIN AND CO. DUBLIN.
1833

## PREFACE.

In presenting this Work to the scientific and medical Public, the Author has done what he believes has not been previously attempted, at least in such a manner as to render superfluous any future endeavours of a similar kind. The aim is to exhibit to the Student in Anatomy such combined views of the Human Body as a plain surface can convey. He is well aware that nothing can altogether supersede the necessity of dissection, but he still thinks that great aid and benefit may be derived from the study of such views of the body as are here given, and more especially at a time when anatomical subjects are of such rare and difficult attainment. Should the attempt be

deemed bold and adventurous, yet, if it be thought to give a promise of utility, he will venture to hope for some share of protection and patronage; or at least, that his ardent and laborious endeavours will be received with proportionate indulgence.

# INTRODUCTION.

This work is confined to the Descriptive Anatomy of the Human Body, and as it attempts to elucidate that branch of knowledge by a novel method, will of course require some explanation of the plan by which it endeavours to attain its object.

All terms, anatomical, surgical, or scientific, here used, are to be received in the common acceptations, as deduced from the works of the most approved authors; and in the department of General Anatomy, the works in which their explication may be found are referred to in notes, and sometimes the very page of the author is mentioned; this is done to confine the Demonstrator to one thin volume, clear and comprehensive.

The several stages into which each part of the Dissector is divided are not always those which occur in actual dissection, for, although it may reasonably be said that there is only one stage in a dissection, still there are times when it is necessary to discontinue the examination of parts, until those which obstruct our view are cut off, and each of these is termed a stage; since the superjacent layer being removed, the next layer or stage is developed.

As frequent reference to superjacent, subjacent, or contiguous parts is unavoidable, and, that the particular part, or spot referred to, may be understood, the individual organs, or parts, whether arteries, veins, nerves, muscles, &c. &c. are numbered in small arabic figures, thus 1, 2, 3, &c., each series of such figures extending from the beginning to the end of each part of the work; and the stage in which the individual number is found being given in arabic numerals, thus (1st, 2nd,) the reader of the Demonstrator may instantly turn to the stage of the Dissector and become sure of the exact organ or part of an organ mentioned; these figures of reference being

placed within parentheses, to distinguish them from those used to direct us to the individual organ under demonstration, thus,

1. Supinator Radii Longior, is to point out the supinator, which is the part particularly the object of description, but in explaining the origin of that muscle we find, (6th 78, *a*, *b*,) which directs us to the "6th" stage, at figure the ("78") being that attached to the Os Humeri, or bone of the arm, and the letters, ("*a*, *b*,") referring to the particular parts of the surface of that bone.

Thus we see that the *italic* letters *a*, *b*, point to a particular *part* of an organ; the *arabic figures*, 1, 2, to *an* organ; the *arabic numerals*, (1st, 2nd,) to a *stage*, in the dissection of a part of the *body*; and the roman numerals, I, II, V, &c. to another part of the *work*, rendering it impossible to misconceive the spot to which the Author especially refers, and this it is obvious is very important in anatomy.

The Author may add, that the parts *cut through* in the operations of surgery, may be discovered in this work, by forcing fine needles through the paper at the parts of the Dissector where the first incisions are usually made, should the subsequent ones be continued directly forward; and the parts injured by the puncture of a sharp instrument, as swords, &c. may be in the same manner observed.

It is also to be remarked, that this has lately become a favorite, and indeed a very effective, method of ascertaining the attainments of students in the ground-work of a very honorable and useful profession.

# THE DEMONSTRATOR.

## PART FIRST.

FRONT VIEW OF THE RIGHT FORE-ARM AND HAND.

### *Demonstration of Dissection, Stage* 1.

In this Stage of the Dissector the subject has been deprived of the skin, or external tegument*, the cellular substance†, and the aponeurosis superficialis, or fascia‡, except a small portion, by means of the scalpel, that the parts now exhibited might be exposed; and it is to be borne in mind, that frequently in all the future Stages, much cellular substance or fat, and irregular fasciæ, besides those forming the sheaths to the arteries, veins, and nerves, and also the envelopes of muscles, and tendons, must be cut away, that we may distinctly see

* *Vide* General Anatomy, by Bichat; or a Compendium by Bayle and Hollard, translated by Storer, 12mo. p. 211.

† *Ibid.* or Compendium, p. 1.

‡ *Ibid.* or Compendium, p. 91.

the more important parts. Those now to be Demonstrated, are

### Muscles.

1. Supinator Radii Longior. In describing this muscle, the appellation of the several portions of that class of organs will be given minutely, as a means of facilitating our future progress. This *arises* at *a*, (called its *origin*,) tendinous* and fleshy, from the ridge of the Os Humeri, (6th. 7. 8. *a. b.*) which terminates in the external condyle, (7. *g.*) commencing its attachment from nearly the middle length of that bone, and terminating it about two inches above the external condyle (as seen by the *dotted* line in the Diagram). It forms a thick muscular mass *b*, called the *belly*, which decreasing in size ends in a flat tendon *c*. This becomes rounder, and is

*Inserted* into the rough flat surface at the outer side of the extremity of the radius (6th, 82. *o.*) It is here cut off, that the lower portion may be distinctly seen in the next stage of the dissection.

*Function, (or Use.)* To roll the radius (6th, 82.) outwards, thus *supining* the hand, (that

* *Vide* Bichat, or Compendium, p. 91.



is, bringing the palm upwards, in the erect posture of the body), and when this is prevented to *flex* or bend, the fore-arm on the arm.

*Syn.* Supinator Longus, vel Major, &c.

2. Pronator Radii Teres. This *arises* at *e*, tendinous and fleshy, from the anterior surface of the internal condyle of the humerus. (6th, 80.) and the coracoid process of the ulna, (6th, 85.) it becomes a *round* fleshy mass, which, as is shewn, passes obliquely across the fore-arm and is

*Inserted* into a rough surface on the posterior part of the radius, (6th. 82. vide part II.*) at about its middle length.

*Function*, to roll the radius inwards, and thus *prone* the hand, that is, bring the palm towards the earth.

3. Flexor Carpi Radialis. This *arises* 1st. narrow and tendinous, (indicated by the dotted line) from the inferior and anterior part of the internal condyle of the os humeri, (6th, 80.) and is there covered by the last muscle; 2nd, fleshy from the fascia at *f*, 3rdly from the intermuscular ligaments†, and lastly from the upper end of the ulna, (6th. 84.) near the inter-

* This refers to a future part of the work.

† *Vide* Bichat, or Compendium, p. 95 and 100.

nal condyle. (6th. 80.) From these four origins it forms a *thick* mass, terminating in a tendon, *g*, which passes under the annular ligament of the wrist, (2nd. 30.) where we now lose sight of it. It is

*Inserted* into the fore-part of the base of the index finger. (6th. 95. 1 *y*.)

*Function*. To flex the carpus or wrist and hand, and assist in pronation.

*Syn*. Radialis Internus.

4. Palmaris Longior. This

*Arises* tendinous from the internal condyle, (6th. 80.) at *h*, (as seen by the dotted lines,) and fleshy from the intermuscular fasciæ. It forms a short body, which transmits a slender tendon, attached at *i* to the annular ligament (2nd. 30.) and terminates, or is

*Inserted* into the fascia palmaris. (1st. 10.)

*Function*, to make the fascia *tense*, and assist in flexing the carpus or wrist.

*Syn*. Ulnaris Gracilis ; Palmaris Longus.

5. Abductor Pollicis. This

*Arises* from the annular Ligament (2nd. 30.) at j, the os trapezium and os naviculare, (6th. 90 and 91.) and is

*Inserted*, tendinous, into the outer side of the root of the first phalanx of the thumb, (6th. 96.)



*Function*, to move the thumb from the fingers.*

6. Palmaris brevior. This

*Arises* from the annular ligament (2nd. 30.) and inner edges of the palmar fascia, (1st. 10.) and is

*Inserted* into the tegument or skin, and fat, covering the short muscles of the little finger.

*Function*, to assist in making the aponeurosis *tense*, and *contracting* the palm of the hand.

*Syn*. Palmaris brevis.

We also see the tendons of two of the long muscles of the thumb. (See Part II.) Their names are

7. Extensor Ossis Metacarpi Pollicis Manus.

8. Extensor Primi Internodii Pollicis Manus.

The word fascia†, or aponeurosis, has been several times used. Two parts bearing that name are now before us ; the first is part of the

9. Aponeurosis Superficialis, sent off from the tendon of the *biceps*, (2nd. 20.) all the other portion, which completely invested the fore-arm, having been carefully dissected from

* The portion of this muscle marked *k* is termed by Albinus *abductor brevis altor*, but is not always evident.

† *Vide* Bichat, or Compendium, p. 91.

*beneath* the superficial veins and nerves, which we shall presently demonstrate.

*Function.* To bind the muscles down to their respective places, and support them when in action, this effect being increased by the contraction of the *biceps flexor cubiti.* (2nd. 20.)

*Syn.* Fascia superficialis.

The second is the

10. Aponeurosis Palmaris, given off by the tendon of the palmaris longior (*l.* 4.) and as you may perceive, extending over the palm of the hand, and attached by bifurcated slips to the end of each os metacarpalis (95's. *z.*) and by sending down slips of fasciæ, to the whole length of those bones; thus dividing and affording sheaths to the flexor tendons (2nd. 21. jj. & 3rd 36. *gg.*)

*Function.* To keep the muscles and tendons in their places, its power being increased by the action of the palmaris longior. (1st, 4.)

*Syn.* Fascia palmaris.

We shall now proceed to the

### Superficial Veins.*

11. Vena Cephalica, or Cephalic Vein, commences from the outer and posterior part of the fore-arm, (vide Part II.) and is here

* *Vide* Bichat, or Compendium, p. 48.



seen coming round the *supinator radii longior*, (1st. 1.) to continue its course on the exterior side of the *arm*, until it ends in the auxiliary vein. (vide part III.) At the bend of the arm the cephalic vein communicates by means of the

12. Vena Mediana Cephalica, with the

13. Vena Mediana Longior, which arises from the back part of the hand, (part II.) and root of the thumb, (at 1st. *z.*) and is seen passing obliquely up the fore-arm, and receiving numerous branches, (many of the smaller of which are cut away,) terminates in the median cephalic, (1st. 12.) before-mentioned, and the

*m.* Vena Mediana Basilica, which passes up to the

14. Vena Basilica. This vein with the median cephalica, (1st, 12.) takes all the blood brought by the median vein. (1st, 13.) The basilic vein, begins at the back of the hand, by the *salvatella* from the little finger and other branches, and is now observed bending obliquely round the muscles on the inner side of the fore-arm, to unite at the bend of the arm with the deep seated veins at (*n.*) and become in the arm-pit, the auxiliary vein. (vide part III.)

There is also a small vein in the middle of the fore-arm, which joins the median basilic at (*m.*) it is called Vena Mediana Minor.

The *Function* of the preceding veins is to *return* the blood, which in circulating has become of a purple colour, (or, as it is termed, venous and carbonized,) *towards* the heart, thence to be sent to the *lungs*, to be there decarbonized or oxiginized, which changes the colour to crimson.

### The Superficial Nerves*.

15. Nervus Musculo-Cutaneus, which is here distributed by means of several branches to the muscles, skin, and other parts. Its previous course will be seen in part III.

16. Nervus Cutaneus Internus, which passing down, terminates in numerous branches in the skin and fasciæ which have been removed. Its previous course is in part III.

*Obs.*—Branches of this and the last-mentioned nerve, passing over the median cephalic (1st), and median basilic (1st) veins, from their liability of being wounded in bleeding, cause one of the dangers of that operation—trismus, or lock-jaw.

17. Nervus Spiralis, this is the smaller branch of the nerve of that name, the division of which we shall presently see. (at 4th. 56.) It passes down at *o*, from beneath the *pronator radii teres*, (1st. 2.) and *supinator radii longior*, (1st: 3.) and continues its course, down the fore-

* *Vide* Bichat, or Compendium, p. 155.



arm, along the outside of the radial artery, (1st, 18.) and just above the wrist passes outwards, under the tendons of the long muscles of the thumb, (1st. 7 and 8.) that it may arrive at the back of the hand (vide part II.); it also transmits *p*, a small branch which passes with the artery to the thumb.

There is one

### Artery,

And its branches, to be demonstrated; it is,

18. Arteria Radialis, coming from under the *pronator radii teres* (1st, 2), and in very muscular subjects the *supinator radii longior* (1st, 1.) is seen passing down the fore-arm, between the last muscle and the *extensor carpi radialis* (1st, 3.), on the muscular and tendinous parts of the *flexor digitorum sublimis*, (2nd, 21.) and at the wrist dividing into (1st, *d.*) the branch which becomes the *arcus arterialis palmaris profundus* (4th, 55.) which is the principal one, and

*q*. Ramus Volaris, or *superficialis volæ*, which sends off

*r*. Arteria Superficialis Pollicis, and many other branches, as you may see, principally to the palmar fascia. (1st, 10.)

Those other parts, imperfectly seen, will be noticed in the next demonstration, and the *lym-*

*phatic vessels,* commonly called the lymphatics, which perform the office of absorption, and are therefore sometimes termed the absorbents, being too minute to be preserved in the dissection of an healthy subject, are not given. They are well shewn in the plates of Mr. Hewson, and other more recent authors.

*Demonstration of Stage* 2.

The parts to be demonstrated in this stage of the dissection, are

MUSCLES.

19. EXTENSOR CARPI RADIALIS LONGIOR.

It *Arises* at *a*, from the external ridge of the humerus, (6th, 78.) just below the *supinator radii longior*, continuing its attachment down to the upper part of the external condyle of that bone. (6th, 79.) Its thick short belly ends in a flat tendon about the middle length of the radius, (6th, 82.) which passes obliquely round that bone at *b*, in a groove, to be

*Inserted* into the *posterior* and upper part of the metacarpal bone of the index or fore-finger. (6th, 97. 1.) Vide part II.

*Function.* To extend the carpus, and thus move the hand *backwards*, also to assist in flexing the fore-arm.

*Syn.* Radialis externus primus.



The lower end of the

20. BICEPS FLEXOR CUBITI, also seen in part III. It is here observed

*Inserted*, at *c*. into the tubercle of the radius (6th, 83.) and giving off that tendinous expansion at *d*, which becomes the fascia superficialis of the fore-arm. (1st, 9.)

*Function.* To flex the fore-arm on the arm, and make tense the before-mentioned aponeurosis or fascia.

21. FLEXOR DIGITORUM SUBLIMIS, which

*Arises*, tendinous and fleshy from the inferior part of the internal condyle of the humerus (6th, 83.) at *e*; tendinous from the lower edge of the coracoid process (6th, 85.) at *f*; at *g*, fleshy from the tubercle of the radius, (6th, 83.) and from the middle third of the outer edge of that bone at *h*, and *i*. These four origins send off a strong and thick muscular mass, terminating in four tendons, at j, which pass under the annular ligament of the wrist, (2nd, 30.) where they are connected with each other, by short and slender cross ligamentous threads; they diverge, become thinner and flatter, pass along the metacarpal bone, (6th, 95's) and first phalanx of each finger, (6th, 98.) at which part, *k*, *k*, *k*, *k*, but concealed by the small annular ligaments, each tendon is divided for the passage of one

of the four tendons of the *flexor sublimis profundus*, (3rd, 36. *g*, *g*, *g*, *g*.) and passing downwards are

*Inserted* at *l*, *l*, into the upper and fore-part of the *second phalanx* (6th, 99.) of each finger.

*Function.* To flex the second joint or phalanx of the fingers.

*Syn.* Sublimis perforatus, &c.

22. Flexor Ossis Metacarpi Pollicis Manus, or *opponens pollicis*, which

*Arises*, broad and fleshy from the annular ligament of the wrist, (2nd, 30.) and from the os trapezium (6th, 90.) and os naviculare (6th, 86.) and is

*Inserted*, tendinous and fleshy into the anterior and inferior part of the metacarpal bone of the thumb. (6th. 94.)

*Function.* To bring the first bone of the thumb *inwards*.

*Syn.* Flexor primi internodii ; Semi-interosseus pollicis ; Antithenar.

23. Flexor Parvus Minimi Digiti,

*Arises*, fleshy from the outer side of the os unciforme (6th, 93.) and from the annular ligament of the wrist, (2nd, 30.) where it is attached to the hook-like process of the unciforme ; (6th, 93. *x*.) and is

*Inserted*, at *m*, by a roundish tendon into the



first phalanx or joint, of the little finger (6th, 98. IV.)

*Function.* To flex the little finger, and bring it in some degree towards the other fingers.

*Syn.* Abductor minimi digiti, Carpophalangeus minimi digiti. And

24. Abductor Minimi Digiti Manus,

Which *arises*, fleshy from the os pisiforme, (6th, 29.) and the annular ligament, (2nd, 30.) at *n*, it sends off a tendon, passing under a small annular ligament *o*, of its own, and is

*Inserted*, into the inner side of the first phalanx of the little finger, (6th, 98. IV,) and a tendinous expansion which covers the posterior part of that finger. Vide part II.

*Function.* To draw the little finger from the rest.

*Syn.* Extensor tertii internodii minimi digiti Hypothenar minor; Carpo phalangeus, min. dig.

The Arteries, are

25. Arteria Radialis, or radical artery, which is here seen coming off from the brachial artery, (3rd, 40.) and passing under the superficial fascia of the fore-arm *d*, and on the tendon of the *biceps flexor cubiti*, (2nd, 20. *c*.) at *p* where it gives off

*q*. Arteria Recurrens Radialis, which is directed upwards round the articulation to

inosculate with the arteries of the arm. (vide part III.) The radial also gives off branches to the musles and other organs in the vicinity, and then dips under the *pronator radii teres*, (1st, 2.) to reappear as seen in the first stage. (vide 1st, 18.)

26. Arteria Ulnaris, is here observed arriving from between the *flexor sublimus*, (2nd, 21.) and *flexor profundus*, (2nd, 36.) inside the tendon of the flexor carpi ulnaris, (4th, 45.) marked *r* in the diagram. Here it gives off the *arteria dorsalis ulnaris*, which we shall again refer to. It then passes under a distinct band of the annular ligament, (2nd, 30.) and divides into

*s.* Arteria Profundus Ulnaris, which passes down with the nerve, and inosculates with the deep seated palmar arch (4th, 54,); and

*t. t.* Arcus Palmaris Superficialis, or superficial palmar arch, which directing its course obliquely downwards, and then slightly upwards forms an arch, with the convexity towards the fingers, and thence gives off

*u.* Arteria Superficialis Minimi Digiti ; the three

*v. v. v.* Arteria Digitales, which as you perceive, divide in the clefts between the lower ends of the metacarpal bones, (6th, 95. *z.*) into



two branches, supplying the sides and ends of the fingers ; and

*w.* Arteria Pollicis Ulnaris, which inosculates with the arteria pollicis of the radial artery, (4th, 54. *q.*) and terminates in many branches to the thumb. &c.

There are two large

## Nerves.

27. Nervus Radialis, or the radial nerve, which is here just emerging from under the annular ligament (2nd, 30.) ; its previous course we shall see presently (3rd, 41.) ; it immediately divides into four branches, the first of which is,

*x.* Nervus Pollicis, and the other three

*y. y. y.* Nervi Digitales Superficiales which pass downwards towards the fingers with the arteries (2nd, 26. *v. v. v.*), and the two last divide in the same manner as the arteries to supply the inside of the index, and the outside of the middle, the inside of the middle, and the outside of the ring finger ; the remaining three sides of the fingers being supplied from the

28. Nervus Ulnaris, or ulnar nerve, which we observe coming from between the bellies of the two flexors of the fingers, (2nd, 21. and 3rd, 36.) and on the inside of the ulnar artery, (2nd,

26.) it gives off a branch to the short muscles of the little finger, (2nd, 23, 24. 3rd, 39.) The

z. Ramus Profundus Ulnaris, which passing between the muscles, becomes the *arcus nervosus profundus*, (4th, 59.) and the

Nervi Digitales, two nerves, the outer one of which divides, supplying the inner side of the ring and the outer side of the little finger, and the other passing directly to the inner side of the same finger.

You will please to observe, that at the apices of the fingers, the digital nerves divide into numerous ramnifications of a pulpy consistency, and interlaced by the minute branches of arteries and veins, are imbedded in cellular tissue, or fat.*

There is also a portion of the

29. Nervus Spiralis, a continuation of which we saw in the first stage. (17, 17.) Its previous course will be shewn presently. (4th, 53.)

We will conclude this demonstration by describing the

Ligaments,

Which now present themselves.

30. Ligamentum Annulare Carpi Anticum, or anterior annular ligament of the wrist. It is very strong, and

*Arises* from the os pisiforme, (6th, 89.) and os unciforme, (6th, 93.) and is

*Inserted* into the os naviculare, (6th, 86.) and os trapezium, (6th, 90.) but stretches round and is attached to the surface of the capsular ligament (5th, 66.) so that its fibres interlace with the *ligamentum annulare posticum.* (part II.)

*Syn.* Lig. carpi transversale, vel internum.

31's. Ligamenti Annulares Phalangum, or annular ligaments of the joints of the fingers. They are divided into A primi, B secundi, (cut off, but seen in the last demonstration,) and C tertii; they are little more than condensations of the sheaths (Vide 1st 10.) which envelope the tendons of the flexors of the fingers, (2nd 21, 3rd 35) that have been removed that the tendons of those muscles might be shewn.

*Function.* To bind down the tendons, which they in part surround, often acting as pullies, or fulcri, and always preserving the symmetry of the part.

We shall now proceed to the demonstration of the

* *Vide* Bichat, or Compendium, p. 48.

## THIRD STAGE.

In the third stage of this dissection we shall demonstrate the following

### Muscles.

32. Brachialis Internus, which

*Arises* from the humerus (6th 78, as will be seen in part III.) and is here found terminating its fleshy belly in a flat tendon, which is

*Inserted* at *a* into the rough surface at the end of the under part of the coracoid process of the ulna. (6th 85)

*Function.* To flex the fore-arm on the arm.

33. A portion of the triceps which we shall describe at some future time. Vide part IV.

34. Extensor Carpi Radialis Brevior. This

*Arises* from the posterior and inferior part of the external condyle of the humerus (6th 79) and the external lateral ligament (5th 61); its muscular belly is shorter than that of the Ex. Carp. Rad. Longior, (2nd 19.) but pursues the same course, and is

*Inserted* into the back of the metacarpal bone of the index or fore-finger. (6th 95 1.) Vide part II.

*Function.* To extend the carpus, and consequently the hand.



*Obs.* This muscle will be better seen, and appear larger, in the back view.

*Syn.* Radialis externus brevior: Epicondilo-super-metacarpeus.

35. Flexor Longior Pollicis Manus.

*Arises* at *b*, acute and fleshy from the radius (6th. 82) immediately under the tubercle (6th, 83) and at *c*, *c*, from the outer edge and anterior surface of that bone, till within two inches of its inferior extremity. Also from the external part of the interosseous ligament. (5th 64 *ms*) *Generally* it also arises tendinous from the internal condyle of the humerus (6th 80) at *d*, which you see in this subject. This last origin becomes a small muscular belly, and is affixed to the upper portion of the muscle, the fibres of which principally pass obliquely forwards and inwards into a flat tendon; this becomes round, and is

*Inserted* into the last phalanx or joint of the thumb, (6th 97) as will be seen in the next demonstration. (4th 47)

*Function.* To bend the thumb.

*Syn.* Radialis externus brevior: Radialis secundus.

36. Flexor Digitorum Profundus Perforans,

*Arises*, fleshy from between the coracoid

## THIRD STAGE.

In the third stage of this dissection we shall demonstrate the following

MUSCLES.

32. BRACHIALIS INTERNUS, which

*Arises* from the humerus (6th 78, as will be seen in part III.) and is here found terminating its fleshy belly in a flat tendon, which is

*Inserted* at *a* into the rough surface at the end of the under part of the coracoid process of the ulna. (6th 85)

*Function.* To flex the fore-arm on the arm.

33. A portion of the triceps which we shall describe at some future time. Vide part IV.

34. EXTENSOR CARPI RADIALIS BREVIOR. This

*Arises* from the posterior and inferior part of the external condyle of the humerus (6th 79) and the external lateral ligament (5th 61); its muscular belly is shorter than that of the Ex. Carp. Rad. Longior, (2nd 19.) but pursues the same course, and is

*Inserted* into the back of the metacarpal bone of the index or fore-finger. (6th 95 1.) Vide part II.

*Function.* To extend the carpus, and consequently the hand.



*Obs.* This muscle will be better seen, and appear larger, in the back view.

*Syn.* Radialis externus brevior : Epicondilo-super-metacarpeus.

35. FLEXOR LONGIOR POLLICIS MANUS.

*Arises* at *b*, acute and fleshy from the radius (6th. 82) immediately under the tubercle (6th, 83) and at *c, c,* from the outer edge and anterior surface of that bone, till within two inches of its inferior extremity. Also from the external part of the interosseous ligament. (5th 64 *ms*) *Generally* it also arises tendinous from the internal condyle of the humerus (6th 80) at *d*, which you see in this subject. This last origin becomes a small muscular belly, and is affixed to the upper portion of the muscle, the fibres of which principally pass obliquely forwards and inwards into a flat tendon ; this becomes round, and is

*Inserted* into the last phalanx or joint of the thumb, (6th 97) as will be seen in the next demonstration. (4th 47)

*Function.* To bend the thumb.

*Syn.* Radialis externus brevior : Radialis secundus.

36. FLEXOR DIGITORUM PROFUNDUS PERFORANS,

*Arises*, fleshy from between the coracoid

process (6th 85) and the olecronon (part II.) on the inside of the ulna (6th 84) at *e*, and from the former process down the whole anterior face of two thirds the length of that bone, and the half of the interosseus ligament. (5th 64 *ls*) These origins give off a thick muscular mass, terminating in four flat tendons *gs*, which pass under the annular ligament, (2nd 30) and are

*Inserted* into the anterior, and superior part of the *third* phalanx of the fingers, (100) at *h's*.

*Obs.* The dotted line in the diagram indicates the limits of this muscle.

*Function.* To flex the last joint of the fingers.

*Syn.* Flex. profundus perforans: Profundus perforans: Cubito-phalangeus communis.

N. B. The tendons of this muscle just as they diverge from the annular ligament, (2nd, 30.) give off small tendinous bands, which are attached to the *Lumbricales*. (3rd, 38.)

37. Flexor Brevior Pollicis Manus

*Arises*, by two distinct heads. The 1st. or outer, from the posterior surface of the anterior annular ligament (2nd, 30.), and the anterior surface of the trapezium (6th, 90,) and os trapezoides (6th, 91.) at *i*, and is

*Inserted* into the outer sesamoid bone at *j*.

The 2nd. or inner head, from the os magnum (6th, 92.) and os unciforme (6th, 93.), extending



some distance beneath the tendons of the perforans (3rd, 36.) (as is shewn by the dotted line in the diagram,) and the root of the metacarpal bone of the middle finger (6th 95 II *y*.), and is

*Inserted* into the inner sesamoid bone at *k*.

*Function.* To flex the thumb, being assisted in that office by the flexor longior (3rd, 35.). It acts solely on the first joint.

*Syn.* Flexor brevis pollicis manus.

*Obs.* The sesamoid bones are small and roundish, serving as a sort of pulley to extend the arc of motion, being attached to the metacarpal bone of the thumb (6th 94.) by ligaments, and are therefore cut off with the above muscle after it has been dissected.

38s. Lumbricales, four in number, which

*Arise* by tendinous bands from the outside of the tendons of the flexor perforans (36.), as we remarked when demonstrating that muscle. They have small muscular bellies, and each is

*Inserted*, by small tendons to the tendinous expansion*, which covers the back part of the fingers (vide part II.) about the middle joint, the tendons passing round the outer side of the fingers.

*Function.* To bend the first phalanx of the

* Parts of the above-mentioned tendinous expansion are seen in this dissection, as indicated by these marks, x

fingers (98s), the flexor perforans (36) being previously in action.

39. ADDUCTOR METACARPI MINIMI DIGITI MANUS, which

*Arises* fleshy, from the os unciforme (93.) and the annular ligament of the wrist (30.) (the last origin being shewn cut off,) and is

*Inserted*, tendinous, into the anterior part of the metacarpal bone of the little finger (6th, 95 IV. ), at the spot *l*.

*Function*. To bring the metacarpal bone of the little finger *towards* the others, and to *flex* it.

*Syn*. Metacarpeus: Carpo-metacarpus minimi digiti : Flexor primi internonodii mini midigiti.

ARTERIES.

The ARTERIES next claim our attention. They are

40. ARTERIA BRACHIALIS, or HUMERALIS, (vide part III.) which is now shewn resting on the brachialis internus (3rd, 32.), and a portion of the triceps (3rd 33.) (which is one of the posterior muscles of the arm). At the bend of the arm, generally on the tendon of the former muscle*, it divides into

*m*. ARTERIA RADIALIS, or the radial artery

* The brachial artery (40.), *sometimes* divides into the arteries of the fore-arm (3rd, 41, 2nd 25,), some distance up the arm, even occasionally near the auxilla or arm-pit.



(see 2nd 25, and 1st. 18.), and the ulnar artery mentioned beneath (3rd, 41.).

Commonly, at about three or four inches before the brachial artery (3rd, 40.) divides, it gives off

*n*. RAMUS ANASTOMOTICUS MAGNUS, besides many other small ramnifications about the joint of the elbow.

41. ARTERIA ULNARIS, or ulnar artery, the inner branch of the brachial (3rd, 40.). It gives off two branches, which sometimes come from the ulnar in one branch, and then divide. They are

*o*. ARTERIA INTEROSSEA POSTERIOR, (4th, 52.) which will be demonstrated presently, and

*p*. ARTERIA INTEROSSEA ANTERIOR, which will be again adverted to, when its course and distribution will be given (vide 4th 53.). The ulnar artery then passes downwards supplying the muscles, &c. with many small nutritive branches ; also a large branch, called

*q*. RAMUS RECURRENS ULNARIS, which piercing or going round the flex. dig. profundus (3rd, 36.) and giving a branch to that organ, is directed upwards and backwards, anastomosing with branches sent off by the brachial artery (3rd, 40.) the principal of which is the ramus anastomoticus magnus (3rd 40,*n*).(vide part III.)

Lower down the main artery transmits

*r.* Arteria Posterior Ulnaris, (vide part II.) which passes between the ulna (6th, 84.) and the tendon of the flex. carp. ulnaris 4th, 45.), and being directed backwards divides into many branches, which are distributed on the back of the fore-arm.

*s.* Is a large branch to the muscles. It is not necessary for *me* to describe the course of the ulnar artery; — we now observe it cut off at the part where it became visible in a former demonstration (vide 2nd, 20.). I shall conclude this Stage by describing the

Nerves

Which are exposed. They are,

42. Nervus Radialis, or Radial Nerve, this part of the course of which, I beg you attentively to observe. Its branches are

*t.* One anastomosing with one of the two branches of the spiralis (55.), to form by their union the interosseus nerve (56.), which we shall exhibit in the next stage; and several to the muscles (32, 35, 36.), &c. in its vicinity, the largest of which are preserved in the dissection. The termination of this nerve in the hand and its distribution, was seen as you may remember at the last demonstration, as in that part of its course it is nearly superficial (vide 2nd 27.).



43's. Nervus Ulnaris, or ulnar nerve, which is very remarkable in its course; for, after passing down the arm with the other large nervous trunks, it separates from them near the internal condyle of the humerus, (80) and at *u*, proceeding behind, and on the inside of that process, in a groove which will be seen in the back view, part II. and then turning forwards between the heads, or sometimes fibres of the Flex: Carp: Ulnaris (45), and Flex: Digit: Profundus (36), it re-appears at *v*, anteriorly, and is directed down the fore-arm, in company with the ulnar artery, lying between the flexores sublimis, and profundus (21. 36.); in this part of its course, giving off many small branches to the muscles (21. 36.), &c. in its vicinity, besides a large branch, called

*w.* Nervus Posterior Ulnaris, (58.) which supplies the back part of the fore-arm, and hand. (See part II.)

## FOURTH STAGE.

We have now nearly denuded the bones, except one; the remaining

Muscles are

44. Supinator Radii Brevior, which

*Arises* at *a*, *a*, from the lower portion of the external condyle of the humerus (6th, 79),

from the posterior and superior part of the ulna (6th, 84; vide part II. Stage 4th.) and at *b*, *b*, from the capsular ligament of the elbow joint (5th, 60); and is

*Inserted* at *e*, into the tubercle of the radius (6th, 83), and downwards, to a rough spine which proceeds from that process to the upper and outer edge of that bone, thus surrounding and concealing the outer side of the joint.

*Function*, To revolve the radius (6th, 82) *outwards*, and thus contribute to supine the hand. It also prevents the capsular ligament (5th, 60) being pinched, and injured between the radius, (6th, 82) and humerus (6th, 78).

*Syn.* Supinator Brevis vel Radii Brevis; Epicondilo-Radialis.

45. Flexor Carpi Ulnaris.—[This muscle is generally demonstrated with the superficial ones (1st, 1, 2, 3), but from its position not being then so perfectly exposed it is given here.] It

*Arises* at *e*, tendinous from the lower portion of the internal condyle (6th, 80); tendinous and fleshy from the inner side of the *processus olecronon* of the ulna (vide part II.), which is a protuberance situate precisely behind the coracoid process of that bone; and tendinous from the posterior ridge of the ulna (6th, 84), to



nearly the end of that bone, as seen in the posterior view. From these three origins the fibres pass obliquely forwards into a tendon, which is

*Inserted*, into the os pisiforme (6th, 89); and frequently, as in this instance, extending its fibres over a ligament, into the base of the metacarpal bone of the little finger, (6th 95, IV. *y*) at *f*.

*Function.* To flex the carpus, or wrist, and thus the hand; and, acting simultaneously with the extensor carpi ulnaris, (vide part II.) to bend the hand *inwards*, or towards the side.

*Syn.* Ulnaris Internus: Cubito-Carpeus.

46. Pronator Radii Quadrates, which

*Arises* from *g* to *g*, tendinous and fleshy, broad and thin, from the inner edge of nearly all the lower end of the ulna (6th, 84), thence its muscular fibres run transversly, inclining downward, adhering to the inter-osseous ligament (5th, 64) and terminating in a flat tendon,

*Inserted*, from *h* to *h*, into the inferior, and anterior part of the radius (6th, 82).

*Function.* To revolve the radius (6th, 82) *inwards*, and thus *prone* the hand.

*Syn.* Cubito Radialis.

47. The Tendon, and some Muscular fibres of the

FLEXOR LONGIOR POLLICIS (3rd 35.) which we can now trace, passing downwards, through a groove in the bones of the carpus, and along the anterior surface of the metacarpal bones of the thumb, (6th 94, 96, & 97.) at the flexions of which are *i*, *i*, small annular ligaments to confine it, and is

*Inserted* at *j*, into the last bone of the thumb (6th 97.).

48. The tendon of FLEXOR CARPI RADIALIS, indicated by the dotted line, and

*Inserted*, at *k*.

49. ABDUCTOR POLLICIS MANUS; which

*Arises* at *l*, *l*, from almost the whole length of the metacarpal bone of the middle finger; (6th 95 II.), the muscular fibres converge and end in a tendon, at *m*.

*Inserted* at *n*, into the internal surface of the root of the first phalanx, or joint of the thumb, (6th 94, y.).

*Function.* To adduct the thumb, *i. e.* bring it *towards* the fingers.

The Interosseous muscles remain to be demonstrated. They are seven in number, but only four, termed *Interni* or *Palmares* are now to be noticed: the others called, *Bicipites*, *Externi*, or *Dorsales*, indicated by 50s, are better seen in the view of the posterior part of the fore arm and hand, (part II.)



51's. INTEROSSEI INTERNI are the

1st, 51, *o*, *Prior Indicis* which

*Arises* from the radial side of the metacarpal bone of the index finger (6th 95 I), and is

*Inserted* into the same side of the first phalanx or joint, (6th 98, I) of the same finger.

*Function.* To abduct the fore finger or bring it *from* the other fingers.

2nd 50 *p*, *Posterior Indicis* which

*Arises* from the ulnar or inner side of the metacarpal bone of the fore finger (6th 95 I.), and is

*Inserted* into the same side of the first joint of that finger.

*Function.* To carry the index finger towards the other fingers.

3rd. 50 *q*. *Prior Annularis*, which

*Arises* from the outer, or radial side of the metarcapal bone of the ring finger, (6th 95, III.), and is

*Inserted* into the same side of that finger at its first phalanx.

*Function.* To bring the ring finger from the little finger, and towards the other two.

4th, 50 *r*. INTEROSSEUS ARTICULARIS, which

*Arises* in the same manner from the radial side of the metacarpal bone of the little finger (6th, 95, IV.) and is

*Inserted*, into that side of the first phalanx.

*Function.* To draw the little finger towards the others, thus assisting the Adductor Minimi Digiti Manus (2nd 23.)

All the above small muscles are also inserted into a tendinous expansion given off by the tendon of the Extensor Communis Digitorum Manus, (vide part II.), attached to the back part of the phalanges of the fingers.

We now come to the ARTERIES, which are

52. ARTERIA INTEROSSEI POSTERIOR, given off by the ulnar artery (6th 41, *o*,) and now proceeding through an aperture in the interosseous ligament (5th 64) to the back part of the fore arm. We shall find it in the dissection of that part (part II.).

53. ARTERIA INTEROSSEI ANTERIOR, which is derived from the ulnar artery, (6th 41 *n*.), just after the above-mentioned branch, and is now observed running downwards on the interosseous ligament, (5th 64), giving off many branches in its course, and ending in ramnifications on the Pronator Radii Quadratus, (4th 46) the capsular ligament of the wrist, (5th 65,) &c.

54. ARTERIA ULNARIS POSTERIOR, (3rd 41, *r*), now seen running close to the ulna, (6th



84), and under the tendon of the ulnaris internus, (4th 45), to the back part of the fore arm. (Vide part II.)

55. ARCUS PROFUNDUS ARTERIOSUS or *Radialis*, which is a continuation of the trunk of the radial artery (1st 18), seen in the first stage of this dissection; it passes behind the metacarpal bone of the thumb, (6th 94), &c. and is thus concealed from our view.—We now perceive it coming from that position, having pierced the abductor indicis, (5th 77), and proceeding across the palm of the hand, on the roots of the metacarpal bones of the fingers, (6th 95, *y*), it sends off the following branches.

1st. ARTERIA MAGNA POLLICIS, the course and ramnifications of which you perceive

2nd. ARTERIA RADIALIS INDICIS, and

*s*, *s*, *s*. ARTERIÆ INTEROSSEÆ PALMI, three branches terminating in branches to the interossei muscles and palm, (4th 50&51). The

NERVES

To be noticed, are

56. NERVUS SPIRALIS, (the course of which in the arm, will be given in the dissection of that part,) is now observed bending round the external condyle of the humerus (6th 79), and then, descending on the supinator radii brevis (4th 44), and dividing into

*t*, The posterior, or principal branch, which pierces the muscular fibres of the supinator(44), as you see, reappearing in the dissection of the back part of the fore arm, (vide part II): and

*u*, The branch which we before demonstrated (1st 17), passing down the arm on the outside of the radial artery, (1st 18, 2nd 25), but which here sends off a branch marked with a x, uniting with the following nerve.

57. Nervus Interosseus, transmitted by the radial nerve, (3rd 42 *t*,) descends on the outter side of the anterior interosseous artery (4th 53), and gives branches to all the parts supplied by that vessel.

N. B. The branch from the spiralis (4th 65) is not always present.

58. Nervus Dorsalis Ulnaris, which we saw before coming from the ulnar nerve, (3rd 43, *w*), and passing with the dorsalis ulnaris artery (4th 54) to the back part of this extremity.—The last nervous branch is the

59. Arcus Nervosus Palmaris Profundus, or *Ulnaris*, which comes off from the ulnar nerve, (2nd 28, *z*,) and piercing the adductor minimi digiti (3rd 39), is now observed sending a branch to the back of the hand, and then forming the arch which you may observe running over the roots of the metacarpal bones of the fingers (6th 95, *y*) ; transmitting



*w*. Branches to each of the *interossei* (4th 50, & 51), the same to each of the Lumbricales, (3rd 38,) entering from behind.

*x*. Branches to the Flexor Brevis, (3rd 37,) and adductor pollicis, (4th 49), and then terminates in the abductor indicis, (5th 77.)

## FIFTH STAGE.

Having removed all the parts last demonstrated we come to those

### Ligaments *

which lay close to the bones, they are

60. Ligamentum Capsulare Cubiti, or Capsular Ligament of the elbow, which surrounds that joint, the upper part or edge being attached to the rugged boundary of the articulating surface of the Condyles of the Humerus, (6th 81) and the lower margin to the circumference of the sigmoid cavity of the ulna (6th 84), and the button like head of the Radius, (6th 82,*i*).

*Function*. To preserve the above-mentioned articulating surfaces in apposition, and allow a ginglimoid or hinge-like motion between the bones ; it being prevented, in any other direction by the two ligaments following.

* Bichat or Compendium, by Bayle and Hollard, p. 90 and 95.

61. LIGAMENTUM LATERALE EXTERNUM CUBITI, or external lateral ligament of the elbow, which

*Arises* at *a* from the external condyle of the Humerus (6th 79), through its course being intimately attached to the capsular ligament, (5th 60), and is

*Inserted* at *b* just below the button-like head of the radius, (6th 82, *i*)

*Function.* To prevent lateral motion, particularly *inwards*

*Syn.* Lig. brachio-radiale.

62. LIGAMENTUM LATERALE INTERNUM CUBITI, or internal lateral ligament of the elbow-joint; which

*Arises* at *c* from the internal condyle of the humerus, (6th 80,) is attached and almost part of the capsular ligament, (5th 60) and is

*Inserted* at *d* into the inner side of the ulna (6th 84) just beneath the internal sigmoid cavity, (vide Demonstration 6th, 85).

*Function.* To preclude lateral motion, especially *outwards.*

*Syn.* Ligamentum brachio-ulnare.

63. LIGAMENTUM CORONARE RADII, or the coronary, annular, or orbicular ligament of the radius (6th 82), which

*Arising* at *e* from the fore-edge of the lesser



sigmoid cavity of the ulna (6th 84, *r*), passes round the button-like head of the radius, (6th 82, *i*), and is

*Inserted* into the posterior edge of the same cavity, this portion being extremely dense and firm, its upper edge being blended with, and nearly forming part of the capsular ligament, (5th 60), and its lower margin attached to the whole circumference of the radius, (6th 82), extending lower down than its tubercle (6th 83).

*Function.* To allow of the *rotation* of the radius (6th 82) on the ulna (6th 84) and also preserve the head of the former in apposition with the external condyle of the humerus, (6th 79); these ligaments are strengthened by

*h*, *Ligamentum Accessorium Anterius Cubiti,* or the anterior accessary ligament of the elbow; its attachments are obvious, and its

*Function*, to prevent rotation outwards, and consequently supination proceeding too far.

*i*, *Ligamentum Accessorium Radii,* or accessory ligament of the head of the radius. The origin and insertion of which are as evident, but its

*Function*, which is similar, much more influential. And

*k. Chorda Transversalis Cubiti*, which stretches from the coronoid process of the ulna (6th 85) to the radius below its tubercle, (6th 83) and is part of

64. Ligamentum Interosseum Cubiti, or interosseous ligament of the fore-arm, which is attached to the external rough surface of the ulna, (6th 84, *u*,) at *l*, *l*, *l*, and the inner sharp edge of the radius, (6th 82, *l*,) at *m*, *m*, *m*, its fibres running from above, obliquely downwards and inwards, and filling up the space between the two bones, except at the upper portion.

*Function.* To afford a broad surface for the origins of muscles, and to support vessels and nerves. It also assists in confining pronation and supination within due bounds.

*Syn.* Ligamentum cubito-radiale.

65. Ligamentum Capsulare Radii, or the capsular ligament at the lower end of the ulna, (6th 84, *v*,) which

*Arises* from both the margins of the semilunar cavity, at the inferior termination of the radius (6th 82, *n*) passes round the button-like end of the former bone, and its edges are

*Inserted* above, superior to the button-like head, and below into, and is, in fact, a part of the general capsular ligament, which we shall demonstrate next.

66. Ligamentum Capsulare Carpi, the capsular ligament of the wrist. It

*Arises* from the edge of the glenoid, or navi-



cular cavity at the lower end of the radius (6th 82, *p*), and from the triangular cartilage of the ulna, and surrounding the joint, is

*Inserted* into the os naviculare (6th 86) os lunare (6th 87) and os cuneiforme (6th 88)

*Function.* To preserve the apposition of the articulating surfaces, assisted by the lateral ligaments; but allowing a *rotatory* motion.

67. Ligamentum Laterale Externum Carpi, or external lateral ligament of the wrist, which

*Arises* from the styloid process of the radius (6th 82, *q*), is intimately connected with the capsular ligament of the wrist (5th 66), and is

*Inserted* into the os naviculare (6th 86).

*Function.* To strengthen the capsular ligament (5th 66) and restrain the *rotation* of the wrist *inwards*.

68. Ligamentum Laterale Internum Carpi, or internal lateral ligament of the wrist, which

*Arises* from the styloid process of the ulna (6th 84, *w*), proceeds forward and downward firmly adherent to the capsular ligament, and is

*Inserted* into the os cuneiforme (6th 88) and os pisiforme (6th 89).

*Function.* To assist the capsular ligament (5th 66), and check the *too* great rotation of the wrist *outward*.

N. B. Rotation of the wrist is not nearly so extensive as the gliglimoid motion in that joint; it is, in fact, very imperfect.

69. Ligimenti Cruciales Carpi, et Ligimenti Capsulares Carpi; or crucial and capsular ligaments of the carpus. The latter unite the eight bones of the carpus, (6th 86, 87, 88, 89, 90, 91, 92, and 93) in every direction; are strictly capsular ligaments, and are strengthened very considerably by the former, disposed as their name indicates, in a crucial direction on the surface, and firmly attached to the latter.

70. Ligamentum Capsulare Metacarpi Pollicis, or capsular ligament of the metacarpal bone of the thumb (6th 94) uniting it to the os trapezium (6th 90), much assisted in power by its

*n. Lateral Ligaments*, one of which is not seen, being situate behind, (vide part II.)

71. Ligimenti Capsulare, et Laterales Primi Internodii Pollicis. These are like the last, a capsular, and *o*, two lateral ligaments of the *first* j int of the thumb.

72. Ligimenti Capsulare et Laterales Secundi Internodii Pollicis, or the capsular, and *p*. the two lateral ligaments of the *second* joint of the thumb.



73's Ligimenti Capsularia Ossium Metacarpium, that is capsular ligaments of the bases of the metacarpal bones, (6th, 97) uniting them to three of the lower, or second row of carpal bones, (6th 91, 92, 93), and they are firmly, interwoven with, and form the superior portion of

*q*'s. Ligimenti Interossei Metacarpium Ossium, (6th 95), or interosseous ligaments of the metacarpal bones, which extend to

74's Ligimenti Capsularia et Lateralia Primi Phalungis Manus, or capsular and *r*'s lateral ligaments of the first phalanx, or joint of the fingers, articulating the lower ends of the metacarpal bones (97), with the bases of the 1st phalanx of the fingers; the former are prevented from being seperated laterally by the

*s, s, s*. Ligimenti Transversalia Metacarpi, or three transverse ligaments of the metacarpus.

75, and 76. The second and third phalanges, or joints of the fingers, are also articulated by *t, capsular*, and *u, lateral ligaments*, as the first joint.

There is an Artery, which is part of

77. Arteria Interossea Anterior Cubiti, or anterior interosseous artery of the

fore-arm, demonstrated in the last stage, (4th, 53), and here observed adhering to the interosseous ligament, (5th 64), and at *v*, passing through an aperture in it to the back part of the wrist, (vide part II). We have also a

MUSCLE, the

77.* ABDUCTOR INDICIS, which

*Arises* at *w*, from the os trapezium, (6th 90), and the upper and inner side of the metacarpal bone of the thumb, (6th, 94, *y*,) and is

*Inserted* at *x* by a short tendon into the outer and posterior part of the first phalanx of the index, or fore finger, and also into the tendinous expansion on the back of that finger. (vide note after 50.)

*Function.* To carry the fore-finger from the others.

## STAGE SIXTH, OR LAST.

We shall now demonstrate the

BONES

of the fore-arm and hand, having perfectly deprived them of their periosteum* and pericrondrium. †

78. OS HUMERI, or the bone of the arm, of

* Compendium, p. 103. † Compendium, p. 105 & 123.



which we find it necessary at present to mention the lower portion only. We observe

79. CONDYLUM EXTERNUM, the external condyle. Its

*Form* is *a*, a spine or ridge, terminating in a large protuberance, *b*, and its

*Use* is to increase the surface for the articulation of the elbow, (81), and for the origins of the *extensor* muscles of the hand and fingers, (vide part II), and the supinators, (1st 1 and 4th 44).

80. CONDYLUM INTERNUM, or internal condyle of the humerus. Its

*Form* like the last mentioned part, but larger, and its

*Use* is the same, except that the powerful flexor muscles of this part arise from it.

81. THE ARTICULATING SURFACE at the lower end of the humerus, (6th, 78): its general direction is oblique, as on drawing the line, *c*, you will perceive. The *inner portion* articulating with the ulna, (6th, 84), is *formed* of *d*, a large internal, and *e*, smaller external, ridge, running from before backwards, which together form a sort of pulley.

THE OUTER PORTION, *f*, in form is round every way, some part of which is always in ap-

position with a depression in the button-like head of the radius, (6th, 82, *i*).

Immediately above the inner division of the articulation is a depression, *g*, to receive the coronoid process of the ulna (6th, 85), when the arm is bent, and by its outer side is a smaller and less deep pit, *h* for the button-like head of the radius, (6th, 82, *i*).

The object of the general obliquity of the joint is to enable the fore-arm to move towards the mouth, face, &c. with facility.

82. Radius, the external bone of the fore-arm; we may observe the following parts:—

*i.* Its Caput Fibulaforme Radii, or button-like head of the radius, which is round, and, in fact, like an ancient button with a depression in the middle to receive *f*, the outer part of the articulating surface of the humerus, (6th 78.)

*j.* Cervix Radii, or neck of the Radius, being that diminution in girth, which you observe immediately beneath its head.

83. Tuberculum Radii, or its tubercle; its *Form* is a globular process, and to it is attached the biceps flexor cubiti, (2nd 20).

*k.* A rough spine running from the tubercle obliquely downward and outward, into which the pronator radii teres, (1st 2), and the supinator, radii brevior, (4th, 44) are inserted



The shaft, or body is roundish in shape externally; internally, or towards the ulna, (6th 84), it is flat, having at *l*, a spinous edge for fixing the interosseous ligament, (5th 64). It is more bulky than the ulna, (6th 84).

There is a foramen (or hole) on its anterior flat surface, (above the number 82) for the passage of the medullary vessels and nerves*, *i. e.* those going to the marrow of the bone.

There are also various depressions, &c. arising from the pressure, origins, and insertions of the muscles, which are affixed to this bone.

Towards the lower part the radius becomes thicker, and on the face, (the anterior), which we now speak of, flat, and even in a degree concave, just above the articulating *surface*; and here at *m*, we observe a Fossa, (or long hollow) for the tendons of the flexor carpi radialis, (1st 2), and the flexor longior pollicis, (3rd 35), also more externally a more shallow and less defined fossa for the extensor ossis metacarpi pollicis.

*n.* Fossa Semilunaris Radialis, or semilunar cavity of the radius, the edge of which is seen in profile; it is lined with cartilage†,

* See Bayle and Hollard's Compendium, p. 113 & 14.

† Idem p. 115.

and in form adapted to receive the button-like head of the ulna, (6th 84, *v*), on which it rotates.

*o*. A flat uneven surface to which the external lateral ligament of the wrist, (5th 67), and the supinator radialis longior, (1st 1) are affixed.

*p*. Fossa Navicularis Radialis, or boat-shapen cavity of the radius, which is, in fact, two cavities divided by a ridge, for the articulating surfaces of the os naviculare, (6th 86), and os lunare, (6th 87) to play on, in effecting the flexion, and extension, and slight rotatory motion of the wrist; the outer of these two cavities enclosed by cartilage, continues downwards and backwards, and becomes the

*q*. Processus Styloideus Radii, which is rough, and of a blunt irregular form.

84. Ulna, Cubit, or the inner bone of the fore-arm. Its upper end is large, and of an irregular wedge-shape, having the following parts.

Olecranon, (not seen in this view, but indicated in the diagram by the dotted line inclosing the letter *g*,) which is a process forming the posterior prominent part of the elbow.

85. Processus Coronoideus, or coronoid process, from its rude similitude to a crow's beak; to it is attached the capsular liga-



ment, (5th 60). Between these two processes is the

Fossa Sigmoida Major, (part of it indicated by the dotted line surrounding the letters *g*, *e*, and *d*), greater sigmoid, or semilunar cavity, which is in form exactly adapted to the internal part of the articulating surface of the humerus, (6th 81), with this bone, and has a *ridge* running from before backwards, opposite the middle depression in that bone, and two cavities opposite the protuberances (*e* and *d*), of the same bone; there are therefore, in fact, two cavities, the outer small and the inner larger, instead of one, which are divided by a ridge or rib.

*r*. Fossa Sigmoida Minor, or smaller sigmoid cavity. It receives the button-like head of the radius *i*, being adapted to that part, that the radius may freely rotrate on it, to effect the pronation and supination of the hand; it is covered thickly with cartilage.

*s*. Tuberculum Ulnæ, or tubercle of the ulna, (6th 84), a small rough elevation, to which brachialis interus (3rd 32), is attached.

The shaft or body of this bone is of a triangular form, the anterior face of which, *t*, is wide at top and narrower below, and terminates in a rounded form: the external face *u*, is seen in

profile, it is very rugged and irregular at the upper part, but at the lower more smooth, and is in some degree blended into the roundish form of the anterior face, *t*, to it is attached the inner side of the interosseous ligament, (5th 64); the bone, after diminishing much in girth at the lower end, again swells out and ends in

*v*. Caput Fibulaforme Ulnæ, or the button-like head of the ulna, articulating with the semilunar cavity of the radius, *n*: its form is evident, and from it proceeds

*w*. Processus Styloideus Ulnæ, or styloid process of the ulna, from which a strong ligament, seen in the back view of this part, (Part II) is sent off to be attached to the bones of the wrist.

The anterior surface of this bone, *t*, is marked by the origins, insertions and pressure of muscles, &c., and there is generally observed, an oblique foramen, or hole for the vessels, and nerves of the marrow to pass through.

We now come to the bones of the Carpus, or wrist, which are eight in number, disposed in two rows, each bone being broader on its posterior than anterior surface, and thus forming an arch, which is, as you perceive concave in front, producing strength of structure, and convenient security for the muscles, blood vessels,



nerves, &c., passing downward to the fingers; all these bones are covered with cartilage to facilitate motion, that this is the object is evident from the

*Triangular Cartilage* serving that purpose so well, and its never ossifying as other cartilages in old persons frequently do.

It is not shewn, but is placed in the interval, between the button-like head and styloid process of the ulna, (6th 84, *v* and *w*), and the upper surface of the os lunare, (6th 87), being most firmly attached to the former bone.

It is not thought necessary to give a description individually of the forms, &c. of the bones of the carpus, as that will be sufficiently understood from seeing them anteriorly and posteriorly, and being informed of their names.

*The* First Row *of the* Carpal Bones.

86. Os Naviculare, or boat-shapen bone, also Os Scaphoides.

87. Os Lunare vel Semilunare, or moon-shapen bone.

88. Os Cuneiforme, or wedge-shapen bone, also, Os Triquetrum.

89. Os Pisiforme vel orbiculare.

*The* Second Row *of the* Carpal Bones.

90. Os Trapezium, being nearly that figure.

91. Os Trapezoides, from being somewhat like the Trapezoid.

92. Os MAGNUM, largest bone of carpus; also Os CAPILATUM.

93. Os UNCIFORME, so named from the unciform, or hook-like process, *x*, proceeding from it.

The METACARPUS, or bones beyond the wrist, are five in number, four devoted to support the fingers, and one for the thumb, their posterior surface more round than the anterior, which has a spine running down the middle of each, bifurcated above and below; they have also slight lateral spines for the small interosseous ligaments to be affixed to; they have each *y*, a base which is irregular in form, but having an articulating surface, exactly corresponding in figure with the part of the carpal bone, or bones which it is attached; *z*, a head which is ball-shaped, thus allowing lateral, as well as ginglimoid, or hinge-like motion. They are

94. Os METACARPALIS POLLICIS, or metacarpal bone of the thumb, which is flatter than those of the fingers, and is articulated with os trapenium, (6th 90). And

95. OSSA METACARPALES DIGITORUM, or the metacarpal bones of the fingers, and of which we may observe that the one supporting the index or fore-finger, marked

I, is articulated with Os TRAPEZOIDES, (91).



II. Middle finger is articulated with Os MAGNUM, (92.)

III. Ring Finger, } are ditto ditto Os UNCI-
IV. Little Finger } FORME, (93.)

Those bones, supported by the metacarpal bones, form the bony structure of the thumb and fingers, and from being arranged in rows, are termed "PHALANGES," each phalanx forming one of the rows of what are commonly called joints. Each of the bones forming the phalanges, has, like the bones of the metacarpus, a base, shaft or body, and head, on which we observe ridges and rugosities, formed for the attachment of the capsular, lateral, annular and other ligaments, the insertion of the tendons of muscles, and by the pressure of muscles and other parts.

The thumb has two phalanges,

96. 1st, PHALANX OF THUMB.

97. 2nd, ditto ditto.

Each of the fingers has three phalanges.

98. 1st, PHALANX OF FINGERS,

99. 2nd, PHALANX OF FINGERS.

100. 3rd, PHALANX OF FINGERS.

We also observe at the end of the last phalanx of the thumb, (6th 97), and fingers, (6th 100), a rough and irregular crescent-shapen prominence, to which the vascular, and pulpy

nervous substance of the points of the fingers and thumb is attached anteriorly and beneath, and the nails posteriorly, of which we shall speak in the next part.

END OF THE FIRST PART.

## SOME OBSERVATIONS ON PHOSPHORUS. *By* JOHN DAVY, *M. D. F. R. S., Assistant Inspector of Army Hospitals.*

*From the Edinburgh New Philosophical Journal for July* 1833.

IN the Number of the Quarterly Journal of Science for July and December 1829, is a paper by Mr Thomas Graham on the slow combustion of Phosphorus, in which he has given an abstract of what was previously known on the subject; and has, besides, added several curious particulars, ascertained by himself.

Before I was acquainted with Mr Graham's paper, I had been engaged in a similar inquiry, the results of which I now propose to give. Although the greater number of them accord sufficiently with his, some of them are different, and a few of them I believe are new.

It is considered as a well established fact, that phosphorus does not shine in oxygen gas at a temperature below 64°. This is stated by Mr Graham, and by Dr Thomson in his System of Chemistry; it is also stated, that phosphorus does not combine with oxygen below the point of fusion. The results of my experiments have been different. In some instances, in which I have introduced phosphorus into oxygen obtained from chlorate of potash, it has not shone in the dark between 60° and 80°. In others, it has shone very feebly, even more feebly than in common air; the oxygen not having sensibly diminished in a volume in the course of several hours. In others, it has shone very brightly, sometimes by fits, flashes of light appearing and disappearing; and sometimes without interruption, with an intensity, though infinitely below the violent combustion of phosphorus, so much above its very slow one, that the heat produced fused the phosphorus, and the ascent of the water or mercury in the tube was visible in progress, and occasionally rapid, and yet never breaking out into vivid inflammation.

To what these differences of effect have been owing, I have not been able to ascertain; only this far, that they were not concerned with the purity of the gas, at least, in relation to the presence of small variable proportions of atmospheric air, or indeed any appreciable adulteration; or with the degrees of temperature. The most probable mode of explanation of the luminous appearances in different degrees is, that they are connected with the formation of different compounds of phosphorus and oxygen, according to the analogy of the degrees of light emitted

by sulphur in combustion; but of the truth of this I have not been able to satisfy myself by experiment.

In accordance with the observations of others, I have found that when oxygen gas is rarefied, phosphorus shines in it; and that when condensed, it ceases to shine. With an augmented pressure of a column of mercury of 16 inches, when heated with a spirit-lamp in this gas, it emitted no light, till it fused; then it burst into flame and burnt explosively, and the oxygen was condensed in an instant.

Dr Ure states in his Dictionary of Chemistry, that phosphorus soon ceases to be luminous in dry atmospheric air, on account of the acid coat formed on it, which protects the surface from the farther action of the air. This I have not found to be the case. A stick of phosphorus suspended over strong sulphuric acid in a limited portion of atmospheric air, continued shining many hours, till, there was reason to suppose, all the oxygen was consumed; and the result has been the same when phosphorus has been introduced into air confined over mercury, and previously dried by the same acid; when its light ceased, a fresh portion of phosphorus thrown up did not kindle. In both instances, the luminous appearance was as bright as in common air that had not been artificially dried.

Compression and rarefaction in the instance of common air, has an effect analogous to that mentioned when speaking of oxygen. In a bent tube, under an increased pressure of 90 inches of mercury, phosphorus did not shine. When the experiment was reversed, it became luminous, and more so than under ordinary atmospheric pressure. The volume of atmospheric air compressed in one instance and rarefied in the other, was about one cubic inch.

The same effect is displayed in a striking manner by heating phosphorus in a retort securely closed. The compression from the intense heat produced when the phosphorus inflames, presently extinguishes the flame, which may be rekindled by allowing a portion of the confined air to escape.

When phosphorus is placed on the plate of an air-pump, under a receiver, and the air exhausted, the brightness of its light in the dark rather increases with the exhaustion, and, in the nearly perfect vacuum formed by a good pump, its light was not diminished. When the air has been suddenly readmitted, its light has been extinguished, and for a few seconds it has ceased to shine.

When phosphorus has been placed in distilled water under the receiver of an air-pump, and the air dissolved in the water has been exhausted, or taking it into the open air out of the water by a thread attached to it, it has shone with rather increased brightness. If now immersed in common water, and suddenly



taken into the atmosphere, it has emitted no light. Many other effects similar to this might be mentioned, showing how circumstances, apparently very trifling, exercise an influence on phosphorus, and promote or impede, in a manner that could not have been expected *a priori*, its union with oxygen, and its luminous appearance depending on this union.

In accordance with the results of Mr Graham's experiments, I have found that the vapour of ether, oil of turpentine, and every other essential oil that I have tried, extinguished the light of phosphorus shining in common air. The vapour of alcohol, of camphor, and even of assafœtida at ordinary temperatures, has had the same effect. Phosphorus even fuses in the vapour of camphor without becoming luminous; and may even be sublimed with camphor without inflaming. The mixed sublimate of phosphorus and camphor exposed to the air on the warm hand, did not shine till rubbed, when it became brilliantly luminous. Phosphorus may also be boiled in and distilled from oil of turpentine without inflaming.

Though phosphorus inflames in pure chlorine gas, its light is extinguished when it is exposed to the vapour of chlorine, as when it is held over an aqueous solution of this substance. The same happens when it is exposed to the vapour of Iodine and Bromine.

It does not shine in nitrous oxide, though mixed with common air. When heated in this gas it melts, and at the subliming point decomposes the gas explosively with a bright flash. Its light is extinguished by nitrous acid gas or vapour, even when so much diluted with common air as hardly to be perceptible by the sense of smell.

The vapour of ammonia, of muriatic acid, of distilled vinegar, and of hydrocyanic acid, do not appear to prevent phosphorus from shining; they rather increase the brightness of its light. It shines in carbonic acid gas, and muriatic acid gas, when the minutest quantity of atmospheric air is present.

It appears to be soluble, or capable of rising in vapour in muriatic acid gas, carbonic acid gas, and hydrogen gas; for when these gases perfectly pure have been kept some time over mercury with phosphorus in them, a luminous appearance has been produced (bright flashes of diffused light), when they have been passed alone into a jar of common air. The same effect takes place, when the azote of atmospheric air, deprived of its oxygen by the *slow* action of phosphorus, is thrown into the atmosphere, or into oxygen gas. But the reverse is the case, when the oxygen of the atmospheric air has been separated by *intense* combustion; however much the phosphorus has been in excess, and though it has been a second time sublimed in the azote, it has not acquired the power of shining on admixture with com-

mon air, although from its smell there was no reason to suppose that the gas did not contain phosphorus in solution.

Mr Graham has pointed out the remarkable effect of different varieties of carburetted hydrogen in extinguishing the light of phosphorus. The results of my experiments with these gases perfectly agreed with his. I have also found that hydrogen gas obtained from iron-filings and dilute sulphuric acid (the former from the blacksmith's shop) has had a similar extinguishing effect, though in a less degree. One volume of it, mixed with fifty-nine of common air, has prevented phosphorus immersed from shining; diluted more than this, it lost its preventive power. This result is probably owing either to the presence of a little vapour somewhat analogous to that of naphtha, on which the odour of hydrogen gas thus procured depends (and the odour of this gas was strong); or, on the presence of a little carburetted hydrogen formed by the union of the nascent hydrogen and the carbon of the cast-iron or steel at the instant of separation. The result of the analysis of the gas by the explosion with oxygen by means of the electric spark, has been rather favourable to the first supposition; but the quantity of carbonic acid gas formed was so extremely small, that it was impossible to decide positively. The fact that hydrogen gas procured by means of very pure steel, such as piano-forte wire, does not, when mixed with atmospheric air, extinguish the light of phosphorus, is favourable to the same conclusion.

Some of the results described are not without interest in relation to practical chemistry. Mr Graham has pointed out the applicability of phosphorus to detect in mixed gases the presence of very minute quantities of carburetted hydrogen. It is equally applicable as a test of the purity of muriatic acid gas and carbonic acid, and hydrogen gas. If they contain the slightest trace of common air, phosphorus will shine in these gases, provided they are otherwise unadulterated. It has been shewn how it is capable of detecting an adulteration of hydrogen, which had hitherto, I believe, escaped detection; and, it may also be employed to detect similar impurities in other gases, in which, with an admixture of common air, phosphorus usually shines. I need not point out the caution that is required in deciding on the absence of oxygen, in any mixed gas in which phosphorus does not become luminous.

In relation to the results in general, they are not without some interest theoretically considered, as belonging to the more obscure phenomena of chemistry, somewhat analogous to what we witness in the animal and vegetable kingdoms, in which notable changes during life and after death are taking place, owing to the action of causes which we are not able to appreciate, or perhaps of substances which have hitherto eluded detection.

MALTA, *March* 1833.

A

PROBATIONARY ESSAY

ON

# CARBUNCLE.

To
Sir James McGregor Bart
with the respectful compliments
of the Author

A

PROBATIONARY ESSAY

ON

# CARBUNCLE,

SUBMITTED,

BY THE AUTHORITY OF THE PRESIDENT AND HIS COUNCIL,

TO THE EXAMINATION OF THE

**Royal College of Surgeons of Edinburgh,**

WHEN CANDIDATE

FOR ADMISSION INTO THEIR BODY,

IN CONFORMITY TO THEIR REGULATIONS RESPECTING THE

ADMISSION OF ORDINARY FELLOWS.

BY

ANDREW DOUGLAS MACLAGAN,

SURGEON,

PRESIDENT OF THE ROYAL MEDICAL AND PLINIAN SOCIETIES

OF EDINBURGH.

Causa latet, vis est notissima. OVID.

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MDCCCXXXIII.

TO

DAVID MACLAGAN, M.D., F.R.S.E.

PHYSICIAN TO THE FORCES, &c.

FORMERLY PRESIDENT OF THE ROYAL COLLEGE OF SURGEONS,

*This Essay is Dedicated, with every feeling of respect and esteem, by his affectionate Son; who, while enjoying the advantages of his Father's assistance and advice in the prosecution of his Professional Studies, has not forgotten the kindness and indulgence extended to him in his boyish years.*

TO

JOHN THOMSON, M.D., F.R.S.L. & Ed.

PROFESSOR OF MEDICINE AND PATHOLOGY,

AND

J. W. TURNER, ESQ. F.R.S.E., F.R.C.S.E.

PROFESSOR OF MEDICINE AND SURGERY IN THE UNIVERSITY OF EDINBURGH;

THESE PAGES ARE ALSO INSCRIBED BY THE

AUTHOR,

IN TESTIMONY OF RESPECT FOR THEM AS HIS INSTRUCTORS,

AND GRATITUDE TO THEM AS HIS FRIENDS.

ON

# CARBUNCLE.

The term Carbuncle or Anthrax * has been applied to a circumscribed inflammatory tumour seated in the cellular membrane, attended during its progress with considerable constitutional irritation, and usually terminating in sloughing of the affected part.

Three distinct species of the disease are now generally recognised by authors.

* In Peter Lowe's "Discourse of the whole Art of Chyrurgery, Glasgow, 1612," I find the following exordium to the chapter on Anthrax or Carbuncle. "There is small difference between Anthrax and Carbuncle, saving that Anthrax is the Greeke word, and Carbuncle the Latine, and is so called because it burneth the place where it is like unto coales. Carbuncle is defined to be a pustule inflamed, black-burning the place. It is sore with many blisters about it, as if it were burned with fire or water."

I. Simple Idiopathic Carbuncle.

II. The Pestilential Carbuncle, or that which appears as a symptom of the plague, and in some malignant fevers.

III. The Epizootic Carbuncle, or that disease described by many of the French writers, under the names of Pustule or Charbon Maligne.

My object in the following Essay is to describe Carbuncle as a local disease, and to give an account of the constitutional affection, merely in as far as it is symptomatic of, or secondary to, the local injury.

I. *Simple Carbuncle.*—The affection generally commences with a sharp pain and sense of burning heat in some part of the skin, where there soon appears a small tumour of a purple colour, surrounded by a hard base, attended by a deeper seated pain, and most annoying itching.

As the disease advances, the swelling and hardness increase, and the skin over and around the tumour acquires a dark red or purple colour, which is deepest towards the centre of the swelling. At this point a small vesicle about the size of a pea soon shews itself, which is generally burst by the patient in his attempts to allay by scratching the sensation of itching; and beneath this vesicle a small ulceration is found, discharging a thin yellowish fetid



ichor, generally extending through the true skin, and disclosing the cellular membrane converted into a whitish or ash-grey coloured slough. Numerous smaller vesicles also appear on the whole surface of the tumour, which burst and present similar appearances.

If the disease proceeds to a favourable termination, the slough, either by the efforts of nature or the assistance of art, is discharged, and there remains a large granulating cavity, which speedily contracts and heals.

Such is a general description of the ordinary progress of the local symptoms of Carbuncle.

The disease throughout its course is attended with constitutional symptoms, in the form of a fever, which assumes more of the inflammatory or typhoid type, according to the age and constitution of the patient and other collateral circumstances.

The less recent writers on surgery were always careful to draw a marked distinction betwixt Anthrax or Carbuncle, and Furunclus or Boil, but it is now generally allowed that any difference between these two affections is only in degree; and indeed, if we trace their pathology, we shall find that, strictly speaking, Phlegmon, Boil, and Carbuncle, may all be classed together as inflammations of the cellular

texture varying only as regards their termination; in the first case in simple suppuration, in the next in suppuration attended by the separation of a small slough, and in the last in complete sphacelus or mortification of the affected part.

RICHTER * describes a boil as being in many cases like an inflamed encysted tumour, and compares the sloughing cellular membrane to a cyst enclosing the pus,—thus bringing it nearly to the nature of a circumscribed abscess, with its lining membrane of coagulable lymph; and in speaking of Carbuncle, he defines Anthrax to be a malignant boil which speedily ends in mortification, and is sometimes attended with much danger.

The chief peculiarities by which Boil and Carbuncle were supposed to be distinguished, consist in the former discharging some pus along with the sloughing cellular membrane, and in its being a milder and more tractable form of disease than the latter.

The Epinyctis and Terminthus described by WISEMAN †, appear to have been two varieties of boil differing but little from one another, and apparently intermediate betwixt the boil and carbuncle of authors.

* Anfangsgrunde der Wundartzneykunst. Goett. 1799.

† Chirurgical Treatises, by RICHARD WISEMAN. 1676.



The Epinyctis is described as being about the size of a lupin seed, of a dusky red, but sometimes of a livid or pale colour, with great pain and inflammation, discharging first a sanies and then a bloody matter.

The Terminthus is described as being of smaller size, with nearly the same characters, and terminating by sloughing. From these, and similar observations, it would appear, that, as regards local symptoms, Boil and Carbuncle differ only in the intensity of the inflammatory action, and that they are essentially similar in nature.

Most systematic writers have made a division of Carbuncles into Malignant and Benign; the latter term being applied to all forms, however severe, of the idiopathic kind. Baron BOYER * has followed this arrangement, but under the head of Malignant Carbuncle has included two species, the pestilential, and non-pestilential;—by the former meaning that form of carbuncle which occurs in cases of plague and of bad typhous fever; and by the latter, idiopathic carbuncle of a severe form, attended with

* BOYER, Maladies Chirurgicales, tom. i.

typhoid symptomatic fever. But, upon the whole, it will be found better to adhere to the division into Simple or Idiopathic, and Pestilential or Symptomatic, restricting the latter term to the Carbuncle of the plague and typhus.

Anthrax seems to consist essentially of an inflammation of the cellular tissue of a gangrenous character, the affection of the skin being of a secondary nature, and not being always proportionate to the extent of disease in the cellular membrane. Indeed, it has always been a remark with practical surgeons, that it is far from easy to ascertain from the state of the skin what the amount of mischief is which the disease may be doing in the cellular tissue. Perhaps the best means we have of ascertaining the extent of the disease, is to feel for the termination of the circumscribed hardness which surrounds the base of the swelling, as it generally marks the spot where nature, in her endeavours to check the progress of the disease, has erected a barrier of lymph between the living and dead parts.

The first appearance of the destructive process having attacked the skin, is the formation of numerous vesicles on the tumour. In many cases the ulcerations are so numerous, that the surface of the tumour bears a strong resemblance to a portion of



honeycomb. After this the progress of the disease is simply that of the separation of a slough, which process goes on with greater or less rapidity, according to the severity of the attack, the remedial measures employed, and the strength of the patient's constitution.

Carbuncle may have its seat in any part of the body. It appears most commonly as a single tumour, but in some cases several arise at once. It frequently occurs between the shoulders, and often on the sides or front of the neck, in which latter situation it is generally a more severe affection than when situated on the trunk or extremities. In the more common cases, the tumour acquires the size of a large orange or small melon; but it has sometimes been observed to be as large as an ordinary dinner plate.—(RICHTER, op. cit.)

Of the causes of Carbuncle little or nothing is known. There does not seem to be any habit of body or peculiarity of constitution necessarily giving rise to it, though it appears to occur most frequently in persons of a debilitated constitution, or in those whose health has been impaired by voluptuous living. This is a remark that has long been made by practical writers, and coincides with an observation of my respected teacher Professor THOMSON, who remarked in his lectures on General Pathology, that

he had frequently had occasion to observe the disease in persons of a gouty constitution.

The disease which BOYER has described under the name of Malignant Non-pestilential Carbuncle, and which appears to be a severe idiopathic anthrax, attended with typhoid symptoms, has been observed by that eminent surgeon to prevail epidemically, particularly in hot seasons, and to attack children more readily than adults. I have also heard Dr THOMSON remark, that some of his professional correspondents in India had observed something like an epidemic prevalence of Carbuncle in that country.

The constitutional symptoms which attend carbuncle are usually of a severe kind, whether they assume the inflammatory or typhoid type. There does not appear to be any corresponding relation established by authors between a particular form of local disease and the kind of constitutional affection; and we may consider the distinctions of Carbuncle into benign and malignant, as indicating rather varieties in the degree of intensity, than any specific difference in the nature of the diseased action.

The severity of Carbuncle and danger to life arising from it, depend chiefly upon the nature and degree of the constitutional symptoms, more particu-



larly as these are influenced by the size or number of the local affections.

If, in the local appearances, we cannot find any specific difference to account for the varied, or rather opposite, types of the symptomatic fever, we shall probably find the circumstances fully explained by a reference to the habit of body, general health, or previous manner of life of our patient. If the subject of the disease be young and plethoric, the fever will generally assume the inflammatory type; but if, as is too often the case, the disease occurs in a person advanced in years, or in one whose constitution has been shattered by his previous habits of life, the fever, even from the commencement, may have more or less of the typhoid character.

DELPECH * says, that the fever appears under the form of a quotidian remittent, by which, I presume, he means a symptomatic fever, with a daily increase of the febrile symptoms, which we know frequently takes place in all symptomatic fevers, and generally towards evening.

But although the fever may be of a well-marked inflammatory type at the commencement, it will be well, in reference to practice, to bear in mind the frequency of the occurrence of typhoid symptoms

* Delpech, Maladies Chirurgicales, tom. i. p. 59.

during the progress of the disease, and particularly towards the later periods.

Mr PEARSON *, besides the more general symptoms of typhoid fever, mentions, that in some cases a miliary and petechial eruption had occurred in the course of the disease. As these appearances in the course of symptomatic fevers are not common, there seems reason to suspect that the local affection had come on as a complication of an idiopathic typhoid fever of a bad character; and Mr PEARSON himself says, "Anthrax is assigned by authors as a very common appearance in pestilential diseases; and where there is no reason to suspect the plague as a cause, that state of the system is commonly present which is characteristic of putrid fever."

In some cases, there appears to be a tendency to the formation of Carbuncles, intermixed with simple boils, all over the body; for "sometimes we see, towards the end of the malady, a new eruption of large pimples, which suppurate, whilst occasionally some of them become true Carbuncles †."

In the treatment of simple Carbuncle, as observed by Professor SAMUEL COOPER, "the duty of the surgeon may be described in a few words."

* PEARSON. Principles of Surgery, p. 147–8.

† Encyclopédie Méthodique, part Chirurg. art. Anthrax.



The local treatment consists essentially in endeavouring to procure, as speedily as possible, the separation of the sloughs; whilst the constitutional affection is to be combated by a treatment corresponding to the nature of the symptoms.

In the early stages of the complaint, occurring in a young or plethoric subject with a full pulse, bloodletting may be resorted to; but caution in reference to after consequences is required in the employment of this powerful remedy, and we must bear in mind the debility which frequently occurs towards the termination of the disease.

This doctrine would certainly be dangerous if applied to all inflammatory diseases, in many of which the after debility is proportionate to the previous irritation, and may often be greatly prevented by the early and free use of depletory measures. But here, where a large slough must separate, and an extensive suppuration necessarily follow, the advantages and disadvantages of bloodletting should be well weighed before its employment is had recourse to.

Most commonly, instead of depletory measures, those of a contrary kind may be called for; and instead of the abstraction of blood, the administration of stimulants may be necessary. In most cases where the antiphlogistic treatment is considered ne-

cessary, the use of antimonials, laxatives and low diet will suffice. Many cases, however, are on record, where a violent aggravation of the disease took place under this treatment, and where the amelioration was rapid on the employment of stimulant remedies *.

But if caution be required in the employment of the lancet, it is equally demanded in the use of stimuli, an excess of which may defeat the object of their administration, by aggravating the local disease; indeed, in the first stage of the affection, our measures may perhaps be equally successful, if confined to the refraining from depletion, as in the resorting to stimulants. In many cases, however, we may find it necessary to administer wine, even before the separation of the slough has commenced; and too often we shall find, that, notwithstanding the use of wine, and the employment of bark, camphor, and other boasted remedies, the typhoid fever will prove fatal. The evacuation of the bowels should never be neglected, whatever the type of the fever may be. In typhoid cases, of course, the mildest laxatives should be used. Both in conjunction with the stimulant treatment, and even in cases where bloodletting has been employed, the

* New York Med. and Phys. Journal, vol. iii.



intense burning pain may be so severe as to require the use of an opiate.

In the local treatment of Carbuncle, it may be useful, in the early stages of the disease, to apply a few leeches over the tumour, chiefly with a view to moderate the pain; for it will seldom, if ever, be found practicable to affect the cure of a Carbuncle by resolution after it is fairly formed.

No treatment seems to be of more use, in the first place, than the application and frequent renewal of large emollient poultices; but more energetic means must speedily be resorted to.

The great object to be held in view is to procure, as speedily as possible, the separation of the sloughs; and, for this purpose, the early employment of free incisions is the practice most generally adopted by surgeons, particularly in Britain. These incisions should be carried to such a depth as fairly to divide the slough, but not to penetrate into the subjacent sound parts. For a Carbuncle of moderate size, two incisions, reaching from side to side of the tumour, and intersecting each other at right angles, will generally be sufficient. These means must be adopted promptly and early. It will not do for the surgeon to delay making his incisions in the hopes of being able to subdue the disease by milder means.

The slough, separated from the surrounding parts, and totally deprived of vitality, resembling in no small degree, a sponge soaked in an irritating fluid, can only act as a foreign body; and, till it is removed, or a free exit given to it, no diminution of the local affection, or abatement of the constitutional symptoms, can be looked for. In many cases, it is necessary to cut off portions of the undermined skin to afford a free exit for this slough.

DELPECH * conceives that the incisions can be of use only when the gangrenous inflammation shall have been bounded by other means, and that they act by what he calls adding more power to the local reaction in the affected parts; but he adds that it is the opinion of Baron DUPUYTREN, that early incisions will check the gangrene, by giving relief to the tense and strangulated state of the parts. This, I believe, is in accordance with the experience of most British surgeons of the present day. The patient often experiences sudden and great relief from the incisions on this account †.

The actual cautery, and the powerful caustics formerly so much reputed in the treatment of Carbuncle, have, particularly in England, been almost entirely superseded by the certainly less painful, and equally, if not more, efficacious practice of incision. In America, considerable attention seems to have been paid to other remedial means. The practice of applying large blisters over the tumour, not only in the inflammatory stage, but after the state of sloughing has come on, and the skin has assumed the honeycomb appearance, was first introduced by Dr PHYSICK, of New York. A case in which this plan of treatment was followed by a successful result, is related by Dr BECK *. The application of the first blister gave immediate relief, and the inflammation assumed a more healthy character; the vesicatory was repeated two days afterwards with more manifest success, the sloughs soon separated, and the sore healed in six weeks. In his observations on the above case, Dr BECK remarks that Dr PHYSICK has since abandoned the use of blisters, and gives a decided preference to the use of caustics. Reference is made by Mr SAMUEL COOPER, in the last edition of his Surgical Dictionary, to a case healed by caustics by Dr PHYSICK †, of which the latter gentleman has published

* Delpech, Maladies Chirurgicales, tom. i. p. 61.

† Vide a case by Dr JONES, in vol. i. of Transactions of College of Physicians of Philadelphia.



* New York Medical and Physical Journal, vol. ii.

† Philadelphia Journal of Medical and Physical Science, vol. iii.

an account, but I regret that I have been unable to obtain a perusal of the paper *.

Dr HOSACK relates a case in which the remedies consisted of poultices rendered stimulant by the admixture of a quantity of spirits, along with internal tonics and stimulants. No incisions were made; but, from Dr HOSACK's narrative, there seems to be room for doubt as to the true nature of the affection; for the discharge is said to have been very healthy pus, and there was no sloughing of the cellular membrane. Indeed, upon the whole, the case seems to have been rather one of boils (for several tumours appeared though one only assumed a violent form), occurring in the debilitated body of an old man of eighty-four *. Other cases, in which the true nature of the disease was less equivocal, have since been treated with success in this manner in America †.

When causties or the cautery are employed, it may render their action more efficacious, if, before their application, incisions be made a little way into the dead and insensible slough, or if portions of it be picked away with the forceps.

The extirpation of the tumour, which was once

* Edin. Med. and Surg. Journ. vol. vi.

‡ New York Med. and Phys. Journ. vol. vi.



practised, has now been entirely abandoned, as it is found to be a very painful method of cure, and to possess no advantages over the more simple means. Of all these remedies the incisions seem to be the least painful, and certainly not the least efficacious, in causing the separation of the sloughs. Advantage will be obtained after the incisions have been made in applying to the sore some stimulant application, such as the common hot-dressing, composed of resinous ointment and turpentine.

After the sloughs have come away, and a raw granulating but healthy sore is left, the usual local remedies, combined with a nutrient and generous regimen, will generally bring the case to a successful issue in a few weeks.

The next species of Carbuncle of which I purpose to give a short account, is that symptomatic affection which occurs in the plague, and other malignant typhoid disorders.

In the plague, the Carbuncle shews itself along with the buboes and petechiæ which generally occur in this disorder; and, according to the observations of Dr RUSSELL *, is very rarely unaccompanied by some of these eruptions. Dr RUSSELL in-

* RUSSELL on the Plague. 4to.

forms us that Carbuncles appear in nearly one-third of the cases of plague; but that, of 2700 cases which he observed, only 85 had Carbuncles, without buboes or petechiæ, and many of the cases were seen at a period of the disease when it was not improbable that buboes or petechiæ might afterwards shew themselves. Dr RUSSELL observed, that they were least common in winter, but began to appear generally about May, were most frequent in the heat of summer, and seemed to decline again towards autumn.

In perusing the various works of the authors who have written on the plague, we cannot avoid being struck with the discrepancies which occur in their descriptions of the various species of Carbuncle which shew themselves, and notwithstanding the high authority of some writers, we shall find it difficult to resist the conclusion that the various species which have been described are merely varieties, depending on collateral circumstances. To use the words of Dr RUSSELL, "the same eruption appears under different forms, as it happens to be viewed in its different stages, and hence perhaps the varieties of the Carbuncle have been erroneously multiplied *." Dr RUSSELL enumerates five species which he thinks he has observed, all varying more or less in

* Op. cit. p. 121.



the degree of inflammation of their base, and in the extent and rapidity of their sloughing; but he allows that they are not to be distinguished after the formation of the slough. The differences which he has pointed out at length in his extremely valuable treatise, are too minute to demand or admit of being here noticed in detail.

In some of the cases observed by Dr RUSSELL, two or three Carbuncles only appeared, whilst in others as many as twenty or thirty shewed themselves at once. The usual size of the tumours seldom exceeded that of a horse bean, and the description of many of the varieties accords strikingly with that given by WISEMAN, of the Epinyctis and Terminthus. The character of the sloughing is described as a good deal different from that of the simple Carbuncle. The sloughing seems, in no instance, to have been deep in the cellular membrane, but to have had its principal seat in the true dermoid tissue. It generally began to be formed on the third, fourth, or fifth day, and speedily assumed the appearance of an eschar, produced by the application of caustic to the skin. This appearance is well seen in three delineations in the collection of Professor THOMSON. In cases where recovery took place, the sloughs gradually separated, with a little suppuration, around the edges; but, in fatal cases,

the eschar remained dry, without any tendency to separate.

No part of the body seems to be exempt from the eruption of these Carbuncles, although they have never been seen on the skin covering the buboes.

VERNY * states that he had seen them on the mucous membrane of the fauces, as is commonly observed of the pustules in cases of small-pox.

The period of the fever at which they occur is very various. RUSSELL never saw them later than the 18th day. In all cases, however, the invasion of the febrile affection precedes the local disease, thus establishing the great difference between the simple and pestilential Carbuncle, that the former is idiopathic, and is the cause of any fever that may occur; whereas the latter is a local disease, symptomatic of the typhoid constitutional disorder.

In the local treatment of the pestilential Carbuncle, it was formerly the custom to apply freely the actual cautery, as appears from the work of Dr HODGES on the Plague of 1665. Such severe treatment, we are called upon by every feeling of humanity to reprobate as at least useless; for why subject a patient who will, in all probability, die of the fever itself in the course of a few days or hours, to such cruel treatment, on account of a local affection

* VERNY, Traité de la Peste.



which is neither in itself dangerous, nor the cause of the constitutional disturbance? Fortunately, most late writers agree, that less energetic local treatment is sufficient. Dr RUSSELL informs us, that he did not, in general, require to have recourse even to scarifications. His favourite remedy was a simple emollient poultice, which, with a little stimulant dressing, he found to be the only local applications required.

With regard to the appearance of Carbuncle in typhus fever, little need be said. It is seldom seen, even in the worst cases of typhus admitted into our hospitals; but, according to DELPECH *, when it does occur, it uniformly tends to aggravate the typhoid symptoms. BOYER † states, that when any amelioration follows its eruption, the Carbuncle may be looked on as a sort of critical appearance. He does not, however, state that he ever had seen cases in which this occurred.

There is nothing particular to be remarked as to the treatment in those cases, except, as DELPECH suggests, that it would be better to delay any but the mildest local treatment, for fear of aggravating the sinking condition of our patient.

The third and last form of Carbuncular disease

* DELPECH, Malad. Chirurg. loc. cit.

† BOYER, Maladies Chirurg. loc. cit.

which remains to be described, is that which has become known to us through the writings of the French authors, under the name of Charbon, or Pustule Maligne, the Milzbrand of the Germans.

This form of Carbuncle consists of a circumscribed gangrenous affection of the skin and subjacent cellular membrane, usually commencing with a small dark-coloured vesicle, giving way and disclosing a slough of the skin, which rapidly extends to the cellular membrane, and is attended during the course of its progress with constitutional symptoms of a typhoid character.

The earliest descriptions of this disease are those of MM. THOMASSIN, whose essay on this subject divided the prize of the Academy of Dijon in 1780*; and of ENAUX and CHAUSSIER, 1785†. Since that time, descriptions of the disease have been given by BAYLE‡ in 1802; and more lately by DELPECH§, BOYER‖, and RAYER¶. Most of the authors

* Traitement des Gangrènes en général et du Charbon en particulier. Berne, 1792.

† Méthode de traiter les Morsures des Animaux enragés; suivie d'un précis sur la Pustule Maligne. Dijon et Paris 1785.

‡ Considérations sur la Nosologie. Paris, 1802.

§ Maladies Chirurgicales. 1816.

‖ Maladies Chirurgicales. 1818.

¶ Traité des Maladies de la Peau. Paris, 1827.



who have written on the Pustule Maligne, seem to agree in considering it as a disease of a truly contagious nature. It appears, however, to arise spontaneously in cattle and other animals in marshy districts, chiefly during hot weather; and in many provinces of France, particularly Burgundy, Franche Comté, Lorraine, &c. it prevails as an epizootic: but it appears, that in most of the cases in which it has occurred in the human body, it has been made out to have arisen from the application of contagious matter from the bodies of animals so diseased. The doctrine, however, of a specific contagion, is, I think, to be received with caution, inasmuch as the disease has, in some cases, been seen to arise from punctures received in opening the bodies of animals which had not been affected with the disease itself, but which had only been exposed to great fatigue, or other debilitating causes, previous to being slaughtered *.

The disease has been observed to occur most frequently among butchers and others employed in slaughtering the cattle, and in peasants who are engaged in administering remedies to them when diseased.

The affection invariably shews itself on parts of the body which are not covered by clothing, and thus

* Vide Cyclopædia of Practical Medicine, art. Mortification, by Dr CARSWELL.

exposed to the contact of morbiferous matters. The arms, hands, neck, face, and breast, are the usual seats of the disease, and this circumstance furnishes us, at least, with presumptive evidence, that it originates in causes acting from without.

It does not seem to be necessary, for the production of the Pustule, that there should be any cut or puncture, many cases being on record where the disease was caused merely by the blood of the animal falling on the skin of the individual affected. The contagion is generally believed to be capable of being conveyed by dead matters; many cases are known of persons becoming infected from carding the wool, or dressing the hides of the diseased animals; and, according to BOYER, so difficult is the destruction of this contagious matter, that the skin which has been prepared in the usual way, and has been used for domestic purposes, retains, even for some years, the power of propagating the contagion.

M. BAYLE, whose essay I have quoted above, considers the disease, when it affects the human body, as having sometimes an origin independent of contagion. The observations on which he has founded this opinion are rather of a limited extent, particularly when compared with the great mass of evidence collected by other authors, and have been



well commented on by BOYER in his work Sur les Maladies Chirurgicales.

M. DAVY LE CHEVRIE has, it appears from the work of BOYER, also seen some cases which would tend to establish the doctrine of BAYLE; and BOYER himself seems inclined, chiefly on the authority of the above mentioned authors, to adopt a similar opinion. But I think that, without denying the possibility of such an occurrence, we may consider the question as to the occasional sporadic origin of the Pustule Maligne as still *sub judice*.

MM. FOURNIER and MERAT of Dijon conceived that the Pustule Maligne might arise from the bite of an insect. However ingenious this supposition may be, we must require some farther evidence before we can admit that a disease, so terrible in its effects as the Pustule Maligne, can arise from the bites of insects alone; but I think we may easily conceive the possibility of an insect conveying morbific matter from an already existing pustule to a healthy person, and giving rise to the usual train of symptoms, without that person being aware that he had been exposed to the contagion. ENAUX and CHAUSSIER, as well as DELPECH and BOYER, although they do not relate any cases in which this was actually observed, state, that it was consistent

with their knowledge, that observations had been made which tended to confirm this opinion.

The disease may likewise be communicated from one person to another, as occurred in the case of a woman who, whilst attending her husband, who was afflicted with Pustule Maligne, touched her face with some of the matter from the vesicles of the pustule, and was speedily attacked with the disorder*. This corresponds with what has been observed in some cases of Erysipelas.

Some of the authors who have written on Pustule Maligne, maintain that the flesh of those animals which die of the disease may be eaten with impunity. To say the least of this, it is rash and dangerous to promulgate such an opinion, for, although some authors may have met with instances in which such meat was eaten, without producing any bad effects, yet there are many more cases on the contrary in support of the fact, that animal matters, both when diseased, and when a certain degree advanced in putrefaction, produce, when eaten, generally dangerous, and often fatal effects; and cases are not wanting in which an eruption of a malignant carbuncular nature has been the result †.

In detailing the symptoms of the Pustule Maligne,

* Thomassin, oper. cit. p. 30.

† Christison on Poisons, p. 473.



authors have generally described it as consisting of four periods. In the first, there comes on in some part of the skin an intolerable itching, which attracts the attention of the individual to the spot, where he discovers a small dark-coloured vesicle, which, when it bursts or is opened, discharges a few drops of dirty serum, and discloses a portion of the skin in a state of gangrene. In the second stage, a small hard moveable and painful tumour shews itself, around which an areola is formed, which is little raised above the surrounding skin, and is free from tension. But in the third stage, the gangrenous spot rapidly extends, the swelling around the dark-coloured slough increases, forming a circle of a peculiar nature, having, as described by Boyer, an appearance neither inflammatory nor œdematous, but somewhat resembling emphysema without crackling. I had an opportunity of seeing, a short time ago, in the Clinical Ward of the Royal Infirmary, an appearance corresponding exactly with Boyer's description. It was in the foot of a woman, who died rapidly of a spontaneous spreading gangrene of the lower extremity. It is probably caused by the conjoined occurrence of emphysema and of serous effusion into the cellular membrane. This areola quickly becomes covered with numerous confluent vesicles, which are filled with a turbid serum. In the fourth stage, if

the disease is to terminate favourably, the extension of the gangrene is checked by the appearance of a ring of healthy inflammation, and the slough separates; but if the result is otherwise, as is frequently the case, the sloughing goes on extending rapidly, and a typhoid fever, of a very malignant type, comes on, which speedily proves fatal.

Such is the history of the symptoms that usually appear in cases of Pustule Maligne. The disease runs its course with various degrees of rapidity. Sometimes a fatal result does not occur till after the lapse of several days; whilst, in others, it supervenes in as short a time as twenty-four or thirty-six hours.

Death from Pustule Maligne is more rapid, according to DELPECH, in women and debilitated subjects, than in otherwise healthy men; and, according to ENAUX and CHAUSSIER, the danger of the disease is in general proportionate to its rapidity. Like erysipelas, it is more dangerous when situated on the head or trunk, than when it occurs on the extremities. When the neck is the seat of disease, it often gives rise to alarming symptoms, from the impediment to the breathing produced by the swelling of the cellular tissue. When it attacks the eyelids, as is very frequently the case, the swelling is enormous, and the sloughing frequently destroys not only the eyelids and the soft parts of the face and



forehead, but frequently disorganizes the ball of the eye itself. Such cases are usually attended with great oppression of the sensorial powers, and typhoid symptoms of an aggravated character.

According to THOMASSIN, dysenteric symptoms are very common in bad cases; and RAYER says, that gastro-intestinal affections are the most common complications in this disease.

The Pustule Maligne may be mistaken for Erysipelas in any part of the body, but particularly when it attacks the upper part of the face. When it is situated near the mouth, it may be mistaken for the disease which occurs chiefly in children, and is known by the name of Cancrum oris. In erysipelas, however, the course of the symptoms is widely different. There is no distinct central vesicle, nor does the singular areola present itself, which is so characteristic of the pustule maligne; neither does sloughing take place in erysipelas till a late stage of the disease, and generally only when it has been preceded by violent inflammatory symptoms. From the cancrum oris it may be at once distinguished by the circumstance, that the cancrum oris commences invariably with an aphthous affection of the mucous membrane, whilst the pustule maligne commences as constantly in the skin. Both diseases, however, agree in one particular, that the gangrenous process may in either extend its

ravages through the whole thickness of the lips or cheeks.

Most authors seem well agreed upon the treatment of Pustule Maligne, particularly as regards the local remedies. As it is to be regarded as a disease of an essentially gangrenous nature, and as the process of sloughing has generally commenced before the surgeon is called to see the case, it is not to be expected that it is to be checked by remedies of a discutient nature. The objects to be held in view, are to remove the slough as speedily as possible, and to protect the surrounding healthy parts from being involved in the disease. This can best be done by incisions, followed by the free application of escharotics. The incisions are to be carried deep, but should not penetrate into the healthy textures, as they are only required to enable the caustics to act more freely. DELPECH says, that we must endeavour to place a healthy slough betwixt the diseased and sound parts, by freely applying caustics, or even the actual cautery, first making incisions through the diseased parts, or even removing portions of the slough, if necessary.

RAYER gives minute directions for the application of the caustics, which he assures us, if employed in the first stage, when the vesicle only has formed, will frequently put a stop to the future progress



of the disease. If, however, it be found that the caustic has not acted powerfully enough, and that the disease has gone on to the formation of an areola, the caustic is to be still more freely applied, incisions being previously made, if necessary.

With regard to the general or constitutional treatment, depletion is universally disapproved of; and DELPECH mentions cases in which he conceives the patients' lives to have been lost from the employment of venesection in the first stages, under the mistaken idea of the disease being erysipelas. The remarks already made as to the necessity of husbanding the strength against the exhausting processes of the latter stages of Carbuncle, apply *a fortiori* to the disease now under consideration. Most authors recommend the employment of cordials during all its stages, and the typhoid nature of the symptoms seems to warrant the practice.

BOYER and others seem to place great reliance on the use of bark as an antisceptic and tonic. That it may be of some advantage as a tonic I have no doubt, particularly during the process of recovery; but for checking the gangrene, I should be disposed to place reliance chiefly on the local remedies, and on stimulants of a more decided character than cinchona.

BOYER observes, that if gastro-enteritic symptoms come on, an emetic should be given previously

to the administration of the bark. If diarrhœa or dysentery supervene, as is frequently the case, the use of a gentle laxative, such as castor-oil, to free the intestines from irritating matters, followed up by the administration of opiates, may probably be required. Purging is certainly uncalled for; but intestinal derangement would probably be less frequent, if gentle laxatives were employed in the commencement of the disease; and we may perhaps hazard the conjecture, that it is an unwillingness on the part of the French to administer laxatives arising from a misapplication of the Broussaian doctrines, that gives rise to the frequency among them of such gastro-enteritic complications, in this as in many other diseases.

FINIS.

# DESCRIPTION

OF

# THE PATENT SYRINGE.

In the month of August, 1820, I took out a Patent for a Surgical Syringe, which, from its useful applicability to a variety of necessary and important operations, has obtained the Patronage of the Profession and the Public, not only in this kingdom, but in Foreign States also.

The Syringe is about 7 inches in length, and $\frac{3}{4}$ of an inch in diameter; the extremity contracted and perforated by an opening considerably smaller than the internal diameter of the body of the Instrument; within this opening is a chamber containing a spherical valve, which, rising into the upper part of the chamber, where a vacuum is formed by elevating the piston, admits the fluid to pass freely into the Syringe.

To give exit to the contents of the Syringe, a side branch is constructed, furnished with a valved chamber, similar to the one above described, but so placed as to act in direct opposition to it; so that when the Syringe has been filled from the extremity, and the piston is depressed, the fluid closes the lower valve, and opens the lateral one, and consequently escapes through the latter aperture. To facilitate the operation of the instrument, a small pipe communicates with the upper extremity of the Syringe, which gives free ingress and egress to the atmosphere during the action of the piston, a circumstance essentially necessary in causin the instrument to work easily and perfectly.

THE

# CLYSTER APPARATUS.

The contents of the case, containing the enema apparatus, consist of the following:

1st—The Syringe, or Pump.
2nd—The Flexible Tube, armed with a brass socket at one extremity, and a screw at the other.
3rd—The Receiver.*
4th—Two Ivory Pipes and Sockets.

PLATE 1.

DIRECTIONS FOR ADMINISTERING ENEMAS.

The liquid being put into the receiver (or a basin) screw the Syringe upon it, and next the flexible tube to the side branch of the Syringe; then insert one of the ivory sockets into the opposite extremity of the tube, (the *bulb* socket being used when self-injection is requisite); and, lastly, screw into the ivory socket, the pipe that may be preferred. The invalid, if in bed, should lay upon one side, as near the edge as convenient, and the pipe being introduced under the bed clothes, is passed gently into the bowel, and an assistant slowly pumps the fluid into the bowels. As a security against any of the fluid escaping during the operation, the patient may press a soft napkin to the part, which serves also to prevent dis- placement of the pipe.

For self-injection, the patient may sit upon a night chair, and place the vessel containing the enema, before him, and in this manner, without any assistance, the instrument may be used with the greatest ease and facility. The operation, however, is better managed by the apparatus represented in the next page.

* For those who prefer injecting the fluid from a basin or other vessel, cases are fitted up *without* the Receiver; in lieu of which, the fluid may be put into a basin, as shewn in the figure to the right hand in the above plate.



## Injecting and Bathing Bidet.

This is not only adapted for general purposes in the usual manner, but in being combined with the Injecting Syringe, possesses a greater efficacy than either of them separately. At the front of the vessel is a metallic basin (to hold about three pints) with a pipe, upon which the Syringe is to be screwed. From this basin, water or any other liquid that may be thought necessary, (for female injection particularly) may be pumped, which, being discharged into the back part of the vessel, allows a current of fresh liquid as long as the syringe is kept in action and the basin supplied. In the same manner Enema Injections are used. Another great advantage of this combined apparatus, is, that the syringe being fixed, requires but *one* hand of the operator, whilst the other may be employed to direct and fix the injecting pipe: a circumstance superseding the necessity of any assistance, which, to females, is an important consideration.

I must take leave to advise that Enemas be thrown up slowly: and correct an error under which some persons labour, that a *large* syringe will inject a greater quantity of fluid in a given time, than mine. This is a false conclusion, *exactly the reverse* being the case. Three quarts per minute may be injected by my apparatus, a quantity not required (but in fact injurious) under any circumstances. The temperature of the fluid should be ascertained by placing the back of the hand upon it, to which it should communicate an agreeable warmth.

For much interesting matter respecting the domestic use of clysters, I respectfully beg leave to refer the reader to a valuable little work on this subject lately published, by Mr. SCOTT, entitled "A Sketch of the Utility of Enemas, &c. &c." To be had of Mr. Glendinning, 25, Hatton Garden.

THE

# STOMACH PUMP.

With the addition of the Œsophagus tube, (22 inches long) and a mouth guard, the Apparatus, last described, obtains the name of "*Stomach Pump*," and is of course applicable both to the administration of Enemas, and to withdrawing the contents of the stomach. With this case, also, the Receiver may be omitted and substituted by a basin, as shewn by *fig.* 1.

THE OPERATION OF EXTRACTING POISONS FROM THE STOMACH.

PLATE 2.

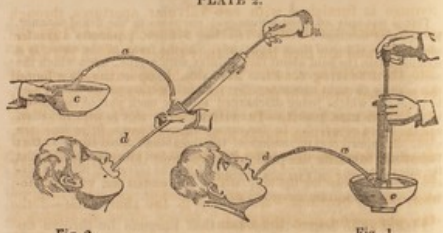


Fig. 2. Fig. 1

*Injecting the Stomach.* The short tube is first screwed to the lateral branch of the Syringe, and the Œsophagus tube being passed into the stomach, the brass joint at its extremity is inserted into the socket at the end of the short tube. The fluid having been put into a basin, the end of the Syringe is to be immersed in it, and the piston being put into action, any quantity may be thrown into the stomach that may be desired—*see fig.* 1.—*a.* the short tube.—*d.* the Œsophagus tube.—*c.* the basin.



*Emptying the Stomach.* A sufficient quantity of fluid having been injected into the stomach by the above process, the short tube is to be *withdrawn from the Œsophagus tube,* and the joint of the latter *inserted into the extremity of the Syringe, without removing it from the stomach*; let an assistant now hold a vessel to the end of the short tube, and by working the piston, the contents of the stomach may speedily be pumped into it, as is shewn in figure 2, of the drawing. By thus transferring the end of the œsophagus tube, from one situation to the other, the two processes of washing and emptying the stomach may be repeated as often as is judged necessary by the operator. Thus it is seen that the Syringe is furnished with two valvular apertures, through *one of which* the contents of the stomach passes into the cylinder, and are then immediately forced through *the other,* into the receiving vessel. This double operation is effected by repeated strokes of the piston, which slides so easily, that an infant may use it.—In withdrawing the contents of the stomach, the lateral branch of the Syringe should be turned upwards towards the patient's face, and the instrument may be held a little obliquely, which preserves the valves upon their proper bearings.—*see fig.* 2.—*a.* the short tube—*d.* the Œsophagus tube—*c.* the Basin.

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*The New Method of Operating with Read's Patent Syringe.*

An improved mode of removing poison from the stomach, with the instrument which I have had the honor of introducing to public notice, was first adopted in Saint Thomas's Hospital, and has since been performed successfully in a variety of cases, as represented in the following sketch.

PLATE 3.


*a.*—Guard, to be introduced between the teeth, for protecting the Œsophagus tube from injury.

This is by far the quickest, easiest, and most simple mode of operating that has hitherto been devised, requiring no shifting of the apparatus, or interruptions of the operation. It consists simply in filling the stomach, (according to the method of fig. 1, in the preceding plate,) until surcharged, or until it begins to re-act upon its contents, when the fluid regurgitates by the mouth. The pumping being now continued, the contents of the stomach are washed up, and forced, by the power of the pump, through the œsophagus (by *the side* of the tube,) into a vessel held under the chin to receive it. The operation may be continued as long as the Surgeon thinks proper, or until the fluid returns unchanged, which indicates the thoroughly cleansed state of the stomach. The operator may occasionally suspend the action for an instant, if necessary, to allow the patient to inspire. By this means the fluid may be injected in the quantity of three quarts a minute.

As an Apparatus for conveying nourishment into the stomach of Persons afflicted with Stricture of the Œsopha-



gus, the Patent Syringe is found to possess obvious advantages; and for throwing stimulating liquids into the stomach of persons under suspended animation from drowning.

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## APPENDAGES

TO

# READ'S PATENT SYRINGE.

It being found that the Instrument is applicable, with certain additions, to various purposes, I have prepared several appendages, by which many important operations may be performed with great certainty and effect. These detached parts, which are *Nine* in number, may be had with either of the foregoing cases, or any of them can be afterwards added at the desire of the Possessor. I shall now proceed to state what these Articles are, and describe the operations performed by affixing the Syringe to them.

( No. 1. )

# TOBACCO FUMIGATION.

PLATE 4.

For the purpose of introducing the smoke of Tobacco into the intestines, I have fitted a Canister to the Syringe, by which the operation is performed with more certainty and ease than with the old medical apparatus. It is used in the following manner:

Unscrew the cap of the canister, and take out the perforated plunger; put in the tobacco (half an ounce or an ounce) and replace the plunger lightly upon it; then put on the cap and insert it into the end of the Syringe; hold a lighted candle close under the bottom of the canister, and a stroke or two of the piston of the Syringe will light the tobacco. The enema tube being now fixed to the side branch, and the pipe introduced into the rectum, the tobacco smoke is forced into the intestines.



( No. 2. )

# TRANSFUSION.

The experiments of Dr. BLUNDELL and other experienced Physiologists had long since demonstrated the practicability of transmitting blood from one living body to another; but it is, at length, to Dr. BLUNDELL's application of it to the human body, and to his unwearied zeal and physiological knowledge, that the profession are indebted for positive data upon which it can be undertaken with the best hopes of saving life under circumstances of appalling, but alas! frequent occurrence.

The value of the operation having been lately demonstrated by several successful cases, there seemed to be wanting but one requisite for extending the benefit of this invaluable discovery, into the remotest regions of professional influence. The extreme caution practised and inculcated by Dr. BLUNDELL, shewing the danger of admitting air into the blood-vessels, sufficiently attests the necessity for an apparatus by which the operation may be conducted without incurring this risque. This has been supplied by an appendage which I have added to my Surgical Syringe, and of which Dr. BLUNDELL has been pleased to express his approbation. It consists of a double apparatus, (either of which may be had separately) the one, receiving the blood into a tubulated funnel, the other, transmitting it from the vein of one person into that of another, *without atmospheric communication.*

In neither case is it necessary to lay bare the vein, as has been usually done, the venous pipe being constructed to pass

freely into the opening made by the Lancet. The Council of the College of Surgeons have examined and approved the Apparatus.

*Directions for Performing the Operation with the double Apparatus.*

The metallic stem to be first screwed into the stand, the funnel next upon the stem, and thirdly, the perpendicular arm of the latter to be inserted firmly into the extremity of the Syringe by a rotatory twist. The flexible tube to be then screwed to the lateral branch of the Syringe, and the silver pipe inserted into the socket at the other extremity. The apparatus being thus adjusted, the surgeon should pump a few ounces of water through it, keeping the point of the pipe immersed in the fluid, when, if he observes any bubbles of air rise, he must fix the different parts closer, until no air is admitted. The whole should now be plunged into a basin of warm water for a minute or two, and being placed betwixt the person who supplies the blood and the patient, a ligature is put around the arm and the blood drawn by a *free* incision into the funnel. An opening being made into a vein of the patient's arm, (the limb kept steady and unmoved, to preserve the relative position of the internal and external openings, as well as to prevent the cellular tissue from slipping over the orifice in the vein,) the operator gives three or four *short* strokes of the piston, which expels the small



quantity of air contained in the tube, without occasioning the expenditure of more than a few drachms of blood. The pipe is to be immediately introduced into the vein, and the shield pressed against the surface of the arm, by the fingers of an assistant, whilst the operator proceeds to throw in the blood by jets. Dr. BLUNDELL recommends the piston to be drawn up only one-fourth its length, which will be found to throw in about a drachm of blood at a stroke*. The surface of the blood in the funnel must not be allowed to sink below a line drawn in the lower part of its interior, least air should be admitted with the fluid.

*To convey blood from one person to another without atmospheric communication*

The tube with the cylindrical socket, being armed with a silver pipe, is to be inserted into the extremity of the Syringe, and the pipe passed into a vein (in the direction of the fingers) of the right arm of the person who is to furnish it, and whose arm is to be tied up as in the former case. A few strokes of the piston, (as before directed) throws out a small quantity of blood and expels the air from

* This remark refers to the latest Improvement of the Syringe, which has been, by the advice of scientific Professional Gentlemen, reduced considerably in size, containing only half an ounce of fluid, being decidedly the best for *all* purposes.

the tubes, when the pipe of the tube screwed to the side branch of the Syringe is to be passed into a vein, (in the direction of the heart) of the left arm of the patient and the quantity of blood injected may be measured by counting the strokes of the piston, reckoning one drachm at each jet. In this operation, the plunger of the syringe should be tightened by winding a little more tow round it, by which the admission of air is effectually prevented; *the piston must be drawn up slowly*, so as to allow time for the blood to pass through the aperture of the venous pipe, and supply the vacuum formed in the syringe. The patient should recline upon the back, with the left arm near the edge of the bed; the person losing the blood should sit on a *very low* seat close to the bed side, and with his back to the operator, who stands with the pump in his left hand, sufficiently distant from both parties to keep the tubes as nearly straight as possible; one nearly horizontal, the other perpendicular.

The Syringe should be *very clean* when used, and the assistants are required to keep the pipes firmly in the veins, during the operation.

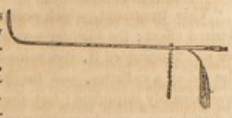
The Transfusion appendages are so small, that the parts for the two modes of operating scarcely occupy the space of a common scalpel case, and if fitted up with the Stomach and Enema Apparatus, will encrease in a very trifling degree, the size of the box for the latter only.

I beg, respectfully, to inform those Gentleman who are already in possession of the "Patent Syringe," that by forwarding the Instrument to me, they may have either or both of the above parts (as they think fit) adapted to it, and sent in a separate case, or fitted into a new one with the Syringe, &c.



( No. 2. )

## INJECTING THE BLADDER.



The expediency of this operation is becoming every day more and more apparent; and, I have, therefore, manufactured a double barrelled catheter, (as represented in the annexed figure) by which fluids may be injected into the bladder, and discharged in a continued current. This instrument is highly approved by many of the first Surgeons in this Metropolis. To shew the estimation in which the operation is held in Paris, I copy the following case, from a Medical Pamphlet, just published.*

"M. G. aged 69, affected with a paralysis of the bladder, and unable to pass his urine by voluntary efforts, had suffered for several days the painful effects of distention of the bladder. The hypogastric region was swollen, and painful; the urine, turbid and smelling of ammonia, deposited a thick, brown and fœtid pus; the tongue dry; the skin hot; the breathing oppressed; the voice hoarse and feeble; there was much nervous irritation, accompanied at times by delirium. M. *Ségalas* was called in; this physician obtained by an examination with the catheter, a confirmation of the diagnostic established by the symptoms. A sound of elastic gum, introduced with the greatest facility. discharged a large quantity of purulent urine of an insupportable odour. The instrument was suffered to remain for two days, but became often obstructed. Injections were frequently used, but with little success; this, at length, determined *M. Ségalas* to use a catheter with a double barrel, and to wash

* Scott's Translation of Labarraque's Treatise "On the use of the Combinations of Chlorine with Soda and Lime." Published by S. Highley, 174, Fleet Street, London. Price 1s. 6d.

the bladder copiously with water, after the ingenious method of *M. Jules Cloquet.*

"This treatment, which occupied several days, had the desired effect; the bladder was relieved of the putrid matter which occupied it, the urine being easily withdrawn by the aid of a catheter, and the general state of the patient was sensibly improved; but the urine continued to deposit a fœtid pus, which sometimes completely encrusted the catheter.

"*M. Segalas* therefore had recourse to the Chlorinated Solution of Soda diluted in sixty parts of water, throwing it into the bladder by means of the double catheter. The first injection produced *a diminution very remarkable in the secretion and odour of the pus;* a second, performed forty-eight hours after, was followed by a similar success, and two more injections, peformed at the interval of two days, placed the patient in a state to attend his occupation."

To perform the operation; the fluid to be injected is put into a basin, and the syringe inserted into it. The flexible Enema tube is next fixed to the side branch of the syringe. The catheter is now to be passed into the bladder, and the metallic ferrule, at its extremity, inserted into the brass socket at the end of the flexible tube. The piston being put into action, the liquid is pumped into the bladder, and discharged by the barrel of the catheter. By closing the inferior aperture, the liquid may be accumulated so as to produce distention of the bladder, if the operator see occasion to do so.

*N. B.* Retention of urine from spasmodic stricture, is treated by *Professor Cettadine, of Arezzo,* by passing the catheter up to the strictured part, and injecting warm water, by which the spasm is relaxed and the urine instantly flows.



( No. 4. )

## DRAWING OFF THE URINE.

In cases of retention of Urine, it frequently happens that in consequence of hæmorrhage and other causes, the Catheter becomes so obstructed that the bladder cannot be emptied. Dr. *Jules Cloquet,* a celebrated Surgeon of Paris, suggested the practicability of employing my syringe in these cases, and I have accordingly adapted Catheters to it, by which the operation is performed with certainty under any circumstances. The Catheter having been passed into the bladder, the metallic socket at its extremity is to be inserted into the end of the syringe, and the Enema tube having been screwed to the side branch, the contents of the bladder is discharged through the latter into a vessel held to receive it.

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( No. 5. )

## INJECTING THE VAGINA.

For this operation, curved flexible pipes are prepared, which are fixed to the end of the Enema tube, when wanted. A flattened smooth and soft shield, which admits the pipe to pass through it, is pressed against the soft parts, and prevents the regurgitation of the fluid. The distance to which the pipe is allowed to pass is regulated by putting on it, one, two, or more of the metallic rings, after the shield is put on. The bulb at the end of the pipe causes it to be retained during the operation.

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( No. 6. )

## ANATOMICAL INJECTION.

The inconvenience of recharging the Syringe, as usually experienced in anatomical injections, does not occur with my syringe; I have therefore prepared a flexible tube and pipes to be affixed to it, for this operation, by which any quantity may be injected, *without interruption* in the process.

( No. 6. )

## ADMINISTRATION OF FOOD & MEDICINE
### In Cases of Mania, Lock Jaw, &c.

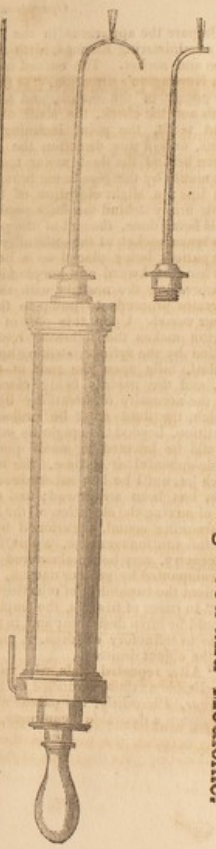
For the ingenious suggestion of introducing fluids into the stomach, *during a closed state of the teeth*, the profession are indebted to *Charles Newington, Esquire*, Surgeon, of Ticehurst, in Sussex; who has lately published the following remarks upon the propriety and method of this operation.

"The frequent occurrence of cases in which maniacs obstinately refuse sustenance, has contributed very materially to increase the trouble, and burden the responsibility of those to whose care the management of insane persons are intrusted; and I can truly aver, from the experience afforded by an establishment, to the duties of which I have been accustomed for many years, that no part of actual and personal superintendance can be more disagreeable or revolting, than the task of forcing food upon a contumacious patient by the methods usually pursued. The utter unfitness of the vessel in common use for this purpose, technically called "the boat," imposes upon the attendant, a duty at all times productive of dissatisfaction, if not disgust; and what is worse, generally involves the patient in a series of unpleasant and painful effects; among which, injury to the mouth and teeth is a frequent occurrence. It is in the hope, therefore, that a simple plan which I have devised may be acceptable and useful to the profession, and more particularly to those engaged in similar occupations with myself, that I am induced to recommend to their attention, a method which I have now pursued during ten years, with a facility and efficacy equal to my wishes.

"Upon examining the anatomy of the mouth, we perceive that the rami of the inferior maxilla, in their ascent to the articulatory cavity of the temporal bone, are placed behind the tuberosity of the superior maxilla, leaving a space between the last molar teeth (of the upper and lower jaw) and the coronoid process of the inferior maxilla, sufficiently large to admit of the passage of a hollow metallic pipe, bent at the extremity into a crescentic curve. Midway between the turn and the point, is an opening communicating with the cavity of the instrument."



## Newington's Syringe for administering Food and Medicine.



### PARACENTESIS THORACIS.

The use of a Pump or Syringe for the withdrawing the fluid in cases of Hydrothorax, Empyema, Extravasation of Blood, &c. was practised by many eminent Surgeons of the last and preceding century, and having been strongly recommended more recently (particularly by Mr. Jowett, Surgeon, to the Nottingham Hospital*), I have manufactured a *Trocar* and *Canula*, the latter of which admits of being attached to the Syringe, whereby the Operator is enabled to withdraw the effused matter without incurring that risque which is occasioned by the introduction of air in the usual mode of operating.

* Vide Case of Empyema, by Thomas Jowett, Esq. Medico Chirurgical Review, Vol. IX. No. 9. New Series.

*Operation.*

Prepare the apparatus in the same manner as directed for administering Enemas, with the exception of the ivory pipe and socket. The curved metallic pipe, agreeably to Mr. Newington's direction, "is then to be introduced into the corner of the mouth, and passed along between the teeth and the cheek, the shaft of the pipe parallel to the front teeth, the point inclining downwards towards the gums, and in this direction the extremity slides into the space behind the last molar tooth, and is projected into the mouth by the pipe being brought to a right angle with the lips; a slight elevation of the instrument fixing the hook firmly behind the dens sapientiæ of the upper jaw." This being done, the end of the pipe is to be inserted into the brass socket at the extremity of the flexible tube, and the patient being placed on a bed, an assistant inclining the head backward and keeping it steady, at the same time compressing the nostrils with the finger and thumb, the operator proceeds to pump in the liquid from a basin or other vessel. Upon this part of the operation, Mr. Newington makes the following remarks. "The fluid propelled by the syringe, striking upon the Velum Pendulum Palati, falls upon the root of the tongue, near the glottis, and the nostrils being closed, the patient is driven to the necessity of breathing by the mouth, previously to which, the fluid must be projected, by the action of deglutition, beyond the epiglottis into the pharynx. The fluid should be injected in small quantities, not exceeding a table-spoonful at a time, the operator waiting between each jet, until he has ascertained that the previous portion has been swallowed; and of this he may be assured by observing the elevation of the larynx, as also by a slight murmuring sound, occasioned by the act of swallowing. In this cautious manner, a pint, or even a quart of fluid, if necessary, may be administered in a very short time, unaccompanied by pain or nausea, and without affording the patient the capability of rejecting any part of it.

"In cases of trismus, the employment of this instrument would be often desirable; and, in the administration of medicine to refractory children, it may be rendered subservient to the object desired.

"After repeated trials, with various syringes, I find none so eligible as those furnished me by Mr. READ, of 35, *Regent Circus, Piccadilly*, the patent air pipe of which gives the operation a desirable cleanliness, facility, and power."



( No. 8. )

## DRAWING THE BREASTS.

Where the breast is hard, swollen and painful, from inflammation, or the nipple sore from excoriation, the application of this instrument is attended with more ease to the patient than any other means, and she may without difficulty use it herself, by which she can regulate its action agreeably to her own sensations. The flat surface of the glass should be smeared with oil before it is put on, and the bulb preserved in a dependant position to receive the fluid. During the operation the small aperture in the brass socket must be closely covered with the finger, which being removed, admits air into the glass and causes it to be detached from the breast whenever it may be desired.

( No. 9. )

## CUPPING.

The want of success so generally experienced in using the torch for this operation, seems to proceed chiefly from an imperfect exhaustion of the cupping glass; and so necessary is it that the degree of heat applied should be in a ratio duly proportioned to that state of rarefaction productive of sangui-suction, that it requires the hand of an adept to apply it. The advantage which results from exhausting the glass upon an air pump principle, is, that just such a degree of exhaustion may be made, as is seen to produce the effect desired; the operator continuing the action of the pump until he perceives the blood issue freely from the incisions. The mathematical correctness of my syringe renders it a Pneumatic as well as a Hydraulic machine, and in this operation, it is found to possess the necessary requisites of an air pump itself.

The practice of exhausting the cup upon this principle, seems to have been the original method; for we find the Ancient Greeks were ignorant of any other means of producing a vacuum, except by sucking the air from the vessel by the mouth. Even Hippocrates himself operated in this manner, using a gourd with a hole in the top, where the lips were applied; and the natives of India, at the present day, continue to perform the operation by means of a horn, from which they suck the air through a hole made at the small extremity. The French, also, have an ingenious instrument of this kind, invented by M. Demours.

*Operation.*

Take off the end of the Syringe, screw on in its stead the extra nozzle, and into the latter insert the socket of the



cupping glass. Immerse the glass in hot water, apply it to the skin, close the small aperture in the bottom of the syringe with the thumb of the left hand, and draw up the piston; then remove the thumb and return the piston which forces air out of the syringe. Re-close the aperture and return the piston. Repeat these alternate operations until the desired degree of exhaustion is effected and the scarifications bleed freely, when the syringe may be removed and the glass left to be filled.

N. B. In washing the glass be careful not to injure the membranous valve.

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## GENERAL DIRECTIONS.

If the piston slides too easily, wind a thread of cotton or tow round it, if it be too tight smear it with a little sweet oil or pomatum. After using the syringe, pump a little warm water through it, which sufficiently cleans it. The valves may be cleaned with the feather of a pen. If any of the joints leak, put a fine thread of tow round the screw with a little tallow or suet. In screwing on the tubes, take hold of the brass sockets.

# VINDICATION
OF
# *THE PATENT SYRINGE,*
AGAINST
## Interested Opposition and unphilosophical Objections.

I shall now make a few brief remarks, in vindication of my instrument, against an ungenerous opposition which has been offered to it by certain interested persons, who have been maliciously active in depreciating its merits by false insinuations, for the mere purpose of selling instruments of their own manufacture. First, the spherical metallic valve (which belongs exclusively to my Syringe) they say is inferior to spiral and leather valves. Let me answer this by asking, is there any figure in geometry so simple as a sphere, or liable to so little destructive friction? Again, is not a spiral valve, or any other that is kept to its bearings by a spring, liable to speedy and certain derangement, by the oxidizement occasioned by alterations of moisture and dryness? And further, does not the natural hygrometrical property of animal substances, which subjects them to a wide range of expansion and contraction, render leather and other such substances highly unfit for the nicety essential for valvular coaptation; and do they not by the chemical agency of heat and moisture, undergo an alteration in structure that proves destructive to their use? Secondly, my adversaries assert, that the valves of my Syringe become choked in those cases, where it is necessary to inject a glutinous fluid; and if laid by without cleaning, after such an operation, would be found clogged up when subsequently wanted. The first part of this assertion is not only a base falsehood, coined to pass current with other forgeries with which they endeavour to injure the merit of mechanical simplicity, but it is an actual absurdity in experimental philosophy; and



its fabricators, had they known any thing themselves of hydrostatics, never would have attempted to impose a belief, even on the most ignorant, that *a fluid*, though it were as tenacious as bird lime, could resist a pressure upon its surface equal to 15 pounds to a square inch. But this calumnious assertion, has been disproved by reiterated cases, in which glutinous fluids have been injected, and I defy my adversaries to produce a single instance of what they advance. I boldly assert there is no fluid either natural or artificial, that can obstruct the valves of my Syringe; and I will engage to empty the stomach of an Epicure, though he may have dined upon macaroni, and washed it down with mucilage of quince seeds. But the cream of the above charge is, that the valves, will be found clogged, if they are not cleaned after glutinous fluids have been injected. Cunning Rogues! Perhaps you have discovered that your scullion has sense enough to wash your plates after dinner?

Another equally untenable objection has been raised to the instrument, in consequence of a trifling attention being necessary, as to position, in withdrawing the contents of the stomach. In a former notice of this subject, I happened to say that the degree of inclination at which the Syringe should be held in this part of the operation, should make an angle of 45°; this remark has been a good handle for our interested hypercritics to turn the subject to my disadvantage. They have asserted that my Syringe cannot be used except it be held in *one particular* position, to discover which they modestly and humbly submit, would, in most cases, be an insurmountable attempt, from the general want of mathematical knowledge in taking angles!!! Now the truth of the matter is simply this, that the position which I recommended (as shewn by figure 2, page 6,) is really one to which *convenience* alone would involuntarily conduct the operator's hand, if he had never been told a word about it. Let the

reader imagine that he *stands* with the Syringe in his hand, fixed to the extremity of the Œsophagus tube projecting from the mouth of the patient, who is *seated* or *laying* before him, and the position of the Syringe he will find corresponds with that represented in the cut. When I alluded to the propriety of holding it at an angle of 45 degrees, I referred to the mathematical principles of the instrument, the valves of which lay directly on their bearings at this point of the scale; but I by no means intended to say (nor could it be so understood, except by wilful misinterpretation) that no other position could be effective; it is just otherwise; for the valve of the lateral branch of the Syringe covers its bearing, if the instrument be inclined to a level with the horizon, and it will sustain its proper seat upon the aperture during a *lateral* motion of half a circle. It resolves itself at last to this, that by the simple rule of keeping the lateral branch of the Syringe *upwards*, the instrument will act perfectly, and cannot fail.

My opponents have endeavoured also to depreciate the value of the instrument by asserting that much valuable time is lost in shifting the tubes during the operations upon the stomach. Had such a complaint proceeded from a medical practitioner, or any one who had actually performed or witnessed the operation, it would, indeed, be sufficient to "make the judicious grieve;" but coming, as it does, from persons incompetent to give an opinion, (the truth of which would be suspected even if they were) it can be viewed only as the dicta of "envy, hatred, and malice, and all uncharitableness." That time is lost, nothing can be more untrue, as will appear by the testimonials which I have presently to submit, of which any person may readily satisfy himself by a trial.

The size of the Syringe has been supposed by some persons to be too small, and they have imagined that with a



larger instrument they could propel fluids with more power; but it is just the reverse, it being an acknowledged law in mechanics, that as you enlarge volume you increase resistance, and as you encrease resistance you diminish power. The force, then, with which fluids may be propelled with my Syringe, is four times greater than it would be if the instrument were twice its present size, and as that even, would not be half so large as other Syringes sold for this purpose, its power when compared with them is (to say the least) as 16 to 1, and with some infinitely more. The bulk of the fluid contained in the instrument is so small, that the force necessary to propel it, scarcely requires the efforts of an infant; but the effects of these efforts, multiplied by repetition, increase to an almost infinite ratio, and at length present an overwhelming force, capable of bearing down all opposition, and overcoming all natural restraints. To try the power of the syringe, I fixed the injecting pipe firmly into the rectum of an Animal that had been recently killed, and proceeded to pump into the bowels a large quantity of water, and I continued the operation with the same ease and freedom, until the intestinal canal, stretched beyond its tone, burst with the distending force.

Notwithstanding the smallness of the instrument,* it is capable of injecting a larger quantity of fluid in a given time than is requisite in any case, particularly in Enema practice, where it is necessary to move the piston slowly, and allow a little time between each stroke.

* I beg to remark, that I can make the Syringe *of any size* that may be required, by a specific Order to that purpose.

# TESTIMONIALS

*Of the Superior Utility of*

# THE ENEMA SYRINGE.

## Authorised.

(COPY.)

"We, the undersigned Professional Men, strongly recommend the use of the PATENT INJECTING MACHINE, invented by *Mr. John Read*, as being the most efficient Instrument for the purpose of removing Obstructions in the Bowels; and declare that we have had, by experience, proofs of the most decided advantage it has over every other Instrument within our knowledge, invented for the same purpose."

| PHYSICIANS. | SURGEONS. |
|---|---|
| "Robert Montague Wilmot, M.D. Hastings. | William Duke, Hastings. |
| Robert Watts, M. D. Cranbrook. | Thomas B. Saterley, do. |
| Robert Chisholm, M.D. Physican to the Kent and Canterbury Hospital. | George Taylor, do. |
| William Chandler, M. D. Surgeon to the Kent and Canterbury Hospital. | James Dutton, do. |
| N. A. Davies, M D. East India Company's Service, Brompton. | Robert Ranking, do. |
| William Hart, M. D. Cavalry Depot, Maidstone | Charles Stephen Crouch, do. |
| Henry Sully, M.D. Surgeon to the Public Infirmary, Wiveliscombe. | Robert Watts, Battle |
| —— Smith, M. D. Maidstone. | James Watts, do. |
| J. P. Dale, M. D. Liverpool | Stephen Monkton, Bromehley. |
| ——Hamilton, M.D. Finsbury Square | Jonathan Monkton, do. |
| | Samuel Newington, Goudhurst. |
| | Charles Newington, Ticehurst. |
| | Edward Morris, Tunbridge. |
| | Richard Thompson, Rochester. |
| | Avery Roberts, Lewes. |
| | Henry Verral, do. |
| | John Vine, East Peckham." |

In corroboration of the good effects of this instrument in obstructions of the bowels, I extract the following remarks from some of the most respectable medical publications of the present time.

"Dr. Chisholm has related a case of obstinate constipation of the bowels, relieved by *Read's Injecting Machine*, after various other means had failed. The obstruction had existed three or four days before Dr. Chisholm saw the patient with Mr. Beet, Surgeon, of Ashford. When seen by Dr. Chisholm, the patient's extremities were cold, and tercoraceous vomiting had come on. A tepid solution of



yellow soap was prepared, and more than *a wash-hand basin full* was gradually but perseveringly thrown up by means of the instrument above mentioned, and prevented from returning by napkins pressed to the anus. *The patient's belly now resembled a drum.* When the injection was allowed to come away, the spectators had the gratification to find it mixed with fœces. Shortly after this, the patient passed flatus and stools, and all the bad symptoms quickly vanished. "'I have had many other cases,'" says Dr. Chisholm, "'where Read's Machine was of infinite service, and I think every medical practitioner should have one in his possession.'"—*(Med. Repos. No. 1, New Series, Page 944.)*

A recent Medical Author, under the article costiveness, makes the following remark: "But the use of clysters is in every way preferable to purgative medicines, and those who are costive should provide themselves with "Read's Patent Syringe," and administer a pint of the domestic enema every day at a certain hour, until the bowels act without." The same author, treating upon Iliac Passion, remarks, that "a copious injection of six or eight quarts of warm water, or gruel, will be the most likely means of removing the obstruction, restoring the bowels to their proper situation, and of softening and bringing away those hardened motions, which accumulate in the bowels and occasion the complaint. For this purpose (as well as for the injection of tobacco smoke,) *Read's Patent Syringe* is preferable to all other instruments, and should be in the possession of every family."

Mr. Scott, in his "Sketch of the Utility of Enemas," makes the following remarks upon the effects of costiveness.

"To obviate these complaints, recourse is generally had to the use of purgative medicines, which most frequently aggravate the mischief and occasion new disorders. In this

species of practice, the French and other continental nations have long pursued a much more rational and beneficial mode of treatment: instead of swallowing a host of drastic drugs which nauseate the stomach, irritate the bowels, and disorder and debilitate the constitution at large, they apply a simple remedy, at once, to the offending organ, in the form of clyster, which, if properly prepared and administered, softens and dissolves the contents of the bowels, removes obstructions, by the mechanical distention it produces, and, by its gentle stimulus, restores a healthy tone and action, without inconvenience, debility, or pain.

"To give, however, this desirable plan its proper efficacy, an instrument was wanted, not only adapted to domestic use, but which could meet all the exigencies of those severe cases of obstruction, that often baffle medical skill, and terminate fatally. For the first purpose, it was necessary that the machine should be so constructed that an invalid should be able to use it *without assistance:* and for the second, that it should be capable of transmitting *any quantity* of fluid desired, with a power equal to the resistance it might experience.

"This has lately been effected by the invention of a small Syringe or Pump, by an ingenious person, named READ, which is more suitable to this operation than any other instrument hitherto used. The Cylinder of this Syringe is not more than three quarters of an inch in diameter, and four inches in length, and receives about half an ounce of fluid, which is admitted at the extremity, and discharged through a small branch at the side attached to a long flexible tube that conveys it to the bowels. Notwithstanding the small size of this instrument, a large quantity of fluid may be injected in a very short space of time; in fact, it can be made to pass with a velocity not requisite in any case to which it



may be applied, *viz.* at the rate of three quarts per minute. The French and other Clyster Syringes (containing a pint or more) are much too large to be either convenient or efficacious; in the first place, if there be any obstruction in the intestinal canal, or the bowels oppose the passage of the injection by any degree of reaction (which they usually do) the force necessary to propel so large a column of fluid requires the arm of a Sampson or a Hercules; and secondly, the clumsy size of these instruments renders their use so awkward, that the patient is often much hurt by the attempts to effect the operation. Besides this, if a large quantity of fluid be necessary (as in cases of introsusception, obstinate constipation, &c. where several pints or even quarts are often thrown up) the operation is unavoidably suspended as often as the instrument requires to be recharged, and this, perhaps, several times successively. There are, also, serious objections to an apparatus I have seen, the fluid contents of which are forced into the bowels by the agency of condensed air. One of the evils of this instrument is, that part of the confined atmosphere rushes through the liquid injection and passes into the bowels along with it, occasioning, of course, mischievous and hazardous consequences; and again, as the injection is forced out by the expansive action of the compressed air within the canister, the propulsive power *lessens* as the operation *proceeds*, which is directly the reverse of what ought to happen, for with an accumulating resistance and volume anteriorly, the *vis a tergo* ought to be, of course, proportionally *increased*.

"None of these objections appertain to READ'S SYRINGE, the action of which is so easy that it may be worked with a finger and thumb, whilst its power is so great that all resistance yields to it without any increased efforts."

I shall add one more testimanial in favor of my instrument, as an Enema Syringe, as follows:

" The Lavement Syringe, invented by Mr. READ, is the best instrument for forcing a fluid up the Intestinal Canal. We have been told by some respectable Surgeons, that they have by means of it, injected warm water into the Rectum till it was vomited."—REECE ON COSTIVENESS, p. 332.

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As an apparatus for removing the contents of the stomach, my Instrument, as most persons are aware, was first ushered into notice by Sir Astley Cooper, the particulars of which have long been before the public. I shall, therefore, only recapitulate so much of what has already been reported of the worthy baronet's remarks, as tend to contradict an idle assertion, that the Syringe was incapable of removing *mineral* poisons.

In addressing the class who had recently witnessed Mr. Scott's successful experiment in the theatre of St. Thomas's Hospital, and that of himself upon the dog, at Guy's Hospital, Sir Astley thus proceeds:

" I certainly think, however, after the experiment which you had an opportunity of witnessing in this theatre, and that of the dog in the other hospital, that the instrument for evacuating the stomach affords the best means of saving persons, who would otherwise perish under the influence of opium. I mentioned to you, on a former occasion, the case of the young lady who had taken opium, in which every means which I could employ for the purpose of producing vomiting proved completely unavailing. When the œsophagus has lost its functions, which it soon does from the influence of opium, no stimulating substances will produce



the least effect upon it. I sat hour after hour, by the side of this young lady, watching her progress to dissolution, without being in the least able to prevent it. If, however, I had been acquainted with the instrument which has been since invented, I should have used it with the probability of success. This instrument enables us not merely to remove the poison from the stomach, but to throw in water in considerable quantities, and to introduce stimulating remedies after the opium is removed, for the purpose of restoring the functions of the Nervous system; and this in cases where emetics cannot be even swallowed. I certainly do expect the happiest results in such cases from the invention of this instrument. The man who first suggested such an idea deserves well of his country, and they who oppose it until the instrument has been fairly tried and found useless, must be destitute of understanding. Persons who object to a proposition merely because it is new, or who endeavour to detract from the merit of the man who first gives efficacy to a new idea by demonstrating its usefulness and applicability, are foolish, unmanly, envious, and illiberal objectors; they are unworthy of the designation either of professional men, or of gentlemen."—LANCET, Vol. III. No. 6, page 174.

In speaking of the treatment of poisoning by the oxymuriate of quicksilver, Sir Astley remarks:

" It may appear that I am disposed to think too well of the instrument to which I before adverted, when I state that I believe the Syringe may also be successfully employed for the purpose of removing the oxymuriate of mercury from the stomach. I should certainly prefer it to any other means; but instead of using simple water, I should throw in a quantity of soap and water, then withdraw it; I should repeat this operation until the stomach was entirely

cleansed. It has been suggested that although this instrument may be used with success for the purpose of removing the vegetable poisons from the stomach, yet it would not succeed in cases of poison by arsenic or corrosive sublimate. *This I do not believe.* With respect to arsenic, I am aware that if it were taken in a solid form, and a considerable portion had fallen on the stomach, it would be impossible to remove it; but as it is usually taken, in powder, I think the instrument is very capable of removing it, because it will be for a considerable time at least kept in solution by the mucus which is thrown from the surface of the stomach, and in this state it may be removed. At all events this deserves a trial."—LANCET, Vol. III. No. 6, page 177.

Several cases in point, have since occurred, to verify Sir Astley Cooper's opinion, one of which is related by Mr. Campbell, a Surgeon of Pimlico, of a young female, who swallowed, by mistake, a quantity of corrosive sublimate, but instantly discovering the error, a quantity of the white of eggs were administered to decompose the oxymuriate, and the tube being passed into the stomach, the contents were extracted by the Syringe, and the patient experienced no ill effects.—*See the Morning Chronicle of Friday, September* 17, 1824.

A case of this nature occurred also soon after the above. A young woman, in a state of pregnancy, endeavoured to destroy herself by taking an ounce of Sugar of Lead. Copious vomiting was produced by very powerful emetics, but the pain of the stomach remained extremely severe. Under these circumstances, Mr. Scott, assisted by Mr. Iliff, of the West London Dispensary, and Mr. Mason, Surgeon, of Newington, injected the stomach with warm water by the Patent Syringe, the force of which dislodged the poison adhering



to the inner coat of this organ, and effectually removed the pain as soon as the fluid was withdrawn. In this case, also, the Syringe, as an enema apparatus, proved most essentially serviceable; for a portion of the lead having passed into the bowels, constipation and colic succeeded, which were removed by an injection of Epsom salts in warm water; *six* pints of which were thrown up.

Another important and successful operation upon the human stomach, where metallic poison had been taken, has been lately performed by Mr. Roberts, Surgeon, of Brighton, of whose report the following is an abstract.

"A young man having swallowed a teaspoonful of arsenic, myself and Partner (Mr. Blaker) were called to him. We took with us that excellent Instrument, READ'S STOMACH SYRINGE, and although he made every exertion to prevent us, we found the introduction and application of the Tube and Syringe extremely easy. The whole contents of the Stomach were well washed out, and to make the removal of the arsenic certain, two gallons of water were introduced and withdrawn: the young man, in a few days, was able to resume his occupation.— An attempt has been made to prove that much valuable time is lost through the peculiar mechanism of this Syringe, but I must observe, that if we can remove arsenic from the Stomach with great facility and with sufficient expedition to save life, after the Poison has been swallowed nearly half an hour, *there can be no well grounded objection* brought against the Apparatus."

AVERY ROBERTS, Surgeon."

"15, Jerman Place, Brighton,
Dec. 20, 1825."

The above is also a triumphant reply to the cavilling sophistry of those who artfully insinuate that time is lost in the use of my Syringe; and further, to confute the malignant aspersion, I shall add the following testimony, obligingly given me by Mr. Scott, who is well calculated to give an

uncontrovertible opinion upon the merits of my Syringe, not only from his having been the first person to operate upon the human subject, but from the long and unwearied attention he has devoted to the mechanical construction and philosophical improvement of a proper apparatus for the purpose; to which may be added his experience in its practical application, more cases having fallen into his hands than has occurred to any other professional gentleman in England.

*"I have not seen any instrument so eligible for removing poisons from the stomach as "* READ'S PATENT SYRINGE." *The simple construction of the pump affords such a ready and unembarrassed action, that the stomach may be cleared in the space of three or four minutes.*

*London, March 25, 1826.* J. SCOTT.

The following remarks are to be seen in Dr. Johnson's Quarterly Review.

"For many months past we have been in the habit of employing Mr. Read's Patent Injecting Apparatus, which is so small as to be carried in the waistcoat pocket, and so powerful as to throw fluids to a great distance. The object of our present notice, however, is to inform our readers that Mr. Read has adapted to the Instrument, a flexible elastic tube, most admirably calculated for throwing fluids into the stomach, and then extracting them in cases of poisoning. We have attentively examined the instrument, and we know it is approved of by Sir A. Cooper, and some of the first Surgeons of the Metropolis; we think it of so much importance, that we seriously recommend it to every private practitioner." Vol. 4, No. 15, page 742, of the Medico-Chirurgical Review.



*Extract of a Letter from* DR. RALPH, *of London, published May 27, 1826, in the 43rd Number of* THE LANCET.

"On Wednesday, the 17th inst. about Eleven A. M. I was called in haste to Mrs. Bates, of No. 9, Great St. Andrew's Street, whom I found in a state of great exhaustion from uterine hæmorrhage. I learnt that she had aborted (at the end of the third month) at One o'Clock in the morning, and that the flooding had been *ever since copious and incessant.* Finding, upon examination, that the fœtus, placenta, and membranes, had been expelled, I directed the application of cold water, and after an hour I had the satisfaction to find that the hæmorrhage had ceased, and I took leave of her. Upon renewing my visit three hours afterwards, I found her still more sunken, and although the hæmorrhage was not renewed, I could perceive the prostration increase, even as I sat by her. I now administered laudanum and brandy with that unsparing liberality, of which but too much experience in these urgent cases has taught me the propriety and *necessity.* The hours rolled on, but my poor patient's system replied not to the repeated use of these powerful stimulants; life was fast ebbing, and nature incapable of rallying. Her countenance was blanched and cadaverous; her eyes, sunken and dim, were partially covered by the falling of the upper lids; her lips pale and quivering the extremities cold; the surface of the body covered with a chilling moisture; the pulse just perceptible enough to be found fluttering and irregular, beating (as well as I could ascertain) more than 140 strokes in a minute. She was extremely restless, and every now and then a cessation of the pulse, a lived hue of the face, and motionless position of the body, marked a temporary state of syncope, which I more than once mistook for death. Notwithstanding the flooding had ceased, eleven hours were spent in attempts to induce

reaction, but in vain ; not a solitary indication of it was manifested during this time, but the patient continued gradually to sink, until but feint signs of life remained.

"The operation of Transfusion now appeared to me the only means of saving the patient's life, and I therefore immediately called in the assistance of my friend Mr. SCOTT, of whose ingenious apparatus for transfusion of blood I had just heard. This gentleman fully concurred in my opinion of the extreme danger of the case, and of the utter inefficacy of all medicinal agents, but he rather *yielded to*, than *approved of* my proposal to try the operation of transfusion, as he regarded the life of the patient too near its extinction to be capable of resuscitation. I lost no time, however, in procuring from Mr. READ, the necessary instruments, and four ounces of blood were injected into the median vein of the right arm. *In a few minutes* the pulse became stronger and more apparent, and the countenance lost much of its death-like appearance; the surface became warmer, the eyes intelligent and inquiring, and in a quarter of an hour from the operation, she raised herself upon her elbows and asked for drink ; the circulation gradually recovered, and steadily rose in firmness, whilst it diminished in velocity, and after less than an hour, we left her with a pulse not weaker, probably, than in health, and equal in its beat, striking 120 strokes in a minute. In fine, from this moment she rallied, and her convalescence has been uninterrupted.

"Such, Sir, is a brief sketch of the most gratifying case that has ever rewarded my professional solicitude; and if there lives a sceptic to the power of transfusion, he cannot receive a more just reward, than in being for ever shut out, by his prejudices, from the enjoyment of that satisfaction which results from so closely contributing in restoring a wife to her husband and a mother to her children.



"In conclusion, I cannot speak too highly of the ingenuity displayed by Mr. READ, in the apparatus I employed; for, however formidable and difficult the operation may have hitherto seemed, it may be performed by this instrument with the greatest ease.

"I am, Sir,

"Your obedient humble Servant,

19, *Leicester Square*, "JOS. RALPH."
*May* 23, 1826.

As a concluding testimony in favour of my apparatus, I beg leave to subjoin the following letter, which is authenticated by the signature of the Chairman of the Committee of Governors of the Northampton Infirmary, a favour altogether unsolicited and unexpected.

To Mr. READ.

*General Infirmary, Northampton.*

SIR,

I am directed by the Committee of Governors of this Infirmary, to convey to you their approbation of your Instrument for extracting poisons from the stomach, and to give you the details of a case in which it was used with complete success.

A boy, nine years of age, was discovered at eight o'clock in the morning of the 12th ult. in nearly a lifeless state. On investigation it was ascertained that he had taken, by mistake, a solution of opium, three hours before. He was lying in a deep stupor, his respiration very slow, and accompanied with a convulsive catching; his feet, hands, and face livid, and no pulse to be felt at the wrist. He was immediately roused up, and violently shaken, when he uttered a few incoherent cries. A quart of warm water was instantly injected into the stomach by means of your Syringe, and then with-

drawn; the fluid was brown, and the smell of opium plainly perceptible. Another quantity of water was then thrown in, and withdrawn; it returned colorless and without any smell.

The boy was now moved continually about for some time, and his senses gradually returned. As soon as he could swallow, he was made to drink two ounces of Ipecacuanha Wine, with a drachm of Sulphate of Zinc, dissolved in half a pint of warm water. This not operating, in twenty minutes a second dose was given as strong as the first, and in ten minutes afterwards the boy showed a disposition to vomit; this was effectually excited by injecting a hand-basin full of warm water, by which I made sure that his stomach should be completely washed of any remains of the poison. After the vomiting was over, he was kept in motion for three or four hours, taking at intervals a strong decoction of coffee: by the afternoon, of the same day, I had the pleasure of finding him perfectly well.

It is almost unnecessary to observe, that as the opium had been swallowed three hours, (and that, too, upon an empty stomach,) no emetic medicine would have operated until the poison was withdrawn; the fibres of the stomach being rendered perfectly inert by the stupefactive effect of the drug; indeed he had totally lost the power of swallowing; it is therefore pretty evident, that the boy's life would not have been saved, but for the very useful Instrument of which you have the merit of being the inventor.

I am, Sir,

With much respect,

Approved,
C. Bouverie,
*Chairman of the Committee.*

Your obedient Servant,
Charles Witt,
*House Surgeon.*

# OBSERVATIONS

ON

# ANEURISM

OF THE

# ABDOMINAL AORTA.

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BY

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To

Sir James M^c Grigor Bt D.

With the Author's respects.

## PRELIMINARY OBSERVATIONS, &c.

NOTWITHSTANDING the little reliance which M. Foderé, and a few others, place in the knowledge which may be gained from the dissection of morbid bodies, I am disposed to think that most medical men entertain a different opinion, and concur with Dr Sandifort, who has remarked, " Et quis denique vel ipsius Hippocratis aurea scripta attento volvens animo, non animadvertit sæpius summum hunc naturæ observatorem, longe plures sanaturum fuisse morbos, si cultri ope illorum inquirere causas ipse fuisset concessum. Revera enim in permultis casibus, causa morbi inventa, inventam etiam esse sanationem, et plurimos ab hostili morborum insultu esse liberatos."

The importance of the study of morbid anatomy, to the accurate knowledge of physic and surgery, must be obvious even to the cursory and inexperienced inquirer. It may indeed be represented as one of the primary foundations of medical science, for, without an intimate acquaintance with the morbid changes that take place in the human frame, as the causes or the effects of disease, the practice of physic and surgery can be directed only by ill-founded hypotheses, or blind empiricism.

The inspection of morbid bodies not only explains the cause of the progressive advancement of organic diseases towards their fatal termination, but also the manner in which such organic

derangements are sometimes arrested in their progress, or sometimes are entirely removed. Several striking illustrations of the above observations might be adduced. One or two are, however, sufficient for the purpose.

When blood has been extravasated within the substance of the brain, the red part of it is in some instances absorbed, and a clear fluid remains, which is contained in a distinct sac, and, after a time, this fluid is also absorbed, which is followed by an accretion of the opposite sides of the sac.

There are also several well authenticated instances upon record, in which ulcers of the intestines have been cured by an effort of nature.—The filling up of the bloodvessels by coagulable lymph, is one of the most striking examples of the efforts of nature, in preventing death from being occasioned by the loss of blood. This takes place in the vessels of the body, that have been divided by a wound. Thus the bleeding, which otherwise might have taken place from these, is prevented; and, owing to the same cause, a mortified is separated from a living part of the body without a loss of blood. By the same process, aneurisms of the larger branches of the arteries of the extremities of the body have been cured spontaneously. To the list of organic disorders which have been cured by an effort of nature, may be added an instance which lately fell under my observation, in which an aneurism of the abdominal aorta was filled up by coagulable lymph, owing to an obstruction of that artery above the seat of the disease.

Under the impression that such an important case cannot fail to be highly interesting to the medical world at large, and, in an especial manner, to Sir Astley Cooper, as bearing the strongest evidence of the propriety of his attempt to save the life of an individual, who was in the most imminent danger of immediate death, from the rupture of an aneurism of the abdominal aorta, I have been led to publish the annexed statement, together with a few observations on aneurism of the abdominal aorta, in which that formidable disease had followed its more usual course.



## CASE OF ANEURISM OF THE ABDOMINAL AORTA, ACCOMPANIED BY AN OBSTRUCTION OF THAT VESSEL.

The patient, a middle aged man, and well limbed, had, in consequence of exposure to cold, been seized with pain in his side, difficulty of breathing, cough, followed by expectoration, quick pulse, and the other symptoms of phthisis pulmonalis.

Notwithstanding all the remedies that were employed, the disease made rapid progress, and proved fatal in the course of four months.

It merits particular notice, that this man had no degree of weakness, numbness, or palsy in his limbs, and could walk about until a day or two before his death.

As the patient's death was owing to phthisis, the thorax was opened in the usual manner, by raising the sternum: the lungs presented the same morbid appearances as are usually detected in cases of tubercular phthisis, and the heart was in its natural state. After the contents of the thorax had been examined, the parietes of the abdomen were freely divided, so as to expose all the abdominal bowels, all of which were also in a healthy state.

Upon turning over the convolutions of the smaller intestines, a distinctly circumscribed tumour, rather more than three inches in breadth, and about two inches and three quarters in height, was observed lying upon the second and third lumbar vertebrae, which, upon a more minute investigation, proved to be connected with the descending abdominal aorta. This tumour was considerably flattened; and adhered very firmly to the second and third lumbar vertebrae, which were partially absorbed; and, when compressed, it felt somewhat hard, and evidently was filled by a quantity of clotted blood.

Upon cutting through the sac, it was found to be much thicker than the coats of any sound artery; and it did not seem to be composed of distinct layers, nor was there any deposition

of bone in any part of it; and in appearance it very much resembled thick white leather, which had been steeped for a considerable time in water. (Vide Engraving.)

The abdominal aorta entered into the very middle of the sac, (Vide Engraving) which was situated at the division of the aorta, into the two great iliac arteries; and I am disposed to think, that it was formed by the uniform expansion of the coats of that artery; and their unnatural thickness was probably owing to the addition of a quantity of compact cellular substance.

The aneurismal tumour was filled by portions of coagulable lymph, which were not disposed in parallel layers of an equal thickness, as in the greater number of aneurisms: but of short and unconnected portions of coagulable lymph, which crossed each other in different directions, so as to form a confused and irregular mass, which, on being pressed between the fingers, was evidently mixed with a gritty substance like sand.

After the removal of the sac, I carefully examined its inner surface, but could not discover any appearance of a rupture of the inner coats of the aorta.

The coeliac, superior mesenteric, renal, inferior mesenteric and lumbar arteries, were not larger than usual. A very correct idea as to the size of the intercostal and epigastric arteries could not be formed, as they had been divided in cutting through the parietes of the thorax and abdomen.

The portion of the artery which is immediately above the aneurismal tumour is evidently contracted, and was impervious; and, in that place the coats of the artery were to the touch firmer, and also whiter, than usual. Above this contracted portion, a conical shaped plug, of a firm nature, was placed *, with the smaller extremity undermost. This plug was of a deep red colour, and seemed to be composed of a solid mass of coagulable lymph, intermixed with the red globules of the blood. It was an inch and one-eighth long, about an inch broad at its basis, and was fixed by thin laminæ of coagulable lymph to the sides of the aorta †.

* See Engravings, letter A. † See Engravings, letter D.



This mass of coagulable lymph filled and completely obstructed the passage of the blood through the aorta.

As this plug adhered intimately to each side of the vessel by thin and dense layers of coagulable lymph, it appears to me that it was not formed *in articulo mortis*, but some time before death, and probably by an inflammatory action of the vasa vasorum of the coats of the aorta.

From the vicinity of the aneurismal tumour to the lumbar vertebræ, the vessels proper to these bones must have been much irritated; but they did not, as in the greater number of instances, in which an aneurism is seated in the immediate vicinity of a bone, secrete bony matter. A considerable portion of the second and third lumbar vertebræ was absorbed.

## REMARKS.

An obstruction of the abdominal aorta seems to me to be occasioned by two very different causes: it is an *original malconformation*, or it is occasioned by *a disease in the coats of the artery, and a consequent deposition of layers of coagulable lymph within it.*

The case of obstructed thoracic aorta, which has been so ably described by my colleague Dr Graham, is of the former description; the coats of the thoracic aorta were *not thickened*, nor otherwise diseased, and the obstruction was similar to that which would have been occasioned by a ligature passed around that great artery. I have seen two instances, in which the arch of the aorta was contracted in different places, so that it somewhat resembled the arch of the colon, and in these instances there was no great degree of thickening of the coats of that great artery. In the instance of obstructed aorta, which fell under the observation of Dr Goodison, and also in that which I met with, the coats of the abdominal aorta were much thickened, the stricture was of considerable breadth, and coagulable lymph was found within the obstructed vessel. I have subjoined an ex-

tract from Dr Goodison's own description of the singular case above alluded to.

"I found the aorta to be obliterated from the origin of the inferior mesenteric artery downwards, for the remainder of its length; together with the greater part of the iliacs, on each sides, —the cavity of that on the left side being oblitered to its bifurcation into external and internal, and that on the right to more than one-half of the length of the common iliac.

"The artery lay close, and was firmly attached to the spine. It had precisely the appearance of the trachea; being rendered flat upon its posterior surface, but preserving anteriorly its circular, or convex form.

"The iliac veins were so intimately connected with the arteries, as to cause considerable difficulty in their removal.

"There was a large quantity of gelatino-cartilaginous matter surrounding that part of the aorta and vena cava, together with the portions of the iliac arteries and veins which were included in the disease.

"The external appearance of the artery at first led me to think that an enlargement of its cavity existed; but this was not the case at the time of the examination, whatever might have been its state formerly. This appearance was owing to the formation of the case of bone externally, and to the formation of gelatino-cartilaginous matter internally.

"The bony sheath incased the artery for the space of about two inches, and was filled with a firm fleshy substance, which had the appearance of the muscular fibre of the heart. The substance was prolonged upwards, beyond the bony sheath, and adhered firmly to the coat of the artery.

"The coats of the artery, at the diseased part, were separated, and the internal coat, having become the medium for the deposition of the ossific matter, had been literally converted into bone."

Mr Crampton observes, "By cutting longitudinally through the diseased portion of the artery, and turning out the condensed coagulum with which it was filled, I was enabled to ascertain the real nature of the changes which the vessel had undergone previous to its obliteration.



"The internal coat, covered with steatomatous and earthy concretions, completely lined the cavity of the dilated portion of the artery; the dilatation itself consists of three irregular pouches, which proceeded from the anterior and lateral surface of the vessel. It is obvious, therefore, that the disease commenced with dilatation of the artery, in consequence of a previously diseased and weakened state of its coats; that the coats had suffered neither ulceration or rupture was evident, since (when the coagulum was detached) the internal membrane was found smooth and unbroken, and its surface presented precisely the same diseased appearances which were found on the internal coat of the aorta, immediately above and below the dilatation *."

In the case which presented itself to me, there was an aneurism of considerable size at the division of the aorta into its two great iliac arteries. The aorta was impervious for the space of an inch and half above the tumour, and there was a plug of coagulable lymph above the impervious portion of the artery. (Vide engraving.)

The constricted portion of the aorta above the aneurismal sac, bore a striking resemblance to the permanent organic stricture of the gullet, intestines or urethra; and it seems to me to be not improbable, that the temporary constriction of the aorta had paved the way for the permanent organic stricture of that artery.

The coagulation of the blood within the bloodvessels of a living animal, is one of the most beautiful resources of nature for preventing the loss of blood; and it takes place from various causes, within the arteries of the body.

I had occasion to meet with one instance in which the arm had been torn off, and what was very remarkable, not above a couple of ounces of blood were lost. The patient's body had at the moment the arm was torn off been very much injured, and he died in the course of three days, from a violent inflammation of the chest. At the post-mortem examination, the torn axillary artery and corresponding vein were found to have been filled with coagulable lymph.

* Vide Dublin Hospital Reports, vol. ii.

In the same manner, in cases of abscess of the lungs, the bloodvessels in the vicinity of the seat of the disease are found filled by coagulable lymph; and many other similar instances might be enumerated, did the occasion require it.

With regard to aneurisms, it may be remarked, that a coagulum is very rarely formed until the sac has attained a very considerable bulk; and it takes place, in the first instance, in that part of the sac in which the blood is out of the direct current of circulation; hence, a spontaneous cure will be more readily accomplished in those instances, in which a large sac communicates by a narrow neck, with an artery which is not enlarged, than in such aneurisms as are of an oval or rounded form, and are occasioned by the uniform expansion of all the coats of an artery, and in which the artery enters into the middle of the sac, as in the annexed engraving. In some aneurisms of the arch of the aorta, which I have examined, there were a number of layers of coagulable lymph within the aorta; so that though the diseased portion of the aorta was externally of much greater bulk than is natural, the channel for the flow of blood was considerably contracted. But in the case which has been described by Dr Goodison, and also in that which I met with, the coagulum filled up the whole cavity, and completely obstructed the vessel. In some instances, the cause of this complete filling up of an artery is quite obvious,—it is the result of pressure. Thus, I had occasion to meet with an instance of aneurism in the arch of the aorta, in which the left arteria innominata was slightly thickened; the left carotid artery was completely obstructed by a regularly organized lymph; and the vein common to the left subclavian and left internal jugular vein, was converted, for the space of two inches, into a ligamentous chord.

In the case of aneurism of the abdominal aorta which occurred to me, the formation of the plug, and obliteration of that artery above the aneurism, had probably occasioned its cure.

In the greater number of aneurisms no coagulum is formed, excepting within the aneurismal sac, notwithstanding which, a spontaneous cure sometimes has taken place.



In short, whenever there exists a greater disposition in the blood to coagulate, than in the artery to expand, a coagulum will fill up the enlarged artery, and a spontaneous cure sometimes follows.

It may further be observed, that the obliteration of certain arteries and veins takes place, even when there is no reason to suppose the coats of these arteries and veins to be in a morbid state. This happens when it is no longer necessary for the due performance of certain functions in the animal economy, that the blood should follow a particular course. Thus the ductus arteriosus, and umbilical arteries and vein, become obstructed in a short time after birth; and, in proportion as the ductus arteriosus is contracted, the branches of the pulmonary artery become so much enlarged, as to be capable of admitting the whole blood which is sent to them by the contraction of the anterior ventricle of the heart.

The arteries within the abdomen, like those of the other parts of the body, are liable to aneurism, and this morbid state is sometimes partial, but on other occasions general.

The partial enlargement is most frequent at the division of the aorta into its two great branches, the common iliac arteries, the free course of the blood downwards being, to a certain extent, resisted by the angle at which these iliac arteries are sent off from the parent trunk.

An aneurismal diathesis sometimes prevails at the same time in the different arteries within the abdomen, of which a remarkable instance has been recorded by my uncle Dr Donald Monro. He has observed: "As this man died so suddenly, his body was opened the second day after his death, when several aneurisms were found in the cavity of the abdomen.

"The superior mesenteric artery, just as it arose from the aorta, was dilated for above the length of an inch and a half, and was near an inch in diameter in the middle of the aneurismal sac, and was filled with a firm coagulum. The left emulgent artery was dilated at its beginning to the size of a filbert nut; and the inferior mesenteric artery was beginning to be dilated just as it arose from the aorta." And, as in the case related by

Sir A. Cooper, an aneurism in the abdominal aorta sometimes occurs in the same individual as an external aneurism.

The size of aneurisms in the abdominal aorta is extremely various, and, in general, they expand to a considerable extent *.

In the case of aneurism of the abdominal aorta, accompanied by an obstruction of that artery, the tumour had attained but a small bulk. This, perhaps, was owing to the tumour having been, as it were, strapped down by the inferior mesenteric artery, which adhered very intimately to its coats, and passed over the front of it; which artery, it may be remarked, was probably highly irritated by the tumour, for its internal coats were of a deep red colour, and the outer coat seemed to my eye to have been somewhat thickened.

Aneurisms of the abdominal aorta have sometimes attained so large a bulk as to fill the greater share of the abdomen, and have also compressed, to a certain degree, the bowels of the chest, so as to occasion difficult breathing.

My uncle Dr Donald Monro has published a very detailed account of an aneurism of this description, which, on account of its very particular nature and termination, merits the notice of the reader, and therefore I have subjoined an extract from that remarkable case:—

"We observed, that the left side of the cavity of the abdomen was filled with one large black tumour, which, on examining, proved to be the cellular membranes behind the peritoneum, which covered the kidney, filled with blood. On cutting through the peritoneum, and these membranes, we found the kidney sound below, which we removed; and then laid the aorta bare from its coming out of the heart, till near its division into the two iliacs, which brought into view a large aneurismal sac, which extended from the diaphragm to the os pubis.

* De Haen has made mention of an exception to the above remark. An aneurism of the aorta protruded between the second and third ribs, and the external tumour, instead of increasing in bulk, suddenly disappeared, and was not perceptible for above a month before the patient's death. Upon dissection the arch of the aorta was found very much enlarged.



"The upper part of this aneurismal sac was formed by a dilatation of the coats of the left side of the aorta, which at first view seemed to be dilated from where this vessel first passes through the diaphragm, till some way below where the emulgent artery of the right side goes off to the kidney; though it afterwards appeared that the dilatation began much lower, about an inch above the rise of the cœliac artery, and extended no further than just below where the right emulgent goes off. The distended coats of the artery extended upwards and downwards, and towards the left side; so that this part of the sac which seemed to be formed by them was full four inches long, and three inches broad, though the length of the aorta which was dilated, was but two inches in all.

"The lower part of the sac was larger than the upper, and extended as far down as the os pubis; and its coats seemed to be made up of the peritoneum and cellular membranes; and it appeared as if this part of the sac had been recently formed by the coats of the true original aneurismal tumour giving way at the lower part, and allowing the blood to pass into and distend the cellular membranes behind the peritoneum, and to raise and push it forwards. Perhaps the coats of the true aneurism began to give way at the time the patient complained of the sensation of a stream of cold water running down into the lower part of the left side of the belly.

"In dissecting off the membranes, to have a more distinct view of the whole tumour, I accidentally tore part of the sac, where its coats seemed to be formed of the peritoneum and cellular membranes, and there came out a quantity of clotted blood. I then introduced my finger through this aperture, and found that the upper part of the sac was filled with a firm fibrous coagulum, which afterwards, when it was taken out, appeared to be exactly similar to what is always found in aneurisms which have been of any standing; but the lower part was filled only with recent coagulated blood. The aneurismal sac adhered firmly to some of the vertebræ, and to the lower ribs; and these bones were become carious, and formed part of the sides of the sac.

" I then had the aneurismal sac cut out of the body, and, in dissecting it away, I observed that it adhered very firmly to the last dorsal and the first and second lumbar vertebræ; and that the pulsation of the blood had worn away part of the aneurismal sac, where it adhered to those bones, and that they were bare and carious on the left side of their bodies; that a number of small osseous spines had grown out every where from the carious parts; that the cartilage between the first and second lumbar vertebræ was worn away for near half an inch deep on the fore and left side; and that the lower side of the last rib was bare and carious.

" I next examined that part of the sac which had formed the large tumour on the back, and found, that the force of the blood had driven the sides of the dilated artery backwards, quite through the muscles of the back, till it had reached the skin.

" The hollow which remained, after the aorta, with the aneurismal sac, and fibrous coagulum, were taken out of the body, appeared to be about three-fourths of as exact a spherical figure, of three inches and a quarter diameter, as if it had been formed by a turning wheel. It reached from the lowermost rib to the spine of the ileum.

" On examining the inside of the fore part of the aneurismal sac (the only part which could be taken out entire), I observed that the aorta had not begun to be dilated for near an inch lower than it had appeared to be on the outside; that the artery had returned to its natural size again, immediately below where the right emulgent artery takes its rise from the aorta; and that there were a number of osseous concretions spread on the internal surface of the sac round the lower orifice where the aorta returned to its natural size, and went out of the sac.

" And, on examining the fibrous bloody concretion, which filled the upper and back part of the aneurismal cyst, I found that there was a hollow or furrow on the fore part, through which the blood could pass freely from the upper part of the descending aorta to the lower, to be distributed through the lower extremities, which was certainly the cause why the pulse



continued regular, and without intermission during the whole course of this tedious and troublesome disorder."

Through the kindness of the late Dr Rutherford, I am enabled to make an important addition to the history of aneurism of the abdominal aorta. The case was drawn up for my own gratification and instruction: and I have given it in the Doctor's own words.

" The abdomen being opened, the viscera, in general, appeared to be remarkably sound; and, though the body was much emaciated, yet no inconsiderable quantity of fat was observed betwixt and under the membranes. The stomach, as well as the great arch of the colon, were much contracted. The solid viscera, viz. liver, spleen, and kidneys, were very pale. The liver was at first thought to be enlarged; but this appearance probably arose from the right lobe being pressed forwards and towards the left side, by a prominence of the part behind. The gall-bladder was flaccid, but contained a quantity of turbid pale brown or yellow bile. The pancreas was rather larger than common; the spleen was of natural size and shape, but, like the liver, was protruded, the parts behind being also unusually prominent. For the same reason, the kidneys also projected farther into the cavity of the abdomen than is commonly to be observed. They were of a natural shape, but considerably smaller, especially the right one, than common. The parts that were so prominent at the back part of the abdomen were nowise discoloured; and, unless by their prominence, gave no indication of their being in a morbid state.

" The cartilages of the ribs were partly ossified, so that they could not be divided without the aid of a saw. When they, with the sternum, were raised, the parts within the thorax exhibited a natural appearance. But presently it was found that there had been an effusion of a vast quantity of blood into the right cavity of the thorax. Hence a continued mass of coagulum was spread over the surface of the lower and middle lobes of the lungs, insinuated into the fissures betwixt the lobes, and accumulated abundantly behind the lungs, and over the surface of the diaphragm. Besides, many pounds of red serum were contained in the same cavity. In the left cavity of the thorax

there was only a small quantity of clear serum. The lungs, as to texture, were in general perfectly sound, only a few very hard roundish tubercles, not much larger than garden peas, were felt in them, immediately below their surface, and a few bands of cellular substance connected them, in certain points, particularly the right lobes, and to the tendon of the diaphragm. The pericardium was nowise diseased; it contained a little yellowish serum. The heart was pale and uncommonly small. Both the heart itself, and the large vessels proceeding from it, were quite empty of blood.

"All the effused matter being removed from the right cavity, and the lungs raised, the diaphragm was discovered to be much diseased, protruded far into the thorax, greatly thickened, of a very deep red or purple colour, with a large ragged perforation in the most prominent part, through which the blood had issued into the right cavity of the thorax. Through this perforation was a communication with a very large and irregular preternatural cavity situate behind the posterior parietes of the abdomen. This, on the right side, was situate behind the right lobe of the liver, or upper part of the right kidney. By further examination, it was found to extend across the spine, then expanding, run downwards, so as to form a large oblong pouch, corresponding in situation and extent to the external tumour that had been observed on the left side of the spine. This great cavity was filled with coagulated blood, and such was its capacity, that it contained betwixt three and four pounds. Within, where the cavity crossed the spine, the bones were bare, rough, and greatly eroded, the interosseous cartilages projecting far beyond the wasted bodies of the vertebræ, (I believe the last dorsal and two first lumbar). It was not difficult now to trace the source of the extravasated blood. All the great bloodvessels within the thorax, and in the upper part of the abdomen, were in appearance perfectly sound, and of a natural size. But about the first and second lumbar vertebræ, the aorta was found to have concreted most firmly with the anterior parietes of the cavity; and searching from within the cavity, it was found, that in this place the coats of the artery were completely eroded and destroyed, so as to afford a large and free passage or opening, estimated at an inch and a half in length, from the artery into the cavity."



Other aneurisms of the abdominal aorta project backwards at the side of the spine, and sometimes attain a most enormous size. I have had occasion to see an instance, in which the aneurismal tumour in the back was at least eighteen inches in circumference, and so very heavy, that the patient could not turn himself in bed without aid; and, in the following instance, the tumour had attained a still larger size.

On the 28th September 1823, I was called to see A B, a stout man, 36 years of age, who had a tumour of a globular form, and three feet in circumference, on the right side, which extended from the ribs to the anterior spine of the os ilium. This tumour had a distinct pulsation, which was synchronous with that of the heart. It was so heavy that he could not turn himself in bed without aid, and was obliged to lie always on his side. The surface of the tumour was sphacelated, and a good deal of serum issued from it at different times for several days. The centre of the tumour communicated a distinct pulsation, but it was hard to the touch in its circumference.

The patient suffered acute pain in the back and loins, which extended down to the right thigh, scrotum and inferior extremities, which latter were œdematous. He was occasionally sick, but his appetite upon the whole was tolerably good.

I was informed that, three years ago, in putting some straw upon a cart, he had strained, or racked, as he called it, his back, which created very acute pain at the moment, which lasted for three or four days. He was at length somewhat relieved by bleeding, but the pain never left him, and he was supposed to labour under a disease of his stomach or liver, his appetite and digestion being, after a time, very much impaired. His pulse was not affected.

Last April, a tumour, about the size of a hen's egg, appeared on the right side below the ribs, and which had a distinct pulsation. This tumour increased rapidly in size, and created much uneasiness, so that he was obliged to take very large

doses of laudanum. The patient at length died, and without the tumour bursting externally or internally, seemingly quite exhausted by his very acute suffering.

Dissection.—The lungs were œdematous,—the heart in all respects sound; but the aorta was a little larger than usual; and before passing between the crura of the diaphragm, it was evidently expanded. On tracing the enlarged aorta, it adhered to the diaphragm; pushed forwards and downwards the right lobule of the liver and right kidney, the enlargement having existed between the place above mentioned, and the renal arteries. The tumour extended backwards first to the left side, and then, as far as the pelvis, to the right side. The large sac seemed to be formed out of the coats of the arteries, to which a quantity of condensed cellular substance was added, and the muscles of the back were in part sphacelated, and five or six of the dorsal vertebræ were partially absorbed. The splanchnic nerve adhered intimately to the left portion of the sac; hence the great pain and derangement in digestion; and the nerve seemed to my eye to be somewhat larger than usual. The patient had had occasional difficulty in voiding his urine: but no mechanical obstruction was found in the bladder, and the coats of the ureters were somewhat thickened.

It was remarkable in this case, that the greater part of the blood in this great sac had not coagulated.

The sac itself was inflamed on its inner side, and lined by a thin layer of coagulated blood. In this case the inner coat of the aorta was redder than usual.

## OF THE COATS OF THE ANEURISMAL SAC.

In the case of obstructed aorta, I did not dissect the coats of the aneurismal sac, lest I should thereby have injured the appearance of so rare a specimen; and, besides, it did not seem to be necessary, as my Father has already investigated this part



of anatomy with much attention. In a paper on aneurism, which was published in vol. 3d of the Literary and Physical Essays of this place, the following description has been given of the dissection of an aneurismal sac, in a letter from my grandfather to his son Dr D. Monro. "The aneurismal sacs you sent me to Edinburgh were dissected by your brother in my presence. The appearances were the following:—The external loose cellular, and the cellulo-membranous, coats being dissected away carefully, the circular fibrous, commonly called muscular, coat, was evidently seen continued on all the three small sacs in every part of them, but was thicker there than in the sound part of the artery; and, in the most enlarged part of the sacs, an extraneous substance, resembling a soft steatomatous matter, was intermixed with the muscular fibres. The cellular substance lining the inside of the muscular coat was considerably thicker than natural, and had much the same appearance of an extraneous substance filling its cells. The internal membrane of the artery adhered so firmly to these cells, that it could not be separated, but seemed thicker than in a sound state. Though the circular fibres could be observed at the sides of the incision made into the fore part of the sac of the left ham, as represented in your figure; yet, as the dissection was continued backwards towards the most distended part, these muscular fibres became less observable, and could not be traced. Whether this apparent defect of them here was owing to a much greater proportion of the extraneous substance above mentioned, or to their having been destroyed by the great distention, is difficult to determine. The internal cellular coat of this sac was considerably thicker than in the smaller ones, but of the same texture. The most internal membrane was in a thickened adhering state. In the part of the great sac of the right ham which came to Edinburgh, no circular fibres could be seen, and the structure was otherwise much the same as that now described of the back part of the sac in the left ham."

Professor Scarpa, one of the most justly celebrated anatomists in Europe, has also given a very distinct and beautiful representation of the proper fibrous or muscular coat, as he calls

it, in a case of an aneurism of the thoracic aorta, which is represented in Fig. 1. of his Tav. IX.; and as may be seen in Plate I. of Mr Wishart's translation of Scarpa on Aneurism; but I never could distinguish these fibres when that artery is in a healthy condition; and besides, it may be added, that, in aneurisms of the extremities, the muscular fibres of the coats of an aneurism are, on account of their greater size, much more apparent than in an aneurism of the abdominal aorta.

The late Mr Wilson of London, whose skill and accuracy as an anatomist have been universally acknowledged, has observed, "In the true aneurism, at the beginning of the disease, the coats of the artery are not ruptured; on the contrary, they are often increased in thickness before they become morbidly dilated; and, in general, the alteration in structure appears to begin in the inner and muscular coats *."

It may be proper to add, that my assistant Mr Mackenzie, who has lately paid much attention to the structure of aneurismal arteries, has assured me, that, in such diseased arteries, he has observed the muscular structure much more distinctly than in those arteries which are in a sound state.

Aneurisms of the abdominal aorta generally prove fatal before they burst, by the derangement which they occasion in the functions of the abdominal bowels, but sometimes they burst into the abdomen, or even into the thorax, as in the cases described by Dr Rutherford; and they generally have occasioned the absorption of the contiguous vertebræ.

* Lectures on the Vascular System, London 1819.



### OF THE NEW CHANNEL BY WHICH THE BLOOD FLOWS TO THE BOWELS OF THE PELVIS, AND TO THE INFERIOR EXTREMITIES, WHEN THE ABDOMINAL AORTA IS IMPERVIOUS.

The case which fell under my notice, affords a striking example of the circulation being carried on, when none of the blood reached the bowels of the pelvis or inferior extremities, by the medium of the trunk of the aorta; and also, that the blood may be diverted from its usual channel, without a derangement of the functions of that part of the body which is usually supplied by the aorta.

The blood probably reached the pelvis and inferior extremities of the body by different channels; a part of it, by the anastomosis between the internal mammary and epigastric arteries, another part of it by the medium of the anastomoses between the phrenic, lumbar, ileo-lumbar, and circumflex arteries, and by the anastomoses between the ascending branches of the gluteal and lumbar arteries; and I conceive that but a small part of the blood found its way downwards by the anastomoses between the internal mammary and epigastric arteries; as there must be a considerable impediment to the free flow of blood by that channel, for the usual current of the blood is then reversed,—for, instead of the blood rising upwards towards the internal mammary artery, as in the natural circulation, it must have descended through the epigastric artery towards the inferior extremities, by which the natural course of the blood is reversed.

If aneurism in the abdominal aorta be seated between the origin of the superior and inferior mesenteric arteries, I am led to suppose, from a preparation in my Museum, in which a ligature had been thrown around the descending aorta of a living dog, and, from the consequent enlargement of the anastomosing branch between the superior and inferior mesenteric arteries, and also by the result of the following experiment, made upon a dead body, that a considerable portion of the blood flows downwards by that channel.

I divided the abdominal aorta; one pipe was fixed into the upper portion, and another into the lower portion of that vessel.

A coloured injection was thrown into the uppermost pipe with force, and in the course of a minute a considerable portion of the injection flowed out at the mouth of the pipe, which had been inserted into the lower portion of the abdominal aorta; and I found that the arteries of both inferior extremities had been completely filled by the injection.

From this experiment, it appears to me to be a legitimate conclusion, that if, in this case, where there had been no previous obstruction in the aorta, and no enlargement of the anastomosing branches, the injection had passed readily from the upper to the under part of the body, by the medium of the anastomosing branches of the superior and inferior mesenteric arteries, the thinner fluid, the blood, would certainly also have passed by the same unusual route, if the aorta were obstructed, in consequence of disease. When the lateral branches sent off from an artery are large and numerous, as at the elbow and knee joints, it might have been expected that the blood would still flow to the hand or foot, though the main trunk be obstructed; but when there is a greater disproportion between the size of the obstructed artery and the lateral anastomosing branches through which the blood must afterwards pass, as in the obstructed aorta, there is reason to be apprehensive of a deficiency in the necessary supply of blood to the parts beyond the seat of the obstruction; yet that did not take place in this case, for the limbs of the patient were not, in the slightest degree, paralytic or shrunk; nor was there any symptom which, during the life of the patient, led to a suspicion of the existence of any disease in the arterial system.

My friend Professor Graham has described an instance of an obstruction of the thoracic aorta. The blood, in this instance, had been impelled with great force into the great left subclavian artery, and also into its branches the internal mammary and superior intercostal arteries, which occasioned a considerable enlargement of these vessels. The blood, therefore, reached the inferior extremities chiefly through the medium of the inosculations between the superior intercostal and mammary arteries, with the three arteries arising beyond the seat of the obstruction of the aorta.



The blood followed a similar course in the instance of contracted aorta which fell under the notice of Mr Paris.* The enlargement of the thoracic arteries was so remarkable as to be evident before the body was opened; and, upon dissection, the arteria innominata and left subclavian arteries were found enlarged to twice their usual size, and also the internal mammary, phrenic, and transverse arteries of the neck.

But the case now under consideration is of an opposite description; for the arteries in the more immediate vicinity of the tumour, viz. the lumbar, mesenteric, and cœliac arteries, were *not* enlarged beyond the usual standard; which extraordinary fact perhaps admits of explanation, on the idea, that, as the obstruction had probably been of considerable duration, hence the collateral anastomosing arteries, which had previously been enlarged, had, as in cases of external aneurism, regained nearly their natural caliber.

## OF THE SYMPTOMS.

The greater number of aneurisms of the abdominal aorta at their commencement, derange the functions of the alimentary canal, and of the urinary organs, and induce diarrhea, and sometimes suppression of urine; and, when they have attained a large bulk, they occasion great difficulty in breathing, by impeding the descent of the diaphragm, and are so heavy as to prevent the patient turning in bed without aid.

Considering the vicinity of the tumour to the hypogastric plexus of nerves, which includes two-thirds of the aorta, and considering likewise the state of the second and third lumbar vertebra, and the pressure made upon the vena cava inferior, it is remarkable, that there were no symptoms of the disease during life, no degree of weakness or swelling of the limbs, nor derangement as to the functions of the bowels of the pelvis, in the case of obstructed aorta, which fell under my notice.

In the case of an aneurism of the arch of the aorta, when the tumour, in consequence of the absorption of a portion of the

* Desault's Parisian Journal.

sternum has become external, the gradual cessation of the pulsation in the tumour indicates the gradual and progressive formation of layers of lymph within it.

When the sac of a large abdominal aneurism has attained a great size, it generally contains, at its more prominent part, more or less of coagulated blood; hence, when it projects backwards, pulsation is not very obvious, and it has been mistaken for a lumbar abscess. I attended a patient afflicted by a large aneurism, which was seated in the loins, and was informed by the friends of the patient, that a medical gentleman, supposing the tumour to be an abscess, had proposed to push his lancet into it, in order, as he said, to let out the matter.

## OF THE SPONTANEOUS CURE OF ANEURISM.

Many instances are to be found in the records of physic and surgery, in which aneurisms proper to the arteries of the extremities of the body have been removed by an effort of nature in the following manner:

The aneurismal sac is filled up by a number of layers of coagulable lymph, by which the artery is rendered impervious; these layers of lymph are afterwards absorbed, and the opposite sides of the artery grow together.

Considering that the blood is driven into the abdominal aorta, by the powerful contraction of the posterior ventricle of the heart, it is not to be expected that this artery should be frequently obstructed by coagulable lymph, unless the tumour, as in one in the Museum of the University, be placed at the side of the aorta.

## MEDICAL TREATMENT.

The filling up of aneurismal tumours, by coagulable lymph, has been occasionally brought about by diminishing the impetus and velocity of the blood which flows to the seat of the disease, by the repeated detraction of blood, by low diet, rest,



or by the use of the foxglove; and, it may be remarked, that even when the disease is seated in the arch of the aorta, into which the blood is driven with great force from the left ventricle of the heart, the aneurism is in part filled, in some instances, by layers of coagulable lymph.

I have had occasion to meet with two such instances, in which very large aneurisms of the aorta were partially filled up by layers of coagulable lymph.

In the first of these, a part of the breast-bone, and a part of three of the upper ribs, had been absorbed. The tumour protruded externally, and measured fifteen inches in circumference, and at first it pulsated uniformly over its whole surface. The pulsation, however, became gradually less distinct, and at length ceased. The patient died in the course of eighteen months, from phthisis pulmonalis, and upon dissection I found the greater part of the aneurism filled by layers of lymph.

In the other case, the aneurismal tumour was as large as a child's head. This patient laboured under excessive difficulty in breathing, his face, and the point of his nose, became much swollen, so that he resembled a monkey. This symptom, according to Aretæus, strongly marks the difficulty with which the blood passes through the lungs.

His difficulty of breathing increased to a most distressing extent before death. Upon dissection, eight pounds of water were found within the chest, and there was a very large tumour connected with the arch of the aorta, which was completely filled by layers of coagulable lymph. Neither of the above patients died from a rupture of the arch of the aorta. The large aneurism, by pressing upon and irritating the lungs, occasioned phthisis, and in the latter, by preventing the free flow of blood through the lungs, had occasioned an effusion of water within the chest, which proved the more immediate cause of death. But, in the instance of obstructed aorta, a complete plug of coagulable lymph was formed within the abdominal aorta, though the patient walked about, and had not been restricted to very low diet before death.

## SURGICAL TREATMENT.

NATURE, in the case of obstructed aorta, has pointed out the most efficacious means of curing aneurisms, which the surgeon should imitate, by passing his ligature around the vessel above the seat of the disease.

To those who are conversant with the history of scientific surgery, the valuable observations of Sir A. Cooper on different aneurisms, and on the improved mode of treating those of the carotid and inguinal arteries, and of the abdominal aorta, which have been introduced by that distinguished surgeon, are familiar. The case of obstructed aorta, which has been above described, cannot fail to be read with peculiar interest by the medical world at large, and by Sir Astley in particular. Nature had in this instance produced the same effects as the ligature which Sir Astley had thrown around the abdominal aorta, and has pointed out the accuracy of those principles, and the propriety of his attempt to save the life of one, who was weltering in his blood, and in the most imminent risk of immediate dissolution.

Combining together the results of the experiments of Sir A. Cooper upon dogs, (and which, it may be remarked, have been attended with similar results in the hands of others), and the cases which have fallen under the notice of Dr Goodison and of myself, there can be no doubt as to the safety and expediency, in certain cases, of throwing a ligature around the abdominal aorta.

To Mr Tyrrell we are indebted for the following account of the manner in which Sir A. Cooper performed the operation.

" The patient's shoulders were slightly elevated by pillows, in order to relax, as much as possible, the abdominal muscles; for I expected that a protrusion of intestines would produce embarrassment in the operation, and was gratified to find that this was prevented by their empty state, in consequence of the involuntary evacuation of the fæces. I then made an incision,

* *Vide* Sir A. Cooper's Lectures on Surgery, London, 1825.



three inches long, into the linea alba, giving it a slight curve, to avoid the umbilicus; one inch and a half was above, and the remainder below the navel. Having divided the linea alba, I made a small aperture into the peritoneum, and introduced my finger into the abdomen; and then with a probe-pointed bistoury enlarged the opening into the peritoneum to nearly the same extent as that of the external wound. During the progress of the operation, only one small convolution of intestine projected beyond the wound.

" Having made a sufficient opening to admit my finger into the abdomen, I passed it between the intestines to the spine, and felt the aorta greatly enlarged, and beating with excessive force. By means of my finger nail, I scratched through the peritoneum on the left side of the aorta, and then gradually passed my finger between the aorta and spine, and again penetrated the peritoneum, on the right side of the aorta.

" I had now my finger under the artery, and by its side I conveyed the blunt aneurismal needle, armed with a single ligature behind it; and Mr Key drew the ligature from the eye of the needle to the external wound, when the needle was withdrawn.

" The next circumstance, which required considerable care, was the exclusion of the intestine from the ligature, the ends of which were brought together at the wound, and the finger was carried down between them, so as to remove every portion of the intestine from between the threads; the ligature was then tied, and its ends were left hanging out of the wound.

" During the operation the fæces passed involuntarily, and the patient's pulse, both immediately and for an hour after the operation, was 144 in a minute. I applied my hand to his right thigh, immediately after the operation, and he said that I touched his foot, so that the sensibility of the leg was very imperfect.

" The omentum was drawn behind the opening as far as the ligature would admit, so as to facilitate adhesion; and the edges of the wound were brought together by means of a quilled suture and adhesive plaster.

"He remained very comfortable until the following evening, when he vomited, and his fæces passed off involuntarily. 27th, Seven o'clock A. M. had passed a restless night, and had vomited at intervals; pulse 104, weak and small; pain in his head; great anxiety of countenance; very restless, and his urine dribbled from him. He gradually sunk, and died at eighteen minutes after one o'clock, having survived the operation forty hours.

"*Dissection.*—No peritoneal inflammation but at the edges of the wound, which were glued together by adhesive matter, excepting at the part at which the ligature protruded. The thread had been passed around the aorta, about three quarters of an inch above its bifurcation, and rather more than an inch below the part at which the duodenum crosses the artery; it had not included any portion of omentum or intestine. Upon carefully cutting open the aorta, a clot, of more than an inch in length, was found to have sealed the vessel above the ligature; below the bifurcation, another, an inch in extent, occupied the right iliac artery; and the left was closed by a third, which reached as far as the aneurism: all were gratified to observe the artery so completely shut in forty hours. The aneurismal sac, which was of a most enormous size, reached from the common iliac artery to below Poupart's ligament, and extended to the outer part of the thigh. The artery was deficient from the upper to the lower part of the sac, which was filled with an immense quantity of coagulum *."

The peculiarities of the above case probably induced Sir A. Cooper to adopt the above method of operating. It appears to me that the aorta is more accessible from behind.

I found, upon trial on a dead body, that a ligature might be readily passed around the aorta, after pressing to one side the kidney, by cutting down upon that vessel from behind, on the

* "In an operation which I lately performed of tying the external iliac artery much above Poupart's ligament, I think I could with little difficulty have reached the aorta, by turning up the peritoneum without dividing it; and should I again wish to put a ligature on the aorta, I should prefer this method to the one I have before adopted."



left side of the spine. My son made a similar experiment upon a ram, and passed a ligature around the artery, opposite to the third lumbar vertebra. The blood still continued to flow to the extremities, for there was no diminution of heat of the hinder limbs, and the animal retained the feeling and power of moving them, so that none of the nerves had been included in the ligature. It may be added, that, after the death of the animal, there was no appearance of peritonæal inflammation.

## INFERENCES.

From what has been above stated regarding obstruction of the abdominal aorta, it follows;

1*st*, That an aneurism of the abdominal aorta is sometimes cured, by an effort of nature, by an obstruction of that vessel above the seat of the disease.

2*d*, That an aneurism of the abdominal aorta, accompanied by an obstruction of that vessel, is not invariably characterized during life by any one pathognomonic symptom, even when there is reason to conclude that the disease had been of some duration.

3*d*, That an aneurism of the abdominal aorta does not prove invariably fatal, as that vessel has been sometimes completely obstructed by a plug of coagulable lymph; notwithstanding which the blood still flowed to the lower parts of the body.

4*th*, That a ligature may be passed around the abdominal aorta, with the prospect of saving life, when the aneurism is seated in that part of the aorta which intervenes between the origin of the superior and inferior mesenteric arteries, and also when the aneurism occurs at the division of the aorta into the great iliac arteries.

5*th*, That, during the passing a ligature around the abdominal aorta, great caution is requisite, lest a part of the hypogastric plexus of the nerves which surrounds two thirds of that vessel, be included in it, which would undoubtedly bring on an incurable

palsy of the inferior extremities, and materially derange the functions of the bowels of the pelvis.

Lastly, that, upon consulting the records of physic and surgery, it will be found, that our knowledge of the nature and treatment of aneurism has arrived gradually at its present state of perfection, in consequence of the investigations, experiments, and operations, that have taken place chiefly in this country; and, it may be added, that the cases of obstructed aorta which have been above described, render complete the history of aneurism.

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## EXPLANATION OF PLATE.

This engraving is of the same size as nature, and gives a back view of the aorta of an adult male.

I. Points out the abdominal aorta, which was opened from behind.

II. Points out the origin of the superior mesenteric artery, which is not larger than that vessel is in its sound state; an observation which may be extended to one of the lumbar arteries, which is referred to by No. IV.

V. Points out the plug which filled the aorta. It is composed of a very solid mass of coagulable lymph, with which there were a number of the red globules of the blood intermixed, which gave it a deep-red colour.

VI. Refers to a cut which was made into the plug, in order to discover its nature.

VII. VIII. Point out two thin masses of coagulable lymph, by which the conical-shaped plug was firmly fixed to the side of the aorta; and the engraving also exhibits the separation of the component coats of the aorta, which spontaneously took place after the artery had been opened.

PLATE I. *Edin. Journ. of Med. Science Vol. III.*

*Published by Maclachlan & Stewart 1827*

At No. IX. the abdominal artery felt hard and like a solid cord, and it was found impossible to pass even the smallest probe through it down to the aneurismal sac marked by

X. X. This portion of the vessel was considerably contracted, and was whiter than any other part of the aorta. The aneurismal sac is represented after its contents had been removed. The aneurismal sac appears to have been formed by the uniform expansion of the coats of the aorta; whereas, according to Sennertus and Scarpa, an artery retains its natural size, and its coats are ruptured or corroded at a certain place, and seem included within, and to pass through, the sac, which is formed in consequence of the effusion of blood under the cellular sheath, or any other membrane which covers the ruptured or corroded coats of the artery.

The coats of this sac are of unusual thickness. The inner surface of the sac is irregular, owing to the adhesion of several small portions of coagulable lymph to it. In consequence of the pressure of the aneurism upon two of the lumbar vertebrae, these were found to have been absorbed to a certain extent.

XI. XI. Point out probes put into the common iliac arteries, which, in this case, were considerably contracted.

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1826.

# BAYNTON's

## NEW METHOD

OF

## *TREATING ULCERS.*

ULCERS of the Legs have from the earliest times been classed among the most unmanageable diseases which occur to the Surgeon; and indeed have so often defeated the utmost efforts of his skill, as to have become the reproach of his profession. Circumstances so disagreeable sufficiently evince the idea entertained of their intractable nature, and best prove, how valuable

valuable a remedy which does not require confinement, is easy of application and within the attainment of every description of person, must prove to the human race.

This disease, from the various accidents to which the Legs are exposed in performing the necessary duties of life, is found to affect the greater number of persons who are actively employed, at some time or other; and from the unfavourable situation of those parts, which are placed at a remote distance in the human machine from the fountains of life and heat, and are obliged to return the venous blood and lymph to the heart under some peculiarly unfavourable and disadvantageous circumstances, the difficulties have arisen which have been so frequently lamented.

It



It has however very often happened, that the affluent and more healthy part of the community have obtained cures by rest and long confinement, whilst the laborious poor and the aged have almost always been unable to attain by any means, a restoration of that health which is to them so peculiarly dear and valuable.

In the West-India Islands, this disease happens so frequently from the bites of insects, and from other slight causes in the crop season, and proves so very unmanageable, as to occasion as much, or more real distress to the Africans, and sometimes to the natives, than many of the endemial diseases found in those pestilential regions.

I

I shall now endeavour to describe the means whereby these inconveniences may be obviated: and as it will be perceived that there is little more in the materials recommended, than Surgeons have been long in the habit of using, it must also be perceived that the difference in the effects are to be ascribed to the *manner* in which those materials are applied. Success therefore depending upon the *mode* of their application, I shall be more particular in my description of *it* than perhaps may to many appear necessary; but being convinced that almost every thing which can be desired may be obtained in such cases, if the principles are kept in view, and a proper application of the means persevered in, I hope by the fulness of my description to spare those who adopt the plan, the inconveniences and disappointments which may be experienced if the



the steadiest attention does not direct its application.

The parts should be first cleared of the hair sometimes found in considerable quantities upon the legs, by means of a razor, that none of the discharges by being retained may become acrid and inflame the skin, and that the dressings may be removed with ease at each time of their renewal, which in some cases where the discharges are very profuse, and the ulcers very irritable, may perhaps be necessary twice in the twenty-four hours, but which I have almost in every instance been under the necessity of performing but once in that space of time.

The plaister should be prepared by slowly melting

melting in an iron ladle a sufficient quantity of Litharge plaster or Diachylon, which, if too brittle when cold to adhere, may be rendered adhesive by melting half a drachm of resin with every ounce of the plaister, when melted it should be stirred till it begins to cool, and then spread thinly upon slips of smooth porous calico of a convenient length and breadth, by sweeping it quickly from the end held by the left hand of the person who spreads it, to the other held firmly by another person, with the common elastic spatula used by Apothecaries; the uneven edges must be taken off, and the pieces cut into slips about two inches in breadth, and of a length, that will, after being passed round the limb, leave an end of about four or five inches. The middle of the piece so prepared, is to be applied to the sound part of the



the limb opposite to the inferior part of the ulcer, so that the lower edge of the plaister may be placed about an inch below the lower edge of the sore, and the ends drawn over the ulcer with as much gradual extension as the patient can well bear: other slips are to be secured in the same way, each above and in contact with the other, until the whole surface of the sore and the limb are completely covered, at least one inch below, and two or three above the diseased part.

The whole of the leg should then be equally defended with pieces of soft calico three or four times doubled; and a bandage of the same, about three inches in breadth, and four or five yards in length, or rather as much as will be sufficient to support the limb

limb from the toes to the knee, should be applied as smoothly as can be poſſibly performed by the Surgeon, and with as much firmneſs as can be borne by the patient, being paſſed firſt round the leg at the ankle joint, then as many times round the foot as will cover and support every part of it except the toes, and afterwards up the limb till it reaches the knee, observing that each turn of the bandage should have its lower edge ſo placed as to be about an inch above the lower edge of the fold next below. If the parts be much inflamed or the diſcharges very profuſe, they ſhould be well moiſtened and kept cool with cold ſpring water, poured upon them as often as the heat may indicate to be neceſſary, or perhaps, at leaſt once every hour. The patient may take what exerciſe he pleaſes, and it



it will be always found that an alleviation of his pain, and the promotion of his cure, will follow as its conſequence, though under other modes of treating the diſeaſe, it aggravates the pain, and prevents the cure.

Theſe means, when it can be made convenient, ſhould be applied ſoon after riſing in the morning, as the legs of perſons affected with this diſeaſe are then found moſt free from tumefaction, and the advantages will be greater than when they are applied to limbs in a ſwollen ſtate. But at whatever time the applications be made, or in whatever condition the parts be found, I believe it will always happen that cures may be obtained by theſe means alone, except in one ſpecies of the diſeaſe, which ſeldom occurs, but that will hereafter be deſcribed. The firſt application

cation will ſometimes occaſion pain, which however ſubſides in a ſhort time, and is felt leſs ſenſibly at every ſucceeding dreſſing. The force with which the ends are drawn over the limb muſt then be gradually increaſed, and when the parts are reſtored to their natural ſtate of eaſe and ſenſibility, which will ſoon happen, as much may be applied as the calico will bear, or the Surgeon can exert; eſpecially if the limb be in that enlarged and incompreſſible ſtate, which has been denominated the ſcorbutick, or if the edges of the wound be widely ſeparated from each other.

In the early period of this practice, I feared the conſequence of breaking the ſkin in the vicinity of the ſores; later experience has proved ſuch



ſuch occurrences to be of no conſequence on any part except the tendon achilles, thoſe wounds being always healed again in a few days; whereas on the tendon, ſuch accidents occaſion more trouble, and require ſometimes the care of many weeks. I therefore now make it a practice, wherever the caſe requires conſiderable extenſion of the ſkin upon that part of the limb, eſpecially if the patient be of a ſpare habit, to defend the tendon with a ſmall ſhred of ſoft leather, previouſly to the application of the adhefive ſlips.

It may be neceſſary to add, that cures will be generally obtained without difficulty, by the mere application of the ſlips and bandage; but when the parts are much inflamed, the ſecretions great, or the ſeaſon hot, the frequent application of cold water will

will be found a valuable auxiliary, and may be always ſafely had recourſe to where the heat of the parts is greater than is natural, and the body free from perſpiration.

FINIS.

J. H. Stopforth, Printer,
18, Little Newport-Street.

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ISH ARMY
SULA.

ERY.

1826.

# OBSERVATIONS

ON

# HOSPITAL GANGRENE;

WITH REFERENCE CHIEFLY TO

THE DISEASE AS IT APPEARED IN THE BRITISH ARMY DURING THE LATE WAR IN THE PENINSULA.

BY

JOHN BOGGIE, M.D.,

SURGEON TO THE FORCES.

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*FROM THE TRANSACTIONS OF THE EDINBURGH MEDICO-CHIRURGICAL SOCIETY.*

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EDINBURGH:
PRINTED BY P. NEILL.

1826.

# OBSERVATIONS

ON

# HOSPITAL GANGRENE.

THE efforts of nature are in nothing more conspicuous than in repairing the various injuries incident to the living body from wounds and other accidents; but causes occasionally supervene to counteract these efforts, which nature, unaided, is unable to overcome, and which terminate often not only in the destruction of a part of the body, but even in that of life.

Of these causes, none appear to me more deserving of an attentive consideration than Hospital Gangrene, which I propose as the subject of the following observations, and which may be regarded as the most serious affection to which wounded surfaces are liable; as it destroys without distinction, and involves in one common mass, all the textures which it attacks. It has, in this country, been denominated

Contagious Gangrene, Phagedæna gangrænosa, Malignant Ulcer, Putrid Ulcer, Sloughing Sore; and by the French writers, Gangrene humide des Hôpiteaux, Pourriture d'Hôpital: I shall use the name Hospital Gangrene, as a general term, and point out what I wish to be understood by that of Contagious Gangrene and Phagedæna Gangrænosa.

This affection prevails in various situations, but it is seen in its most aggravated forms in military hospitals; and deplorable, indeed, are the consequences sometimes resulting from it; so that perhaps there is no disease more destructive than this to an army on service. During the late war in the Peninsula, if I mistake not, there was no malady more fatal, in proportion to the numbers affected by it; nor was there any by which a greater number of men were rendered unfit for further service. To the military surgeon, in particular, it must be an object of the deepest interest.

No doubt much valuable information is to be found in the works of those who have lately written on this subject; but authors differ so much in the relations which they have given as to the nature of the affection, its causes, and treatment, that it would be difficult indeed for any one who had not had frequent opportunities of witnessing the disease, to say which author is the most correct. I shall, therefore, endeavour to give an account of the disease as it occurred to myself, together with the practice followed, as also what I conceive to be its causes; mentioning at



the same time the opinions of some of those writers who have described the same affection.

There is no reason to believe Hospital Gangrene to be a disease of recent origin: it must have existed from the earliest period; and, accordingly, we find allusion made to it, or, at least, a gangrenous affection supervening to wounds and ulcers, related in the works of the oldest writers. The only doubt whether the disease mentioned by them is the same as that under consideration, seems to arise from their not having noticed its contagious nature; that circumstance, however, I conceive is no proof of its not being the same disease; for it would appear that the ancients were but little acquainted with the subject of contagion and infection, and that point even now is by some disputed.

Although it was observed by Lamotte in the Hotel-Dieu of Paris in 1722, no one before Pouteau, whose posthumous works were edited in 1783, seems to have described it very minutely. Since that time, however, many writers have given it a place in their works, and some separate essays on the subject have been published.

Hospital Gangrene has been found to prevail very often in ships of war, and in naval hospitals, where great numbers of wounded had been crowded together. It has also existed in hospitals by no means crowded, and where every attention was paid to ventilation; and it has been known to prevail, and that extensively, among wounded who had never been in hospital, as I shall afterwards relate. It shews

itself at all seasons of the year; but authors are not agreed as to that in which it chiefly prevails. Boyer seems to think that it is most frequent after the great heats of summer, and during a continuance of southerly winds *. I hope to be able to prove that it will be found in its greatest virulence during a continuance of very hot weather.

There are two forms under which Hospital Gangrene usually appears. The first I would name Contagious Gangrene; the second Phagedæna gangrænosa. Professor Delpech of Montpellier, who has given a very excellent account of this disease, mentions four different forms. The first he denominates the Ulcerous (Ulcereuse). The second the Pulpous (Pulpeuse). The third and fourth seem to be varieties of these two†.

When a wound or ulcer is affected with Contagious Gangrene, it becomes painful and swollen, loses its healthy florid appearance, and the granulations, which were small and distinct, become flabby, and appear sometimes as if they were distended with air; at other times, vesicles containing a watery coloured fluid, or bloody serum, have been observed, and the sensation in the sore has been described as resembling the stinging of a gnat. The secretion of pus is suspended; the wound is dry, and covered with a tenacious viscid ash-coloured

* Vide Traité de Maladies Chirurgicales, tom. i. p. 321.

† Vide Memoire sur la Pourriture d'Hopital, p. 4. et seq.



matter, which adheres firmly to the surface. When this morbid state has existed for some time, a discharge takes place of a thin ichorous matter, of a very peculiar smell; the pain encreases, the edges of the wound are reverted, and in general assume a circular form; an erysipelatous redness surrounds the wound, and sometimes extends to a great distance, even over a whole limb; the neighbouring glands, as those of the axilla or groin, swell, inflame, and sometimes suppurate; febrile symptoms become apparent; the pulse is accelerated, full and strong; the heat of the surface is much increased; the patient complains of nausea and thirst; the tongue is covered with a whitish or brown crust, and the bowels are in general constipated. The inflammation goes on increasing, the thin ichor continues to be discharged in great quantity, and a thick slough, apparently of coagulable lymph, covers the whole surface of the wound; the fetor becomes intolerable, and the pain quite insupportable. In the last stage, there is in general an oozing of blood from the surface of the wound, and not unfrequently distinct hæmorrhage, from the corrosion or destruction of the larger bloodvessels. Sphacelus takes place to a greater or less extent; the strength of the patient fails; the pulse sinks; his countenance becomes collapsed and altered; the skin is bedewed with a clammy sweat; and a diarrhœa with hiccup coming on, the scene very soon terminates.

Though this is the most common form of the disease which I have seen, as it occurs in a recent wound, and in strong healthy men, who are the ordinary subjects of it, yet I am well persuaded that the fever which accompanies Hospital Gangrene is not always of so phlogistic a character. It has been often observed to partake more of a typhoid type; and it is of the utmost consequence in practice to attend to this distinction, as it will be found, that what would be a valuable remedy in the one case, might, if carried to any extent, be very pernicious in the other. The not attending sufficiently to this circumstance, that is, to the phlogistic or typhoid type of the fever, has, I am convinced, often led to fatal mistakes, and seems to be partly at least the cause of that great diversity of opinion among medical men regarding the best mode of treating this very dangerous affection.

The other form in which Hospital Gangrene usually manifests itself is more of a chronic nature; appearing then seldom in a recent wound. Most of the cases which I have seen of it have been in those of some standing, and in patients who had been long in hospital, many of whom had suffered attacks of Hospital Gangrene in the more acute form; after recovering from which, and when the wound was to all appearance doing well, the granulations healthy, secreting good pus, and sometimes even nearly cicatrized, a small dark-coloured spot or ulceration has appeared, most commonly on the edge of the sore,



varying in its dimensions from the size of a millet seed to that of a split pea.

This little ulceration was in general of a circular form, its edges ragged, its bottom unequal and excavated, and secreting a matter of a very peculiar smell. Ulcerations of the same kind not unfrequently appeared in other points, which, spreading in all directions, united, and soon extended over a great part of the wounded surface. At times, this ulceration has been known to go on, and to cause very considerable destruction of parts, without the system appearing to be much affected by it; but most frequently after it had spread to a certain extent, symptoms denoting constitutional irritation became apparent; these were nausea and loss of appetite, thirst, foul tongue, restlessness, a small and quick pulse, and heat of skin. After the febrile symptoms had appeared, the progress of the ulceration was more rapid, and very often extended beyond the limits of the original sore; the discharge became bloody, and the fetor peculiar to this affection more offensive. Sphacelus in many instances took place, and some time before death the same train of symptoms occurred, already described as taking place in the last stage of the more acute form of the disease. This is the depascent, or phagedenic, form of Hospital Gangrene, or what may be called Phagedæna gangrænosa.

It would appear, that, in the milder cases of this disease, the skin and cellular membrane are the parts originally and principally concerned, and that

it may sometimes be confined to these textures; but that, in more violent cases, one structure is destroyed after another, so that the muscles, ligaments and tendons, together with the bloodvessels and nerves, are involved in the disease, become disorganised, and slough off; even the periosteum is not exempt from its influence, and the bones being deprived of their covering, very often become affected with caries.

The duration of the disease varies in different individuals. If not checked by the operation of remedies, it may continue for a period of from fourteen to twenty days, or even longer; but it often terminates much sooner, sometimes as early as the third, fourth, or fifth day, either in recovery or death. When once attacked, the patient, even when convalescent, is very liable to suffer a relapse, and repeatedly, too, as I myself can testify; and Dr Hennen mentions a case in which the patient survived twelve different attacks, but sunk under the thirteenth *. Under such circumstances, it was not to be expected that they could ultimately recover; accordingly most of those so affected, being completely exhausted, lingered for a time, and then sunk under the hectic fever which invariably attended.

When a patient is beginning to recover from this disease, there is an abatement of the febrile symptoms; the local inflammation subsides, healthy pus is secreted, small florid granulations spring up, and the

* Military Surgery, p. 225.



sloughs separate without being renewed. Specific sores, such as venereal, scrophulous, and variolous, are thought to be less liable to this affection than simple sores. This may perhaps be the case in some degree, but they are by no means altogether exempt; it has been repeatedly seen to attack cancerous and venereal sores *; and a case is mentioned by Dr Hennen of a soldier of the Waggon Train who was sent into the hospital at Bilboa, with an open bubo in the groin, and under the influence of mercury, who was carried off by this disease in 48 hours,—the gangrene affecting the sore almost instantly, eroding the great vessels in the neighbourhood, and destroying the abdominal parietes to a a great extent †. This case I witnessed myself.

In that form of the disease which appeared in the Artillery Hospital at Woolwich, as described by Dr Rollo, specific sores were not affected, though such patients were in the same wards. This is just what I should have expected; that form of the disease being apparently purely local, and not having the power of extending its influence, at least through the medium of the atmosphere.

A great peculiarity in the phagedenic form of the disease is, that different actions, such as the ulcerating, suppurating, and cicatrising, may frequently be seen going on in one sore at the same time. During the prevalence of the Hospital Gangrene at Bilboa, this peculiarity was often observed; the

* Thomson's Lectures on Inflammation, p. 460.
† Military Surgery, p. 218.

same thing was remarked by Dr Rollo at Woolwich *.

After military punishments, in consequence of neglect or other causes, Hospital Gangrene sometimes occurs; and from what has been stated in the description of the disease, the appearance and consequences of it may be easily imagined. Happily, however, for the sake of humanity, corporal punishments, both in the navy and army, are now inflicted with much greater discretion, and indeed are but seldom heard of; though it is yet to be lamented, that it has been judged inexpedient to dispense with them altogether. In warm climates phagedæna is very liable to ensue from this cause; and it is perhaps not out of place here to mention, that the most effectual remedy in speedily healing such wounds, and, consequently, in preventing the bad effects which sometimes result from them, is the immediate application of a spirituous embrocation. The aqua ardente, a sort of brandy which was issued to the troops in Portugal and Spain, I found most beneficial in such cases: for the first 24 hours I was accustomed to use it undiluted, and after that time mixed with water, or a solution of acetas plumbi, much on the same principle as oil of turpentine and spirituous applications have been employed in scalds and burns.

From all the phenomena of the disease, we may be warranted, I think, in considering Hospital Gangrene, more especially that form of it named Contagious Gangrene, to be a peculiar inflammatory action attacking wounded surfaces; varying in its character according to the constitution of the patient, type of the accompanying fever, and other circumstances; nearly allied to erysipelas, if, indeed, it be not a modification of that disease, and depending on a diversity of causes, as I shall endeavour to make apparent.

* Treatise on Diabetes, vol. ii. p. 261.



The causes which induce this affection have never been very satisfactorily explained, nor do practitioners seem to be yet agreed upon the subject. The foul air of crowded hospitals has always been considered a chief cause of Hospital Gangrene, and that it is so, cannot reasonably be doubted. I am aware, however, that even this has been called in question by some writers; but the general testimony of authors on this point is, I conceive, too strong to be controverted, and, indeed, the records of public hospitals bear ample proof of the truth of the opinion. But, again, we are told that there is no hospital, however small, airy, or well regulated, where this disease may not at times prevail *; and that it has been known to appear among wounded who had not been in hospital at all †.

Thus it appears that Hospital Gangrene may exist, independently of this as a cause; that it is not exclusively confined to hospitals, as has been sup-

* J. Bell's Principles of Surgery, vol. i. p. 108.
† Rollo on Diabetes, vol. ii. p. 262.

posed; and that the vitiated air of such establishments, though considered by some to be the sole cause of the disease, is but one of the many by which it may be produced.

Monsieur Delpech is of opinion that the infection of typhus fever, the exhalations from the dejections of dysenteric patients, and even from common gangrene, more especially that named Gangræna senilis, by their immediate action on the surface of the wounds, rather than by their hurtful influence on the general system, are the most frequent sources of this affection. Indeed, from the observations of this distinguished Professor, one would suppose that almost all the cases of Hospital Gangrene which he saw during so many years of the late war, owed their origin to one or other of these causes.

I am myself inclined to believe, that, under particular circumstances, all those which have been mentioned may at times produce this disease; though one might be led to suspect that in hospitals said to be crowded and ill-aired, and where nuisances are allowed to collect, or are not speedily removed, other and less equivocal causes of Hospital Gangrene may at the same time be found to exist. What these are I shall now proceed to consider.

### 1. *Particular States of the Atmosphere.*

It has been often observed, that, in certain seasons, wounds, whether received in battle, or in consequence of operations, and even old sores, become



affected with Hospital Gangrene, but what these states are, has not been very well ascertained.

Hospital Gangrene has been known to prevail at all seasons of the year, but, as far as my observation goes, in hot weather much more frequently and severely than in cold.

It is well known that in hot climates, in addition to the general excitement of the system, all the secretions and excretions are more acrid, and, in a very particular manner, the secretion from sores, which is both very abundant and extremely irritating. During the prevalence of the gangrene at Bilboa, and when it was at its very height of malignancy, of which so animated an account is given by Dr Hennen, in his Principles of Military Surgery, p. 210, *et seq.*, the thermometer in the shade seldom stood below 75° of Fahrenheit, and often much higher. In the wards of the Hospital I have seen it at 85°, and in the sun upwards of 120°; indeed, I know of no exception to this fact of hospital gangrene prevailing most in hot weather, for I have constantly found, that, in the warm months, the disease raged in its greatest virulence. I am therefore inclined to consider a greatly heated atmosphere to be one of the most powerfully exciting causes of this disease.

### 2. *Inattention to Cleanliness.*

When the discharge of a sore, particularly in warm weather, is long confined, the dressings not frequent-

ly renewed, and the wound cleaned by careful ablution, such changes take place in the matter discharged, as to alter its nature altogether; it becomes exceedingly acrid, and even poisonous, and cannot fail to produce the worst possible effect upon the sore.

This appears to me to be a very frequent cause of Hospital Gangrene, that form of it, in particular, termed Phagedæna, and, if I am not mistaken, was the source of the disease in some instances, as it occurred at Passages in Spain, so well described by Mr Blackadder.

In shewing that the disease could not be occasioned by the foul air of an hospital, but without attempting any explanation of the fact, that gentleman relates a case, which I shall take the liberty of transcribing.

"Three men, who had been severely wounded and taken prisoners, were carried to an open building, which had apparently been used as a stable, but which had not been recently occupied. After having been repeatedly pillaged, they were ultimately abandoned, and the only articles left with them were a few pieces of biscuit, a canteen of water, one sheet, one pair of trowsers, a pair of old shoes, and an old great-coat. In this miserable situation they remained for three days, when they were fortunately discovered, and some provisions and clothing being provided for them, they were put into an open boat under the charge of two fishermen. Had the wind proved favourable, a few



hours sailing would have brought them to an hospital, but it was the winter season, and they were overtaken by a storm of wind, rain, and sleet, to which they were exposed for nearly two days and a night, and when they at last got to an hospital, the wound of one of these unfortunate men was discovered to be affected with this disease."*

Now, the explanation of this case appears to me to be very easy. In all probability the wounds of these men had been entirely neglected, and the only surprising thing is, that they were not all affected with gangrene; but had it been the summer season, and had they been exposed to the other causes about to be mentioned, we should have had a very different account of them. The chances are, that before they had reached Passages, the gangrene must have made such progress that they should all have been in an advanced stage of the disease, and perhaps irrecoverably gone; but the cold to which they had been exposed, and the very spare diet on which, from necessity, they had been obliged to subsist, had, in my opinion, contributed to their safety. And, in that form of the disease, also, which prevailed in the Artillery Hospital at Woolwich, described by Dr Rollo, nothing appears to me more clear, than that want of cleanliness was the chief, indeed apparently the sole, cause of the disease there. Dr Rollo confesses, that the

* Blackadder on Phagedæna gangrænosa, p. 45.

wounds were seldom washed, and that the matter was allowed to form encrustations around the edges of the sores, and this, the Doctor says, arose from the opinion of some, that the washing of sores, if it did no harm, was at least superfluous. He suspected also, that the poison was propagated from one sore to another by means of the sponge employed in the occasional washing or wiping, the same sponge having been unguardedly used for different sores.*

### 3. *Acrid or Irritating Applications.*

These may be considered another cause, or at least may contribute very effectually to the production of this disease.

This is one great objection to the use of ointments; for when long kept, they invariably become rancid, and irritate extremely. After a continued use of such ointments, or even after a single application of this kind, I have not unfrequently seen the character of a sore entirely changed, and, from a healthy ulcer, secreting good pus, to become irritable, inflamed, and very painful, the granulations to disappear, the surface to become glassy, and discharge a thin acrid sanies, very fetid, and to be brought to a state, if not actually of Hospital Gangrene, at least somewhat approaching to it. On this subject

* Vol. ii. p. 266.



the suggestions of Sir Everard Home are well worthy of attention *.

### 4. *Stimulating Food.*

It has been thought that the disease may be occasioned by a change of food, as from a vegetable diet, to one consisting chiefly of animal matter; and I have myself very little doubt but that it may contribute to that effect.

The diet of soldiers, on service particularly, is very stimulating, consisting in a great measure of animal food, with a daily allowance of wine or spirits; and I have on many occasions seen, for days together, the diet made up altogether of animal, without any admixture of vegetable matter. This, to be sure, is not their ordinary fare; but it cannot fail, in my opinion, to induce a state of the system highly favourable to the production of this disease,—to men in health it may be considered a predisposing cause, and to the wounded, a powerfully exciting cause of Hospital Gangrene.

The diet of seamen in the navy was formerly pretty much the same as that of soldiers on service, or perhaps even more stimulating, for the allowance of wine and spirits made to them was greater; and we know how liable they have always been to this affection; but, by a most judicious regulation lately

* *Vide* Home on Ulcers, p. 39.

made by the Navy and Admiralty Boards, and sanctioned by His Majesty, I find that the rate of seamen's diet has been entirely altered; consisting now of a much greater proportion of vegetable matter, and that the ration of spirits is much reduced; which cannot fail, I should imagine, in every point of view, to be attended with the greatest benefit to the service. Dr Trotter appears to me to have most correct notions on this point*.

The importance of the subject of dieting troops, more especially in tropical climates, has been most particularly attended to, and pointed out, by that excellent officer General Stewart, who, during a long period of varied services, seems to have overlooked nothing that could tend, in any way, to the comfort or benefit of the soldier, or to the advantage of the State; in a work, which, while it reflects the highest credit on the author as a commander and a historian, has, at the same time, in an eminent degree, exalted the character of his countrymen †.

### 5. *Intemperance in the Use of Wine and Spirituous Liquors.*

It is hardly possible to imagine any thing more likely to produce Hospital Gangrene, than the abuse of wine and spirituous liquors; and I have

* *Vide* Medicina Nautica, vols. ii. and iii.

† *Vide* Stewart's Sketches of the Character of the Highlanders, &c. vol. i. p. 357, and vol. ii.



been long inclined to consider this to be one of the most powerfully exciting causes of the disease. In that very violent form of Hospital Gangrene, which prevailed at Bilboa in the summer and autumn of 1813, whatever other causes might have contributed to the production or continuance of the disease, there is not a doubt in my mind, but that it was rendered much more virulent, and that it was even perpetuated in the hospitals there, by the use of wine and other stimulants, injudiciously administered. From an idea which very generally prevailed, that the accompanying fever was Typhus, and that Hospital Gangrene could not be prevented, or successfully treated, unless by stimulants, antiseptics, and tonics, a liberal allowance of wine was made to every patient as a preventive; and, when the disease actually appeared, it was then prescribed in increased quantity as a cure; the consequence of which was, a fatal termination in almost every case. On this point I am very sorry to be obliged to differ so widely in opinion from my friend Dr Hennen.

It will be seen from the account which he has given of the Hospital Gangrene at Bilboa,—that, from the view which he took of the disease, and in order to reconcile the mode of treatment which was first established, with that which was ultimately adopted, he considered the fever, in the first instance, and during the hot weather, to be of a typhoid character, and that its type altered, or became inflamma-

tory, when the cool weather set in. Now, this is not what might *à priori* be expected, and is very different from the opinion one would naturally entertain on the subject. The fever appeared to me, from the first, to be highly inflammatory, that is immediately after the injury was received, and at a time when the heat of the season was at its maximum; and that it became more mild when the temperature fell, or when the sedative effect of the cold began to be felt; but it was not until the antiphlogistic treatment was fully established, that any remarkable decrease in the mortality took place. The tabular views annexed, will shew at once the difference from the opposite modes of treatment which were pursued.

Dr Trotter, who appears to be perfectly well aware of the causes of this disease, as it occurred in the navy, has some very judicious remarks on this subject, under the head of Malignant Ulcer. He observes, "When a disease, like the one in question, which has usually appeared in a warm country only, comes to shew itself in a cold climate, it is reasonable to conclude that there must be some similarity in the causes which produce it in both situations." And, after giving a detailed, but by no means an exaggerated statement of the excesses which seamen commit, whenever an opportunity offers, he adds, "If the body suffers a diminution in its excitement, between the West Indies and Plymouth Dock, with all deference to the licensing magistrates, the landlord has in his possession what can



quickly stimulate beyond solar influence*." And Mr John Bell, in his remarks on Hospital Gangrene, after adverting to the irregularities which he witnessed during the period of his visit to Yarmouth Hospital, confirms Dr Trotter's statement, by giving, no doubt, rather a ludicrous, though I dare say a faithful, account of what he saw; and certainly quite in accordance with the habits of British seamen†.

To illustrate this still further, and to shew how soon this affection may be brought on by an improper regimen, I shall relate a very remarkable case which occurred to myself at Brussels. A few days after the battle of Waterloo, the weather being then very warm, I was requested by the surgeon of a foreign corps, to visit Major ——, an Officer of the King's German Legion, who, on that memorable occasion, had received a severe wound on the leg. The object of my being called in was to decide on the question of amputation, and to give

* Medicina Nautica, vol. iii. p. 469.

† According to Mr Bell, "When they wanted to steal out, and get drunk, they had two general methods, the wet and the dry; the wet, when they went through the ditch, and the dry, when they burrowed through the sand, and so got under the palisade. In the Yarmouth Hospital sentries were placed, one to guard the holes, and another to guard the ditch; however, he had the most difficult duty who watched the ditch, for nothing of them but their heads were above the mud, and unless he heard them puddling and snuffling, he had no chance of preventing the enterprise."—*Vide* Note to p. 116.

assistance, in case the operation was determined upon. On entering the apartment, at an early hour in the forenoon, I was startled at the appearances which presented themselves, and predicted at once what would be the consequence. The patient was apparently about fifty years of age, of a very plethoric habit, and, without doubt, a *bon vivant*. He was propped up in an arm-chair, wrapped in sheets; his leg, supported by pillows, extended on a stool; and on a table, which stood close at hand, were wine, spirits, and tobacco, in which he had been freely indulging. On examination, I found that the gastrocnemii muscles of one leg had been carried away by the splinter of a shell; the whole limb was in the highest state of inflammation; the system was violently excited; the wound had already become gangrenous, with the peculiar smell which is characteristic of contagious gangrene; and the pain was quite insupportable. I gave it as my opinion that no operation should be thought of, in the state of the wound at that time. I advised that the patient should be largely bled, and some cooling aperient medicine administered; that cold lotions be applied to the wound, and to the whole limb. Stimuli of all kinds to be prohibited, and the most strict antiphlogistic regimen to be put in force, and continued until the fever and inflammation should abate. On my objecting to the use of such powerful stimulants as I saw before me, the effects of which were but too evident from the state of the wound, the Major gave me to understand,



that, with respect to regimen, he would be his own physician, and that my opinion was only requested as far as regarded the operation. My remonstrances I saw were useless, nor was the advice which I gave more approved of by the surgeon, who appeared to be a most determined Brunonian. I accordingly took my leave, with a promise, however, to return, whenever my services should again be required. I heard no more of this patient until some days after, when I met the surgeon who had been in attendance, and who told me that the Major was dead,—that he insisted upon the operation being performed, which was accordingly done; and that the same stimulating regimen had been continued to the last. He died from the violence of the fever, surviving the operation little more than twenty-four hours.

### 6. *Motion, or Mechanical Irritation.*

This is a much more frequent cause of Hospital Gangrene than has been imagined; for if we admit, that, under particular circumstances, any great irritation may induce the disease, then we cannot doubt, that motion must be one of the chief exciting causes of this affection.

Recollecting what I have myself seen in the Peninsula, which was for so many years the theatre of the greatest military operations, I am convinced that, in transporting the wounded from the field, or from one hospital station to another, when at any considerable distance, more cases of Hospital Gan-

grene appeared upon the road, than in any other situation. In support of this opinion, I shall mention only one or two of the more remarkable instances which came under my own observation.

In the beginning of August 1809, a few days after the severe battle of Talavera, when so many of our wounded fell into the hands of the enemy, the slighter cases only effected their escape, some on foot, others on mules or cars. Few or none of these men had been in hospital after the battle, but had been lodged in convents and private houses, and although the wounds of all were in a most promising state when they began their flight, they had not been many days on the road before evident signs of the disease became manifest. Many, I have no doubt, must have died on the journey, and when the survivors reached Elvas, which was the nearest station on the Frontiers of Portugal, distant about 40 leagues,—the disease continued, and raged with unexampled violence. These cases I saw at Talavera, and some days after on the road, when the gangrene had appeared. In the Autumn of 1813, when I was stationed at Bilboa, a party of wounded arrived from Vittoria, distant only 12 leagues, whose wounds were in a healthy state when they commenced their route, and in whom the gangrene appeared for the first time in the journey thither. Some of them were among the worst examples, that is to say, the most severe, of the disease I ever saw; and the same fact is related by Dr Hennen in his Principles of Military Surgery, p. 214.



### 7. *Specific Contagion.*

When the disease is once produced, although the same causes continuing to operate may be sufficient to keep it alive, it appears probable that a contagion is generated, and that the disease may be propagated, in this way, to a certain extent at least, even although the causes, by which it was originally produced, should have ceased to act. But I confess, that I impute much less to this than to the continued operation of the original or other irritating causes. At Bilboa we had a strong instance in proof of this opinion. Although all the means which are usually employed for the extinction of contagion were had recourse to, such as fumigations of nitric and muriatic acid gases, ventilation, separation, nothing appeared to have the least effect in moderating the violence of the diease, till an antiphlogistic regimen was established.

However, that the disease is contagious, and even infectious, I think cannot be doubted. This is admitted by most of those who have written on the subject; but how to account for its origin has always been considered a complete mystery. Under what circumstances contagion is generated we shall perhaps never be able satisfactorily to explain; or how a disease which in general has no such property, should occasionally become contagious, instances of which may be seen in erysipelas, or ophthalmia; but it is sufficient for our purpose to be aware of the

fact. This property, however, of generating contagion in its progress, is not peculiar to Hospital Gangrene alone; and it seems to me, that, among certain diseases, which have been thought to owe their origin to a morbid poison, as for instance the Egyptian Ophthalmia, there is in some respects a very considerable analogy to that now under consideration.

This disease, like Hospital Gangrene, has always appeared to me to originate in certain irritating causes, the influence of which is much favoured by the climate. Like it, Egyptian Ophthalmia is found to prevail with greatest virulence in the same seasons, that is during very hot weather; when once produced, it acquires, in like manner, the property of extending itself by contagion, and also by infection; and, lastly, it is found to yield to the same kind of treatment, the antiphlogistic *.

We know that irritating causes, which, acting in a slighter degree, produce only inflammation, increased secretion, and ulceration, will, when carried to excess, occasion sloughing; and this will be found to be the case in specific as well as in simple sores; and we find that all those already enumerated, to which, perhaps, may be added the stimulating influence of mercury, are the most frequent

* May not the same analogy be extended to Syphilis? The recent doctrines which have been advanced, seem, in some measure, to confirm this; and may perhaps help to account for the origin of that disease.



sources of phagedæna in syphilitic sores. Heat, within certain limits, appears to be a most powerful agent, both as a direct stimulus, and as favouring the production of contagion; hence the great virulence of some diseases in warm, and their comparative mildness in cold, or temperate climates.

Now, if it can be made out, that any of the causes, singly, which have been mentioned, may produce Hospital Gangrene, what must we expect, when all, or the greater part, of these causes, are in operation at once? and this is not an imaginary case, but one which, I conceive, occurs very frequently. We have only to observe the movement of a party of wounded on their route, to be convinced of this.

After reading the valuable work of Delpech on this subject, one cannot but be surprised that the effects of local or mechanical irritation should have been entirely overlooked by him; and particularly when he acknowledges, that the wounded had been obliged to travel great distances, and that some of them were between two and three months on the road before they reached the hospital at Montpellier, exposed, as they no doubt must have been, to every cause which could have any effect in bringing on the disease; but contagion, dejection of spirits, want of proper food, and other debilitating causes, seem to be all that the distinguished Professor has taken into account as having any effect in the production of it.

In speaking of the causes of gangrenous phagedæna, Mr Blackadder says, "he has understood, though he cannot certify to its correctness, that the

disease has occurred during the conveyance of the wounded from one hospital station to another, the weather being very hot, and the distance considerable," (p. 46.) And my friend Dr Hilson, now practising at Jedburgh, who had many opportunities of witnessing this affection, speaks distinctly upon this particular, in a very excellent thesis published here in 1818.

If the view now given of the causes of Hospital Gangrene should be found to be correct, it will explain some points in the history of this affection, which have hitherto been considered mysterious; and it will shew that the ordinary means which have been employed for the prevention of this disease, however proper they may be in hospitals for the general health of the patients, such as ventilation, separation, fumigation, or even the entire breaking up of an establishment where Hospital Gangrene prevails, as has been proposed, will be of little avail, so long as the true causes of the disease are overlooked.

For the prevention of Hospital Gangrene in a recent wound, it appears to me, that the great object to be held in view, is to avoid all sources of irritation, and by all the means in our power to keep down inflammation. From the moment of receiving the injury, a moderately antiphlogistic regimen should be prescribed; the wound should be kept cool; and the discharges from it removed by careful ablution: no bandages ought to be applied in the first instance to gunshot wounds. With regard to these, the directions of my friend Dr Luscombe are particularly deserving of attention *; above all, absolute rest, together with the above remedies, should be enjoined.



The sedative effect of cold in repressing inflammation and Hospital Gangrene cannot, I think, be better illustrated, than in the following extract, which I shall take the liberty of making from the work just now quoted, as it corresponds with what I have said on the subject.

Speaking of amputation the Doctor says, " I have been for a long time persuaded that stumps do much better when dressed more lightly than has been the usual custom, by which the parts are kept in a state of increased temperature by numerous bandages, caps, &c.; and I have of late formed a decided opinion in favour of the direct application of cold to stumps, and other wounds occasioned by surgical operations.

" I was first led to entertain this opinion by a valuable communication I had with the Surgeon-General of Ireland, who acquainted me in conversation that he had ascertained from surgeons who were present at the battle of Eylau, that the wounded were exposed after that action to intense cold, so much so, that many of them were frozen to the ground by their blood; but that it was remarked, that Hospital Gangrene, which was at that time very prevalent, attacked none of those who had been thus exposed to the cold; but that, on the contrary, all their wounds did extremely well."—Page 140.

* Vide Luscombe on the Health of Soldiers, p. 132.

In all wounds, but particularly those of the trunk and lower extremities, rest is of the utmost consequence. Nothing excites inflammation sooner than motion. I shall never forget the appalling spectacles I beheld in the unfortunate men who effected their escape from Talavera; though the wounds of many of them were but slight, and, no doubt, would have soon got well had they remained at rest, and on the antiphlogistic regimen; yet, after a few days, in consequence of the motion, and other irritating causes to which they were subjected, they were to be seen in all stages of the disease, from the state of incipient inflammation, to that of gangrene, and even sphacelus, and loathsome from the quantity of maggots with which they were infested; and, in those men who arrived at Bilboa from Vittoria, many of them were in an equally bad state; whole limbs were to be seen, almost entirely deprived of vitality, nearly dropping off, and a prey also to vermin, which seemed actually to be devouring them.

As a contrast to this, and to shew the effect of rest, when followed up by the antiphlogistic regimen and other sanative measures, I may mention that, after the battle of Waterloo, a very great proportion of the wounded were sent to the hospitals in Brussels, which, being in the immediate vicinity of the field, they reached without much difficulty or exertion. The consequence was, that, among the many hundreds who were treated there, scarcely any cases of this disease appeared. The very few that existed, and which I had an opportunity of seeing,



were in men who had been concealed by the Belgians, entertained in their houses, and from an excess of hospitality on their part, had been treated by them most sumptuously. These cases were highly inflammatory, and yielded to venesection, and the antiphlogistic regimen.

The disease was said to be more frequent at Antwerp, and this is just what might have been expected; the distance from the field of Waterloo being so much greater.

The practical deduction from all this, I conceive, is, that hospitals should be established as near the scene of action as circumstances will permit; and that wounded men should never be moved, without some very urgent reason.

Having proceeded thus far, I may now advert to a question, which at first sight appears very simple, which has been long agitated, but does not seem to be yet settled; Whether the local or constitutional symptoms of Hospital Gangrene occur first in the order of succession? From the account which has just been given, it will be seen, that the local symptoms were always the first; but to decide the question, I suspect we must look to the causes.

If the disease originates in foul air, or febrile infection, which seems to be the case most frequently in civil hospitals; it is very possible that the constitutional symptoms may often precede the local, or appear at the same time; but in army practice, where other causes are more frequent, as local

or mechanical irritation, intemperance, and such like, it is reasonable to expect, that the local must precede the general affection; and this, I think, must be admitted.

It is by such an explanation only, I conceive, that the discordant opinions of authors on this point can be reconciled.

The prognosis in this disease, as in most others, must depend on circumstances.

If the patient is young and healthy, of temperate habits, and the accompanying fever inflammatory, even although the affection should be pretty severe, the prognosis, I think, may be favourable; but, on the contrary, if the patient is old, addicted to intemperance, his health bad, and particularly, if the gangrene should be complicated with fractures of the bones, or a scorbutic diathesis be present, with a fever evidently typhoid, it must be very unfavourable.

In laying down rules for the treatment of this complaint, we must be guided entirely by the symptoms. If the constitution is much affected, general remedies will be required; if, on the contrary, the affection appears to be entirely local, the cure may be trusted to topical applications; but, in many cases, both the one and the other will be found to be necessary. It is of the utmost consequence, also, to attend to the type of the accompanying fever, and to ascertain whether the gangrene is simple, or complicated with any other disease, such as scurvy, or bilious fever, in which case its character



will be modified, and the corresponding treatment must also be different.

I mean to confine myself chiefly to the simple form of the disease, and to such as I have most commonly met with myself.

The treatment, then, may be divided into general and local.

When Hospital Gangrene occurs in a recent wound, and in young healthy men, or in men of the middle period of life, who are most frequently the subjects of it, the accompanying fever is almost always inflammatory. I have seen but few exceptions to this. Indeed it is not easy to conceive how so many should have adopted the contrary opinion.

Professor Delpech, in his preface, endeavours to show, that the French soldiers, from their great sufferings, and constant defeats, became dejected, and that the fever in them was always of the low kind. This accords with his theory of the disease. The French, however, are not remarkable for dejection of spirits, and have always appeared to me to bear up under adversity with wonderful fortitude. At the same time it must be admitted (probably owing to their more temperate manner of living), that they are less liable to violent inflammatory diseases than the natives of this country, at least as far as accords with my own observation.

But whatever might have been the case in the French army, it was very different in the British. Constantly elated with success, they had gone on, under their great leader, for a series of years, from

one brilliant action to another, each succeeding one surpassing the preceding, till at last they terminated their very extraordinary career, by perhaps the most splendid achievement of modern times. They may be said to have been in a constant state both of bodily and mental excitement. In such cases, I say, the fever is almost always inflammatory, and will require bloodletting; but it must be proportioned to the degree or violence of the inflammation, and the age and strength of the patient.

No precise rule can be laid down regarding the quantity to be taken; but in severe cases I have had occasion to take one, two, three, or even four pounds of blood before the inflammatory symptoms were subdued. In men, however, of a less robust constitution, who may have lingered long in hospital, or suffered much from ill health, we must act with the greatest caution. Bloodletting in such, is either altogether inadmissible, or should be used very sparingly. The same may be said of those who are the subjects of Hospital Gangrene in civil hospitals. They are for the most part poor people, worn out with age, or whose constitutions have been broken by poverty and hard labour; in such the disease assumes a different character, and will require a corresponding treatment. As an auxiliary to general bloodletting, Dr Trotter has proposed the local detraction, by cupping and scarifying; and though I have not employed this myself, I can see no real objection to its use. The danger of the punctures becoming gangrenous, appears to me not to be very



great. The same objection has been made to general bloodletting; but though I have bled many in this disease, I never saw a single instance of gangrene supervening to the operation.

Dr Thomson, in his Lectures on Inflammation, p. 494, remarks, that the effects of spontaneous hemorrhagies in this disease, have either not been accurately observed, or at least not fully recorded, and he conceives that they might be a guide of great importance in practice. To this I beg leave to say, that, as far as my observation goes, in the early or inflammatory stage of Hospital Gangrene, spontaneous hæmorrhage seldom occurs, and it might then, if not too profuse, be very beneficial. But in the later or more advanced stages of the disease, I have always considered it a very alarming, dangerous, and most frequently a fatal symptom, denoting that great destruction had already been done, and that the gangrene was still making progress. Many of our patients at Bilboa were carried off in that way. My sentiments respecting this are very different from those of Dr Hennen. He says, "But what more than all convinced us of a change of type, and pressed on our consideration the propriety of bloodletting, was, that spontaneous hæmorrhagies, which formerly sunk the patient's strength, were now attended with obvious relief."—Military Surgery, p. 223.

Those who trust chiefly to local remedies in this disease, and who disregard the constitutional symptoms, as being of secondary importance, and those

also who consider the accompanying fever to be always of a typhoid type, object strongly to the use of the lancet, and say that they have sometimes found it do incredible mischief. To this I answer, that if bloodletting is used indiscriminately in this disease, there can be no doubt but that it will often disappoint the practitioner, and even be productive of mischief. This I can myself bear witness to; for at Bilboa, after bloodletting had been acknowledged to be of the greatest benefit in those cases to which it was really applicable, I had sometimes the mortification to see that remedy brought into discredit, by being used in cases where it was evident, beforehand, that it must have been injurious; and this will always be the case, where due regard is not paid to the circumstances under which any particular remedy is prescribed.

It has already been said, that, in that form of Hospital Gangrene named Phagedæna, very great destruction of parts may sometimes take place, without the constitution being much affected by it. Now, if bloodletting is used in such a case, or even in the advanced stage of the true inflammatory gangrene, when disorganisation has taken place, and the system is sinking under the consequent debility, the vital powers being nearly exhausted, the result must be obvious; but when it is used with caution, and in cases where it is really applicable, it will be found, I doubt not, to be a most valuable remedy.

Emetics have been highly extolled by many in this disease, as Pouteau and others. I have certainly often seen them used, and sometimes, as I think, with advantage; but as a general remedy, I consider them much inferior to cathartics. The cases to which they are chiefly applicable, are those where the stomach is loaded, and where the fever appears to be of a bilious character. This was the case in not a few which I saw at Bilboa; the gangrene being complicated with a fever of that kind, and sometimes supervening to it. Emetics in nauseating doses, were often tried in such instances, and were considered useful, both by their operation as evacuants, and by the nausea which they excited, lowering the action of the vascular system. In the same cases, antimonials and saline diaphoretics will be found very useful. But whatever may have been the opinion with regard to emetics, by the consent of all, cathartics are considered quite indispensable.



Cathartics appear to be the remedies, next to bloodletting, the best calculated for lessening arterial action in inflammatory diseases, and the use of them was indicated in cases where that remedy was inadmissible, or at least not so much required. These cases were of a doubtful nature, where general inflammatory action existed to a certain degree, but where, from the long confinement of the patient, or his previous state of ill health, venesection could not with safety be employed, or where the fever was evidently typhoid. Among the poor in civil hospitals, purgative medicines will be found, in this disease, I suspect, unless in very extraordinary

cases, to be the most useful, indeed the safest evacuants.

Bark, which was formerly so celebrated as a specific in the cure of gangrene, is, in this disease, in the commencement at least, entirely useless. Indeed it is not surprising that this should be the case. Bark is acknowledged to be a powerful tonic, and if I am right in considering hospital gangrene to be an acute inflammatory affection, then it is just what might be expected, that, if not injurious, it must at least be ineffectual. But, in the more advanced stages, when the inflammation has abated, it may be given as a useful remedy, either alone, or in conjunction with the mineral acids.

The cold affusion has been thought to be deserving of attention in this disease; but it does not seem to have been ever put to the test. If we were sure of obtaining the sedative effects of the remedy only, I should be inclined to think very favourably of it; but generally, after the cold affusion, a reaction of the system takes place, which I should be afraid might rather aggravate a local inflammation, or at least render the propriety of employing it a matter of doubt; but as I have never tried that remedy in hospital gangrene, I offer this only as conjecture.

To sponging of the surface of the body with tepid water, there can be no such objection, and from its cooling and soothing effects, I should be inclined to expect the most agreeable results.

The violent pain which always exists in the com-



mencement of this disease, seems to call for the use of opium; but as long as the fever and inflammation continue, it will tend only, both by its direct stimulating properties, and by deranging the functions of the stomach and chylopoietic viscera, to aggravate the symptoms. In the more advanced stages, however, when the inflammatory symptoms have subsided, should the patient complain of restlessness, it may be allowed, and then I have no doubt but that it will be found beneficial.

Camphor in large doses has been recommended by Pouteau in this disease. It certainly has very considerable anodyne effects, and perhaps may be used where opium would be improper; but I have no idea of its possessing any specific powers in Hospital Gangrene, and it appears to me, to be applicable chiefly in the low state of the disease, which sometimes succeeds to great vascular action, or where the fever is evidently typhoid. In such cases I have occasionally used it, and I think with good effect.

The use of wine, as is observed by Dr Thomson, in the early stage of hospital gangrene, is liable to still stronger objections than opium, for it adds to the violence of the fever, without having, like opium, a tendency to soothe or diminish the local pain *. At Bilboa I saw much mischief done by an injudicious use of wine; every symptom was aggravated by it, and the gangrene assumed a character of malignancy unexampled I verily believe in the history of this affection, and which, under other cir-

* Lectures on Inflammation, p. 495.

cumstances, it never could have acquired. Had the same treatment been persisted in, it is impossible to say what might have been the result, or to what extent the mortality might have reached. It is my firm belief, that, of the numerous inmates of a very large hospital, the Cordeleria, in which were usually from 600 to 800 men, besides those in the four other hospitals at the same station, where Hospital Gangrene prevailed, very few would have escaped. Fortunately, however, the antiphlogistic regimen was at last established, and in a short time after, the gangrene ceased to be formidable.

But although the use of wine and other stimulants, in the early stage of Hospital Gangrene, while there is great vascular action, as well as much local inflammation, cannot be too highly reprobated, yet there are states of this disease in which it will be found not only not injurious, but very beneficial; such, for example, as the advanced stages of Hospital Gangrene, which occur in poor old infirm people, or where the patients have lingered long in hospitals, and their health has been broken by previous disease, or where the fever is evidently from the first of a typhoid character.

The diet, in the first instance, should be very light, consisting chiefly of farinaceous matter; indeeed I ought rather to say, that an almost total abstinence should be enjoined; but when the febrile symptoms abate, it may be made more nourishing. The drinks should be of the weakest kind, such as tea, water gruel, and lemonade. Ripe fruits, such as oranges, may be freely used; and from the



first, the regimen altogether ought to be strictly antiphlogistic.

### *Local Treatment.*

There are few diseases in which a greater variety of topical applications has been applied, and to enumerate them all would be useless. Those, however, of any efficacy may be comprised under three classes, viz. Sedatives, Escharotics, and Stimulants.

When the inflammation continues violent, cold applications, such as water alone, rendered colder artificially, and solutions of sugar of lead, are what I should prefer. Whatever objections there might be to the cold affusion as a general remedy, nothing appears better calculated to subdue inflammation in the local affection, and consequently to allay pain, than the continued application of cold; besides, in very warm weather, it is much more agreeable to the feelings of the patient than any thing hot. To obtain all the advantage from the sedative effect of cold, cloths dipped in the liquid should be applied to the part, and kept constantly moist. I have already mentioned an instance of the good effect of cold in the prevention of Hospital Gangrene, and I have no doubt that if applied steadily in cases to which it is adapted, it will be found a most valuable remedy.

Poultices of all kinds, the common emollient, as also the fermenting, carrot, turnip, and charcoal, being always applied warm, have appeared to me

in general to aggravate the pain, nor can we be surprised at it, when we consider what a powerful stimulant caloric is. Poultices, though applied cold, soon acquire the temperature of the body; they are, therefore, not the best applications in this complaint, and are objectionable also on account of their weight.

When the inflammation abates, the sloughs separate, healthy pus is secreted, and florid granulations spring up: when this is the case, the wound should be dressed simply with dry lint, over which a pledget of emollient ointment ought to be applied, and the whole supported by a good compress and roller. Should the sloughs continue to adhere after the inflammation has abated, some stimulating application, such as a mixture of resinous ointment, and oil of turpentine, known by the name of warm dressing, may be made to the wound, or an ointment composed of unguent. resinosum and oxyd. hydrarg. rubrum, in the proportion of ℥i of the latter to ℥i of the former. On such occasions I have also found the diluted nitric or muriatic acids, or the citric and acetic acids, good applications: in the same cases a solution of argentum nitratum will be found very useful. It is in this stage of the inflammatory gangrene, that warm fomentations and poultices may occasionally be employed with advantage, and that the stronger escharotics, such as the concentrated mineral acids, caustic alkalis, arsenical solution, or the actual cautery, may be used most successfully; but it is not improbable, that escharotics, applied at



a very early period, when the morbid action is just commencing, may sometimes, particularly in old wounds, arrest at once the progress of the disease. A more generous diet may now be allowed, and even a small quantity of wine. But although the patient has arrived at the stage of convalescence, and may be considered as safe, I can affirm, from extensive experience on this point, that if he be guilty of any excess, more especially in drinking, of using exercise, of not attending to the proper dressing of the wound, or neglecting the state of the digestive organs, he is almost certain of suffering a relapse, when the same train of symptoms will be renewed, and the danger of the patient will be infinitely greater, and exactly in proportion to the state of debility to which he is reduced.

Those who are entrusted with the charge of patients in this state, cannot be too attentive to the proper dressing of their wounds. The new granulations continue long very weak, and extremely liable to fall into disease; and the danger of this will be in proportion to the extent of the renewed surface. Nothing favours this diseased action more than inattention to the cleanliness of the wound, and the want of due support from proper bandaging. When the discharge is long confined, it becomes acrid, and even poisonous, and from this cause, more than any other, I conceive, that that form of the disease named Phagedæna, most frequently arises. If the discharge continue very abundant, the dressings should be frequently renewed, and some as-

tringent lotion, such as a weak solution of acetas plumbi or sulphas zinci used at each dressing; after which powder of peruvian bark may be applied to the wound as an absorbent. In this case also, it may be taken internally, with very good effect. Should phagedæna supervene, which may be known by the appearance of a small dark spot or ulceration, as already described, escharotics should immediately be applied.

This form of the disease, in the first instance, is purely local, and we are almost sure of putting a stop to its progress, by local remedies alone. Those which I have been chiefly in the habit of using are, argentum nitratum and oxyd. hydrarg. rubr.; but the undiluted sulphuric, nitric, and muriatic acids, and the caustic alkalis, have also been often employed with the same intention.

The oxygenated muriatic acid was made use of by Dr Rollo, in that form of the disease which prevailed in the Artillery Hospital at Woolwich, with great success; and lately I find that the nitric acid has been employed at St Bartholomew's Hospital in London, by Mr Welbank, in some cases of syphilitic phagedæna, with the very best effect *.

At Bilboa I used the oxyd. hydr. rubr. very extensively, because, after many trials, I found it was the only escharotic that could be applied, without causing much pain, and that it answered the purpose as effectually as any other. A thick eschar is

* Vide Medico-Chirurgical Transactions, vol. xi. p. 361. *et seq.*



very soon formed, which is easily removed at the next dressing.

An incipient phagedæna may be often removed by one application of the precipitate, but if the ulceration has made much progress, or has penetrated deep into the soft parts, several applications may be necessary, as the eschar only penetrates to a certain depth. In the same cases the solution of arsenic may be employed as recommended by Mr Blackadder in Phagedæna gangrænosa, and practised by him with so much success at Passages, or the actual cautery, as used by Pouteau, Delpech, Boyer and others. Mr Blackadder is of opinion, that Hospital Gangrene, under any form, may be speedily and certainly cured by the arsenical solution.

At the time when this disease raged with so much violence at Bilboa, I had not heard of that remedy; and when I was made acquainted with it, the malady had abated so much, and was so manageable by the means then in use, that it was not thought necessary to have recourse to any other, and since that time I have had no opportunity of putting it to the test. That it is a valuable remedy in certain states of the disease, there cannot, I think, be a doubt; but that it will succeed in all, and without the assistance of general remedies, remains I conceive yet to be proved. Whether for example, it would have been applicable to the cases at Bilboa, attended as they were with such excessive inflammation, and originating in the causes which I have endeavoured to point out; or whether it would answer in cases of Hospital Gangrene, breaking out

on a journey, as happens in the removal of wounded men from one station to another, which is always preceded by inflammation, and depending for the most part on a variety of irritating causes, are questions which I shall not attempt to decide.

The same may be said of the actual cautery, which has been used by the French writers so successfully; but indeed, after perusing the works of Pouteau, and more particularly of Delpech, who has perhaps had more experience in this disease than any practitioner of the present day, it may be considered presumption in any one to call it in question. I have been informed by some who have witnessed the practice of Dupuytren, the present celebrated surgeon of the Hôtel-Dieu at Paris, that he trusts very little to general remedies in this disease; at the same time, however, that he uses the cautery, he has been frequently obliged to have recourse to the lancet.

The cautery, at first sight, appears to be such a formidable remedy, though I do believe that it is more so in idea than in reality, that it is not likely soon to be brought into general use in this island. In cases, however, which have resisted other means, we ought not to scruple to employ it, and it ought at any rate to be kept in view as a last resource. I find, accordingly, that the prejudices which have so long existed against it are at last giving way, and that in some cases of caries, and in scirrhous tumors of the tongue and mouth, which could not be removed by the ligature, or with safety by the knife, and in some species of polypi of the antrum maxillare,



it has been used by some surgeons in this country with very good effect.

There is a species of gangrene complicated with a violent remittent fever, like the yellow fever, which may be mistaken for Hospital Gangrene, but is very different. It attacks wounded men, particularly after undergoing amputation, and has proved fatal I think in almost every instance that I have seen. The gangrene in this case appears to be symptomatic of the constitutional derangement. It is mentioned by Baron Larrey as having affected the French soldiers, more especially after operations, in the campaign of Eygpt * ; and Dr Hennen speaks of the same disease, as it occurred near Brussels in an hospital occupied by a part of the Brunswick corps.

The hospital was situated in a swampy flat, through which the great Antwerp Canal was cut. The wounded lay on the floors, and were much crowded; and it appears form the accounts which Dr Hennen received from the surgeon who did duty there, that almost all the amputations which were performed in that hospital immediately after the battle, terminated fatally. That some hours after the operation, the patient was seized with fever, strongly resembling the yellow fever. A violent rigor was soon followed by heat and sweating, coma, yellow skin, and gangrenous spots on the stump. The accession continued for an hour or two, and returned in five or six hours. Almost all those who had suffered

* Larrey's Military Surgery, vol. ii. page 18. et seq.

amputation, died of it on the first or second day after the operation *.

Several cases of this disease, somewhat different, occurred to myself, in the Jesuits Hospital, which stands in the high part of the town of Brussels. The patients were all wounded in the knee-joint, and amputation was not performed till three weeks from the time of the injury, and just when they were beginning to grow hectic. These patients all went on well for eight or ten days after the operation, the hectic symptoms were entirely removed, and the wounds in some of them were nearly healed; but at the end of that time they were seized with fever. A violent rigor was soon followed by heat, and perspiration; in a few hours more, after another rigor, the wounds burst open, the bone protruded to the extent of several inches, and the whole surface of the stump fell into mortification. The rigors continued at short intervals, and in little more than thirty-six hours from the accession of the fever they expired.

Having before met with such cases, I was aware of the danger, but I could do nothing to avert the fatal termination. Under such perplexing circumstances, it appeared to me most advisable, after prescribing an emetic, and cathartic, to support the strength of the patients as long as possible. With this view, bark was ordered, with wine and other cordials, and the stumps were dressed with a powder composed of myrrh, bark, and camphor, which

* Military Surgery, p. 239.



I have sometimes applied with advantage to mortified parts: but nothing was of any avail; they all sunk in the short space of time already mentioned.

It has been said, that, in Hospital Gangrene, when all other means fail, amputation may be performed with success, and even at a time when the gangrene is extending.

There is one form of Hospital Gangrene, which appears to be entirely local, at least in the commencement; and I have sometimes seen very great destruction done by it, without the constitution being much affected, viz. the phagedenic form of the disease; in which I have no doubt but that the operation may be performed, and without any risk of the disease returning, or affecting the stump; but in the other form of the disease, which has been named Contagious Gangrene, in which there is always inflammation to a greater or less degree with fever, I consider such practice to be extremely dangerous, and contrary to all the rules which have ever been laid down on this subject.

The operation, in my opinion, should never be thought of, until the fever and inflammation abate, and then, in all probability, the progress of the gangrene will be found to be stopped.

The following are three tabular returns of the Cordeleria Hospital, for the months of October, November, and December 1813, which I signed as senior Medical Officer, when the charge of that establishment for the time devolved upon me.

They will give a pretty good idea of the extent to which the gangrene prevailed, and of the compa-

rative efficacy of the different modes of treatment that were employed.

The Hospitals at Bilboa were opened in July 1813, after the Battle of Vittoria; and from that time to October following, the monthly loss at the Cordeleria alone had never been below 80, and it was then only for the first time that the antiphlogistic treatment was introduced.

*Tabular View of the Monthly return of the Cordeleria Hospital, from 21st of September to 20th October* 1813 *inclusive, before the antiphlogistic treatment was established.*

| Diseases. | Remained last Return. | Since admitted. | Total. | Discharged. | Died. | Proportion of Deaths to diseases treated. | Remaining. |
|---|---|---|---|---|---|---|---|
| Vulnus, ..... | 872 | 422 | 1294 | 384 | 83 | 1 to 15 | 827 |
| Total, ..... | 872 | 422 | 1294 | 384 | 83 | 1 to 15 | 827 |

*Tabular View of the Monthly Return of the Cordeleria Hospital, from 21st of October to 20th November* 1813 *inclusive, when the antiphlogistic treatment was partially established.*

| Diseases. | Remained last Return. | Since admitted. | Total. | Discharged*. | Died. | Proportion of Deaths to diseases treated. | Remaining. |
|---|---|---|---|---|---|---|---|
| Vulnus, ..... | 827 | 30 | 857 | 213 | 25 | 1 to 34 | 619 |
| Total, ..... | 827 | 30 | 857 | 213 | 25 | 1 to 34 | 619 |

* Of this number, 59 affected with gangrene were transferred to another hospital.



*Tabular View of the Monthly Return of the Cordeleria Hospital, from 21st of November to 20th December* 1813 *inclusive, when the antiphlogistic treatment was fully established.*

| Diseases. | Remained last Return. | Since admitted. | Total. | Discharged. | Died*. | Proportion of Deaths to diseases treated. | Remaining. |
|---|---|---|---|---|---|---|---|
| Vulnus, ..... | 619 | 172 | 791 | 67 | 6 | 1 to 131 | 718 |
| Syphilis, .... | ... | 5 | 5 | ... | ... | ..... | 5 |
| Total †,..... | 619 | 177 | 796 | 67 | 6 | 1 to 131 | 723 |

* The deaths which occurred this month were rather from exhaustion and hectic fever, than from gangrene.

† These returns are not so complete as could have been wished, inasmuch as they do not state the number of cases of gangrene which prevailed at any one time. Were I, however, to hazard an opinion upon this point, I should perhaps not be far wrong in estimating the numbers who were affected with this disease from first to last, and in a greater or less degree, to be two-thirds or three-fourths of all the patients admitted; for at one period the whole Hospital was literally overrun with it.

Dr Hennen says, "Every sore in the house assumed a malignant character, and the deaths increased in nearly a threefold proportion," p. 214.; but it was truly gratifying to see how soon the malignant character of the disease was changed on the introduction of the antiphlogistic treatment; the symptoms became more mild, and the deaths decreased almost immediately.

In the month of November, I considered the disposition to gangrene to be in a great measure corrected. However, a few cases still remained, mild indeed, compared with those which

I have thus endeavoured to give a concise view, very imperfect it must be admitted, of Hospital Gangrene, such as I have met with in military practice; an affection which, even in civil life, is at times sufficiently formidable; but which, on many occasions, has been of the most serious consequences to our Fleets and Armies.

Having had opportunities of witnessing the disease, such as I believe have fallen to the lot of but few, I have thought proper to lay before the Society all the information I have acquired on this subject, as well from observation as from books, in the hope of its being useful at some future period to those who may hereafter be employed as I myself have been.

The subject, indeed, might be much extended, but I am not aware that I could add any thing of importance to what is now submitted; and though in this disease, which appears under different forms, depending also on so many different causes, much

formerly existed; and these, the Deputy Inspector Dr Charles Forbes, who superintended at the station, in his anxiety to clear the hospital of this disease, thought proper to remove to a house appropriated for the reception of gangrenous cases, a measure which was perhaps unnecessary.

I left Bilboa early in January following, for France; so that I am unable to bring the returns down to a later period. I have, however, been informed, that the gangrene ceased entirely soon afterwards, and never again appeared at that station.



must still be left to the judgment of the practitioner, yet there are sufficient marks, I think, to guide us in the treatment of it, so that we need seldom commit any very dangerous mistake.

From the inquiries, then, into this subject, which have of late been made by so many individuals, it is perhaps not unreasonable to expect that considerable good must arise; that the sufferings of the defenders of our country shall in time to come be much alleviated; that the great loss which has so often happened to the naval and military service of the State, shall be lessened; and that, in short, some benefit shall be conferred on society.

THE

# ORIGIN,

## PROGRESS AND PRESENT STATE

OF THE

## VARIOUS ESTABLISHMENTS

FOR

## CONDUCTING CHEMICAL PROCESSES,

AND OTHER

MEDICINAL PREPARATIONS,

AT

## Apothecaries Hall.

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LONDON:

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ST. JOHN'S SQUARE, CLERKENWELL.

1823.

Apothecaries Hall,
*11th Nov.* 1823.

The Committee of Managers of the United Stock of the Society of Apothecaries, have great reason to apprehend that the origin and design of their Establishment for preparing Chemical and other Medicines, is very imperfectly understood, not only by the public at large, but also by those Corporate Bodies, Merchants, Medical Institutions, and private Persons, whether Medical Practitioners or others, who have for so long a period honoured them with their confidence; they have, therefore, considered it a duty incumbent upon them to publish a brief Statement of the first formation of their Laboratories, and of the methods in which their Business has been conducted for about a Century and a half to the present time. To this is

subjoined a description of the late greatly enlarged and much improved state of their Laboratories and Apparatus, both for Chemical and Galenical preparations, by which they are enabled to perform the several processes in a manner which will be attended with increased advantage to the Public, in a corresponding reduction of Prices, and at the same time with an equitable profit to themselves.

THE

# ORIGIN,

*&c. &c.*

From the Charter granted to the Society of Apothecaries by his Majesty King James the First, it appears that about the latter end of the 16th and the beginning of the 17th century, the Metropolis of this kingdom abounded in ignorant and dangerous Empiricks, who, not being regularly educated as Apothecaries, made and compounded many "hurtful, false, and pernicious medicines," the evil effects of which were not confined to the Capital, but were disseminated through most parts of the Kingdom. With a view to remedy these grievances this Society was established in the year 1617, and was empowered to make ordinances concerning Medicines and Compositions, advising respecting the same with the President and Censors of the Royal College of Physicians; also to examine the Shops of

Apothecaries within the City of London, and to the extent of seven miles around it, with a view of ascertaining the qualities of the Drugs and Medicines contained in them, and with power to destroy all "unwholesome and hurtful articles" which they might discover during such examination.

It was soon found that the want of Legislative authority rendered the wise and judicious intentions of this Charter nugatory, with respect to all such Apothecaries who were not members of the Society. Early and repeated applications were therefore made to Parliament for their sanction to confirm and establish the powers contained in it, but for various causes such sanction could not then be obtained; so that the evils, which it was chiefly intended to obviate in the preparation of Medicines, continued to an equal and probably greater extent.

From the records of the Society, it appears, that its Members soon discovered a laudable anxiety to relieve themselves from the necessity of depending for a supply of Medicines on the artifices, and the spurious compositions of the Druggists and Chemists of that time, and accordingly, in the year 1623, they formed a plan for supporting a Dispensary of their own, for compounding the more elaborate Confections, (which containing a great number of Ingredients were more liable to adulteration) by a public dispensation under the inspection and management of a Committee of themselves. The utility of this plan, being probably confined to very few articles, must have been of a very limited extent, and it was not until nearly half a century after, that the design of a public Laboratory for the preparation of Chemical Medicines was set on foot. It originated from the difficulty and great expense which must have been incurred, by the Apothecary, in making his own Chemicals, and from the impracticability of his procuring them elsewhere in a pure and genuine form.



In the year 1671 a Chemical Laboratory was first formed at Apothecaries Hall, by subscription among the members of the Society. When compared with the present very extensive establishment, it must certainly have been upon a small scale, but, no doubt, amply sufficient to answer the purpose for which it was then intended, which was to furnish the individual subscribers, and them only, with such chemical preparations as they might have occasion for in their medical practice as Apothecaries.

How long the sale of Chemicals was confined to subscribers alone, cannot now be known, but the increasing reputation of this Laboratory must have soon caused applications for purchasing them, from persons who were neither subscribers nor Members of the Society, for in 1682, the Com-

mittee of Managers were called upon to consider the propriety of acceding to such applications. Whether it was at that time consented to, or not, does not appear, but it must have taken place within a few years after.

In the early part of the reign of her late Majesty Queen Anne, a new era took place in the affairs of this Society. So much difficulty had arisen in providing pure and genuine Drugs and Medicines for the use of the Royal Navy, and the credit of the Society in their chemical preparations was so fully established, that application was made to them by his Royal Highness Prince George of Denmark, Lord High Admiral, to undertake that service, which was readily consented to, and became the origin of a separate commercial establishment under the title of the Navy Stock.

Until this time Chemical processes only were carried on at their Hall, but as it now became necessary to provide both Drugs and their preparations, as well as the various Galenical Medicines at that period employed, a considerable capital was formed, and Warehouses and Laboratories erected for that purpose. The great expense attending the establishment of this Stock, which, from the extensive erections of such various kinds, became unavoidable, rendered it for the first half century a source of small pecuniary



profit to the Proprietors. It is only subsequently to that period, that the numerous and extended wars in which the nation has been engaged, and the consequent large supplies of Medicines required for the service of the Navy, in addition to the great quantities exported to India, by order of the Honourable East India Company, and the large sums which have been of late years received for Medicines furnished for public institutions, as well as private families, that a profit has accrued by which the Society and its members have been indemnified for the losses and other disadvantages sustained in the infancy of this commercial establishment.

As the concerns of the Society have been at all times conducted with that accuracy, and integrity, which has acquired for the Medicines prepared at Apothecaries Hall the highest character, both throughout this kingdom and in almost every part of the Globe, it will be right to give a general explanation of the manner in which the business is conducted, subjoining a short description of the present improved state of their Laboratories and Apparatus, and also of the several processes carried on in them.

The general management of the affairs of the Society as connected with the preparation of Medicines, is under the immediate superintendance of Committees, who meet four times in the

week, or oftener when required, and some Member of which attends daily, and enters in a Book the processes which he finds carrying on at the time of his visit. These daily attendances are performed by the Members of the Committees in rotation.

The *buying Committee* meets every Tuesday at one in the afternoon, to examine and compare the samples of articles sent in by the Druggists, and to direct their purchase; the articles wanting, and the quantity of each required, being specified upon a list posted up in the Hall for the information of any Merchant or Druggist who may choose to offer Samples to the Committee. At these meetings, the best article being selected and determined upon, the Chairman announces the name of the Vender and the price, and the deputy Chairman enters the order. Where two or more Samples of the same Article are equal in quality but vary in price, the cheapest is purchased; if the price of two or more equally good Samples be the same, and the quantity required considerable, the order is generally divided, or given to that house from which the least has been purchased.

In this way every Drug and other article required for the use of the Society's trade is purchased exclusively by sample.

To ensure the correspondence of the bulk of



the article delivered into stock with that of the sample, a distinct *Committee of Inspection* meets every Friday, for the purpose of comparing the bulk with the sample presented on the preceding Tuesday, and rejecting or receiving it accordingly. It is also an important duty of this Committee to examine samples of all preparations whatever, coming from the Laboratories, previous to their being disposed of in trade; samples, therefore, of all Powders, Tinctures, Chemical and other preparations, are regularly presented at this Committee, and their qualities determined by inspection or experiment, when any faulty articles are rejected or returned for amendment, while those which are approved are entered as such, and ordered into the shops and warehouses.

The immediate business of the Chemical Laboratories, as relates to the Processes, Operations, and Apparatus, are under the controul and inspection of Mr. W. T. Brande, F.R.S. the superintending Chemical Operator; and of the Chemical and Galenical Operators who reside at the Hall; and these Officers constantly attend the Buying and Inspecting Committees, and such other Meetings of the Directors of the Establishment as may require their presence.

If any explanation be necessary of the prices charged by the Society of Apothecaries for their

Medicines, which are in some instances higher than those usually affixed to the same articles, even by respectable Chemists and Druggists, it will be only necessary to observe that the mode in which the business is transacted at Apothecaries Hall puts it out of their power to enter into competition with those persons in that respect for the reasons which follow :

The Society consider it their duty to countenance and support the laudable designs of the Royal College of Physicians by adhering strictly to the directions of their Pharmacopoeia in the preparation of Medicines, both as to the quality of the ingredients and the proportions in which they are employed. Moreover, their practice of purchasing none but select Drugs, separated from those parts which are of a damaged or inferior description, compels them to give proportionably higher prices for them than are given by the wholesale Trader, who either imports his own Drugs, or purchases them in their original packages as imported, which he afterwards garbles and divides according to their respective qualities, and fixes his prices to the different purchasers accordingly.

The medicinal Compositions which are most liable to adulteration, because the less easily detected, are Extracts, Confections, and Tinctures. The ingredients of which these are formed, are



for the most part very expensive, such as, among many others, Opium, Cassia fistula, Castor, Colocynth, Saffron, Benzoin, Guaiacum, Scammony, Cinnamon, Cardamom Seeds, but above all the Cinchona Lancifolia, or Crown Bark, which from the very high price it bears, from the large quantity of it which ought to be employed, and from the many inferior sorts of Bark which may be purchased in some instances for not more than a sixth part of its price, affords a strong temptation to abuse, both in the quantity and quality of the article made use of; a temptation, which the most charitable judgment must suppose, in many cases, too strong to be resisted.

That there are Chemists and Druggists in the Metropolis, from whom genuine Drugs may be purchased, and by whom Medicines are prepared with fidelity, is indisputable, but it may be feared that it is too often far otherwise. The advantage of low prices is a powerful inducement with Medical Practitioners, both in town, and particularly in the country, to purchase inferior Medicines; placing that confidence in the vendor of them, to which, they are perhaps not aware that he is not always entitled, and of the quality of Medicinal Preparations the Practitioner himself is frequently an incompetent judge.

As superior excellence in the condition of the

various materials employed in the preparation of Medicines must be allowed to be of the greatest importance, and as it is a trust so liable to abuse, that it must ever be considered highly confidential, it is respectfully submitted that this advantage cannot be satisfactorily secured by any other method than that which has been constantly pursued by the Society of Apothecaries, namely, having no articles of inferior qualities in their possession, and, as far as is practicable, conducting all their processes within their own Walls, and particularly that of powdering Drugs in their own Mills, by which a fruitful source of fraud must be effectually prevented.

The Society beg leave to subjoin, that after repeated solicitations, they have for a few years past, in addition to the general business carried on at their Hall, opened a Department for the sole purpose of preparing and compounding the Prescriptions of Physicians and others, which from the success which has already attended it, they are well satisfied will prove an acceptable enlargement of a system, the principal object of which, in all its branches, has been to provide the public with pure and genuine Medicines.

*Description of the Laboratories and their various Appendages, by William Thomas Brande, F.R.S. and Professor of Chemistry to the Royal Institution.*

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The principal Laboratory is a brick building about fifty feet square and thirty high, lighted from above, and subdivided by a brick wall into two compartments, the dimensions of the larger one being fifty feet by thirty, and of the smaller fifty feet by twenty. The former may properly be termed the *Chemical Laboratory*, all the open fires and furnaces being situated in it, and all operations requiring intense heat being there conducted. The latter is usually termed the *Still-house*, all distillations and evaporations being performed there, exclusively by steam, which is furnished in a manner afterwards to be described, by a boiler placed in a small building annexed to the main Laboratory.

Immediately connected with the above mentioned building is a Chemical warehouse for such articles as are in immediate consumption in

the Laboratory, above which is a small house for a Clerk, the whole being shut off from the Laboratory by iron doors.

The principal entrance to the Chemical Laboratory is through the *Mortar-room*, which is forty feet long and twenty-two broad, and appropriated to mortars, presses, and generally speaking, to all mechanical operations performed by manual labour. At its eastern extremity is a large drying stove, heated by flues, for the desiccation of those articles which cannot be dried conveniently at temperatures easily obtained by steam. At the west end of this apartment a room twenty-two feet by fifteen is divided off, in which is an apparatus for the production of gas from oil, with which the Hall and its various departments, both externally and internally are lighted. Above the mortar-room is a gallery fitted with shelves for various utensils and apparatus, opening at one end into a room appropriated to the use of the labourers, and at the other, into the *test-room*, a small Laboratory fitted up with the requisite apparatus, for minute and delicate investigations, and in which Chemical tests and other articles requiring peculiar attention and cleanliness are prepared.

Annexed to the gas room is a counting-house, behind which a room twenty-two feet square;



commonly called the *Magnesia-room*, is appropriated to the preparation of that article, and also to the manufacture of the most common saline preparations.

Having thus stated the general arrangement and dimensions of the various buildings connected with or forming part of the Chemical Laboratories, I shall now proceed to a more particular account of them, premising that in a detached building there is a steam engine of eight horse power, which is employed with proper machinery, for grinding, sifting, triturating, pounding, and a variety of other operations, which it is not necessary at present particularly to advert to. There are also connected with the Establishment, suitable warehouses, shops, and all other requisite conveniences for carrying on an extensive trade.

In the construction of the new Laboratory safety is ensured by the whole being fire proof, and it is ventilated by a series of apertures in the roof, which may be opened or closed at pleasure. The main chimney is erected in the centre, and has, opening into it below the pavement of the Laboratory four large flues, one of which enters upon each side of its square base. The shaft is one hundred feet high from the foundation, and is accessible in its interior, from one of the underground flues. The flues of the furnaces which are placed against the walls of the Laboratory are

each supplied with registers, and open into a common channel, which surrounds the building, terminating in the chimney, as already described. Each of the four large flues has also a separate register, which may be more or less closed or opened according to the operations which are going on in the various furnaces connected with it. The furnaces thus arranged are,

1. A subliming apparatus for Benzoic Acid.
2. A furnace for the preparation of Sulphate of Mercury.
3. A high pressure steam boiler.
4. A reverberatory furnace.
5. A sand bath
6. An apparatus for Muriatic Acid.
7. Ditto for Nitric Acid.
8. Ditto for the distillation of Hartshorn.
9. A calcining furnace.

There are also a series of furnaces built against the sides of the main chimney, and communicating directly with it by flues of their own, which, as well as the common openings by which they enter the chimney, are supplied with effectual registers, so that when not in use they may be perfectly closed. Of these furnaces, four are chiefly employed for various sublimations, and fusions; four are retort pots; the third side of the chimney is occupied by a powerful wind furnace; and the fourth by a furnace for the



sublimation of calomel. In this Laboratory there is, moreover, a very copious supply of water, both hot and cold; and an engine-hose and pipe is always attached to the water main, in case of accident by fire, as well as for the purpose of cleansing the pavement. Beneath the building are extensive vaults for fuel, with which there is a direct communication by steps descending in one of the angles of the Laboratory.

The *still-house* contains six stills of various dimensions and constructions, twelve pans or boilers, and a drying stove, all of which are exclusively heated by steam supplied from an eight hundred gallon copper boiler, placed in an annexed building, below the level of the still-house; and the flue of which, passing under the pavement of the Laboratories, enters the main chimney already described.

This boiler is calculated to supply steam under a pressure of an atmosphere and a half, and is fed with hot water by a forcing pump kept in constant operation by the steam engine. It is properly fitted with valves, and pressure and water gages.

The main steam-pipe, after ascending from the boiler, sends off descending branches which ramify under the pavement of the still-house in channels of brick-work, covered by cast iron plates. These send off a steam-pipe, fitted with

a register cock, to each still and boiler, from which there passes off an eduction or condensed water pipe, entering the condensed water main, the ramifications of which accompany the steam main, and deliver their contents into a cistern, whence the boiler is supplied with hot water. A large branch of the steam pipe circulates in five convolutions at the bottom of the drying stove, so as to heat a current of air which is made to pass through it; and another branch rising perpendicularly through the pavement, is properly fitted with cocks and screws for the occasional attachment of leaden or other pipes, for boiling down liquids in moveable pans and vessels.

In this building, one of the stills is of a distinct construction, and heated by high pressure steam, supplied from the boiler already mentioned in the description of the Laboratory. Another still, together with its condensing pipe, is composed entirely of earthenware. The former is chiefly used for the first distillation of sulphuric ether, and the latter for that of spirit of nitric ether. The stills and vessels are generally heated by the circulation of steam upon their exterior, but sometimes serpentine pipes traversing the liquor are employed.

In the still house all spirits and waters are distilled; extracts and plasters are prepared;



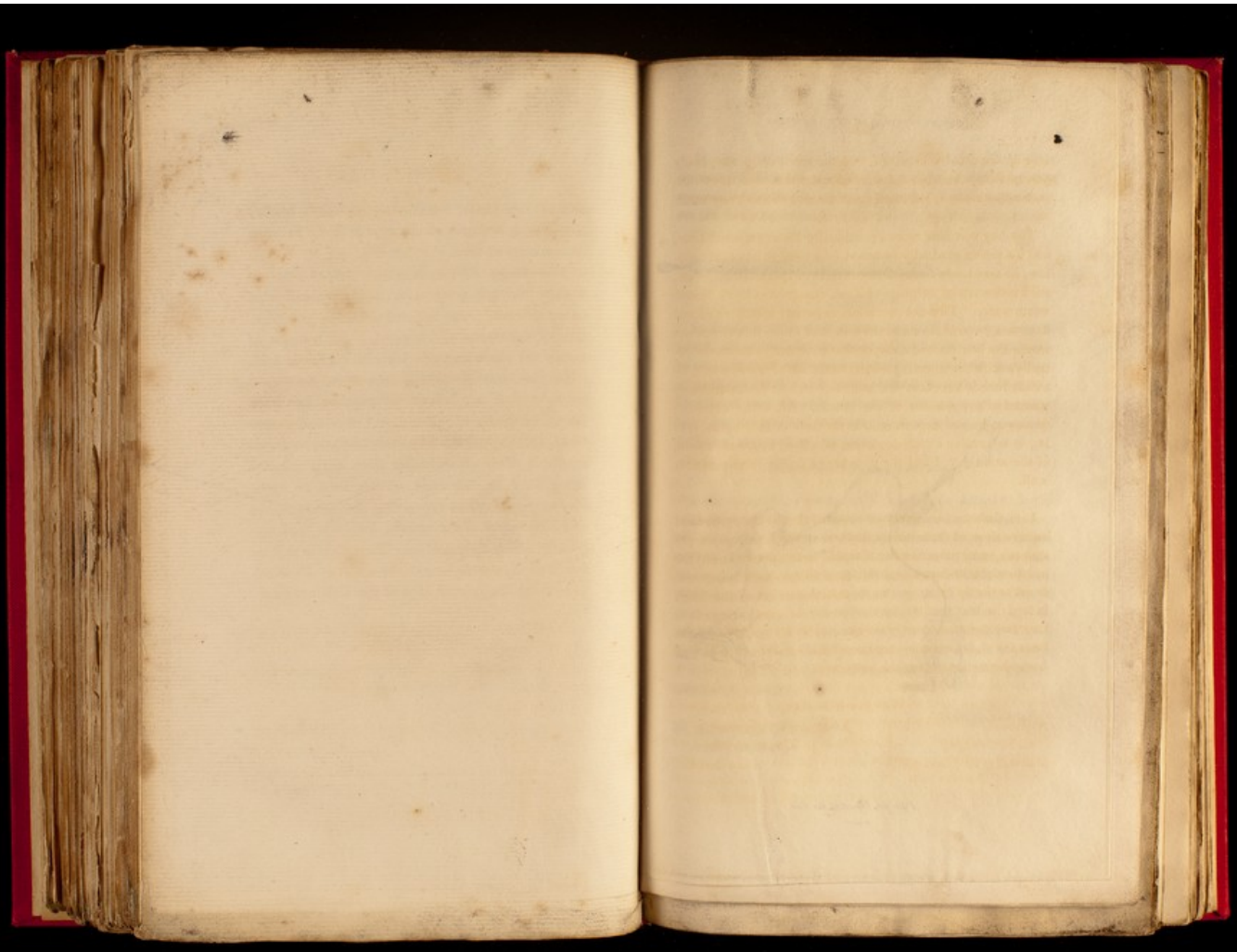


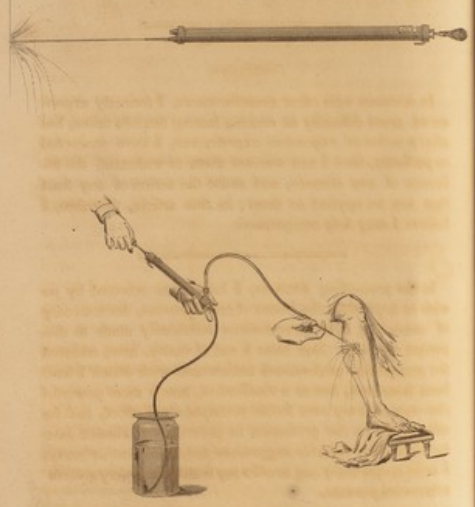
and all operations are carried on which involve risk by fire, or in which damage is likely to occur from excess of heat.

The *Magnesia room* contains proper vats and boilers for the production and evaporation of saline solutions; the apparatus for the precipitation of carbonate of Magnesia; and a series of vessels for saturating alkalies with Carbonic acid.

In the above outline it has been my object to shew that no labour or expense has been spared to render the Chemical Laboratories complete, and that all the important modern improvements in their construction have been adopted upon an extensive scale, rather than to enter into any particulars respecting the arrangement and dimensions of the vessels, furnaces, and apparatus which they contain. These details will be found in the description of the annexed Plate representing the ground plan of the Laboratories.

Printed by R. Gilbert, St. John's-square, London.





*Pipe for Injecting the Ear.*



At the suggestion of Dr. Sully, I have lately fitted up an Apparatus for injecting the wounds inflicted by rabid animals, as represented in the engraving. For an explanation, see Dr. Sully's pamphlet on the Treatment of Hydrophobia.

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*Conclusion.*

In common with other manufacturers, I formerly experienced great difficulty in making lasting flexible tubes, but after a series of expensive experiments, I have succeeded so perfectly, that I can warrant them to withstand the influence of any climate, and resist the action of any fluid that can be applied to them; in this article, therefore, I believe I may defy competition

---

In the preceeding remarks, I have been actuated by no wish to depreciate the labour of other persons, desirous only of correcting misrepresentations insidiously made to disparage my own. Nor have I out of vanity, here, adduced the respectable professional testimonials with which I have been honoured, but as a vindication, much more powerful than any that my own feeble attempts could effect, and for which (and to the profession in general from whom I have received many valuable suggestions and the utmost urbanity) I most respectfully beg to offer my humble and very gratefu acknowledgements.

JOHN READ

*25, Regent Circus, Piccadilly.*
*May 10, 1828.*

# READ'S

## NEW IMPROVED PATENT SYRINGE,

*FOR DOMESTIC & HORTICULTURAL PURPOSES.*

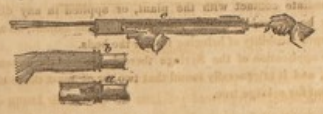
THE Public are respectfully solicited to the Inspection of this Instrument, which, for its convenience and utility in Domestic and Horticultural Purposes, claims universal regard. For watering Pines and all other plants in Conservatories and Hot-houses; and for the destruction of Insects upon trees in Forcing-houses or on Walls, it far exceeds the Barrow-engine in the facility of its application. The Horticultural Society of London, to mark their approbation of it, have been pleased to honour the Patentee by conferring upon him their Silver Medal for the Invention. It has of late been much used for washing the Windows of Houses and Carriages, and is found to be a most effective apparatus for Fumigating Trees and Hot-houses.

This Instrument also, in case of need, is an excellent Fire-engine, as from its portability it can be applied, upon the first breaking out of a Fire, when no sort of assistance could be derived from the Engines of the Insurance Companies, and its utility in this way having been proved by actual experience, most of the Fire Offices have prepared themselves with it, and it is now, very properly finding its way into Private Families, as a safeguard against the destructive and hazardous effects of Fire.



*Section of the Horticultural Syringe.*

*a.*—Cap for destroying Insects on Wall-trees and Plants.
*b.*—Cap for Watering Forcing-houses and trees in Blossom.
*c.*—Cap for Extinguishing Fires.




*EXPLANATION OF ITS USE.*

THE Cap *a* is to be screwed on when the Syringe is used for washing away Insects from Peach, Nectarine, and Apricot Trees. Set a pot of water near the stem of the tree, and having charged the Syringe, throw the shower between the tree and the wall, directing it against the *back* surface of the leaves, where the insects are placed, by which mode, the fluid effectually and speedily sweeps off both the insects and their eggs and larvæ, and thus prevents a succession of these injurious animalculæ. The Barrow Engine can only be brought to play upon the *front* of fruit trees, and dislodges, therefore, the insects but very imperfectly, without removing, in the least, their eggs, that stick upon the under surface of the leaf. This Cap is also used for watering Pines.

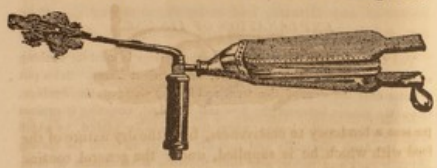
The Cap *b*, has smaller perforations than the above, and as it throws the fluid in a light and gentle moisture, almost like a dew-fall, is particularly eligible for sprinkling Forcing Houses of all descriptions and Trees in bloom, and not only clears the latter of insects, but deposits the water in such a gentle manner upon the leaves, that, if it be applied at night, preserves the plant moist until the next morning, materially tends to its nourishment and health, and prevents the formation of animalculæ, which breed rapidly in the *dry* but perish by moisture. The Practical Gardener is aware of this, and takes care, during warm weather, to supply his trees with moisture while their buds are forming and before the blossom expands. This Cap is used also for washing the leaves of trees, plants, and vegeta-

bles when frost-nipped in the cold nights that often prevail during the spring; it should of course be done before sun-rise.

The Cap *e* is used for extinguishing fire and for washing the coarser sorts of trees, as Pears, Plumbs, Cherries, &c. against walls, and for general watering in lieu of the Barrow Engine, and in this way can be applied more efficaciously than the latter, as it may be brought into immediate contact with the plant, or applied in any direction that may be desirable, which the Barrow Engine cannot, on account of the impracticability of bringing it over the beds.

By the application of the Syringe there is no useless expenditure of water, and it is generally found that two, or at most three charges s sufficient for a large tree.

## Improved Horticultural Tobacco Fumigator.



*Directions for Use.*—Unscrew the bottom socket of the canister, and allowing the perforated plunger within it to fall on the opposite extremity, put in the tobacco upon it; replace the socket, hold the apparatus in the position shewn by the Cut, with the aperture over a piece of lighted paper; expand the bellows and the flame rushes in and ignites the tobacco. Then by continuing to use the bellows in the ordinary way, the tobacco may be all consumed, whilst a copious dense volume of smoke issues from the pipe, and may be directed upon plants and trees in forcing houses or against walls, beds of roses, &c. &c, &c. with unerring success.—Immediately after using, immerse the canister in water, then unscrew the top and bottom, and wipe the valves containing the chambers quite clean.

The Patentee, after an active and extensive experience of Forty Years in Practical Gardening, humbly offers the above explanation of the uses of his Garden Syringe to the attention of young Horticulturists, who may not despise a few simple but useful hints.



# Veterinary Practice.

"A righteous man regardeth the life of his beast."
PROVERBS, chap. xii. v. 10.

ANIMALS, as well as man, are liable to accidents and disorders that demand the aid of medical surgery; and among these, the occurrence of constipation and obstruction of the bowels, and of the fatal effects of excessive abdominal distention, from an undue quantity of improper food, frequently brings a most useful and highly-valued animal into a situation of the utmost danger. Examples of the former are constantly experienced with horses and dogs. The former

possess a tendency to costiveness, from the dry nature of the food with which he is supplied, under the general routine practice of feeding; and he is rendered still more susceptible of this state, and consequently of obstruction and even inflammation, by protracted and heavy labour, and by neglect or improper management after severe exercise. It is also a well-ascertained fact, that the sports of the field induce a costive state of the bowels of dogs, that often reduce the animal's condition and health, and not unfrequently destroy his life. The attention of sportsmen and gentlemen cannot, therefore, be too seriously drawn to this subject; and I respectfully beg to solicit their consideration of an instrument by which the lives of many valuable animals have been saved, when every other means had failed. By means of the apparatus represented by fig. 1. of the following plate, enemas may be easily administered either to horses or dogs: and the instrument is such as to admit of any quantity being injected that may be considered applicable to the size of the animal, and to the nature of the case.

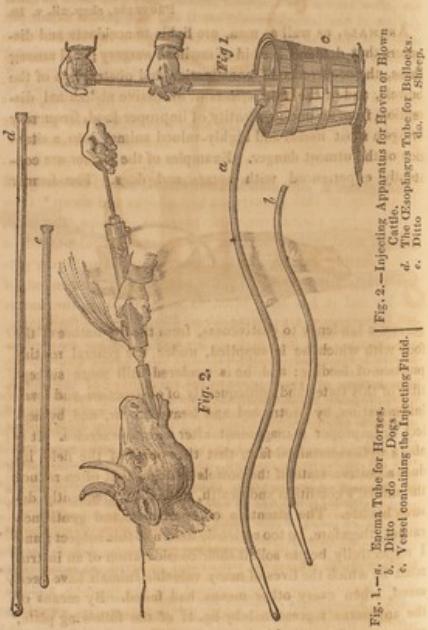



Fig. 1.—*a.* Enema Tube for Horses.
*b.* Ditto do Dogs.
*c.* Vessel containing the Injecting Fluid.

Fig. 2.—Injecting Apparatus for Hoven or Blown Cattle.
*d.* The Œsophagus Tube for Bullocks.
*e.* Ditto do. Sheep.



The plate (fig. 1.) represents the action of the instrument: the tube being screwed to the side branch of the syringe, and the pipe introduced into the bowels, the extremity of the syringe is held in the fluid to be injected, (which is put into a pail, or other convenient vessel) and the piston being put into action the clyster passes freely into the intestines. The facility afforded by this instrument of throwing fluids into the bowels of animals was demonstrated by an experiment performed at Charlton Mews, before Mr. Goodwin, his Majesty's Veterinary Surgeon, in which I injected a clyster of three gallons in two minutes.

The next consideration, as to the applicability of the instrument, is to the cases of hoven (or blown) cattle. The frequency of this occurrence to bullocks and sheep * from over-gorging themselves with potatoes, turnips, flax-seed, ground meal, green clover, or any moist or succulent food, is unfortunately well known to the agriculturist and every person practically engaged in the breed and management of stock: and it has been often experienced, that the means generally resorted to, in those cases, are, but too frequently, ineffective. The failure may be accounted for by observing how inadequate either the puncture in the loin, or the introduction of the tube is to the evacuation of the offending matter; if this were merely gas, either of the above means would probably liberate it: but it should be known that the stomach is filled by a fermenting pultaceous mixture of solids, fluids, and gas, that cannot be discharged in the manner of gas simply. The Patent Syringe before described, is found to be as exactly applicable for this as for any other purpose; and I have prepared tubes to be fixed to it, either for sheep or bullocks, see plate *d. e.* Fig. 2. shews the operation of extracting the contents of the stomach of a blown bullock—the tube is passed into the stomach, and the syringe being fixed to it, and put into action, the offending matter is discharged at the side opening.

* Horses have been destroyed by eating largely of wheat, obtained by their breaking into a barn where it had lately been thrashed out.

# READ's STEAM INHALER.

The Machines usually sold for this purpose are so constructed that, in using them, the air from the lungs are breathed *back into the vessel*, and, notwithstanding an outlet is provided for it, its escape is necessarily so imperfect that the steam is constantly impregnated with impure air and the patient continues to respire the same breath over and over again. The serious objection to this, lead to the application of READ's Patent Spherical Valves to the Apparatus, by which the breath is prevented from returning into the vessel and discharged readily at the side of the tube, preserving an uninterrupted current of pure vapour to the lungs.

The great utility and efficacy of inhaling the vapour of hot water and other medicated liquids in Catarrh, Pulmonary complaints, &c. have also induced the Patentee, for the convenience of persons possessing his Enema Apparatus, to attach a breathing tube to the Reservoir, by which the latter may at any time be used as a Steam Inhaler.

*N. B.* The top of the Reservoir must be sent, whenever it is wished to have the breathing tube attached to it.

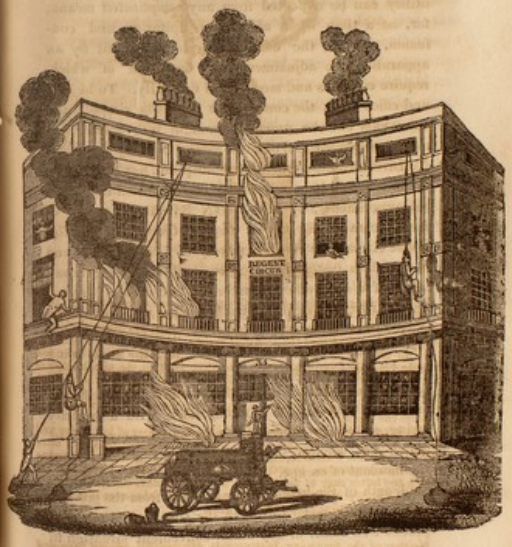
Neither of the foregoing Instruments are genuine except Stamped with the Royal Arms and Patentee's Name.

*Sold by the Patentee, 35, Regent Circus, Piccadilly.*

GLENDINNING, PRINTER, 25, HATTON GARDEN, LONDON.

# NOVEL INVENTION.

## FIRE ESCAPE.



Various Inventions of this kind have, from time to time, been brought before the Public, and obtained, each in its turn, an ephemeral popularity. In every

instance, however, expectation has been disappointed, no apparatus having been produced which could be made available in all the situations of danger which the emergencies of this calamity occasion. Very little utility can be expected from any *complicated* means; for, at a time when alarm, precipitation and confusion, prevail, the danger may be increased by an apparatus, the adjustment and operation of which, require coolness and mechanical dexterity. To be safe and efficacious, the contrivance should be simple; and one which can be promptly brought into action and managed by easy and obvious means, even by the timid. An Invention answering this description, has lately been exhibited, and its applicability demonstrated by practical experiments, by Mr. JOHN READ, (Patentee of the STOMACH PUMP) of *Regent Circus, Piccadilly*, whose Apparatus consists merely of a rope, to the end of which is fastened a loop or cradle of strong broad straps of Webb, sufficient to contain two or three persons. An Iron ring, having a perpendicular bar crossing it like the tongue of a buckle, is to be screwed into the Lintel over the window within the chamber, the rope being coiled in a serpentine form around the bottom of the ring by passing it through the two divisions made by the bar or tongue. Or a strong hook with a security spring, which the inventor has prepared, may be fixed above the window, and this ring hung upon it at the moment of escape. The rope, which must be twice the length of the height of the window from the ground, being properly passed through the ring, coiled up, and placed in a closet or any other convenient situation in the room; upon an alarm of fire, or in time of danger, the ring can be hung upon the hook in an instant. To escape from a window, a person has only to throw



the rope (which uncoils itself as it falls) into the street, slip the cradle under him, take hold of the rope outside the window, and sliding out, gradually let himself down, by allowing the rope to pass from one hand to the other. So great is the resistance to the passage of the rope in consequence of the friction against the Iron ring, that the weight of a person is but little more than sufficient to bring him to the bottom, and may easily be counterbalanced by *one* hand only. If the person be timid and fearful of trusting to himself, any person in the street may lower him, by taking the rope, and letting it slide as he descends; and in this manner, Children and Females may be speedily and safely let down. In the cradle (which, in addition to the support for the back, has for greater safety a cross belt fixed to it, that ties in front of the person) a child may be seated by its mother, if no other person be near, who might thus let down all her family, and then descend herself in the manner above described. A small line may be tied to the top of the cradle, by which any one in the street might draw the person escaping, out of the course of the flames issuing from the lower windows, or pull him clear of any architectural projections, balconies, &c. that impede his descent, as shewn in the cut.

# REGULATIONS

TO BE OBSERVED BY

## Candidates,

PREVIOUSLY

TO THEIR BEING TAKEN UPON TRIAL

FOR OBTAINING

DIPLOMAS

FROM

## The Royal College of Surgeons

OF

EDINBURGH.

---

EDINBURGH:

PRINTED BY WALKER & GREIG,

204. HIGH-STREET.

1832.

# REGULATIONS, &c.

SURGEONS' HALL,
*Edinburgh, May* 1832.

THE Royal College of Surgeons of Edinburgh, in enacting and publishing, from time to time, regulations respecting the course of study to be followed by candidates for their diploma, have been uniformly anxious to improve the education of those who are hereafter to have the care of the health of the community, by adapting their course of study to the progressive state of medical science, so as to enable them to enter on the duties of their profession with credit to themselves and advantage to the public. The present regulations, it is hoped, will be found to evince the solicitude of the College to act upon this principle.

It must be sufficiently obvious to all who consider the extended and complicated nature of medical science, that much of the success of the student, in the prosecution of its various branches, depends upon the direction of his early studies; and that it is of the utmost importance to the interest of the public, and to the future comfort and respectability of the practitioner, that all who apply to the study of Surgery should have the benefit of a liberal education. The College have introduced some positive regulations, which have this for their object; and they are inclined to hope, that medical practitioners in every part of the country will be disposed to second their endeavours, by recommending to the young men who

are placed under their care, or who may apply to them for advice, the study of the *Latin*, *Greek*, and *Modern Languages*, and of *Mathematics* and *Natural Philosophy*, as the best preparation for entering upon a course of medical and surgical education. And they would strongly urge their own Fellows, as well as all other practitioners, not to take any young man as an apprentice, until he shall have gone through this preliminary course.

The College are also desirous to point out to the public, that the profession of Surgery is a practical art, which cannot be acquired without actual experience, and familiarity with the phenomena of disease; and that they believe these objects to be best attained by serving an apprenticeship to a regular practitioner, under whose inspection young men may not only prosecute their studies with the greatest advantage, but have frequent opportunities of being conversant with the sick, and of assisting in preparing and applying the means used for their recovery. The College farther strongly recommend to all masters, to give directions to their apprentices as to the classes which they ought to attend, and the books which they ought to read,—to subject them to occasional examination, with a view to ascertain their progress in the different branches of their education,—and to explain, as frequently and as fully as possible, the nature of the cases entrusted to their care, and the principles on which the treatment ought to be conducted.

The College have marked, with much satisfaction, the gradually increasing knowledge and attainments of those who present themselves for examination at Surgeons' Hall: and they are inclined to hope, that the observance of the regulations now enacted will have a tendency to maintain, and to increase, the anxiety of candidates to raise their acquirements to the highest attainable standard. The College are at the same time aware, that their best efforts to improve



the course of study will be incapable of effecting this desirable end, unless these are seconded by the influence of parents and guardians, and by the strenuous exertions of those who are devoting themselves to the study of the arduous and responsible profession of Surgery.

The College have directed their regulations to be printed and circulated as widely as possible, in order that all persons interested may be informed as to the nature and extent of the course of education, and the amount of professional attainments which the possession of their Diploma necessarily implies.

Since the revision of the Regulations in July 1829, the introduction of *Medical Jurisprudence* is the only alteration in the course of study.

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### SCHOOLS OF MEDICINE, COURSES OF LECTURES, QUALIFICATION OF TEACHERS, &c.

Every candidate for a surgical diploma must have followed his studies in a University; or in an Established School of Medicine; or in a Provincial School specially recognised by the College, and which shall conform to such laws and regulations as they have enacted, or may hereafter enact.

Under the title *Established School of Medicine*, are comprehended all places in this country where diplomas in Surgery are granted, and such Foreign Schools as are acknowledged by the constituted authorities of the countries in which they exist.

No provincial school shall be recognised where there is not a General Hospital, containing at least eighty beds, at which regular medical and surgical attendance is given, and where there are not established courses of lectures on Anatomy and Chemistry.

No course of lectures given at a provincial school shall be recognised, unless it be of the same extent and duration as the course required on the same subject in Edinburgh.

The extent and period of study allowed to be gone through at a provincial school, will be regulated by the means and facility of study which the College receive evidence of its affording; but, in all cases, at least two winter, or one winter and two summer sessions of the course of study required for a diploma, must be passed at a University, or at one of the established schools of medicine.

In Edinburgh, the lectures to be attended as part of the surgical curriculum shall be delivered by Professors in the University, or Fellows of the Royal Colleges of Physicians or Surgeons there; and elsewhere, by Professors of Universities, or by Fellows of the Royal College of Physicians of Edinburgh, and Fellows or Licentiates of the Royal Colleges of Physicians of London and Dublin, by Fellows of of the Royal Colleges of Surgeons of Edinburgh, London, and Dublin, and of the Faculty of Physicians and Surgeons of Glasgow; and by persons holding a Medical Degree or Surgical Diploma, whose courses of lectures have been recognised by the College on special application.

No tickets of a Professor or Lecturer shall be recognised, who teaches more than two of the branches required by the College; but Anatomy, with Practical Anatomy, and Chemistry, with Practical Chemistry, shall each, in reference to this regulation, be considered as one branch.

## COURSE OF STUDY.

1. *Preliminary Instruction.*—Every candidate for the diploma of the Royal College, either previously to, or during his medical education, must have received regular instructions in the *Elements of Mathematics*; and must have



attended a course of *Mechanical Philosophy* of at least *three* months' duration, delivered by a Professor of that branch in a University, a Lecturer in a public institution, or a Teacher specially recognised by the College.

2. *Professional Instruction.*—The candidate must have attended the following separate and distinct courses of lectures during a period of at least *four* Winter Sessions, OR *three* Winter and *three* Summer Sessions, provided that in each Summer Session he shall have attended one or more of the courses prescribed or recommended by the College, exclusive of Hospital attendance, and also provided that the summer courses of lectures shall not commence till after the conclusion of the winter courses.

| | | Duration at least |
|---|---|---|
| Anatomy, | 2 Courses, | Six Months each. |
| Practical Anatomy, | 1 Course, or 2 Courses, | Six Months; Three months each. |
| Chemistry, | 1 Course, | Six Months. |
| Practical Chemistry, The number of Pupils in each Class being limited to 25. | 1 Do. | Three Months. |
| Materia Medica and Pharmacy, | 1 Do. | Six Months. |
| Institutions of Medicine, OR Physiology, | 1 Do. | Six Months. |
| Practice of Medicine, | 1 Do. | Six Months. |
| Clinical Medicine, During the period of attendance at the Hospital where they are delivered. | 1 Do. or 2 Courses, | Six Months; Three Months each. |
| Principles and practice of Surgery. | 2 Courses, | Six Months each. |
| Or Do. and Military Surgery,* | 1 Course, 1 Do. | Six Months each. |
| Clinical Surgery, During the period of attendance at the Hospital where they are delivered. | 1 Do. or 2 Courses, | Six Months; Three Months each. |
| Midwifery, and Diseases of Women and children, | 1 Course, | Three Months. |
| Medical Jurisprudence, | 1 Course, | Three Months. |

* The course of Military Surgery must be delivered by a Professor of that

With the exception of the courses of Clinical Medicine, Clinical Surgery, and Military Surgery, in which lectures are not delivered daily, the six months' courses, delivered in Edinburgh by Fellows of the College, or others, are understood to consist of five lectures per week for a period of not less than five months.

Two *London* courses of three months each, on any of the above subjects, shall be taken as equivalent to one six months' course.

The candidate must also have attended for *eighteen* months a Public General Hospital, containing at least eighty beds; OR for *twelve* months such a *Public General Hospital*, and *six* months a *Medical* or *Surgical Hospital*, or *Dispensary*, recognised by the College on special application.

The following order of study is recommended as a guide to the student, though not absolutely enjoined.

| | |
|---|---|
| First Year, | ANATOMY. |
| | CHEMISTRY. |
| | MECHANICAL PHILOSOPHY, if not previously attended. |
| Second Year, | ANATOMY. |
| | PRACTICAL ANATOMY. |
| | INSTITUTIONS OF MEDICINE or PHYSIOLOGY. |
| | SURGERY. |
| | MATERIA MEDICA and PHARMACY, either in this or the Third Year. |
| Third Year, | PRACTICE OF PHYSIC. |
| | CLINICAL SURGERY. |
| | PRACTICAL CHEMISTRY. |
| | HOSPITAL. |
| Fourth Year, | SURGERY, or MILITARY SURGERY. |
| | MIDWIFERY and DISEASES of WOMEN and CHILDREN. |
| | CLINICAL MEDICINE. |
| | HOSPITAL. |
| | MEDICAL JURISPRUDENCE. |

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branch in a University; or by a Lecturer, who, in addition to the other required qualifications, has served in the Medical Department of the Army or Navy; and the course of lectures must be of at least six months' duration, lectures being delivered at least thrice per week.



The College strongly recommend to students to avail themselves of the opportunities which they may possess of attending lectures on Botany, Natural History, Comparative Anatomy, and Pathological Anatomy, in addition to the courses of lectures which are absolutely required by the above regulations.

### REGISTRATION, CERTIFICATES, &c.

I. A book shall be kept in the Hall of the College, for the Registration, at stated times, of all medical students who may apply.

II. The registration shall be conducted by the Conservator of the Museum, or by a Substitute for whom he shall be responsible. He shall enter in separate columns, 1st, The name of each individual; 2d, The Medical Classes, Hospitals and Dispensaries, attended by each during the current season; 3d, The names of his Teachers. He shall register such only as apply personally to him, shall examine all the tickets produced by each individual, and shall not register any classes for which tickets are not produced.

III. Each student shall pay annually, on his first registration for the year, the sum of five shillings.

IV. Each student, upon being registered, shall be provided with a ticket which will admit him to the Museum of the Royal College, during certain hours of certain days of the week, to be specified in the ticket.

V. The book shall be closed for the registration of the winter classes on the 30th November in each year; and of all other classes at the end of the fourth week from their commencement.

VI. On the day of the election of the Office-Bearers of the Royal College, the President shall appoint a Committee of three, whose duty it shall be to fix the days and hours when the register is to be open for each set of inscriptions;

to give due intimation to the students of these days and hours; and to report to the College, at the first meeting after each set of inscriptions is closed, as to the number and correctness of such inscriptions.

VII. When a student is prevented by sickness, or other unavoidable causes, from complying with the above regulations, he shall, *as soon as the case admits*, present a statement of the circumstances, with proper evidence, to the Conservator, to be laid by him before the Committee, who shall report their opinion to the College; and if the application is sustained, the individual so applying shall be enrolled in the usual manner.

VIII. All students whose classes are thus registered, shall be entitled to receive from the Conservator a Certificate of their course of study, attested by his signature.

IX. A Certificate from the Album of the University, signed by the proper Officer, shall be received as a sufficient proof that the student presenting it has entered the classes taught there at the proper period of the course; but it shall also be in the option of students to register such classes in the manner described above, and to have them included in the same general certificate with those of the other teachers sanctioned by the College.

X. Such certificates shall be required from all candidates for surgical diplomas, in regard to that part of their medical education which they may have received at Edinburgh.

XI. In addition to this proof *of having entered* to their several classes at an early period of the course, all candidates, whether educated at Edinburgh or elsewhere, shall be required to produce certificates from the respective Professors or Lecturers *of having attended* these classes; and in the case of Practical Anatomy, the certificate must express that the candidate has been actually engaged in the dissec-



tion of the human body, under the personal superintendence of the Professor or Teacher, during the course of his attendance.

## EXEMPTIONS.

Candidates who have commenced attendance on their Medical Classes, or entered into Indentures of Apprenticeship to a regular Surgeon, previously to the following dates, are entitled to the exemptions which are here specified:—

| Date. Previously to | Exemptions. |
|---|---|
| 1st August 1831. | 1. From Medical Jurisprudence. |
| 1st August 1829. | 2. From the preliminary instruction in Mathematics. |
| Do. | 3. From do. in Mechanical Philosophy. |
| Do. | 4. From the necessity of attending Medical Classes for more than Three Winter Sessions. |
| Do. | 5. From Three of the Six Months of Practical Anatomy. |
| Do. | 6. From Practical Chemistry. |
| Do. | 7. From Clinical Medicine. |
| Do. | 8. From Three of the Six Months of Clinical Surgery. |
| Do. | 9. From One of the Two Courses of Surgery, and consequently from Military Surgery. |
| Do. | 10. From Six of the Eighteen Months of Hospital Attendance. |

The duration and Course of Study required of Apprentices, whose indentures commenced before the 1st of January 1823, are still regulated by the laws in force previously to that date.

## EXAMINATION.

The days of Examination are the first and third Tuesdays of every month.

No candidate will be admitted to examination before the termination of his last year's course of study.

Applications for examination must be made to the President of the Royal College, two days previously to the day of examination.

Every candidate for a diploma, on applying to the Pre-

sident for examination, is required to present his tickets and certificates, and also a written statement, (for which a printed form will be furnished by the Officer of the College), containing his Name, Age, and Country; a list of all the Classes, Hospitals, and Dispensaries, attended during each session of his study; and, if he has been an apprentice, the name of his master, the date of his indenture, and the length of time for which he was bound. This statement, properly filled up, must be attested by his signature.

If the candidate has been an apprentice to a Fellow of the College for three years, he must also produce his discharged indenture: If for five years, he may apply at the end of four without losing any privilege, provided that he have a written permission from his master, and that the date of his indenture, and whether it is for the freedom or not, be certified at the bottom of this written permission by the Secretary.

On the production of these documents, the President will give the candidate a letter, authorizing the examinators to take him on trial.

The Fees payable to the funds of the College must be lodged before examination in the hands of the Treasurer, who will certify this upon the President's letter, after inspecting and being satisfied with the certificates.

The Fees will be returned to unsuccessful candidates, whose names will be concealed.

Unsuccessful candidates will be remitted to their studies for a period, not less than three months, to be determined by the judgment of the Examinators.

The President, if he judge it proper, can order a meeting for examination on any day, at the request of a candidate; but, in that case, the candidate must pay Two Guineas in addition to the customary fees; and this money is not returned to him, in the event of his being rejected.



Every candidate, at the commencement of his examination, is required to translate into English some portion of a Latin Author, and if he is unable to do so, his examination cannot be proceeded with.

### FEES PAYABLE TO THE FUNDS OF THE ROYAL COLLEGE.

For a Diploma, the sum of Six Pounds Sterling.

Apprentices of Fellows of the Royal College bound for the freedom, pay no fees to its funds, for Diplomas or Certificates; their other Apprentices pay One Pound Eleven Shillings and Sixpence.

Candidates for the Certificate of qualification to act as Assistant Surgeon in the Navy, who have not paid for any previous qualification, the sum of Four Guineas.

Assistant Surgeons, who have already obtained Certificates from the College, applying for Certificates for the qualification of Full Surgeon, Three Guineas.

Assistant Surgeons in the Navy, having previously obtained the Diploma of the College, when applying for Certificates to enable them to attain the rank of Full Surgeon, the sum of Two Guineas.

A Surgeon in the Navy, having obtained Certificates from the College, may receive a Diploma, on paying the usual fees to the Secretary and Officer.

An Assistant Surgeon in the Navy, having obtained his Certificate from the College, may receive a Diploma, on paying the difference of expense betwixt that of the Certificate and of the Diploma, and the usual fees to the Secretary and Officer.

### FEES PAYABLE TO THE SECRETARY.

For a Diploma to a Student or Apprentice, Ten Shil-

lings and Sixpence Sterling; besides Nine Shillings and Sixpence as the expense of vellum, &c. for the Diploma, and box wherein it is contained.

For a Certificate to Surgeon or Assistant Surgeon in the Royal Navy, Ten Shillings and Sixpence.

FEES PAYABLE TO THE OFFICER.

For a Diploma, or Certificate, Three Shillings; or, if he takes charge of getting the Diploma or Certificate signed by all the Examinators, Five Shillings Sterling.

By authority of the Royal College,

(Signed) JOHN GAIRDNER, M.D.
*President.*



REGULATIONS REGARDING ADMISSION TO THE MUSEUM.

The Museum will be open for inspection every Tuesday, Wednesday, Thursday, and Friday, from 12 till 4 o'clock.

Fellows of the College will be admitted to the Museum at all times when it is open for inspection; and are entitled to introduce their friends, either personally, or by a letter to the Conservator.

Professors of the University, Fellows of the Royal and Antiquarian Societies, and of the Royal College of Physicians, Medical Officers of the Army and Navy, and of the Honourable East India Company's Service, Licentiates of the Royal College of Surgeons, and Apprentices of Fellows of the Royal College, will be admitted to the Museum, at all times when it is open for inspection, by means of tickets, which may be had, by application to the Conservator.

Students of Medicine, whose names have been inserted in the Album of the Royal College, will be admitted to the Museum at those days and hours which the College have appointed, or may, from time to time, hereafter appoint. Notice of these days and hours will be affixed to some conspicuous part of the Premises of the College.

Students requiring admission to the Museum, must present their tickets to the door-keeper, otherwise they cannot be admitted.

Any Gentleman may have access to the Museum, by applying for a ticket of admission to the Conservator. The ticket will specify the day and hour of admission.

The preparations, casts, and models in the Museum, must on no account be touched. An infringement of this law, will deprive the individual of the privilege of admission.

Sir James M'Grigor
Director of the Medical Department
of the Army
from his
Obed. Friend
Andrew Duncan Jr

# CATALOGUE

OF

# MEDICINAL PLANTS,

ACCORDING TO THEIR

NATURAL ORDERS.

---

EDINBURGH:
PRINTED BY P. NEILL.
1826.

## ADVERTISEMENT.

The following List contains an enumeration of all the vegetable species which are known to me to possess medicinal virtues, in the order in which they are mentioned in my Lectures on Materia Medica.

Of the various principles upon which the numerous articles of the vegetable Materia Medica, may be considered in a course of Lectures, the classification according to a Natural Botanical Arrangement, seems to me to possess many advantages. It not only is the most suitable for combining in one discourse the natural, medical, and pharmaceutical history of each vegetable, but, by the great similarity which exists in these respects among the individuals forming each family, much repetition is avoided; while a great deal of information can be easily given concerning articles, which, though not officinal in this kingdom, are possessed of virtues that render them valuable in other countries, and may lead to their introduction into more general use. Accordingly, Professor Murray of Göttingen, in his celebrated *Apparatus Medicaminum*, followed the natural arrangement of Linnæus; and modifications of that of Jussieu have been adopted by De Candolle and Richard.

I have been induced to print this List, in consequence of repeated applications from Pupils, to serve as a kind of text-book, and because it is difficult to understand, and impossible

to remember, so many, often strange names, from hearing them once or twice pronounced in a lecture, and because De Candolle (whose arrangement in his Essay on the Medicinal Virtues of Plants I have adopted) has not given an enumeration of the individuals belonging to each family; while Richard, in his Medical Botany, has confined himself to the species officinal in the French Pharmacopœia. My object has been to make the List universal; as Pupils from this school go to every part of the world, and a knowledge of the instruments of our art cannot be too general, although in its exercise we may content ourselves with a few. I have, however, divided the Species belonging to each Family into two sections; the one containing the plants officinal in the British Pharmacopœias, that the Student may be apprized that his attention is to be chiefly directed to them.

ANDREW DUNCAN *junior*.

31*st March* 1826.

# LIST

OF

# MEDICINAL PLANTS,

ARRANGED

ACCORDING TO DE CANDOLLE'S MODIFICATION OF THE NATURAL SYSTEM OF JUSSIEU.

---

## I. Ranunculaceæ.

### 1. *Officinal in the British Pharmacopœias.*

Aconitum Napellus.
Delphinium Staphisagria.
Helleborus niger.
fœtidus.

### 2. *Officinal, or used in other countries.*

Aconitum Anthora.
Cammarum.
Actæa spicata.
Anemone Hepatica.
nemorosa.
pratensis.
Pulsatilla.
Aquilegia vulgaris.
Cimicifuga Serpentaria.
Clematis recta.
Vitalba.
Coptis trifolia.
Delphinium Consolida.
Dracontium fœtidum.
Ficaria ranunculoides.
Helleborus orientalis.
viridis.
Nigella Indica.
sativa.
Pæonia officinalis.
Ranunculus acris.
bulbosus.
sceleratus.
Flammula.
Thalictrum flavum.
Xanthoriza apiifolia.

II. Dilleniaceæ.

*None.*

III. Magnoliaceæ.

1.

Wintera aromatica.

2.

Illicium anisatum.
Liriodendron tulipifera.
Magnolia glauca.
Melambo (Drymis?)

VI. Annonaceæ.

1.

*None.*

2.

Annona muricata.
palustris.
Annona reticulata.
squamosa.

V. Menispermiæ.

1.

Menispermum Cocculus.
Colomba; M. palmatum.

2.

Menispermum cordifolium.
hirsutum.
verrucosum.
Cissampelos Pareira.
Abuta rufescens.

VI. Chlenaceæ.

*None.*

VII. Malvaceæ.

1.

Malva sylvestris.
Althæa officinalis.

2.

Adansonia Baobab.
Althæa rosea.
Bombyx pentandra.
Gossypium herbaceum.
Hibiscus esculentus.
Hibiscus abelmoschus.
Rosa Sinensis.
Sida cordifolia.
rhomboidea.
Theobroma Cacao.



VIII. Sterculaceæ

2.

Sterculia urens (Gum Kuttcera.)

IX. Tiliaceæ.

2.

Corchorus olitorius.
Tilia Europæa.

X. Eleocarpeæ.

XI. Margravaceæ.

XII. Ochnaceæ.

2

Walkera serrata.

XIII. Simarubeæ.

1.

Quassia excelsa.
Quassia Simaruba.

XIV. Rutaceæ.

a. *Zygophylleæ.*

1.

Guaiacum officinale.

2.

Zygophyllum Tobago

b. *Rutaceæ veræ.*

1.

Ruta graveolens.

c. *Diosmeæ*

2.

Diosmæ species (Buch.)

d. *Zanthoxylleæ.*

2.

Dictamnus albus.
Fagara octandra.
Zanthoxylon clava Herculis.

e. *Cusparieæ.*

1.

Bonplandia trifoliata.

XV. Caryophylleæ.

1.

Dianthus Caryophyllus.

2.

Cucubalus Behen. Saponaria officinalis.

XVI. Lineæ.

1.

Linum usitatissimum. Linum catharticum.

XVII. Cistineæ.

1.

Cistus Creticus.

XVIII. Violaceæ.

1.

Viola odorata.

2.

Viola canina. Ionidium Ipecacuanha.
tricolor.

XIX. Passifloreæ.

2.

Passiflora quadrangularis.

XX. Camelliæ.

2.

Thea Bohea. Camellia Japonica.
viridis. Sesanqua.

XXI. Hesperideæ.

1.

Citrus Aurantium. Citrus Medica.

XXII. Meliaceæ.

1.

Canella alba. Swietenia Mahagoni.
febrifuga.

2.

Cedrela Tuna. Melia Azedarach.
sempervirens.



XXIII. Sarmentaceæ.

1.

Vitis vinifera.

XXIV. Geraniaceæ.

2.

Geranium Cicutarium. Geranium Robertianum.
maculatum. rotundifolium.
moschatum. sanguineum.
pratense. Oxalis Acetosella.

XXV. Guttæferæ.

1.

Stalagmitis cambogioides (Guttæfera vera).

2.

Calophyllum inophyllum. Garcinia cambogia.

XXVI. Hypericineæ.

2.

Hypericum Androsæmum. Hypericum quadrangulum.
perforatum.

XXVII. Hypocraticeæ.

XXVIII. Malpighiaceæ.

XXIX. Aceríneæ.

1.

Æsculus Hippocastanum.

2.

Acer saccharinum. Acer rubrum.

XXX. Sapindaceæ.

2.

Bertholetia excelsa. Sapindus saponaria.

XXXI. Droseraceæ.

2.

Drosera rotundifolia. Drosera longifolia.

XXXII. Resedaceæ.

XXXIII. Capparideæ.

2.

Capparis spinosa.
Cleome dodecandra.

XXXIV. Cruciferæ.

*Siliquosæ.*

1.

Cardamine pratensis.
Sinapis alba.
Sinapis nigra.
Sisymbrium Nasturtium.

2.

Brassica Eruca.
Napus.
oleracea.
Rapa.
Cheiranthus Cheiri.
Dentaria pinnata.
Erysimum Alliaria.
Barbarea.
officinale.
Raphanus sativus.
Sisymbrium Sophia.
tenuifolium.

*Siliculosæ.*

1.

Cochlearia Armoracea.
Cochlearia officinalis.

2.

Isatis tinctoria.
Lepidium latifolium.
sativum.
Thlaspi arvense.
campestre.
Bursa pastoris.

XXV. Papaveraceæ.

1.

Papaver somniferum.
Papaver Rhæas.

2.

Argemone Mexicana.
Chelidonium majus.
Fumaria officinalis.
Fumaria bulbosa.
Podophyllum peltatum.
Sanguinaria Canadensis.

XXXVI. Nymphaceæ.

2.

Nymphæa alba.
Nymphæa lutea.



XXXVII. Berberideæ.

2.

Berberis vulgaris.

XXXVIII. Frangulaceæ.

1.

Rhamnus catharticus.

2.

Euonymus Europæus.
Rhamnus Frangula.
Ziziphus vulgaris.

XXXIX. Pittosporeæ.

XL. Samydeæ.

XLI. Juglandeæ.

2.

Juglans cinerea.

XLII. Terebinthaceæ.

1.

Amyris elemifera.
Gileadensis.
Pistacia Terebinthus.
Pistacia Lentiscus.
Rhus toxicodendron
Toluifera Balsamum.

2.

Amyris Opobalsamum.
Anacardium occidentale.
orientale.
Averrhoa acidissima.
Bursera gummifera.
Brucea antidysenterica.
Mangifera Indica.
Pistacia vera.
Rhus radicans.
coriaria.
copallinum.
Spondias Myrobalanus.

XLIII. Tremandriæ.

XLIV. Polygaleæ.

1.

Polygala Senega.

2.

Krameria triandria.
Polygala amara.
Polygala vulgaris.

## XLV. Leguminosæ.

1.

Acacia Arabica.
vera.
Catechu.
Astragalus Tragacantha.
Butea frondosa.
Cassia Senna.
fistula.
Copaifera officinalis.
Dolichos pruriens.
Geoffræa inermis.
Glycyrrhiza glabra.
Hæmatoxylon Campechianum.
Myroxylon Peruiferum.
Pterocarpus Santolinus.
Draco.
erinacea.
Spartium Scoparium.
Tamarindus Indica.

2.

Abrus precatorius.
Andira Horsfieldii.
Arachis hypogæa.
Astragalus exscapus.
Creticus.
Cæsalpinia echinata.
Bonduc.
Cassia acutifolia.
Marilandica.
Ceratonia siliqua.
Cicer arietinum.
Colutea arborescens.
Coumarouma odorata
Coronilla Emerus.
Cytisus Laburnum.
Dalbergia monetaria.
Ervum Lens.
Ervilia.
Galega officinalis.
Genista tinctoria.
Gleditsia triacanthos.
Hedysarum Alhagi.
Hymenea Courbaril.
Indigofera tinctoria.
Anil.
argentea.
disperma.
Lathyrus tuberosus.
sativus.
Lotus edulis.
Lupinus albus.
Medicago arborea.
Melilotus officinalis.
cœrulea.
Ononis spinosa.
Phaseolus vulgaris.
Trigonella Fœnum-Græcum.
Mimosa inga.
Robinia pseudacacia.
Pisum sativum.
Spartium purgans.
junceum.
Trifolium pratense.
Vicia Faba.
sativa.



## XLVI. Rosaceæ.

1.

Agrimonia Eupatoria.
Amygdalus communis.
Geum urbanum.
Prunus domestica.
Pyrus Cydonia.
Rosa canina.
centifolia.
Gallica.
Tormentilla erecta.

2.

Alchemilla vulgaris.
Amygdalus Persica.
Cerasus domestica.
avium.
Mahaleb.
Padus.
Lauro-cerasus.
Fragaria vesca.
Geum rivale.
Malus communis.
Mespilus Germanica.
oxyacantha.
Potentilla Anserina.
Potentilla reptans.
Poterium Sanguisorba.
Prunus domestica.
spinosa.
Rosa pallida.
moschata.
alba.
Pyrus communis.
Rubus fruticosus.
Idæus.
Sorbus domestica.
Spiræa Ulmaria.
Filipendula.

## XLVII. Salicariæ.

1.

Lythrum Salicaria.

2.

Lawsonia inermis.

## XLVIII. Melastomeæ.

2.

Melastoma Malabathrica.

## XLIX. Myrti.

1.

Melaleuca Leucadendron.
Myrtus Pimenta.
Punica Granatum.
Eucalyptus resinifera.
Eugenia caryophyllata.

2.

Psydium pomiferum.
pyriferum.
Myrtus communis.
caryophyllata.

L. Comeretaceæ.

2.

Terminalia Benzoin.
Bucida Buceros.

LI. Loaseæ.

LII. Onagriæ.

2.

Trapa natans?
Œnothera biennis.

LIII. Ficoideæ.

2.

Sesuvium Portulacastrum.
Mesembryanthemum edule.
crystallinum.

LIV. Portulaceæ.

2.

Portulaca oleracea.
Claytonia perfoliata.

LV. Paronycheæ.

2.

Herniaria glabra.
Herniaria hirsuta.

LVI. Tamariscineæ.

2.

Tamarix Gallica.

LVII. Nopaleæ.

2.

Cactus Opuntia.
Cactus Tuna.

LVIII. Grossularieæ.

2.

Ribes Grossularia.
nigrum.
Ribes rubrum.
Uva crispa.



LIX. Crassulaceæ.

1.

Cotyledon Umbilicus.
lutea.
Rhodiola rosea.
Sempervivum tectorum.

2.

Sedum acre.
album.
Sedum Telephium.

LX. Saxifrageæ.

2.

Saxifraga granulata.
Heuchera Americana.

LXI. Cunoniaceæ.

2.

Weinmannia.

LXII. Umbelliferæ.

1.

Anethum Fœniculum.
graveolens.
Angelica Archangelica.
Bubon Galbanum.
Carum Carui.
Conium maculatum.
Coriandrum sativum.
Cuminum Cyminum.
Daucus Carota.
Eryngium maritimum.
Ferula Assafœtida.
Heracleum gummiferum.
Pastinaca Opoponax.
Pimpinella Anisum.
Sium nodiflorum.

2.

Æthusa Meum.
Cynapium.
Anethum Panmorium.
Sowa.
Angelica atro-purpurea.
sylvestris.
Apium graveolens.
involucratum.
Petroselinum.
Astrantia major.
Athamanta Cretensis.
Athamanta Oreoselinum.
Bubon Macedonicum.
Cachrys odontalgica.
Chærophyllum sativum.
temulum.
Cicutaria (Cicuta) aquatica.
major.
virosa.
Crithmum maritimum.
Eryngium aquaticum.
campestre.

Ferula orientalis (Ammoniacum).
Ferulago (Ammoniacum).
Persica (Sagapenum).
Heracleum lanatum.
Spondylium.
Imperatoria Ostruthium.
Laserpitium latifolium.
Siler.
Ligusticum Ajawain.
Levisticum.
Myrrhis (Scandix) odorata.
Œnanthe crocata.
fistulosa.
Pastinaca sativa.
Peucedanum officinale.
Silaus.
Phellandrium aquaticum.
Pimpinella magna.
saxifraga.
Sanicula Europæa.
Scandix cerefolium.
Seseli tortuosum.
Sison Ammi.
Amomum.
Sium angustifolium.
latifolium.
Ninzi.

LXIII. Araliaceæ.

2.

Aralia nudicaulis.
spinosa.
Panax quinquefolium (Ginseng).

LXVI. Caprifoliæ.

1.

Sambucus nigra.

2.

Caprifolium Germanicum.
Cornus circinata.
florida.
mas.
sericea.
Hedera Helix.
Lonicera Diervillia.
Sambucus Canadensis.
Ebulus.
Triosteum perfoliatum.

LXV. Loranthæ.

2.

Rhizophora Mangles.
Viscum album.

LXVI. Rubiaceæ.

1.

Cinchona cordifolia.
lancifolia.
Cinchona oblongifolia.
officinalis.



Callicocca (Cephaëlis) Ipecacuanha.
Rubia tinctorum.

2.

Asperula odorata.
Chloranthus spicatus.
Cinchona brachycarpa.
triflora
ovalifolia.
Condaminea.
Coffiea Arabica.
Cosmibuena obtusifolia.
Exostemma Caribæa.
floribunda.
Galium Aparine.
Galium Mollugo.
verum.
Macrocnemum corymbosum.
Nauclea (Uncaria) Gambir.
Palicouria speciosa.
Pinkneya pubescens.
Portlandia grandiflora.
Psychotria emetica.
Richardsia Braziliensis.
Rubia Manjith.
Valantia cruciata.

LXVII. Opercularieæ.

LXVIII. Valerianeæ.

1.

Valeriana officinalis.

2.

Valeriana Celtica.
Jatamansi.
Valeriana Phu.
Valerionella olitoria.

LXIX. Dipsaceæ.

2.

Dipsacus fullonum.
sylvestris.
Scabiosa arvensis.
succisa.

LXX. Compositæ.

a. *Corymbiferæ.*

1.

Anthemis nobilis.
Pyrethrum.
Artemisia Abrotanum.
Absynthium.
maritima.
Artemisia Santonica.
Inula Helenium.
Solidago Virga-aurea.
Tanacetum vulgare.
Tussilago Farfara.

2.

Achillea Ageratum.
atrata.
Millefolium.
moschata.
nana.
nobilis.
Ptarmica.
Arnica montana.
Artemisia campestris.
Chinensis.
contra.
Dracunculus.
Pontica.
Judaica.
Contra.
rupestris.
glacialis.
spicata.
Bellis perennis.
Balsamita (Tanacetum) suaveolens.
Calendula officinalis.
arvensis.
Chamæmelum (Matricaria) vulgare.
Chrysanthemum Leucanthemum.
Conyza squarrosa.
Diotis (Gnaphalium) maritima.
Doronicum plantagineum.
Pardalianches.
Erigeron acre.
Philadelphicum.
Canadense.
Eupatorium cannabinum.
perfoliatum.
tenuifolium.
purpureum.
Ayapana.
satureiæfolium (Guaco).
Gnaphalium arenarium.
Stœchas.
dioicum.
Helianthus tuberosus.
Inula dysenterica.
Pyrethrum (Matricaria) Parthenium.
Santolina Chamæcyparissus.
Senecio vulgaris.
Jacobæa.
Spilanthus oleracea.
Acmella.
Tussilago Petasites.
Xanthium Strumarium.

b. *Cynarocephalæ.*

1.

Arctium Lappa.

2.

Calcitrapa Centaurea.
stellata.
Carlina acaulis.
caulescens.
Carthamus tinctorius.
Carthamus lanatus.
Centaurea Centaurium.
Cirsium arvense.
Cnicus (Centaurea) benedictus.
Cyanus segetum.



Cynara Scolymus.
Cardunculus.
Jacea Centaurea.
Onopordum Acanthium.
Rhaponticum (Centaurea) Behen.
Silybum (Carduus) Marianum.

c. *Labiatifloræ.*

d. *Cichoraceæ.*

1.

Lactuca virosa.
sativa.
Leontodon Taraxacum.

2.

Cichorium Endivia.
Intybus.
Hieracium murorum.
Pilosella.
Lactuca Scariola.
Lactuca elongata.
Scorzonera purpurea.
humilis.
Sonchus oleraceus.
Tragopogon pratense.

LXXI. Campanulaceæ.

LXXII. Lobeliaceæ.

2.

Lobelia inflata.
Lobelia syphilitica.

LXXIII. Cucurbitaceæ.

1.

Cucumis Colocynthis.
Momordica Elaterium.

2.

Bryonia dioica.
Carica Papaya.
Cucumis melo.
sativus.
Cucurbita Lagenaria.
Cucurbita Citrullus.
Momordica Balsamina.
Pepo oblongus.
macrocarpus.

LXXIV. Gesneriæ.

LXXV. Vaccineæ.

2.

Vaccinium Vitis Idæa.
Myrtillus.
Vaccinium Oxycoccus.

LXXVI. Ericineæ.

1.

Arbutus Uva-ursi.
Rhododendrum Chrysanthum.

2.

Erica vulgaris.
Gualtheria procumbens.
Ledum palustre.
Pyrola rotundifolia.
umbellata.

LXXVII. Aquifoliaceæ.

2.

Ilex Aquifolium.
Ilex vomitoria.

LXXVIII. Myrsineæ.

LXXIX. Sapotæ.

2.

Achras Sapota.
Bassia butyracea.

LXXX. Ebenaceæ.

1.

Styrax officinale.
Styrax Benzoin.

2.

Diospyros Virginiana.

LXXXI. Ternstromiæ.

LXXXII. Oleineæ.

1.

Olea Europæa.
Fraxinus Ornus (Manna).

2.

Fraxinus excelsior.

LXXXIII. Jasmineæ.

2.

Jasminum officinale.

LXXXIV. Pedalineæ.



LXXXV. Strychneæ.

2.

Ignatia amara.
Strychnos Nux vomica.
Strychnos Colubrina.
potatorum.

LXXXVI. Apocyneæ.

2.

Apocynum Androsæmifolium.
Asclepias incarnata.
Syriaca.
tuberosa.
asthmatica.
gigantea.
Cynanchum Monspeliacum.
Cynanchum Arguel.
Nerium Oleander.
antidysentericum.
Ophioxylon serpentinum.
Vinca major.
minor.
Vincetoxicum vulgare.

LXXXVII. Gentianeæ.

1.

Gentiana lutea.
Menyanthes trifoliata.
Spigelia Marilandica.

2.

Chironia angularis.
Erythræa Centaurium.
Frasera Waltera.
Gentiana Catesbæi.
Gentiana Chirayita.
Ophiorhiza Mungos.
Spigelia Anthelmia.

LXXXVIII. Bignoniaceæ.

2.

Sesamum orientale.

LXXXIX. Polemoneæ.

XC. Convolvulaceæ.

1.

Convolvulus Scammonia.
Convolvulus Jalapa.

2.

Convolvulus Mechoacan.
Scoparius.
alpinus.
Soldanella.
Convolvulus Turpethum.
panduratus.
Cuscuta Europæa.
Epithymum.

### XCI. Boraginæ.

1.

Anchusa tinctoria.

2.

Anchusa officinalis.
Borago officinalis.
Cordia myxa.
Cynoglossum officinale.
Echium vulgare.
Heliotropium Europæum.
Lithospermum officinale.
Onosma echioides.
Pulmonaria officinalis.
Symphitum Consolida.
Verbena officinalis.
triphylla.

### XCII. Solaneæ.

1.

Atropa Belladonna.
Capsicum annuum.
Datura Stramonium.
Hyosciamus niger.
Nicotiana Tabacum.
Solanum Dulcamara.

2.

Crescentia Cujute.
Datura Metel.
fastuosa.
Hyosciamus albus.
Mandragora officinalis.
Nicotiana rustica.
Physalis Alkekengi.
Solanum nigrum.
Lycopersicon.
tuberosum.
Verbascum Thapsus.
phlomoides.
nigrum.

### XCIII. Personatæ.

1.

Digitalis purpurea.
Gratiola officinalis.

2.

Antirrhinum majus.
Linaria vulgaris.
spuria.
Scrophularia nodosa.
aquatica.
Veronica Beccabunga.

### XCIV. Labiatæ.

Hyssopus officinalis.
Lavandula spica.
Marrubium vulgare.
Melissa officinalis.
Mentha Piperita.
Pulegium.
viridis.
Origanum Majorana.



Origanum vulgare.
Rosmarinus officinalis.
Salvia officinalis.
Teucrium Chamædrys.
Marum.

2.

Ajuga Chamæpitys.
Genevensis.
Iva.
reptans.
Betonica officinalis.
Cunila pulegioides.
Dracocephalum Moldavicum.
Glecoma Hederacea.
Lamium album.
Leonurus cardiaca.
Melissa Calaminta.
Nepeta.
Melitis Melissophyllum.
Mentha sylvestris.
rotundifolia.
crispa.
aquatica.
gentilis.
arvensis.
sativa.
Monarda punctata.
Nepeta Cataria.
Ocymum Basilicum.
pilosum.
Prunella vulgaris.
Salvia Sclarea.
pratensis.
Satureja hortensis.
Thymbra.
capitata.
Scutellaria lateriflora.
Teucrium Scordium.
Scorodonia.
Creticum.
aureum.
montanum.
capitatum.
Thymus Serpyllum.
vulgaris.

### XCV. Mysoporeæ.

### XCVI. Pyrenaceæ.

2.

Vitex Agnus castus.
Vitex Negundo.

### XCVII. Acanthaceæ.

2.

Acanthus mollis.
Justicia pectoralis.
Justicia paniculata.

### XCVIII. Lentibularieæ.

XCIX. Primulaceæ.

2.

Anagallis cœrulea.
Phœnicea.
Cyclamen Europæum.
Lysimachia vulgaris.
Nummularia.
Primula officinalis.

C. Globularieæ.

2.

Globularia Alyssum.

CI. Plumbagineæ.

2.

Plumbago Europæa.
Zeylanica.
rosea.
Statice Limonium.
Caroliniana.

CII. Plantagineæ.

2.

Coronopus mellis.
Plantago major.
media.
Plantago lanceolata.
Ispaghul.
Psyllium majus.

CIV. Amaranthaceæ.

CV. Chenopodeæ.

2.

Atriplex hortensis.
Beta Cycla.
vulgaris.
Camphorosma Monspeliensis.
Chenopodium anthelminticum.
Ambrosioides.
Botrys.
Bonus Henricus.
Chenopodium vulvaria.
Phytolacca decandra.
Salsola sativa.
Kali.
Tragus.
Soda.
Spinacia oleracea.

CVI. Polygoneæ.

1.

Polygonum Bistorta.
Rheum palmatum.
undulatum.
Rumex aquaticus.
Acetosa.



2.

Polygonum aviculare.
Fagopyrum.
Persicaria.
Hydropiper.
Rheum Rhaponticum.
compactum.
Rumex Patientia.
sanguineus.
Rumex acutus.
crispus.
alpinus.
Hippolapathum.
scutatus.
Acetosella.
Britannicus.
obtusifolius.

CVII. Laurineæ.

1.

Laurus Cinnamomum.
Cassia.
nobilis.
Laurus Sassafras.
Camphora.

2.

Laurus Culiban.
Benzoin.
Laurus Pichurim.

CVIII. Myristiceæ.

1.

Myristica moschata.

CIX. Proteaceæ.

CX. Thymaleæ.

1.

Daphne Mezereum.

2.

Daphne Gnidium.
Daphne Laureola.

CXI. Santalaceæ.

2.

Santalum album.

CXII. Eleagineæ.

CXIII. Aristolochiæ.

1.

Aristolochia Serpentaria.
Asarum Europæum.

2.

Aristolochia Clematitis.
longa.
rotunda.
Aristolochia Pistolochia.
Indica.
Asarum Canadense.

CXIV. Euphorbiaceæ.

1.

Croton (Eleutheria) Cascarilla.
Euphorbia officinarum.
Ricinus communis.

2.

Buxus sempervirens.
Croton lacciferum.
Tiglium.
tinctorium.
Emblica officinalis.
Exæcaria Agalocha.
Euphorbia antiquorum.
Canariensis.
Cyparissias.
palustris.
Peplus.
Euphorbia sylvatica.
Helioscopia.
Esula.
Lathyrus.
Ipecacuanha.
corollata.
Jatropha Curcas.
multifida.
Mercurialis annua.
Siphonia Cuhuca.

CXV. Monimieæ.

1.

Dorstenia Contrayerva.

CXVI. Urticeæ.

1.

Ficus Carica.
Humulus Lupulus.
Morus nigra.
Piper nigrum.
longum.

2.

Cannabis sativa.
Parietaria officinalis.
Piper Betel.
Piper Cubeba.
Urtica dioica.

CXVII. Amentaceæ.

1.

Quercus Robur.
Quercus pedunculata.



Salix fragilis.
alba.
Salix Caprea.
Ulmus campestris.

2.

Alnus glutinosa.
Ballota nigra.
Betula alba.
Castanea sativa.
pumila.
Corylus Avellana.
Fagus sylvatica.
Liquidamber styraciflua.
Myrica Gale.
Populus nigra.
balsamifera.
Quercus sessiliflora.
racemosa.
infectoria.
Suber.
coccifera.
alba.
tinctoria.

CXVIII. Coniferæ.

1.

Pinus Abies (Abies picea).
sylvestris.
Larix (Larix Europæa).
Balsamea (Abies bals.)
Juniperus communis.
Sabina.
Lycia.

2.

Abies taxifolia.
Canadensis.
Cupressus sempervirens.
Juniperus Oxycedrus.
Phœnicea.
Juniperus thurifera.
Virginiana.
Pinus Mughos.
Pinea.
Cembra.

## MONOCOTYLEDONES.

CXIX. Cycadeæ.

CXX. Hydrocharideæ.

CXXI. Alismaceæ.

2.

Alisma Plantago.

CXXII. Pandaneæ

CXXIII. Aroideæ.

1.

Arum maculatum.

2.

Arum vulgare.
Dracunculus.
Arum triphyllum.

CXXIV. Orchideæ.

2.

Orchis mascula.
Vanilla aromatica.

CXXV. Drymyrhizæ.

1.

Amomum Zingiber.
Zedoaria.
Amomum Cardamomum.
repens.

2.

Alpinia Galanga.
nutans.
racemosa.
Amomum Granum paradisi.
racemosum.
Amomum Zerumbet.
Costus Arabicus.
Curcuma longa.
Kæmpferia Galanga.
Maranta arundinacea.

CXXVI. Musaceæ.

CXXVII. Irideæ.

1.

Crocus sativus.
Iris Florentina.

2.

Iris Germanica.
pseudacorus.
Iris fœtidissima.
versicolor.

CXXVIII. Hæmodoraceæ.

CXXIX. Amaryllideæ.

2.

Narcissus Pseudo-Narcissus.

CXXV. Hemerocallideæ.



CXXXI. Dioscoreæ.

2.

Tamnus (Tamus) communis.

CXXXII. Smilaceæ.

1.

Smilax Sarsaparilla.

2.

Smilax China.

CXXXIII. Liliaceæ.

1.

Allium sativum.
Cepa.
Porrum.
Aloe spicata.
Aloe vulgaris.
sinuata.
Scilla maritima.

2.

Aletris farinosa.
Allium Scorodoprasum.
victorialis.
Aloe perfoliata.
elongata.
linguæformis.
Asparagus officinalis.
Convallaria majalis.
Dracæna Draco.
Erythronium Americanum.
Lilium candidum.
Polygonatum uniflorum.
Ruscus aculeatus.
Hypoglossum.

CXXXIV. Colchicaceæ.

1.

Colchicum autumnale.
Veratrum album.

2.

Colchicum Illiricum.
Veratrum nigrum.
Veratrum Sabadilla.
viride.

CXXXV. Commelineæ.

CXXXVI. Palmæ.

2.

Areca Catechu.
Calamus Draco.
Cocos butyracea.
Phœnix dactylifera.
Sagus Rumphii.

CXXXVII. Junceæ.

1.

Acorus Calamus.

CXXXVIII. Typhæ.

CXXXIX. Cyperaceæ.

2.

Carex arenaria.
Cyperus longus.
Cyperus rotundus.
esculentus.

CXL. Gramineæ.

1.

Avena sativa.
Hordeum distichon.
Saccharum officinarum.
Triticum hybernum.

2.

Andropogon Nardus.
Schœnanthus.
Arundo Donax.
Phragmites.
Cynodon Dactylon.
Hordeum vulgare.
Oryza sativa.
Panicum miliaceum.
Secale Cereale.
cornutum.
Triticum æstivum.
repens.
Zea Maïs.

CXLI. Equisetaceæ.

2.

Equisetum arvense.
fluviatile.
Equisetum limosum.
hyemale.

CXLII. Marsiliaceæ.

CXLIII. Lycopodineæ.

2.

Lycopodium clavatum.

CXLIV. Filices.

1.

Aspidium (Polypodium) Filix mas.

2.

Adiantum capillis Veneris.
pedatum.
Aspidium Rhæticum.
Asplenium Adiantum nigrum.



Asplenium Ruta muraria.
Trichomanes.
Ceterach officinarum.
Ophioglossum vulgare.
Osmunda regalis.
Polypodium vulgare.
Calaguala.
Pteris aquilina.
Scolopendrium officinarum.

## ACOTYLEDONES.

CXLV. Musci.

2.

Polytrichum commune.

CXLVI. Hepaticæ.

2.

Marchantia polymorpha.

CXLVII. Lichenes.

1.

Lichen Islandicus.

2.

Lichen caninus.
pyxidatus.
cocciferus.
pulmonarius.
Lichen Roccella.
saxatilis.
plicatus.

CLXVIII. Hypoxyla.

CLXIX. Fungi.

1.

Boletus igniarius.

2.

Agaricus muscarius.
Boletus laricis.
suaveolens.
Lycoperdon Bovista.
Peziza auricula.

CL. Algæ.

1.

Fucus vesiculosus.

2.

Fucus helminthochorton.

THE

# TREATMENT OF ASIATIC CHOLERA,

AND CHOLERIC DIARRHŒA,

WITH

# TARTARIZED ANTIMONY.

To which is appended

INSTRUCTIONS, FOR THE GUIDANCE OF THE PUBLIC, THE MOST SIMPLE AND EFFICIENT, TO DIMINISH ITS MORTALITY.

By J. LANGFORD, M. R. C. S.
LATE RESIDENT SURGEON AND SUPERINTENDENT OF THE KNOTT MILL CHOLERA HOSPITAL, MANCHESTER.

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THE

# TREATMENT OF ASIATIC CHOLERA

## WITH TARTARIZED ANTIMONY.

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The happy decline of cholera amongst the dense population of Manchester has afforded me the opportunity of reviewing my past *experience* and practice, and placing in some order the chief practical conclusions as to the best mode of treating the spasmodic or Asiatic Cholera, according to the experience I acquired as Resident Surgeon to the Knott-Mill Cholera Hospital; and as I conceive that their publicity, when accompanied with a recital of numerous facts which have pressed themselves upon my notice in the course of the disease, may tend to the advancement of its treatment, which at best is but unsatisfactory, I have come to the determination of laying them before the public: more especially as this hydra of disease again renewing its dreadful havoc, I consider it to be the paramount duty of those, whose public and private opportunities have afforded them extensive means of observation, to place the result of their labours before the professional public, with the hope to arrive at some better practice in conclusion, than

that which guided our early efforts, during its prevalence the past year.

Should we fail to make known the result of our observations, we shall have gained but little by our dearly-purchased experience. For my own part, I feel emboldened to add my humble endeavours to the store of acquired facts, by observing in every publication on the subject of cholera that has come under my notice, (with the exception of those by Dr. Latta, of Leith, and Dr. Hardwicke Shute, of Gloucester,) the perfect inadequacy of all means to combat with anything like what may be considered success, the stage of pulseless collapse of Asiatic Cholera. Whilst the opinions and experience of the Central Board of London, the result of their inquiries and communications with every part of the globe visited by cholera, bear the same hopeless and unsatisfactory testimony.

I consider this is the stage best adapted to display the merits of any plan of treatment proposed, because there cannot then be any doubt or equivocation as to the genuineness of the disease or the stage of its application.

The origin and extraordinary course of cholera has been by others so ably described; and the symptoms as they recur, are so familiar to every practitioner, that it becomes quite unnecessary to recapitulate them. As a contagious disease, it will most probably continue to have its votaries and opponents.



Of its pathology—here the chaos that requires more than I feel myself adequate to supply—yet when I am about to introduce to notice a particular plan of treatment, based upon principles so entirely opposite to that followed by every other author, it will become requisite, for explaining the modus operandi, to give my own views of that part, which I have termed the chaos in our science; not laying claim to the originality of the practice, but to its first adoption in this country, recommended to my notice by my indefatigable friend Mr. W. B. Stott, Surgeon, of this town: and I must here take leave to express my warmest obligations for the liberal manner in which he drew my attention to this, the practice of Dr. Reich, of Berlin.

In reviewing the various opinions offered by the very numerous authors upon the subject, coupled with my own observations, I am induced to be of opinion with Mr. Greenhow, of Newcastle, (vide his able work on Cholera,) thus far, "that the first impression is made on the minute nervous expansion of the alimentary canal," the sequel of which being a state of atony of every organic function consecutively, we find arrested secretions before we detect any material change in the vascular system, or the chemical properties of the blood, whilst the skin and tongue are yet warm; though this state I know is of short duration, unless preserved by remedial means.

I shall decline entering into the controversy of

contagion or non-contagion; I do not believe it to be communicable by clothes, in the ordinary acceptation, or by merchandise at all:—when I mention clothes, I do not mean the body clothes or bed linen, which have been saturated with the dejections, and exudations from the skin, during that morbid period I shall presently describe. Under certain circumstances, during the latter hours of the *fatal* cases, when the exhalations from the exudations of the skin and dejected fluids assume a highly offensive odour, it appears infectious. I might, without objection, term this odour a morbid one, possibly contagious, at all events powerfully operating to predispose those exposed to it, to receive any accompanying epidemic influence. It is of a nature quite peculiar to Asiatic Cholera, and may be considered strongly characteristic, not easily mistaken, indicative of an advanced stage of the disease, and when powerful, a decidedly bad omen.

I have frequently been affected by this odour, previous to the dissolution of patients, to the extent of producing immediate and excessive nausea, attended with feelings of indescribable depression, which required direct attention to counteract. I have also known the same to affect my colleagues; therefore it does not require any stretch of reasoning to explain how whole families assume the disease, during, perhaps, an epidemic influence.

Hence arises one of the great utilities of Cholera



Hospitals, in large and densely populated towns, for one fatal case has, beyond a doubt, made many more; for independent of the unfortunate family, mostly destitute even of the commonest necessaries of life, who have been obliged to attend upon their dying relative, for hours, usually inhabiting a close pent-up apartment, without the means of ventilation, inhaling an atmosphere, with an odour quite insupportable; I say, independent of this wretched group, every person near, even the children amongst the poorer orders, are carried by idle and infatuated curiosity to visit their expiring neighbour, reckless of the consequences, perhaps unconscious of them. Under such circumstances is it wonderful that they should carry away with them a strong predisposing cause, to say the least?

If there are any sceptics, who may have their doubts of my statement, let them have but one demonstration to enlighten and expel their prejudices; and I feel assured they will soon acknowledge the humane and necessary principle of what were called Cholera Hospitals,—but what I would term Fever Hospitals, to obviate the vulgar prejudices.

I consider Dr. Gaulter, in his ingenious work on the Progress of Asiatic Cholera in Manchester, did not balance justly, (indeed, he appears to have overlooked these facts,) in favour of Hospital establishments, against those highly coloured and visionary objections which he produced against Hospitals, even independent of the facility of treatment.

The most simple treatment yet offered is that I shall propose,—even this is not followed with effect at their own houses, from the incessant annoyances of meddling neighbours, ever ready with their interruptive nostrums—meagre and unsatisfactory will be your returns under such circumstances.

Candour compels me to admit that many cases have been made worse, perhaps some actually lost by the removal, or by the delay in removal, but I am most confident the *many have been preserved.*

It does not appear to me to be the act of removal or distance of conveyance, so much as the apprehension and dread of being taken to a Cholera Hospital, the very *name* of which carries with it so much unmerited fear, as very materially to depress the already too exhausted powers. In the future I do believe this cause would be diminished, and by a proper arrangement, very much more good effected.

Every person must know that cholera is around them, when they see their neighbours and relations borne daily to the grave in numbers, hurried along to an early interment: it is that which justly gives the alarm, and arouses apprehensive fears, and not the cholera van, which every humane mind knows is a preventative agency, the choice of evils: this state of things can neither be concealed nor denied.

I do not view cholera with that unnecessary dread, to which many are accustomed; for I am certain BY AN EARLY APPLICATION, as my return



in Class No. 1, will show, that it is a disease by no means so unmanageable and destructive.—Dr. Reich's returns in Berlin, were equally or even more satisfactory, but if DELAY is permitted, until the last too fatal stage, or the time approaching it, the most appalling danger is at hand; sometimes the loss of one hour is irreparable.

At the conclusion will be found a numerical list of cases, which were treated on the antimonial plan, showing at one view, the result of the practice, in the three different stages into which I shall now divide the disease for exemplification.

In all cases I assume the presence of serous evacuations, (by some termed rice water,) and arrested secretions, combined with the other usually accompanying symptoms, as necessary to *constitute* Asiatic Cholera.

The first class or division—with *the skin* and tongue *warm*, and *tolerable* pulse.

The second class—the skin and tongue *cool* or icy cold, with *feeble* pulse.

And the third class—pulseless, and every symptom in an aggravated ratio.

By these returns it will be seen how eminently successful were the first class of cases, without one instance of consecutive fever.

Amongst the second class, were many of low, dissolute habits and emaciated constitutions, labouring under old organic disease, with much less chance of recovery than some of those in the third

class; and amongst the third class seven had bloody stools. This last symptom is not peculiar to this plan of treatment, but common to all.

I have followed this practice in patients of all ages from one year to eighty-four, bearing upon a calculation of the ages, the same ratio of success.

The plan of treatment to which I have alluded, and to which my subsequent observations will refer, is that of producing by small and repeated doses of Tartarized Antimony aided by *copious diluents*, the act of FULL, EFFICIENT, AND CONTINUAL VOMITING, not by one solitary effort, but by gentle, continual means.

The reasons which induced me to give a trial to this remedial process were, first, the inadequacy of all other remedies to meet the exigencies of a state of pulseless collapse; and secondly, the impressions which I had formed of the difficulties to be overcome, upon an attentive review of the symptoms, coupled by the facts elicited upon the post mortem appearances.

TREATMENT.—In proceeding with this stage of my communication, I shall confine myself to the explanation of that plan of treatment which I have proposed, and which upon a numerical return I found *decidedly* to give the most satisfactory result, more particularly in that distressing and difficult period, the pulseless collapse. This plan consists in administering small and repeated doses of *Tartarized*



*Antimony*,* aided by the most *copious dilution*. I order at least *half a pint* of toast and water, if preferred, or even common water, either tepid or cold, as may be most agreeable, to be given at one draught every *ten minutes or quarter of an hour*, to keep up full and *efficient* vomiting, taking care to avoid *ineffectual retching*. Some patients however have taken gallons in a few hours: no sooner is it swallowed, than it shortly returns, giving, as the patients *invariably express*, continual relief; as the gorged vessels of the venous system are for a time unloaded, and the sense of oppression at the epigastrium is diminished; and from the relief thus obtained, fluid is again and again demanded, affording us the opportunity of repeating this restorative process.

This continual operation of vomiting, appears to me to be conducive to the following ends:—

To unload for a time the large internal vessels of the venous system, which during collapse are gorged with deteriorated blood, which blood is deprived of those functional powers usually attributed to its office. To call into action the diaphragm, by which the vitalizing influence of the respiratory functions are aroused. The heart by the same

* Dissolve ten grains of tartarized antimony in seven and a half ounces of distilled water, with half an ounce of rectified spirit, of which give half an ounce every two hours. Toast and water ad libitum. Give no other remedy.

operation is unloaded of its vitiated fluid, and the vascular action is frequently increased to the extent of producing a pulsation at the wrist, which before was imperceptible. An immediate change will be observed in the fluid ejected, in which FLOCCULI ARE NO LONGER TO BE SEEN, and the *quantity* ejected, which before was copious and exhausting, is now diminished, not exceeding in quantity the amount administered, indeed less—*direct evidence of a specific change in the morbid action of the stomach.* This is an important fact.

This amended action, when produced, will be observed to continue its course through the whole alimentary canal, the stools becoming thicker or more gruelly, although from the greater extent in the intestinal surface, the dejected fluids will require a longer period to give the same evidence of their improved condition. So that a double action is observable in this stage (collapse) to be the result, viz. a continual mechanical action which contributes to overcome the torpor of the vascular system, and the atony of all the functions requisite for the restoration of the animal economy, equalizing the balance of the circulation, arousing the nervous energy; and, secondly, having a specific effect most probably on the mucous membrane of the alimentary canal, causing a diminution of the excessive exudation ; permitting, through these media, the conservative principles of the constitution to rally against the morbid impression, under which the nervous



system is rendered torpid ; and, through that system, all the functional derangements appear to have their origin.

The very character of the vomiting is changed, it is no longer the *characteristic squirt*, which appears to be the sole effort of the stomach, but it assumes a general muscular action decidedly *remedial.*

In aid of this plan of vomiting, to excite the vascular action, I have frequently applied, with very much benefit, more particularly when I have found the pulse sinking, cloths dipped in warm Spirit of Turpentine, over the thorax and abdomen, for the space of twenty minutes, and kept warm by hot towels.—It not unfrequently has the happiest effect, by its counter irritation, in giving relief to the severe and agonizing cramps of the extremities.

Frictions I consider useless, indeed I may say prejudicial, exhausting the patient, without adequate or permanent relief.

The vomiting appears to relieve the cramps, by diminishing the internal congestion, and more particularly, in my opinion, by allaying the morbid irritation of the alimentary canal. I continue the antimonial solution every *two* hours, until *the biliary and urinary secretions are restored:* the former will be first apparent, in the ejected fluid, which assumes different shades of a grass green colour ; when this takes place I diminish it in frequency, and when free from any risk of consecutive fever, omit it. The pulse will usually return, with the appearance

of bile; and as soon as the latter is fully apparent in the ejected fluid, I give a common Enema of gruel, salt, and oil, and at the same time, a small dose of Castor Oil; these repeated three or four times, at intervals of four hours, followed in a few days by Tonic bitters; abstaining from solid food.

As the various functions are restored from the torpor of collapse, I view the operation of the antimonial in a different light: the system is now disposed to run into an excess of action, and be destructive by consecutive fever. May not the known powers of this medicine, by equalizing the circulation, now act upon a conservative principle, and thus avoid, as it does almost in toto, this consecutive stage? The remedy is by this time usually *tolerated* by the stomach; and the vomiting ceases.

I have seldom had to encounter consecutive fever; but in every case I have been enabled to arrest its progress. When there has been a long state of pulseless collapse, say for forty-eight hours, it is not to be wondered if there is some slight succeeding excess of action, even under this treatment. The usual *absence* of this consecutive stage, which is practically found as destructive as the stage of collapse, must give *considerable weight and importance* to this treatment.

When the secretions are returning, giving direct proof of the system passing into another state, the greatest care is requisite to watch the patient: upon the least indication of drowsiness SHAVE THE HEAD.



This alone usually gave relief; accompanied by a common enema, in quantity about a pint; but if these are not sufficient, without delay, apply a few leeches to the head; as the pulse at this time is fully restored.

Sleep should never be permitted until all is safe: if it occurs during the period of arrested secretions, I have always found it unfavourable; if immediately after their return, sometimes they never awake again. This occurred to me once, when I was pleased to see the patient, as I thought, apparently so comfortable; but I never allowed them again to sleep, but kept them awake, after re-action, by the application of leeches in large numbers. *They must not sleep.*

Blisters in this stage, to the head, I have never seen to be of the least use: it is a loss of valuable time; the cases have usually terminated, previous to their effects being discernible.

In one case in the consecutive stage, accompanied with the choleric eruption, with a full and *intermittent* pulse, and red, dry tongue, I had recourse to general blood-letting, repeated three times, with the happiest effects; each time it brought the pulse to a regular state; this was decidedly the worst case I recovered, being collapsed for nearly fifty hours—and curious to remark, one side became warm many hours before the other. Success here was attained, but not without the most fatiguing labour.

I had three cases of choleric eruption, which ap-

peared a few hours after collapse, disappearing in twenty-four hours, without any apparent interruption to a convalescent state.

The simple enemata, often repeated, appear to give imminent relief, after the return of the secretions, as they have a quiescent effect. *I abstain from Calomel or any other remedy* than those I have proposed.

The biliary secretion will be found always in a more healthy condition after the use of the antimonial, than when treated by Calomel; stools of a healthy colour, not running to excess—always in due proportion, and never *deficient*.

The urine is generally restored after the bile, averaging about thirty-six hours: this is always a recurrence which will give great satisfaction to the patient, and is a favourable circumstance; for then I consider the Rubicon to be passed.

Every case with bloody stools proved fatal, if it occurred during the period when the dejections were perfectly serous. I had but one case of recovery, which took place when the stool was more gruelly, and had a deep pinky colour. I did not alter the treatment.

I have tried all the remedies recommended by authors, for this state, but without the least apparent advantage; the pulse and heat will immediately sink. Dr. Laurie, of Glasgow, very properly terms it a mortal symptom.

I should wish to hear of some satisfactory plan to mitigate the mortality arising from the appear-



ance of the bloody stools, but I almost despair, for the recurrence of all the other unfavorable symptoms so immediately follows, that there does not appear time for a remedial process; and there is not, as far as I observed, any previous symptom to apprise you of its approach. The extreme prejudices of the lower orders, during the prevalence of the epidemic, with the strict injunctions of the authorities of the town, in whose service I was, prevented me acquiring any information on this point through the medium of post mortem examinations.

From the application of heat externally, by whatsoever means applied, I have never seen much advantage, but very frequently it has been highly prejudicial, as inducing too moist a skin. I prefer a dry skin to a moist one if either hot or cold. A moist skin, the extent of which you cannot control, appears only to be an additional drain from the blood, which we all know, in collapse, to have lost too much of its fluidity. Heat, to be remedial, must come *ab interno;* the result of an improved action of the respiratory functions, producing an amended condition of the sanguiferous system. The fatal cases, with the exception of those from bloody stools, have, by a very great majority, almost entirely occurred where vomiting could not be induced. It is not wonderful, in those desperate cases when the nervous energy is subdued, and the powers of life laid prostrate, that the stomach should not respond to the Tartarized

Antimony. Under such circumstances of prostration, every plan of treatment has been unavailing, with the exception of that proposed by Dr. Latta, by venous injection.

Should an opportunity offer itself to me again in this state, I shall be induced, rather than see my patient sink (for otherwise he assuredly will) to have recourse to the saline venous injection, provided blood was absent from the stools; for Dr. Latta, by his ingenious practice, has proved this extraordinary remedy to be compatible with life. I should employ it with the view, and only to the extent of producing vomiting, in conjunction with the antimonial solution given in the ordinary way, as before directed; which constitutes a practice quite the opposite of any yet proposed; by bringing back the system to a state in which the irritability of the stomach may be induced to assume the restorative action.

In all the cases in which I had an opportunity of observing the application of the venous injection, it produced temporary vomiting, which all practices have recommended to check. Some entertain an opinion that the depressant powers of antimony may be prejudicial when vomiting is not induced. My own observation draws me to a different conclusion. The system in these particular cases is found already to be so prostrate, from the morbid impression of the disease, as not to be sensible of any minor impression; for I have often seen laudanum



given, under these circumstances, to the extent of drachm doses, without any effect whatever.

I have been frequently asked, Why do you prefer Tartarized Antimony to the other emetics, such as the Sulphate of Zinc, &c.? My answer is, because in the first instance, it keeps up a more *continual* vomiting; and, secondly, the system under its influence, on emerging from collapse, is prevented from running into an excess of action by its conservative principle. It also acts in a specific manner, not alone upon that peculiar condition of the mucous membrane of the alimentary canal, but also by eliciting an improved secretion from the biliary organs. Therefore I select it.

The symptoms denoting a favourable issue are: The revival of the countenance; the eye resuming its vigour; the sight becoming clearer; the disappearance of the lividity of the lips; the voice improving; cramps diminishing; stools more gruelly and less serous; return of pulse; heat of skin, tongue, and breath increased; the *vomiting continuing* until a *return of the secretions*, with GREAT THIRST; (when these two latter were present, I never lost one case, if bloody stools did not appear:) and, lastly, the return of bile and urine. The symptoms indicative of an unfavourable issue during collapse, are, great prostration; the whispering voice becoming quite inaudible; the impossibility of inducing vomiting or its discontinuance; thirst diminishing; dejection and collapse of countenance; cold clammy,

sweats; hurried respiration; tongue icy cold and moist; pulseless at the wrist, with but a feeble undulation in the brachial artery; stools entirely serous, devoid of flocculi, as pellucid as water; bloody stools, like the washings of raw beef; this invariably is a mortal symptom. Choleric odour increased, sleep, and increased corrugation of the extremities of the fingers, with cold, clammy moisture exuding from them. The cheeks are often as cold as ice, whilst the forehead feels quite warm; I cannot account for this extraordinary fact, but it has always struck me forcibly as a circumstance requiring additional attention.

A relapse is usually fatal—I have seen exceptions. Most writers describe the integrity of the brain as unimpaired; to this doctrine I cannot subscribe, for the total absence, in almost every case, of regard to their peculiarly dangerous situation, and still more, the careless disregard of their dearest friends, shows a functional *depression*, participating in degree with the general character of the morbid impression.

My remarks upon the post mortem appearances are limited, from the causes I have before adverted to; those which fell under my observation, all of which died in collapse, presented a congested state of the large internal vessels of the venous system, the heart gorged with deteriorated, black, treacly blood; very generally depositions of fibrin in the heart and large vessels, sometimes to a great extent;



the gall bladder mostly full, with the duct pervious, and not one drop of bile in the duodenum. I am at a loss to reconcile these remarkable facts.—Intestines devoid of fæcal matter or odour, internal surface pale, with patches elevated and rough.

In the stomach I have seen brown cineritious patches, very similar to the appearance which I observed on the opaque surface of the cornea, in many cases in the Cholera Hospital at Liverpool; this appearance on the eye was usually evident an hour or two previous to dissolution. The bladder contracted in a singular manner.

As soon as reaction appears under this treatment, I have never yet found in any one instance, amongst the very large number I have seen, any want of a due proportion of the various secretions, without the aid of one grain of Calomel—neither is it attended with troublesome diarrhœa, which so often proves fatal in the consecutive stage.

Where cholera has attacked persons advanced in pregnancy, it has almost always proved fatal, in every instance under my own observation but one, and that was treated with the antimonial solution. She was six months advanced; and in that stage of the disease to be placed amongst the cases of class No. 2, with very feeble pulse; the medicine had its full effect of vomiting, without the least inconvenience. The other cases were treated by various remedies; in no instance was there premature labour, and they died in the stage of collapse.

The following are authorities of much professional experience, bearing unintentionally upon the above practice, and corroborating strongly its importance. We have the following observations upon the authority of Dr. Elliotson, (vide The Lancet, Nov. 17, 1832, page 228,) when speaking of cold water in extreme collapse :—" In many cases they have vomited it up, and said THEY WERE ALL THE BETTER FOR IT, and as soon as they have vomited they have asked for more. The water felt pleasantly cold to them, and the ACTION OF VOMITING SO much RELIEVED THEM, that they would not take anything else."

They *always* express relief after the remedial vomiting, but not from the distressing vomiting, caused by the morbid impression.

Again, Dr. Hardwicke Shute says: (vide his Memorial, No. 1, addressed to the Central Board of London,)"—In what I consider the MOST FAVORABLE cases, VOMITING is almost immediately produced, and the patient in two or three minutes again calls for, and eagerly drinks, the same quantity, with the SAME RESULT; this is often continued for hours." In another part he correctly observes,—"The acknowledged effect of VOMITING in checking diarrhœa, equalising the circulation, EMPTYING THE VESSELS of the liver, and consequently the importance of NOT CHECKING A NATURAL ACTION WHICH HAS A CONSERVATIVE TENDENCY."

I commenced the antimonial practice on the 28th



July, 1832, about the same period that Dr. Shute commenced his trial of cold water; the nature of the practices in many respects are similar, yet, from the opinions he has expressed, as to its *modus operandi*, we propose arriving at the same happy conclusion through very different views.

We have, I believe, numerous instances in the Indian Reports of the apparently spontaneous recoveries, where medical aid could not be had. There is no doubt in these cases cold water was always at hand, and as little doubt that it was eagerly taken; of course producing VOMITING; and probably was the curative means accidentally resorted to.

In the premonitory diarrhœa I have administered the same remedy, with the most marked success, without any other aid; checking it, by apparently changing the morbid action of the mucous membrane of the intestines, and eliciting an improved condition in the biliary secretions; at least so I must suppose, for the evacuations re-assume a healthy colour.

The success attending this part of my treatment, which will be found corroborated by the practice of Mr. Ollier, in the New Bailey, and by Mr. Stott, who commenced it in this premonitory stage, at my recommendation, (see their able and accompanying letters) has induced me, without, I hope, the appearance or intention of any thing like empyricism, to append at the conclusion a few practical remarks,

for the perusal and direction of the public generally. I do so with the most sincere desire to propose, if possible, that which may, in the least, mitigate the difficulties we too often find ourselves placed in by delay. These directions, if followed, I feel assured will not only often avert, but as frequently disarm, this scourge of its terror, by preserving a period of time, (until the arrival of the practitioner) in the loss of which, death too often makes sure of his victim. The earlier it is had recourse to, the less the danger, and consequent mortality, as is most evident by the table of cases annexed.

I cannot impress too often or too forcibly the importance of a CONTINUAL professional supervision, otherwise, the attendants, from various causes, despond; not uncommonly become inebriated, for the spirit bottle in these cases is always given out *ad libitum* as a sovereign specific against contagion; they consequently become inactive, causing inattention to a most important part of the practice; this occurred to me a few days since. I was called to see a man who had been sixteen hours pulseless, of a leaden blue colour all over the body. I found the antimonial solution had been given, but not the diluents to anything like a sufficient extent. I immediately ordered a large pitcher, to be made full of toast and water; he drank pint after pint in my presence, and as continually *vomited* it; his colour in half an hour, to the astonishment of the bystanders, was restored to its natural hue; the



respiration became free, and he expressed himself much relieved; his sight became clear, which I have very frequently in this blue stage found very dim. This remedial effort however came too late by their neglect, he continued better for eight hours—a bloody stool appeared, of a brick dust colour, and he sunk in twenty-three hours from the time I first saw him. I had much hope of his recovery, even at this late period, from the extraordinary impression made upon him, until the appearance of the red stools; the effect in this case of long inattention to the instructions given. This man lived much longer than usual after the appearance of these bloody evacuations. I mention this important case as a lesson, how little you can trust to any exertions but your own: they must be unbending to command success at all.

Had the friends pursued the treatment directed, sixteen hours earlier, which I forced upon them when I arrived, success might have followed before the system had become further entangled by the loss of time, in a labyrinth of disease.

Uncompromising diligence will overcome great obstacles, and the treatment of Asiatic Cholera, above all diseases, requires it, to conduct to a favourable issue.

I am aware this communication has become longer than intended, but the great interest, and the numerous hours, both by day and night I have devoted to its observation, must be my excuse in a

desire to add, however small a proportion, to our present but too scanty store of knowledge upon the subject: convinced, that it will be found the most efficient and simple plan of treatment at present in use, in restoring the balance of the circulation, checking the excessive drain, and alleviating the agonizing cramps, WITHOUT THE DREAD OF CONSECUTIVE FEVER.

My only pretext for becoming an author, after the endless number which have preceded me, is the hope of substantiating the pre-eminence of the plan I have proposed; or eliciting the substitution of a better, founded not upon theory, but, as I have attempted, upon facts and practical returns.

| CLASS. | RECOVERIES. | DEATHS. |
|---|---|---|
| I. | 28 | 0 |
| II. | 25 | 11 |
| III. | 11 | 19 |
| Total. | 64 | 30 |

The above classification of the cases will be found explained in page 9, being the state of the patients when they came under this treatment.



*Manchester, September 7th,* 1833.

MY DEAR SIR,

Having heard that you are about to publish some remarks upon Cholera, and that you are desirous of receiving evidence as to the efficacy of the Antimonial treatment, I hope you will not consider me intrusive for briefly addressing you on this important subject.

You will recollect that, in defiance of the restrictive measures which I adopted, as surgeon to the prison of this town, and which, with other circumstances, were detailed in No. 41 of the London Medical and Surgical Journal, the Spasmodic Cholera made its appearance sporadically among the prisoners in September last year.

It is not my intention to theorise upon the character of this malady, nor upon its causes: enough has been written on the subject to convince unprofessional persons that it is a mysterious visitor; and they will perhaps be much more gratified if we can cure, rather than reason upon the cause of their terrors.

In some of the first cases, the symptoms of which were altogether so characteristic as to need no description, Opium and stimulants of all kinds, internal and external, were freely tried, with only a temporary effect. The organic functions of the body (of which the heart is the centre) were all prostrate; but this state of things, unlike syncope, was not to be relieved by those usual remedies, which, acting on the nervous system, restore the arterial action so as to propel the blood through the lungs, for its renovation.

Here nature, in her animal functions, was painfully sensible of her situation, and the sensorium was unimpaired,—but she was evidently unequal to the duties required for her relief.

I had heard of the success which had been derived from the Antimonial treatment, which you introduced under your

superintendence, at the Knott Mill Cholera Hospital, and I determined to try it. Need I assert, that the report of the cases submitted to this treatment, justifies me in the opinion that it met with comparative success? What, let me ask, is the condition of the Cholera patient? The organic functions are altogether at a low ebb. The blood has left the extreme parts, and is, to a great extent, stagnant in the interior of the body. Respiration is ineffective, and thus the surface is cold and of a ghastly blue tinge. The stomach is inactive, and therefore does not respond to the application of medicines: indeed the patient prefers cold water to any stimulus that is offered. The liver is indolent, and vitiated fluids are poured out from the intestines secreted from vitiated, unoxygenated blood. In short, all the organs connected with respiration, secretion, and assimilation, are suddenly arrested in their office.

It may be asked then, why Tartarized Antimony is given in this state of the body. The answer seems plain; and the effect which it produced upon many of the patients in our prison is, in my mind, a sufficient explanation.

Independently of its Antimonial effect, as restoring the balance of the circulation, and acting in any way upon the secretions, it excited mechanically, by vomiting, such a continual powerful succussion of the whole muscular apparatus of the chest and belly, (especially when cold water had been freely given,) that the reservoirs of stagnant blood therein, were emptied; the heart's action was increased; the circulation was gradually equalized throughout the body; the blood was decarbonized in the lungs; the liver was brought into action, and the secretions per anum resume at length, their feculent character.

The administration of Tartarized Antimony then, seems to have a two-fold effect, as Antimony quoad hoc, and as a powerful mechanical agent. Whether it be approved of or



not, it has been given by myself upon the principles alluded to; and I have had the enviable pleasure of being a witness *to its effects* at the bed-sides of prisoners, who, after a pulseless, hopeless, state of suspended animation, continuing for many hours, have been restored to life, without the *dread of consecutive fever.*

I may, with deference, recommend the treatment alluded to in premonitory cases, many of which were cut short in my prison hospital, so soon as *forcible vomiting* was produced, by timely doses of Tartarized Antimony:—if the disease ran its course, the remedy had prospectively its beneficial effect upon the system.

My letter is very brief, (and I speak not of collateral medicines,) but if it tends to show *why Antimony is given in Cholera*, and thereby can do the least service in a cause so sacred, I shall not feel so much ashamed of the deficiency, as a writer, of,

My dear Sir, yours very truly,

HENRY OLLIER, SURGEON.

J. LANGFORD. Esq. New Bailey Prison, Salford.

P. S.—I have annexed the result of twenty cases, which were treated in the Prison Hospital with the Antimonial Solution solely, as you have directed, and classed according to your discriminating arrangement, to elucidate the practice.

| CLASS. | RECOVERIES. | DEATHS. |
|---|---|---|
| I. | 6 | 0 |
| II. | 5 | 0 |
| III. | 3 | 6 |
| Total. | 14 | 6 |

*Quay-street, Manchester,*
*September,* 1833.

DEAR SIR,

I cannot, I fear, add interest or importance to the judicious practical remarks contained in your pamphlet upon Cholera, the MS of which I have, as the privilege of a friend, perused.

I may be permitted to think favorably of the treatment, originated by Dr. Reich, of Berlin, because I had the good fortune first to draw your attention to it, in this district.

But with all my respect for its administration, *in the abstract*, I am bound to admit that you have greatly aided in ascertaining its *practical* advantage; and I have much pleasure in bearing testimony to the skill and success, with which, in your own sphere of usefulness, you have carried out the treatment, and made it the agent of extensive good. This too, be it remembered, has been done under circumstances which required no mean exercise of firmness, inasmuch as the treatment met with grave opposition by many brother practitioners, and was at first justified only by the direful character of the disease; which, as it baffled all ordinary remedies, demanded that resort should he had to extraordinary means. The practice to which I refer, is the giving of small and repeated doses of Emetic Tartar, with a view to arouse the patient from the extreme depression, which, in cases of Cholera, bears down and renders prostrate the whole animal system. The expedient succeeded on the first trial; and assured by the success of the experiment, I followed up the treatment, and now adopt it as the unvarying rule of my practice. During the last month, I have treated upwards of thirty cases in this manner; and I shall give you a brief summary of their results:—Twenty belonged to No. 1, of your classification; six to the second



class, and four to the third, or stage of collapse: all the cases in class No. 1; four of those in class No. 2; and one of those in class No 3, recovered. The remaining five, of classes number 2 and 3, died. The one in class No. 3, who recovered, partook freely of fluids; the three of that class who died, as well as the two in class No. 2, refused them altogether, or would only take them very sparingly. In the other twenty-five cases, a strong desire for fluids prevailed, and the gradual restoration of the suspended functions was most gratifying.

It is unnecessary for me to trouble you further on this subject, as, from our frequent conversations, I am assured that there is a perfect coincidence of opinion between us as to the pathology and treatment of the disease. I shall rejoice to see the institution of a better mode of dealing with it in the collapsed stage, where the patient *refuses fluids*. The malady under such circumstances is indeed a monster.

Believe me, dear Sir,
Yours very faithfully,
W. B. STOTT, SURGEON.

J. LANGFORD, Esq.

My practice during the present month of August 1833, has been equally successful. I have administered the Antimonial Solution, in every case of Diarrhœa, without vomiting, attended with the most marked success; in doses from half an ounce to a teaspoonful, according to the age, every three or four hours, permitting the patient to drink freely of toast and water, which they will readily do, there being usually much thirst. It does not always vomit, and generally removes the complaint in twenty-four hours, sometimes in three or four doses, always producing a healthy secretion from the intestines. The cases of diarrhœa have been innumerable, in all ages, from a few months to advanced age.

Amongst the families occupying the same house, and often the same room, where Asiatic Cholera was running its course, there were great numbers with diarrhœa, mostly attended with vomiting, sometimes also cramps; in all these cases I have removed the symptoms by the antimonial.

I cannot doubt, that in many of these instances, without timely aid, they would have progressed into regular Asiatic Cholera.



INSTRUCTIONS FOR THE GUIDANCE OF THE PUBLIC, DURING THE PREVALENCE OF THE EPIDEMIC, CALLED ASIATIC CHOLERA.

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No time should be lost in sending for medical aid.

This disease more frequently commences during the night, in a violent form, indicated by *vomiting* and *purging*, the severity of which is usually so overpowering, for the space of from one to four hours, as to bring the person immediately to a state of disease, too often both hopeless and irrecoverable. This form of disease cannot be mistaken.

I beg to press upon attention the high importance, and the great advantage of obviating the *loss of time*, which must pass, before aid can be had.

In nine cases out of ten, the patient has been labouring under the attack several hours, before medical aid is had recourse to, when the disease is found in *an advanced stage*.

The moment it is *suspected* to have appeared, by *vomiting and purging*, or either, *take one-fourth part*, or *two tablespoonfuls* of the following mixture, every *two hours*.

Tartarized Antimony, two and a half grains; Distilled Water, four ounces; Rectified Spirit, two drachms. This mixture to be kept ready in the house.

To aid *this vomiting*, drink half a pint of tepid

water, every quarter of an hour, until medical aid arrives to direct its omission or continuance.

For children under *seven, half* the dose above named; and under *two* years of age, a *teaspoonful.* To be most particular in aiding the vomiting, by *draughts of tepid water*, or toast and water; if during the night, warm water cannot be had, drink cold.

By following these simple instructions, the prompt advantages derived, are, that an important remedial action is immediately produced; preserving the heat; relieving the cramps, if present; and checking the *excessive purging*, which otherwise would be going on; and too often, even *in one hour*, bring the person to that state, in which death makes sure of his victim.

I have generally averted the disease by this *efficient* and *simple* practice, if had recourse to *without* any *delay*, and restored the patient in a few hours. In others it has conducted to a favourable issue.

The *loss* of *life*, by this *early attention*, being *most insignificant*, disarming at once, this scourge of its dreadful mortality.

Again, I say, do *not permit* delay.

Use *no other* remedy; rigidly *abstain* from laudanum, brandy, and stimulants.

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HARRISON AND CROSFIELD, PRINTERS, MANCHESTER.

THE

# HUNTERIAN ORATION:

DELIVERED

IN THE THEATRE

OF THE

ROYAL COLLEGE OF SURGEONS

IN LONDON,

*ON THE FOURTEENTH OF FEBRUARY,*

1833.

---

BY

JOHN HOWSHIP,

TEACHER OF SURGERY; AND SURGEON TO THE ST. GEORGE'S INFIRMARY.

Member of the Royal College of Surgeons in London; Medico-chirurgical Society, and Royal Medical Society of Edinburgh; Faculty of Medicine and Surgery, New Brunswick; Société Medicale d'Emulation, Paris; Membre d'Honneur de la Société pour les Sciences Naturelles et Medicale, a Dresde; Academia Cæsarea Naturæ Curiosorum, Bonn; et Societatis Regiæ Medicæ, Copenhagen. Author of Practical Observations in Surgery and Morbid Anatomy; Practical Observations on the Diseases that affect the Secretion and Excretion of Urine; Practical Observations on the Diseases of the Lower Intestines, &c.

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TO

THE PRESIDENT,

COUNCIL, AND MEMBERS,

OF THE

ROYAL COLLEGE OF SURGEONS;

TO THE

PRESIDENT AND COUNCIL

OF THE

ROYAL ACADEMY OF ARTS;

AND TO

ALL THE FRIENDS AND PATRONS

OF THE

SCIENCES AND ARTS;

THE FOLLOWING PAGES ARE RESPECTFULLY DEDICATED

BY THE AUTHOR.

21, *Saville Row,*
*January, 30th,* 1833.

THE

# HUNTERIAN ORATION

FOR

1833.

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Mr. President and Gentlemen,

To trace the path, and review the progress of science, in any of its departments, is an occupation of time, and attention, no less useful than agreeable. And surely no retrospective glance can convey more satisfaction to a benevolent mind, than that which regards the rise and progress of Surgery; a study the sole object of which is to diminish the sufferings, and consequently increase the happiness of mankind.

In the most remote ages of antiquity, those who applied themselves to the acquisition of knowledge in Medicine, were held in high respect, and veneration; and we cannot reasonably suppose that the earliest periods of Egyptian intelligence were less distinguished, by attention to the study of Medicine, and Surgery, than by devotion to the other

sciences. And when we recollect that several of the most ancient cities of Arabia, were devoted, perhaps exclusively to the general purposes of high literary attainment, and the cultivation of a refined taste, as well as to the prosecution of particular pursuits; it can scarcely be doubted, that a subject of research so essentially conducive to the comfort of mankind, as Medicine, must have been diligently attended to.

With the early state of Arabia we are tolerably well acquainted. An accomplished Oriental scholar, the late amiable Dr. MASON GOOD has informed us, that Teman was one of the chief cities of Idumæa; celebrated for its philosophy, and distinguished for its learning. And that Surgery, as one branch of science, was even in those days studied, and practised, agreeably to certain principles, is proved by the testimony of Baron LARREY; who states that "the circumstance "of Gen. DESAIX having pursued the enemy, in upper Egypt, "beyond the cataracts, afforded every facility to the Com-"mission of Arts, for visiting the monuments of the far famed "Thebes, and the renowned temples of Tentyra, Carnak, "and Luxor, of which (he adds) even the present ruins de-"monstrate the ancient magnificence. On the ceilings and in-"terior walls of these temples, may still be seen the bas-reliefs, "representing limbs amputated, with the instruments used, "very similar to those selected for the same purpose, in the "present day. These instruments are again recognized in "combination with the hieroglyphics: together with the traces "of other operations, proving that Surgery in those remote



"times, marched on with the other arts, which appear to have "been carried forward, to a very high degree of perfection."*

HIPPOCRATES, the mighty father of Medicine, whose name has now obtained the veneration of more than twenty centuries, was the first who emancipated this study from the trammels of superstition, and the delusions of philosophy. His capacious mind, and penetrating judgment, clearly discerned, and successfully laboured to remove, the obstacles which the bigotry and superstition of the vulgar, the impudence and vain pretences of the quacks, and the pride and vanity of the sophists, opposed to its improvement.

The æra of HIPPOCRATES, was soon succeeded by that which gave birth to Alexandria. A city founded by the warlike son of PHILIP; on a spot selected for its favorable, and centrical situation: presenting a spacious harbour, with every facility for conveying the costly merchandise of the East, to the luxurious inhabitants of the West.

In tracing forward the thread of history, it is curious to observe, that occasionally events of the highest importance appear to have been brought about by circumstances, the most trifling. To reflect, for instance, that the introduction of an image of SERAPIS into the city of Alexandria, leading, as it did, to the subsequent erection of the magnificent temple of the Serapeum, should have also led to the foundation of the most valuable Library, which perhaps ever existed. Commenced by the first PTOLEMY, within the verge of the

* Chirurgie Militaire.

temple; this Library was devoted to the use of the Academy, instituted by the same Monarch.

Some idea of the extent of this Library may be formed, from its having, at one period, contained upwards of 700,000 volumes; and one of the best proofs of the value of the collection, may be obtained by calling to remembrance the peculiar manner in which it was made.

Most of my present auditors are aware, that the method followed in collecting the books for this particular Library, was, to seize indiscriminately all that were brought into Egypt, either by the Greeks or other foreigners. Each book or manuscript, thus obtained, was carefully transcribed, in the Museum, by persons specially appointed for that purpose. The copy when finished was very liberally handed over to the proprietor of the book, and the original laid up in the Library.

This usage, Gentlemen, although some may no doubt be disposed to consider it "a custom more honored in the breach than the observance," was still eventually, perhaps, productive of good. The value, and therefore the interest, of the collection, must have been exceedingly augmented, by thus, heaping together, so vast a multitude of original works. The spirited cultivation of the liberal arts, no less than the diligent prosecution of scientific researches, would be encouraged, and promoted;—and what was the result?—that in this city, the successors of ALEXANDER first resolutely opposed the natural feelings and prejudices of mankind, by patronizing the dissection of human bodies. Alexandria,



being made the great deposit of literary knowledge by its immense Library; was also rendered the prolific source of every kind of instruction, the most favored seat of science.

The expediency of any attempt to accomplish so great a purpose, will be readily admitted, if we call to mind the state of things, just previous to the æra of this foundation. If we recollect what was the state of learning and of learned men. That a student, interested in any subject of natural philosophy, or abstract science, could become acquainted with the knowledge possessed by others, only by making long journies, and paying very distant visits, to obtain the perusal of works of celebrity, or the conversation of those engaged in similar pursuits, with himself.

We see, for example, that HERODOTUS, sparing no pains in collecting the best materials for writing his history, travelled into Egypt, saw all the principal cities, and conversed much with the priests of that country; visited the several parts of Greece; went to Babylon, and Tyre; and was in Thrace, Scythia, Palestine, and Arabia. Yet, you know, Gentlemen, that all this activity in preparing, and all his subsequent labour in composing, his work, left him eventually no other mode of making known the value of his performance than that of reading or reciting his history, in the public assembly of the people, at the celebration of the Olympic Games.

About this time, the practical study of Medicine appears to have been divided into three branches; Diet, Chirurgical Medicine, and Pharmacy: and from this period, therefore,

may be dated the origin of the three several departments of the profession.

The exact extent, or the precise course of Medical study, recommended or required in the school of Alexandria, we have now no means of determining. It is, however, sufficiently evident that it soon gave a new impulse to enquiry, an increased desire for information. The spirit with which opinions were formed, and the earnest anxiety displayed in maintaining them, were sufficiently manifested in the conduct of SERAPION, the founder of the Empiric Sect; a sect that was well supported by talent, and long continued to flourish. While those who took up the opposite side of the question, formed a second, the Dogmatic or rational sect. The first, admitting only one general method of acquiring skill in the Medical art, that of experience, a knowledge derived from the evidence of sense; the second, asserting the necessity for knowing the latent, as well as evident causes of disease, and contending that a physician ought to understand the natural actions and functions of the human body, which necessarily pre-supposes an acquaintance with the internal parts.

A third sect, the Methodic, was founded by THEMISON, the disciple of ASCLEPIADES; who maintained, that the examination of the causes of complaints, recommended by the Dogmatics, was useless, and the laborious observations of the Empirics, unnecessary; for that the whole art of Medicine might be taught in a few months. He considered that all



Diseases admit of being divided into two kinds; those arising from Stricture, and those induced by Relaxation. A division, much resembling in simplicity, the modern distinctions, into Sthenic and Asthenic.

The Methodic Sect had one advocate, who was said to have brought its doctrines very nearly to perfection: and this was THESSALUS, who certainly appears to have been a man inclined to think, and disposed to speak, rather freely. He is accused by GALEN and PLINY, of excessive vanity, and insolence; and it is asserted that he was in the habit of expressing the utmost contempt for the opinions of others. In fact, his vanity was so unbounded, that he gave himself the ridiculous title of "the Conqueror of Physicians;" and even carried his conceit so far, as to cause this absurd title to be engraved upon his tomb, in the Appian way.

We may therefore Gentlemen, venture to assume, that the organ of self-approbation, was occasionally, even in those days, susceptible of a very sufficient degree of development.

One of the most celebrated medical writers of antiquity, was CELSUS. In his works we have a compendious, yet comprehensive view, of the practice of almost all his predecessors.

In the second century of the Christian æra lived Claudius GALEN. A physician who displayed his judgment, very early in life, by selecting what appeared most rational, from the different sects, in philosophy; but particularly (as it seems to me) by totally rejecting the Epicurean system, which

was then in fashion. During his youth, he travelled much, and was resident for several years at Alexandria; at that time the great resort of men of science, and the best school of Medicine in the world.

Gentlemen, you cannot doubt that the study of Medicine was greatly favored by the various and extensive opportunities of information which the school of Alexandria afforded.—But the hour was now approaching, in which not only that great city, but the whole of the civilized portion of the globe, was to be shaken to its foundation, by a storm, the gathering clouds of which, were destined to overshadow the land, for many succeeding ages.

We see the mighty Roman empire, formerly including almost the wide expanse of the known world; now weakened by divisions, surrounded by enemies. On the East, the Persians; on the North, the Scythians, Sarmatians, Goths, and a host of other barbarians, sought every occasion to break into it.

The shocking extent of devastation attending these inroads, was incredible; the Almighty appeared to have entrusted to them the destinies of the globe, and they used them to destroy.

The Western world, from the height of grandeur, was sunk to the lowest slavery; the provinces, now inhabited by human beings, scarce a degree above brutes; every science, every art, lost; even the savage conquerors themselves starving, for want of a sufficient knowledge of agriculture. The



Eastern empire might however, still be said to live; although fast declining into ruin, and destruction.

In the early part of the seventh century, the inhabitants of Arabia, from their earliest origin, accustomed to war, and plunder, now under the artful MAHOMET, united by the most violent and most absurd superstition, blended with the most enthusiastic desire of conquest; were like a flood pent up, ready to overwhelm the rest of the world.

In no part, or quarter of the globe, was there a power capable of opposing the furious progress of the Arabs. With a celerity that was amazing, they overran Syria, Palestine, Persia, and India; extending their ravages, beyond even the conquests of ALEXANDER.

From the universal devastation, it was not to be expected that Alexandria could escape. It fell; after a long siege and the loss of 23,000 men. Upon which memorable occasion an anxiety to save the great literary treasure, urged the grammarian JOHN, probably to that very step, which precipitated its destruction. The intimate friend of the General AMROU, begged that he would bestow on him the Royal Library. The request of the philosopher was transmitted to the Caliph, OMAR. The ignorant tyrant replied, that if the books in question, contained the same doctrines with the Koran, they could be of no use; but that if they contained any thing contrary to the Koran, they ought not to be suffered to exist; and therefore, that whatever their contents might be, they

should be destroyed. This order was executed, yet such was the magnitude of this splendid Library, that its numerous volumes, distributed among some hundreds of public baths, are said to have supplied their daily fires, for no less a space of time than six months.

But, notwithstanding these, and other subsequent events, all tending to the total extinction of the light of science, and philosophy, some faint and scattered rays might still be perceived, to sustain the agreeable anticipation of a returning dawn. Although Rome, once the seat of imperial power, had for ages continued to decline; the eye of attention might observe, that while by repeated shocks from without, it lost its political consequence, it insensibly acquired a still increasing force within; a still increasing weight of ecclesiastical importance. Religious establishments, of all descriptions, especially monastic institutions, sprung up in almost infinite abundance; not confined to the narrow limits of Italy, but extending their broad foundations to the most remote provinces of the empire.

In these institutions, it must be confessed that letters were cultivated, though licentiousness was also encouraged. In these societies, it may to a certain extent be admitted, that the arts and even sciences still survived; here the scattered remains of Grecian and Roman writers on Medicine, were chiefly preserved, and their languages studied and spoken.

We see then, Gentlemen, that while the great mass of society was illiterate, the secluded inmates of the monasteries,



having the opportunity of reading and studying Medical authors, were induced from various motives, to give Medical advice. But as it was inconsistent with the rules of their order, to shed blood, or dress a wound, these offices, under their direction, were performed by their servants. "It was here therefore," (to quote the words of a late eloquent professor,) "that Surgery first made its public appearance, clothed in the garb of a menial."*

Anatomy, as a study, may be said to have been entirely neglected by the Arabians. MONDINI, in the 14th century, appears to have led the way to its revival, in Italy, by instituting public dissections; and it has been correctly observed, that the zeal and spirit with which the great painters, who flourished in the 15th century, studied their profession; and the distinguished patronage afforded them, contributed in a very powerful degree, to the suppression of the public prejudice against dissection.

The inimitable works of Michael ANGELO, might well persuade mankind to believe, that whatever rule he laid down as a principle, must be worthy of adoption. Were these works now before us, Gentlemen, we might be led to ask,—in what way this distinguished painter studied his art?—The answer is, by diligently applying himself, in the first place, to the study of Anatomy; and should we feel curious to enquire by what means he could have been enabled to leave behind

* Mr. Abernethy.

him memorials, at once so fair, and so unfading, we may draw aside the curtain, a little further; observe his unwearied industry, and close application, bearing in mind, what some persons, will perhaps scarcely credit, that he was in the constant habit of previously modelling, in clay or in wax, all the subjects and figures which he intended to paint.

Neither does the name of Michael ANGELO stand alone in the brilliancy of his attainments, or in the diligent use of the means by which they were acquired. Leonardo DA VINCI, RAPHAEL, and many others, of scarcely less note, are known to have been either frequent dissectors themselves, or diligent students from the dissections of others.

We now see, Gentlemen, the importance of Anatomy, in the study of painting; but the relation is reciprocal. Anatomy can scarcely stand alone, better than painting. And when we recollect the intricacy of this study, the great difficulty of acquiring clear impressions of the relative situation, and form, of parts; and especially, how desirable it frequently is, to preserve the exact appearance of morbid parts; we cannot remain insensible, that as a knowledge of Anatomy is necessary in painting, a knowledge of the principles of Drawing is scarcely less important, in the successful prosecution of that extensive course of study, which through Anatomy, forms eventually, the accomplished surgeon.

If, then, we reflect seriously on these matters, not being unmindful of the dignity, or the difficulty of that profession, we not only practice, but anxiously labour to improve, we



shall cordially join in the benevolent desire expressed by an individual, no less distinguished by his celebrity as an artist, than by the high, and honorable charge of presiding over the arts;*—that as the Royal Academy of Painting has its Professor of Anatomy, we may one day see the Royal College of Surgeons, have also, its Professor of Design.

Gentlemen, so long as the cultivation of Anatomy, languishes, that of Surgery will scarcely be advanced. It is when we see men of superior, and well constituted minds, zealously apply themselves to the improvement of their profession, by the diligent study of nature, as displayed in the living movements of the animal machine; it is then, that we may anticipate the best results, the greatest discoveries.

Such a man, was the illustrious Dr. William HARVEY; whose keen discernment first determined the exact office of the heart, and demonstrated the circulation of the blood. A gentleman, whose private manners, no less than his public conduct, bore testimony that a serious mind is indeed the native soil of every virtue. Dr. HARVEY's disposition was essentially reflective, and thoughtful. That his researches into the most recondite paths of physiology were profound and successful, is demonstrated by his discovery of the circulation, no less than by his elaborate and invaluable treatise on generation. And the clearest evidence that his intellectual endowments were not only of the first, but the best quality,

* Sir M. A. Shee, P.R.A.

may be afforded by the selection of a single passage from his writings; in which "he proposes to explain (in reference to the incubated egg) what (he says) is constituted first, and what last, in a most miraculous order, and with a most inimitable prudence and wisdom; by the great God of nature."

Elevated by the contemplation of these things, Gentlemen, well might an inspired monarch exclaim "I will praise Thee; for I am fearfully and wonderfully made; marvellous are Thy works, and that my soul knoweth right well."

Gentlemen, that which Dr. HARVEY accomplished for Anatomy and Physiology, was achieved by Serjeant WISEMAN in favor of Surgery; by an improvement no less extensive than important; the result of strong natural abilities, urged forward by the most determined industry.

The genius of HARVEY was seen to most advantage, when employed in unveiling the minute and mysterious operations of health; the patient and laborious observation of WISEMAN being still engaged in adding some new fact, in the treatment of disease. The one was led on, by his singularly acute perception of the admirable wisdom displayed in the system of nature; the other appears to have been at once excited, and satisfied, by reflecting that the direct tendency of all his labours was, to abridge the duration, or mitigate the severity of "the thousand ills that flesh is heir to."

WISEMAN, it is true, did not adopt with sufficient decision, the grand improvement in Surgery, introduced by his active



and intelligent predecessor, AMBROSE PARÉ; in the use of the ligature, instead of the cautery, after amputation. This defect, however, was probably owing to a deficient knowledge in Anatomy. The prejudice against dissection in this country, was at that period much greater, than in France. So great indeed, was the difficulty, that the obtaining any adequate extent of knowledge in Anatomy, was impracticable; and this almost insuperable bar to the cultivation of Anatomy, has continued to impede its progress, even down to the present time.

Happily, Gentlemen, for surgery, for science, and for society, a brighter day, at length, has dawned. The able, and spirited remonstrances of those distinguished members of our profession, who having borne the heat and burthen of their day, now sleep with their fathers: the rapid increase of information, and the active cultivation of intellect; have at length conduced to determine, that a study of such pre-eminent importance as Anatomy, shall be no longer held illegal; but that, on the contrary, every legal protection, and facility, shall henceforth be afforded, for the acquisition of that knowledge from the dead, which is so essential to the health, and safety, of the living.

The 18th century includes within its circle, many celebrated men, and two most distinguished Physioligists, HALLER, and HUNTER; the former born in 1708, the latter just twenty years afterward. The one a classically educated, and elegantly accomplished physician; the other, the simple

and artless child of nature, little assisted by education, but indebted exclusively to the unparalleled strength, and high superiority of his mental endowments, for a celebrity as a surgeon, which during his life was unequalled, and since his death has remained without a rival.

Albert Von Haller was the youngest of five sons. Even in childhood he evinced so strong a genius for literature, that at nine years of age he translated Greek, and was commencing the study of Hebrew. The rapidity of his early progress, however, may perhaps, be attributable to his father's having taken into his house, a private tutor; whose discipline appears to have been both active, and impressive; for the accidental sight of him, at any subsequent period of life, never failed to excite in Haller very great uneasiness, renewing all his former terrors.

At eighteen, the reputation of the celebrated Boerhaave drew him to Leyden; where Ruysh still lived, and Albinus was rising into fame. Here he studied with intense application; taking down the Lectures of Boerhaave assiduously (he says) for three successive seasons. After this, he first visited London, and then Paris. Here, however, his zeal in prosecuting his Anatomical studies, had like to have involved him in difficulty; and to avoid the chance of being dissected himself, he cut short his researches, by a precipitate retreat.

It is to be regretted, that when with all these advantages, he returned, at the age of twenty-six, to Berne, in Switzer-



land, the place of his nativity; the interest made by those who had remained comparatively idle, at home, outweighed the influence of all his activity, and acquirements abroad; leaving him an unsuccessful candidate, not only for the office of physician to an hospital, but also for a professorship. The memorial of this unmerited neglect, was however, fortunately soon set aside, by his nomination to a Professorship in the University of Gottingen, by His Majesty George the Second. An appointment, the duties of which he continued to discharge, with honor to himself, and advantage to others, for a period of seventeen years.

Baron Haller, made Physiology his most essential study. Well aware of the necessity for obtaining a perfect knowledge of Anatomy, both human and comparative; he perceived that any reasoning upon function, incompatible with structure, must be fallacious.

Independent of many other works, of less note, Haller published the Academick Lectures of Boerhaave, enriched by his own copious, and comprehensive selection of notes, in which may be traced the vast extent of his reading, and the endless diversity of his experimental enquiries; exhibiting in miniature, the outlines of his latest and most extensive work, the Elementa Physiologiæ.

We may now, Gentlemen, turn our attention to the more immediate object of this Meeting, by again reverting to the name of Mr. Hunter; a name that appears to me to associate with it the idea of nearly all that is perfect in the

philosophy of our profession; a name that recals to recollection much that is amiable, and much that is independent in character, and much therefore, that is worthy of our regard, and imitation. The name of one, whose lofty and restless genius, soaring high above the opinions and errors of others, was early and late occupied in laying a foundation, strong as it was extensive, whereon might subsequently rise the temple of his future fame.

Mr. Hunter, like Baron Haller, was a zealous student of Physiology; but although no man, perhaps, ever employed his reasoning powers with better effect, in this study, than Mr. Hunter, he nevertheless felt the great difficulties with which the subject was surrounded, so forcibly, that he was induced to determine, that in what he might live to perform, there should, at least, be nothing liable to mistake, or misapprehension; but that the various functions, not only of animal, but vegetable life, should be explained and illustrated, by a ready reference to each individual variety of structure, by which those functions were performed.

With this view, he commenced, and almost completed, a scheme of laborious investigation, which, including as it did, the entire circle of the animated creation, was an undertaking of such extent, as had, probably, never before entered into the mind of man to attempt.

Gentlemen, if our time permitted, you would feel interested, in calling to mind, the various traits in the character of this distinguished and excellent man. Numerous anecdotes might



be related illustrative of the habitual generosity, and liberality of his feelings; no less than the lofty and original cast of his genius, labouring to the last, more fully to unfold, the multiplied and admirable contrivances of Omniscient wisdom, in adapting so many diversities of structure to the accomplishment of one and the same purpose; as may frequently be traced in coursing the wide field of animated nature.

We may, however, venture to devote a few moments to the purpose of taking a transient glance at the interior of the Hunterian Museum; for although many gentlemen now present, have, I am aware, already contemplated, in detail, its various contents, it seems to me not unsuitable to the present occasion, to state the leading principle of its arrangement, as demonstrative of the extent of the scheme, and purpose, of its founder.

In this collection (says one of Mr. Hunter's biographers*) we find an attempt to expose to view the gradations of nature, from the simplest state in which life exists, up to the most perfect, and most complex animal, man.

The First Class of preparations, exhibits the sap of vegetables, and the blood of animals; fluids from which all the different parts of the vegetable and animal creation are formed, supported, and increased. The moving powers of animals, muscle, elastic ligament; the bones and joints, conclude this series.

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* Sir Everard Home.

The Second Class, commences with the simplest form of animal, the hydatid, receiving like the vegetable, its nourishment by absorption from the surface. Next follows the simple bag, or stomach, with one opening or outlet; as in the polypus. Then comes the leech, to which a nervous system, and generative organs, are superadded; and thence the series passes upward, to those examples in which the stomach forms only a distinct part of the animal, for the purpose of digestion. The simple membranous stomach; those with the addition of crops, and other bags, to prepare the food, as in the ruminant tribe; and lastly, those with gizzards. Annexed to these, follow the extensive series of teeth; adapted to the kind of food, and form of stomach.

After the Stomachs, we have the numerous diversities in the disposition of the intestinal canal; principally with a view either to complete the process of digestion, or to increase the extent of surface for absorption.

The absorbent system itself, is next displayed; commencing as in plants, and passing upwards, through the various orders of animals.

We next pass forward, to the circulation; one of the simplest forms of which is presented in the caterpillar; a simple canal, or artery, admitting an undulatory motion of the blood. From this simple structure, the provisions become, in different animals, by small additions, more and more complex, until they attain the perfection displayed in the construction of the human heart.



The respiratory organs follow next in order; and are demonstrated, from the fine vascular membrane lining the shell of the egg, up to the lungs, in the various orders to the more perfect animals.

The Third Class, which comprehends the brain and nervous system, occupies a very extensive series; proceeding on, from the simple nerve of the leech, to the delicate nervous circle of the snail, and thence through the insects, fishes, birds, and quadrupeds, up to man. The organs of sense, as appendages to this series, are also beautifully illustrated from every department of nature.

The consideration of the external textures, and the various coverings of animals, form the contents of the fourth and last class; including also all that regards generation; and this latter subject extends its view from the polypus, that possesses this power diffused over its whole substance, through those specimens, in plants, and animals, where the organs are hermaphrodite, up to the most perfect varieties, of a distinction in sex.

It would be presumption, to call that a sketch, which must be perceived to be only a very partial, and imperfect outline; excluding, or at least omitting, all the entire animals that are in the Museum, all the skeletons of animals, the collection of fossil remains; and the extensive pathological series; either of which collections alone, would almost furnish a museum.

Gentlemen, the transition is natural, and easy, from Mr.

HUNTER, to Mr. HUNTER's commentator; and if you ask yourselves, Who was his most eloquent, most ingenious, and at the same time most faithful commentator? it will not be necessary that I should reply,—the late Mr. ABERNETHY. A gentleman, to whom Surgery is indebted, for many important improvements. A gentleman, whose modes of thinking had possibly received, in early life, some bias from those of his great predecessor; for like Mr. HUNTER, we find that he very often occupied himself in distributing, rather than collecting, the fruits of his professional labours.

That Mr. ABERNETHY had a manner of his own, with no small degree of occasional eccentricity, cannot be denied; but he seldom, I believe, indulged his humour, at the expence of his discernment; neither did he ever fail to perceive, and to avail himself of, any seasonable opportunity for the exercise of his benevolence.

Those gentlemen who had the happiness of being most intimately acquainted with Mr. ABERNETHY, will be the best qualified to determine, that in the tribute now paid, I have only ventured to express an opinion, the correctness of which their own sentiments will confirm; and to those gentlemen, particularly, it must afford the highest pleasure, to see so lively a memorial, as that now before them; called into existence, as it has been, by one, who enjoys the enviable, and comparatively the exclusive privilege of conferring perpetuity, and truth, upon the unstable characters of perishing mortality.*

* F. Chantrey, Esq. R.A.



Since our last meeting, Mr. President, the profession has suffered a loss, in the death of Sir EVERARD HOME; a very expert operator, a zealous comparative Anatomist; and a gentleman to whose liberality, (conjointly with the late Dr. BAILLIE) the College is indebted for the Institution of the present Commemoration.

One duty yet remains; it is that of giving expression to a regret, in which every member of this College, and every student, and friend of philosophy, in every country, will participate; when reminded of the heavy loss that science has recently sustained, in the late Baron CUVIER. The ornament of France;—the admiration of Europe; and the envy of the civilized world.

The genius and the labours of this justly celebrated man, will indeed perpetuate his name. The distinguished Geologist, WERNER, it is true, preceded him, in his most peculiar line of research; but CUVIER impressed it with the dignified character of philosophy. WERNER, it must be admitted, contemplated, and collected, various, and resplendent masses, of materials; but it was CUVIER who undertook and accomplished the task of arranging these, and others of his own selection, and discovery; so combining the whole, as eventually to erect a monument, no less sacred to the memory of its illustrious founder, than to the future purposes and pursuits of true philosophy.

Thus, Gentlemen, in conclusion, have I endeavoured to fulfil (although I fear very inadequately) the duty with which I have been entrusted.

We have taken a transient and cursory view of various circumstances, by which the advancement of Anatomy, and Surgery, have, at different periods, been either prevented or promoted; noticing, as we passed, certain individuals, and most particularly Mr. HUNTER; to whom the profession of Surgery is especially indebted, for its scientific character, and for the distinguished position in which it now stands, in the estimation of society. In doing which, I may, perhaps, venture to hope, that those gentlemen who have most largely contributed to uphold the dignity, and extend the improvement of Surgery, may not have seen much to disapprove; and that the junior members may have had an opportunity of perceiving, that although good talents, and a natural as well as cultivated taste for the profession, are necessary to their success; a steady and persevering industry, with a determination to emulate the virtues of their predecessors, are no less indispensable; constituting, as they do, the only sure path to happiness; the only safe road to honorable distinction.

FINIS.

## PART IV. CONTAINS:

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| Calculus *(continued)* | *By Dr. T. Thomson.* | Cold | *By Dr. Whiting.* |
| Calculous Diseases | *Dr. Cumin.* | Colic | *Dr. Whiting.* / *Dr. Tweedie.* |
| Catalepsy | *Dr. Joy.* | Colica Pictonum | *Dr. Whiting.* |
| Catarrh | *Dr. Williams.* | Coma | *Dr. Adair Crawford.* |
| Cathartics | *Dr. A. T. Thomson.* | Combustion, Spontaneous Human | *Dr. Apjohn.* |
| Chest, Exploration of | *Dr Forbes.* | Congestion of Blood | *Dr. Barlow.* |
| Chicken-Pox | *Dr. Gregory.* | Contagion | *Dr. Brown.* |
| Chlorosis | *Dr. M. Hall.* | Convalescence | *Dr. Tweedie.* |
| Cholera | *Dr. Brown.* | | |
| Chorea | *Dr. And. Crawford.* | | |
| Climate | *Dr. Clarke.* | | |

## PART V. CONTAINS:

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| Convalescence *(continued)* | *By Dr. Tweedie.* | Delirium | *By Dr. Prichard.* |
| Convulsions | *Dr. Adair Crawford.* | Delirium Tremens | *Dr. Carter.* |
| Convulsions, Infantile | *Dr. Locock.* | Dentition, Disorders of | *Dr. Joy.* |
| Convulsions, Puerperal | *Dr. Locock.* | Derivation | *Dr. Stokes.* |
| Coryza | *Dr. Williams.* | Determination of Blood | *Dr. Barlow.* |
| Counter-Irritation | *Dr. Williams.* | Diabetes | *Dr. Bardsley.* |
| Croup | *Dr. Cheyne.* | Diaphoretics | *Dr. A. T. Thomson.* |
| Cyanosis | *Dr. Crampton.* | Diarrhœa | *Dr. Crampton.* / *Dr. Forbes.* |
| Cystitis | *Dr. Cumin.* | Dietetics | *Dr. Paris.* |

## PART VI. CONTAINS:

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| Dietetics *(continued)* | *By Dr. Paris.* | Dyspnœa | *By Dr. Williams* |
| Dilatation of the Heart | *Dr. Hope.* | Dysuria | *Dr. Cumin.* |
| Disease | *Dr. Conolly.* | Ecthyma | *Dr. Todd.* |
| Disinfection | *Dr. Brown.* | Eczema | *Dr. Joy.* |
| Diuretics | *Dr. A. T. Thomson.* | Education, Physical | *Dr. Barlow.* |
| Dropsy | *Dr. Darwall.* | Electricity | *Dr. Apjohn.* |
| Dysentery | *Dr. Brown.* | Elephantiasis Arabum | *Dr. Scott.* |
| Dysmenorrhœa | *Dr. Locock.* | Elephantiasis Græcorum | *Dr. Joy.* |
| Dysphagia | *Dr. Stokes.* | | |

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"To the 'Editors' of this CYCLOPÆDIA no exception can be taken; the list of 'Contributors' also contains many good and honoured names, and we look forward to the completion of the work with great interest; in the parts before us there are many excellent articles upon subjects which must be interesting to all medical practitioners; there are many papers we should have much pleasure in giving an analysis of, and which would yield much instructive matter for our readers, but for the present we must conclude, with again expressing our conviction that it will become a standard book of reference for medical students and practitioners."—*London Medical and Physical Journal, March and May*, 1832.

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*** *The* PROPRIETORS *of this Work have the satisfaction to state, that an unexampled sale of the first and second Parts will enable them (notwithstanding the great expense attending the Publication) to give an additional Sheet with each subsequent Part* WITHOUT ANY ADDITIONAL CHARGE; *so that each Monthly Part, after Part II. will consist of* 128 *pages.*

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### CONDITIONS.

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DESCRIPTION

OF

# AN APPARATUS

INTENDED TO FACILITATE

# THE TREATMENT OF FRACTURES

OF

# THE LOWER EXTREMITY.

BY T. M. GREENHOW,

MEMBER OF THE ROYAL COLLEGE OF SURGEONS IN LONDON; SURGEON TO THE GENERAL INFIRMARY, AND INFIRMARY FOR DISEASES OF THE EYE, NEWCASTLE UPON TYNE; AUTHOR OF "CHOLERA AS IT HAS RECENTLY APPEARED IN THE TOWNS OF NEWCASTLE AND GATESHEAD," &c.

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TO
THE GOVERNORS
OF THE
NEWCASTLE INFIRMARY.

In the course of my professional duties in the Newcastle Infirmary my attention having, in a particular manner, been directed to obviate the formidable difficulties which present themselves in the treatment of the more serious kinds of Fracture of the Leg and Thigh—and knowing how earnest is their desire to mitigate the sufferings, and ensure the utmost degree of comfort to the patients admitted into that excellent Institution, I feel that it is with peculiar propriety that the following description of an apparatus intended to conduce to these purposes, is inscribed to its Governors, by

Their faithful and obedient Servant,

T. M. GREENHOW.

*Eldon Square, Newcastle upon Tyne,*
*July* 25, 1833.

# PREFACE.

To the experienced practical Surgeon, who has had occasion frequently to grapple with the untoward circumstances which arise in practice, the Author needs offer no apology for inviting attention to a new and efficient Apparatus for Compound and other Fractures of the Inferior Extremity: but it is not unknown to him that, in the minds of some persons, whose opinions and judgment on many subjects he would receive with the utmost deference, prejudices exist against the employment of mechanical agents, either in the reduction of fractured limbs or for their preservation in that state of perfect rest, as regards the relative position of the extremities of the injured bone, which so greatly conduces to complete recovery. The human hand, it is maintained, is the most

delicate and effectual agent for the accomplishment of the first of these objects, and the simpler the means by which the second is attained the better. If the truth of these positions were proved by the practical experience of Surgeons accustomed to the management of such accidents, the Author would be the last to propose less simple means for fulfilling the indications to be attended to in their treatment; ut as the annals of surgery abound with proofs of the occasional, if not frequent, failure of the means referred to, and, indeed, of any means hitherto employed, in ensuring in all cases a perfect recovery, and in preventing much suffering during the treatment, the Author deems himself not only justified, but bound by the most sacred ties of duty, to lay before the public the mode in which the employment of an additional mechanical power may be resorted to with more than ordinary certainty of success.

Nor is it wonderful, when we reflect on the condition of a fractured limb, that it should require the most diligent efforts of the human mind, guided by the purest principles of mechanical science, to devise the most effectual means of controlling the various disturbing causes which are called into



operation, during its progress towards recovery.—It forms a part of an ever-acting mechanical engine made up of levers, pulleys, and moving forces of very considerable power, which the will of the individual mind, whose organ it is, becomes unable to command in consequence of the altered relation of its parts. The severed portions of bone are acted upon by these forces, as well as by position and weight, in a manner that can only be counteracted by mechanical forces of equal or superior power; and why, after the experience of ages has proved that one set of mechanical agents is unequal to this end, the assistance of one yet more powerful should be rejected, the Author confesses himself unable to discover.

The screw, it is true, is a mechanical agent of nearly unlimited power, but it is also one capable of the most exact and delicate adjustment; and it is these two properties which render it so peculiarly fitted to fulfil, in the most perfect manner, the several indications of treatment in cases of fracture. The superior qualities which it possesses over the hands of several assistants, which rarely act with a tolerable degree of consent or co-operation, will be readily acknowledged by those

who have witnessed the ease and precision with which it is capable of reducing the fractured bone, as well as of maintaining it in its proper position with undeviating exactness.

It must not be assumed, then, that, because the immense power of the screw might, by possibility, lead to mischievous results when injudiciously used, it is not, therefore, well fitted for surgical purposes. Its excellency is greatly dependent upon its power, and it is the duty of every Surgeon to employ it, in common with every other surgical agent, with a due degree of intelligence and caution. The lancet, the scalpel, or the saw, are agents of fearful mischief in the hands of empirical rashness and ignorance, but of undeniable benefit when directed by science, judgment, and practical skill.

## DESCRIPTION, &c.

Notwithstanding the numerous varieties of apparatus, of a more or less complicated character, which have been employed in the management of the several kinds of fracture to which the lower extremities are liable, and, though the ingenuity of many eminent Surgeons has been exerted to obviate the various difficulties which are met with in the treatment of many of these accidents, it will, I doubt not, be admitted that they are too frequently unsuccessful, with whatever degree of care and skill they may be applied. This is more especially the case in compound fractures of the leg, attended with extensive injury of the soft parts, and in fractures of the upper portion of the thigh-bone; and when they occur near the trochanters, or in the neck of the bone, it is scarcely possible to prevent some degree of deformity, or to ensure bony union. That the causes of failure are to be found principally, or entirely, in the impossibility of

maintaining the complete and unvarying apposition of the fractured surfaces and the necessary extension of the limb, is, I believe, generally admitted; and if these two circumstances could be easily and completely effected, much would be done to ensure in every case of fractured femur a favourable result. It is in the invariable accomplishment of these indications that I entertain very confident hopes, that the apparatus, which I am about to describe, will be found more advantageous in its application than any that has heretofore been proposed. Nor are these the only benefits to be derived from it; it will be found to effect the degree of extension and counter-extension required for the reduction of the bone, with greater ease and certainty than can otherwise be attained; it will admit of those movements, on the part of the patient, which may be necessary for his comfort, or for effecting the natural evacuations, without hazard of deranging the fractured bone; and will altogether be found to contribute very largely to his ease and well-doing during the irksome confinement which must unavoidably attend his recovery.

Without entering into any detail of symptoms, causes, or diagnosis, or describing the various modes of treatment which have been recommended by other Surgeons, all of which are, no doubt, sufficiently known, I shall proceed to a simple description of the construction and application of the apparatus, which it is my object to propose as their



substitute, on the ground of its superior efficiency and ease of application. In the construction of the several parts of this machine, I have availed myself of the powerful mechanical agency of the screw. It is by the screw that extension is produced, regulated to the greatest degree of precision, and maintained without hazard of injurious retraction; and it is by the same power that the leg is suspended, or slung, at such a height from the bed as may be found most consistent with the ease and safety of the patient.

The first part of the apparatus to be described is a stand, to be placed upon the bed for the purpose of suspending the leg in an easy sling. This is formed of iron, and is of an oblong figure, with an upright pole at each corner; a moveable framework, consisting also of four upright extremities, connected by a longitudinal beam at bottom, and having slides at each corner which play upon the four poles of the lower part of the stand, admits of being raised or depressed as occasion may require, by means of a perpendicular screw placed in the centre of the longitudinal beam. In this way the height may be varied from twelve to eighteen inches. The poles are furnished with hooks at the top, between which is suspended a cross strap at each end of the stand, and on these straps is supported that part of the apparatus on which the fractured extremity is to be placed. This sling, though sufficiently strong, is neat and light in its

appearance, and will stand steadily upon the bed, provided the lower end be supported by a string attached to the bed-poles.

The advantages of slinging a broken leg or thigh are very great. It will be well, perhaps, in this place, to notice the more striking of them. 1. The greater certainty with which we can command the relative position of the pelvis and the injured limb. When the latter is immoveably fixed, it is well known that any movement in the former, however slight, must occasion a greater or less degree of displacement of the extremities of the fractured bone.—But by having the leg thus supported in a sling, it is permitted, with perfect safety, a degree of freedom which enables it to accommodate itself to any movement of the pelvis: it makes a corresponding movement which preserves completely their relative position. 2. It is by the consent, thus established between the pelvis and extremity, that the patient's bowels may be easily evacuated without injury or danger, while the greatest degree of cleanliness may be observed. 3. In compound fractures of the leg, the sling is remarkably useful in maintaining the horizontal position of the leg, while the knee is bent at that angle which is found most compatible with comfort. By this position the weight of the stream of blood is prevented from pressing upon the injured part, while the most perfect rest is ensured, and a degree of coolness which cannot be obtained when the leg is



closely surrounded by pillows. 4. As regards the general feelings of the patient, it will be found that the sling contributes in an extraordinary manner to his ease and comfort.

The remainder of the apparatus may be considered as a species of splint,* though differing essentially in its form and principles of application from any hitherto described. The knee is received into a deep hollow, where the part appropriated to the leg is united to that which is fitted to the thigh, at an angle of about 35 degrees. This forms a permanent flexion of the knee joint, at that angle which I have found most comfortable to the patient, which places the largest number of great muscles in a state of relaxation, and which enables it to be made an undeviating fixed point in performing and maintaining extension either of the leg or thigh. From the upper margins of the hollow for the knee proceed downwards two bars of iron at a distance of six inches from each other; these are united at the bottom by means of a cross bar placed at a distance of twenty-two inches from the knee. The space between these parallel bars

* Those parts of the apparatus which come in contact with the limb are well padded; the padding being made of materials which will admit of being removed for the purpose of washing, and refitted to the apparatus with the greatest ease. But to defend either the padding or the sling for the leg from being soiled by the discharge attendant on compound fractures, I should advise a piece of oil-silk, or India rubber cloth, to be laid over them.

is vacant, except for about three inches below the flexure on which the knee rests. A screw plays through the cross bar at the bottom, by means of which is moved a foot-piece which slides along the parallel bars with a steady motion. To the foot-piece is affixed, by means of straps, which regulate accurately its height, &c., a shoe made of soft materials, and provided with straps and buckles for fixing it firmly to the ancle and instep.

It will appear obvious that in fractures of the leg, whether simple or compound, when the knee is made a fixed point and the foot properly fixed in the shoe, extension to any degree can be made with ease by means of the screw which acts upon the foot-piece. When turned in the proper degree, the screw is prevented from further motion by means of nuts which are brought close to the cross-bar through which it plays. Though perhaps all this may seem complicated in description, it is perfectly simple in its operation. The fractured bone is thus effectually reduced and secured from displacement; but it will be found to be fixed and supported at the extremities only, while the central part is in an insulated state between the two parallel bars which stand at a considerable distance on either side.

The nature of the accident must now determine our further proceedings. If it be a simple fracture, side splints may be applied to the leg, and fixed by straps, tapes, or in such manner as incli-



nation may dictate. The bars are furnished with a number of studs, at distances of two inches from each other; to these must be affixed a back support for the leg, made of strong ticking, which, by means of buckles, can be made to apply with a comfortable degree of tightness to the back of the leg, without making any unpleasant pressure on the calf or other parts. It is in compound fractures of the leg that this arrangement is found peculiarly advantageous. By dropping the sling, which has just been described, the leg becomes insulated from the ankle nearly to the knee, so that the dressings and bandage may be removed, and the greatest attention to cleanliness observed without the slightest hazard or disturbance. We are thus furnished with facilities for the management of accidents of this description which have hitherto been unattainable, and which will be found to tend greatly to a favourable result; while they relieve the practioner from much of the solicitude and anxiety which have necessarily arisen during his attendance upon them.

In a case of compound fracture of the tibia which lately occurred in the Newcastle Infirmary, I have had an opportunity of putting to the proof the many advantages of this mode of treatment.—A young man, of about 19 years of age, had his leg broken by a sort of low wheeled waggon, (called a rolley,) used to convey corves of coals in the pits, the wheel of which passed over it.—

The fractured ends of the bone protruded to a considerable extent, and a portion, which was completely detached, was removed. The periosteum was destroyed for several inches, and the external wound extended nearly from the ankle to the knee. It was a large gaping lacerated wound; and altogether the accident was of so severe a character as to render it doubtful whether an attempt to save the leg could be made with prudence or a reasonable chance of success. After some consideration it was determined to give it a trial. I, therefore, placed the limb upon the apparatus, rendered the knee a fixed point by means of the straps above and below it, fixed the foot in the shoe, and by acting upon the foot-piece with the screw, the overlapping portions of bone were brought back to their places with ease and precision. The wound was so wide that the edges were drawn together with strips of plaster, a many-tailed bandage was applied, the sling was adjusted, and the patient was left in a more comfortable state than could have been expected. In consequence of the general bruises which he had received, leeches were applied to the abdomen, and an anti-phlogistic plan of treatment was pursued. In three or four days the dressings were removed and the wound thoroughly cleansed; which operation has been repeated on every second day since, quickly and easily; and the progress of the cure has gone on uninterruptedly. A portion of the bone, which



was denuded of periosteum, must be thrown off by exfoliation; but this process appears to be going on in the most favourable manner; while the general aspect of the wound is clean and healthy, and its extent daily diminishing. The constitutional disturbance has been greatly less than I have ever before known to arise from such an accident; and I am assured that this has in great degree arisen from the easy position in which the limb was slung. The adaptation of the bone has been maintained with unvarying precision.* It is true that this is but a single case, but it is one of the strongest character; and if the success of the apparatus has been thus complete where the difficulty and danger were so considerable, surely we

* The only incovenience that has arisen in the treatment of this patient was occasioned by the imperfect construction of the shoe, which, about six weeks after the accident, began to produce irritation and excoriation of the heel. To prevent this accident in future, I have had a shoe constructed on better principles, and of softer materials, which, if carefully fitted, I doubt not, will be found to answer well. If, however, a similar accident should be threatened, I should advise a cushion of elastic gum cloth, partially filled with water, to be placed on the sling for the leg to rest upon. The equable support afforded by this hydraulic pillow must necessarily obviate all hazard of the partial pressure by which excoriation is occasioned. In the case above noticed, at the end of eight weeks, bony union is so complete (although some dead portion must yet be thrown off by exfoliation), as to admit of the limb being removed from the apparatus, and the treatment conducted as if for a wound of the soft parts only. The great extent of the wound is rapidly diminishing, and it presents a very healthy appearance.

are justified in concluding that in less formidable cases its employment will not be found less efficacious.

In fractures of the thigh, especially in the upper part of the femur, the difficulty of maintaining extension and perfect apposition of the fractured surfaces of the bone, by any means in general use, is well known. The arrangement of the instrument for these purposes is simple and efficient.—The limb must be placed upon the apparatus, supported upon the sling, the height of which must be regulated according to the length of the femur, by turning the perpendicular screw. The knee must be rendered a fixed point as before, by buckling the straps above and below its flexure. The back portion of the apparatus must be made (by means of the moveable slide) to reach to the tuberosity of the ischium ; and the outer portion, which passes on the outside of the thigh, parallel with the bone, and has an iron loop at the upper end for the reception of a groin and a pelvis strap, must be extended by the screw to the degree required. Of course, the groin strap must be properly adjusted before the extension is made. The power of this screw will be found very great, but it can be used with so much caution, and so gradually, as to exclude all hazard of mischief. When the proper degree of extension has been accomplished, the pelvis strap ought to be applied, by means of which, in fractures of the neck of the femur, or



in the neighbourhood of the trochanters, the broken surfaces can be pressed together with any degree of force that may be required. The position of the iron loop to which the pelvis and groin straps are fixed, standing off, as it does, from the general course of the outer line of the apparatus, and projecting above the great trochanter, renders it a most advantageous point for effecting both counter extension and co-aptation by compression.—A splint* may now be applied to the anterior surface of the thigh, and the whole bound down by the straps which pass through the apertures in the back part of the apparatus When this application of the instrument is made with care and accuracy (and it may at the same time be done with the greatest ease), it will be found that the limb has been placed in a state of unusual security from the influence of the various disturbing causes by which it is liable to be deranged : and, as its movements accommodate themselves readily to those of the pelvis, it will appear evident that the patient may be permitted to relieve himself by a slight change of position without danger, and that the difficulty of removing the natural discharges usually experienced, and so irksome to the patient,

* For this purpose, and for applying to the leg, within the parallel bars, when thought expedient, I have had some splints constructed of elastic steel, well padded, which appear to me to possess the advantages of firmness and precise adaptation to the form of the limb, while the irritation of partial pressure is entirely avoided.

will be entirely obviated. The moveable portion at the upper part of the femur, together with the screw which acts upon it, can be altogether separated from the other parts of the apparatus, when not required, as in fractures below the knee, and will admit of being fixed to either side, so as to be adapted to the corresponding extremity.

In addition to the accuracy and perfection with which this instrument appears calculated to answer every indication in the treatment of all descriptions of fracture of the lower extremity, I may add that the security is so great, that, in all cases, I believe, the patient may be taken out of bed occasionally (as was done with the patient whose case has been referred to within a week of the accident); and in cases of simple fracture of the leg, or of the thigh when not in the upper part of the bone, he may soon be permitted to sit up daily without danger, and, before long, to make use of crutches.

The parts of the apparatus will easily be understood by referring to the accompanying drawing.

Messrs. Weiss and Son, 62, Strand, London, have been furnished with a model, from which they will manufacture the instrument for the supply of hospitals, or of those surgeons who may be disposed to make use of it in private practice.

I cannot permit myself to conclude this description of an apparatus which, whether or not it may



be admitted to exhibit in its construction the application of a new mechanical power to the purposes of surgery, is at least novel in the arrangement and adaptation of its several parts, without expressing my warm acknowledgements to those eminent members of the profession who have taken the trouble to inspect it during my recent visit to London, and have favoured me with the following testimonials of their approbation of the scientific principles on which it is constructed, and the completeness with which it is calculated to accomplish its intentions:—

*Conduit Street, June 26, 1833.*

My Dear Sir,

I had much pleasure in examining your invention for the Treatment of Fractures, which is ingenious and well adapted to answer its purpose in preventing deformities in union. The screw must necessarily be the steadiest mode of inducing a regular and gentle extension of the limb.

I am, your's truly,

ASTLEY COOPER.

To T. M. Greenhow, Esq.

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*2, New Basinghall Street.*

Dear Sir,

From a careful examination to which I have submitted the instrument of your invention for the support and adaptation of the bones in Simple and Compound Fracture, I have much pleasure in expressing my approbation, and opinion of its general utility and application to the most complicated of those accidents.

Your's, very truly,

GEO. LANGSTAFF.

To T. M. Greenhow, Esq.

*Bruton Street, June 26, 1833.*

I have been much pleased with the Apparatus for Compound Fracture of the Leg shewn to me by Mr. Greenhow, of Newcastle. It appears to me to combine the essential objects of position, security, and adaptation by extension, more perfectly than I have before seen them combined, and thus to offer the advantage of ease to the patient, and at the same time to remedy the inconvenience of partial pressure on the affected limb, if not to supersede altogether the confinement of splints. It is right, however, to state that this is only a theoretical opinion, the correctness of which I shall take an early opportunity of ascertaining.

BENJ. TRAVERS,
Sen. Surgeon to St. Thomas's Hospital.

To T. M. Greenhow, Esq., with Mr. Travers' compliments.

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*Golden Square, June 27.*

Dear Sir,

I have been so much gratified by seeing the Apparatus for Fractured Leg and Thigh, that I cannot refuse myself the pleasure of expressing it. The additional comfort it must afford to patients so circumstanced is so great, that I hope you will not omit the most effectual means of making it generally known.

I am, Dear Sir,
Your's, very truly,
THOS. COPELAND.

To T. M. Greenhow, Esq.

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Dear Sir,

I thank you for your kindness in showing and explaining to me your ingenious, and very efficient Apparatus for Fractures of the Leg and Thigh. It is the only one, which I have ever seen, that enables the Surgeon to bring the whole circumference of a



broken leg into view, after it has been set, without the least movement or disturbance of any part of the limb. This, as every man of experience knows, is a great advantage in the treatment of compound fractures, where the application of dressings to the wound sufficiently often, the prompt discharge of abscesses, the preservation of the parts in a cleanly state, and the opportunity of inspecting the position of the ends of the fractured bones in the early stages of the formation of the callus, are objects contributing very essentially to the favourable progress and termination of these accidents. I see, also, much to approve of in the simple contrivance which you employ for supporting and fixing the injured limb, as well as for making permanent extension, if judged necessary, either of the leg or thigh. Your invention appears to me to deserve the immediate attention of the surgical profession; and I shall take the first opportunity of pointing out its merits to the gentlemen who study surgery under me at the London University.

I am, Dear Sir,
Your's, very truly,
SAMUEL COOPER.

*7, Woburn Place, Russell Square, June 28, 1833.*

To T. M. Greenhow, Esq., Newcastle upon Tyne.

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Dear Sir.

I had an opportunity of examining your Apparatus for Fractures of the lower Extremity, which I like very much. The principle is just, and the mechanical ingenuity very great, by which the same machinery is adapted to the different kinds of fracture. I hope you will tax your ingenuity further to make the machine simple and cheap: a low price is a most essential consideration.

I am, dear Sir,
Your very obedient,
CHARLES BELL.

*29th June, Brook Street.*

To T. M. Greenhow, Esq.

Dear Sir,

I have much pleasure in expressing my entire approbation of the Apparatus you have constructed for the Treatment of Fractures, and which, I have no doubt, will be found eminently useful in practice.

I am, dear Sir,

Your's, very truly,

HENRY EARLE.

*George Street, July* 1, 1833.

To T. M. Greenhow, Esq.

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*Office of the Army Medical Department, 2nd July,* 1833.

My Dear Sir,

I have been much gratified by seeing the model of your invention for the setting and Treatment of Fractures of the Extremities. After the testimonials of approbation which you have received from the most eminent Surgeons who are in the exercise of their profession in the Metropolis, it is superfluous, if not presumptuous, in me to say anything; I may, however, be permitted to add, that in my humble opinion, your Apparatus seems to possess advantages for stationary military Hospitals, which no other that I have seen does.

Believe me, my dear Sir,

Most truly, your's,

J. M'GRIGOR.

To T. M. Greenhow, Esq.

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Dear Sir,

I beg to thank you for having shewn me the Apparatus which you have invented for the Treatment of Simple and Compound Fractures of the Thigh and Leg. It combines many advantages, especially for the management of compound fractures, in which



it is equally difficult to apply an adequate force of extension, and to have the means of perfectly cleansing and making various local applications to the injured part. But your Apparatus is excellently adapted to both these objects. It has, besides, the recommendation of cheapness. I hope that you will leave a model in London, in the hands of some of our instrument makers.

I remain, my dear Sir,

Your's truly,

HERBERT MAYO.

19, *George Street, Hanover Square, July* 2, 1833.

To T. M. Greenhow, Esq.

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My Dear Sir,

You must think it very extraordinary that I did not perform my promise, in communicating to you my conviction of the *general* application of your splint in Fractures of the lower Extremity, I will not say *constant*, because I believe no Apparatus can be made which can be rendered applicable to all the concomitant circumstances of these accidents; but this I will say, I never saw one better suited to combat most of the difficulties.

I remain, dear Sir,

Your's, very truly,

BRANSBY B. COOPER.

*New Street, Wednesday, July* 3.

To T. M. Greenhow, Esq.

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2, *Berkeley Street, July* 3, 1833.

Dear Sir,

Your Apparatus for Compound Fracture of the Leg, &c., which you were so good as to shew me yesterday, will, I think, answer extremely well, and admits of being applied with ease, and, I believe, comfort to the patient. In very bad cases of compound

fracture it seems likely to be a more convenient Apparatus than any other now in use.

With regard to that for the Thigh, the alterations you have proposed to make will render it more perfect; and, if on trial, the whole is found to answer, and to make the extension and counter-extension in an easy and effective manner, a great desideratum will be supplied.

Believe me, my dear Sir,

Your's, very truly,

G. J. GUTHRIE.

To T. M. Greenhow, Esq.

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*London*, 36, *New Broad Street*, *July*, 1833.

My Dear Sir,

Allow me to express to you how much I have been gratified by the inspection of your Apparatus for Compound Fractures, &c., which appears to me to accomplish the double purpose of fixing the limb, and allowing it to be dressed as often as may be required, without in the slightest degree disturbing it. As far as I can judge, without having witnessed its effects at the bed side of the patient, I should think, too, it must conduce to the ease no less than to the security of the limb; and that it will be found to lessen pain and prevent deformity.

I am, very faithfully, your's,

SOUTHWOOD SMITH.

To T. M. Greenhow, Esq.

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14, *Saville Row*, *July* 2, 1833.

My Dear Sir,

I thank you for the opportunity which you have afforded me of inspecting the Apparatus which you have invented for the Treatment of Compound Fractures. The construction of it is at



the same time ingenious and simple; and I have no doubt that we shall find it an important addition to the means which we possess of managing cases of this kind of accident.

I am, dear Sir,

Your faithful servant,

B. C. BRODIE.

To T. M. Greenhow, Esq.

## DESCRIPTION OF THE PLATES.

### PLATE I.

FIGURE 1 represents the stand for slinging that part of the apparatus more immediately connected with the limb.

A, the lower part which rests upon the bed; B B, the moveable part which slides upon the upright poles at C C, so as to regulate the height of the sling.

D, the screw, by means of which the moveable part is raised or depressed.

E E, the straps, suspended by rings from the hooks at the extremities of the upper part, on which the limb is slung. These straps admit of being lengthened or shortened, by means of the buckles, so as still further to accommodate the height of the sling to the particular case to which it is applied. In compound fractures of the leg, the horizontal position will always be preferred; but in fractured thigh, the apparatus can easily be placed in the position of a double inclined plane, if thought advisable, by lengthening the strap which supports the lower end of the apparatus. It will be observed that one end of the stand is narrower than the other; the narrow end is intended to be placed next to the knee, that it may interfere less with the opposite leg of the patient, while the greater breadth of the lower end enables it to stand more firmly: greater steadiness is ensured by fixing a tape to the part F, and attaching it to the bed-poles.

Figure 2 represents the principal part of the apparatus.

A A, the parallel bars which pass on each side of the leg, at a distance of six inches from each other; they are furnished with a number of studs to which is affixed,

B, the support for the back part of the leg. This is made of strong ticking, and admits of being nicely adapted to the form of the leg by means of the straps C C, which hang upon the studs, and can be lengthened or shortened as may be required by means of buckles.

D, the foot-piece, which slides between the parallel bars, and is acted upon by the screw E, which plays through the cross-bar F.—When extension has been carried to the proper degree the screw is secured from further motion by the two nuts which must be screwed against the cross-bar.

G, the shoe, furnished with straps and buckles, by means of which it will admit of being fitted to any ordinary-sized foot; the shoe is suspended by a strap which passes over the top, and is received into a buckle at the back of the foot-piece. Two other straps pass through



apertures in the foot-piece and buckle behind, so as fix the shoe more firmly in its place.

H H, the part of the apparatus which is adapted to fractures of the femur.

I, the moveable portion on the outside of the thigh, which admits of extension to the requisite degree by means of the screw K.

L, the iron loop at the upper end of the moveable portion, which admits of being fixed to the pelvis by means of two straps M M, one of which passes round the pelvis, and the other by the groin, embracing the tuberosity of the ischium.

N N N, other straps for fixing the apparatus firmly to the limb; they pass through apertures at the lower side of the iron work.

O, the screw, by means of which the sliding portion at the back of the thigh is fixed, when lengthened, so as to make it press against the tuberosity of the ischium.

P, screws for detaching the upper moveable portion of the apparatus when the fracture is below the knee, or for fixing it to the other side when the opposite thigh requires its application.

Figure 3 represents the key for acting on the screws E and K, Fig. 2, in producing extension either of the leg or thigh.

### PLATE II.,

Represents the apparatus as applied to the limb in fractures either of the leg or thigh.

Previous to the application of the apparatus it is advisable to pass a few turns of a flannel roller round the knee, to protect it more completely from partial pressure than can be done by padding alone, however carefully it may be fitted. It will be found useful to employ the same precaution for the protection of the foot previous to fitting on the shoe, which nevertheless is constructed with great care and of very soft materials.

The iron loop for the reception of the groin and pelvis straps, by means of a very obvious contrivance, admits of being turned upwards in the direction of the superior spinous process of the ilium on either side, so as to give the most effectual bearing on the pelvis in producing counter-extension by means of the screw.

It has been thought unnecessary to represent in the plate the elastic steel splints which form a part of the apparatus. Their construction is peculiar, and will be found well adapted to their purpose. In compound fractures of the leg, it will frequently be found better not to produce irritation by the application of any splint next the limb itself,

as it will be steadily supported by the shoe and parallel bars, if properly applied. In other cases two of these splints may be applied with advantage; and in fractures of the femur, one may be placed on the front, and a second on the inner side of the thigh. The straps represented in the plate will fix them firmly in their places.

It is due to Messrs. Weiss to express my high approbation of the complete and elegant manner in which they have constructed the apparatus from which the drawings for the plates have been taken.

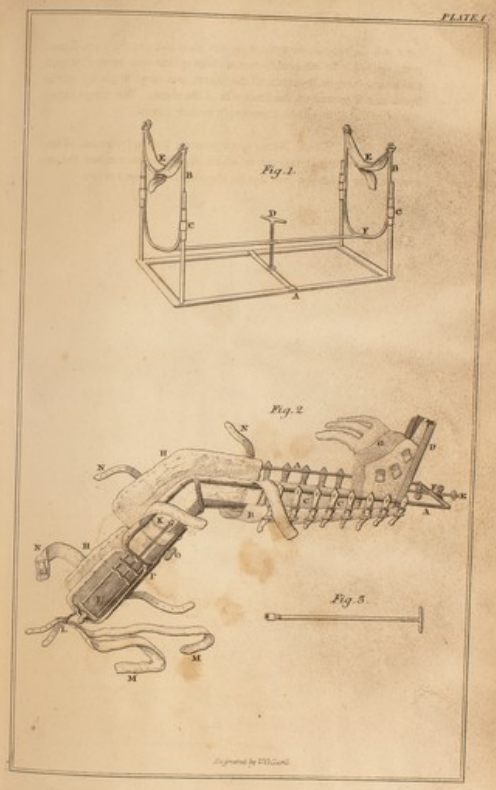
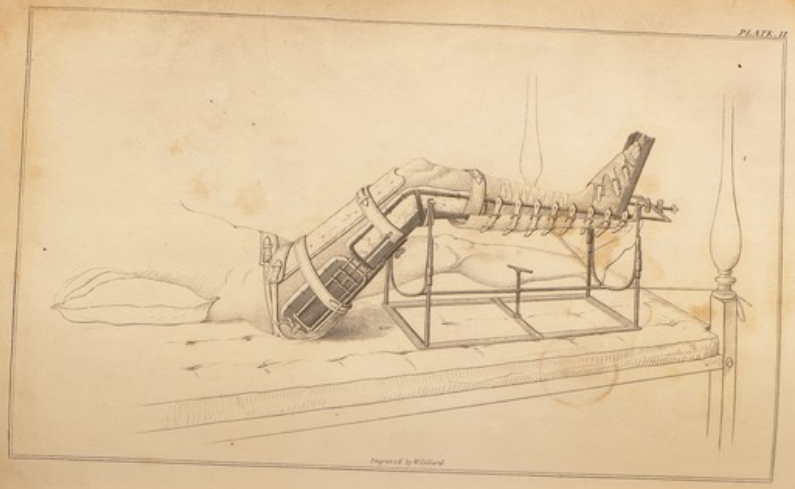


PLATE II



Engraved by W. Willard

AN ACCOUNT

OF THE FIRST MEETING OF THE

# PROVINCIAL MEDICAL AND SURGICAL ASSOCIATION,

HELD IN THE BOARD ROOM OF THE WORCESTER INFIRMARY,

ON THURSDAY, JULY 19th, 1832,

CONTAINING

## AN ADDRESS,

DELIVERED

BY CHARLES HASTINGS, M. D.

TOGETHER WITH A CORRECT REPORT OF THE PROCEEDINGS AT THE MEETING.

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*WORCESTER:*
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# ADDRESS.

I CONGRATULATE you, Gentlemen, that the day for forming a Provincial Medical and Surgical Association has, at length, arrived. An association which, I trust, is destined to exercise no inconsiderable influence on the future progress of medical science Feeling, as I have long done, the disadvantages under which the prosecutors of medicine, resident in English provincial towns have laboured, in consequence of the want of any system of co-operation, by which their separate exertions, for the promotion of our knowledge of the healing art, may be so united as to render them more influential, and more extensively useful; I cannot but hail this day, *Hunc lætum medicis diem*, as one of peculiar promise; as one likely to lead to the most important results.

When I see assembled around me some of the brightest ornaments of our profession; and when I call to mind the fact that, in addition to those now present, our association already numbers amongst its future members, a large proportion of provincial physicians and surgeons, who are, and have been, zealous and successful cultivators of our science; whose wishes, moreover, for the

success of the association, are ardent and strong; and who are only detained, by paramount necessity, from being here this day, to express their conviction that such an association, as we are now about to form, is not only desirable, but loudly called for, as positively necessary, if we, in the present day, mean to avail ourselves of all the advantages which the stream of time has carried down to us. When, Gentlemen, I contemplate these promising omens, can I, for one moment, doubt the success of our enterprise? can I, for an instant, cease to devote my poor abilities to advance the progress of the good cause in which we are engaged?

Neither, Gentlemen, will I affect to hide, on the present occasion, the feelings of unmixed joy which I experience in the reflection, that the Infirmary of my native county has the honour of receiving within its venerable walls, the first meeting that is called for carrying into effect the admirable purposes we have in view: because I feel that the more subservient such institutions can be made to the advancement of medical knowledge, the more instrumental will they ever be, in relieving the afflictions of the sick poor who seek an asylum within their walls.

The benefits which arise from the association of men, for the advancement of general science, have been long felt and acknowledged. Witness, more especially, the recent establishment of the "British Association for the advancement of Science," in which are enrolled the names of scientific men from all parts of Great Britain; a vast proportion of whom assembled together at their late meeting



at Oxford. We may, therefore, infer, that the desire for such a combination of forces in the Medical Profession, though dormant, has existed. We may infer this from the avidity with which the proposition to form such a society, as we contemplate, has been, on all hands, received.

The facilities of communication, too, between distant towns, both personally and by letter, are so much greater than formerly, that the very distance at which many of the members may reside from each other, will oppose but a slight barrier to our undertaking. Every thing now conspires to make the present a fit time to begin our great experiment. Let us look, alone, to the numerous charitable, medical institutions which, to the honour of the provinces, flourish so vigorously in every direction. The means which they would afford, *to increase our knowledge of the medical art, if they really were sanctuaries of science, as well as of sorrow*, are incalculable! Again, I am far from thinking lightly of the influence which provincial medical men have in society; but I also believe that, as a body, provincial medical practitioners do not hold the rank in the community to which they may attain, and to which it will at all times be the effect of our association to stimulate them to aspire. To this end it is also of immense importance, that, as a profession, we should maintain a dignified attitude before the world; for, if we turn our attention to the members of the medical profession themselves, and observe the spirit of misrule and confusion with which some of them are actuated, and the attempts that have been made, and are making, in the

metropolis, to bring about feelings of hostility between the cultivators of the different branches of medicine, we cannot but feel that this is the time in which the friends of peace and harmony should declare themselves. I hope, therefore, as a society, we shall never allow any opportunity to escape us of cultivating friendly intercourse, and of exalting, as far as we have the power, those favoured sons of science who have, by their life and conversation, shed a lustre around them, and whose example, reputation, and acquirements, are calculated not only to stimulate their brethren to exertion, but also to raise admiration of our art in the public mind.

But there may be those who, though they allow the scheme of an association, for the advancement of medical science in the provinces, to be excellent in itself, do not admit that it can ever be made practically available to the furtherance of science, owing to the dearth of willing labourers to cultivate the new ground, which we are about to lay open. I feel satisfied that no one who can entertain so libellous a doubt, will venture to be present this day; but if there be any one who hesitates as to the probability of the provinces containing able writers, willing to devote themselves to the cause of our science, for the pure love of truth, and for that only, I would beg to call his attention to the publication of the Midland Medical and Surgical Reporter, which commenced in the year 1828, and of which, sixteen numbers have been published. In the prospectus of that Journal, the Editors observe, "In reflecting on the state of medical science, and on the aid which



it has derived from the opportunities of observation afforded by congregating the sick in hospitals, it has often struck us with surprise, that so little should be known of the many interesting cases that must have occurred in provincial hospitals. If, from the establishment of these institutions, faithful records of the valuable cases that have occurred in them had been handed down to us, our present limited knowledge of morbid anatomy, the only correct elucidator of disease, would have been greatly extended. We know well that great difficulties must present themselves in effecting an object so desirable as making public these instructive cases. The daily anxieties and fatigues to which those in general are subject, who have the professional care of these institutions, are such as to leave little time for literary pursuits, and appear to present an almost insurmountable barrier to such an undertaking. It is not, however, to be denied that, by zeal and industry, much may be effected."

Such were the anticipations with which the Editors commenced the publication of the Midland Medical and Surgical Reporter, and many were the desponding forebodings with which the undertaking was greeted by some of their friends. But four years' experience in conducting that work, has convinced those who were engaged in it,* that provincial labourers are neither few nor of small value, and the knowledge of this fact was the circum-

* I gladly avail myself of this opportunity of recording the names of my fellow Editors in this work, and of expressing my gratitude to them for their valuable assistance. They were my friends Dr. Malden, James P. Sheppard, Esq. and John Rayment, Esq. all of Worcester; Dr. Darwall, of Birmingham; and Dr. Burne, of London.

stance which induced them to consider, that the more extended enterprise, on which we are this day entering, was not only feasible, but would almost certainly be crowned with success. It occurred to them that as the establishment of a Journal in the Midland Counties had been well received, and supported beyond their most sanguine expectations, there was no reason why a society of provincial physicians and surgeons might not be formed, to elicit valuable information, and to communicate it to the public, under the title of Contributions, Memoirs, or Transactions. They were moved to this consideration by contemplating the necessity that, in the yet imperfect state of our science, exists for the further collection of facts, which, in order to be abundant, must be derived from a wide field, and from numerous contributors. But the duties and the cares of life prevent many from paying their mite into the general treasury, except where arrangements are made for exciting industry, and facilitating communication. Association ministers to these ends more effectually than any other means hitherto devised; *omnes trahimur et ducimur ad cognitionis et scientiæ cupiditatem;* and on this ground the proposition was made, to associate the Provincial Medical Practitioners of England, or, at least, as many as can be brought to rally round a common centre, in a comprehensive co-operating Institution, which, by collecting the results of individual experience, and bringing the energies of many minds to bear on those unsettled points which have subjected medicine to the imputation of being a conjectural art, may



contribute to redeem its character, and to give to its operations more precision and certainty.

I need not here relate how this proposition has been received by the profession at large, how gratifying *this* reception of it has been to those with whom the scheme originated, how honourable, truly honourable, to those who have agreed zealously to engage in this, what I must call, truly noble undertaking. Your presence here this day, stamps with your approval the general principle which is involved in our society, and shews that at any rate, the founders of this institution did not make a wrong estimate of the *desire*, which exists amongst provincial medical practitioners, to advance medical science, and to promote among themselves that harmony and social feeling, which ought ever to characterise a liberal profession.

It has fallen to the lot of the humble individual who is now addressing you, to communicate, either personally or by letter, with a very large proportion of physicians, surgeons, and general practitioners, resident in different provincial towns; and in the course of those communications, there has been but one wish expressed for the prosperity of so promising an institution, and, generally speaking, a desire entertained of being enrolled amongst its members; so that we actually have this day upon our list, 150 candidates for membership.

To attempt to express the feelings of gratitude which I experience towards those numerous friends who have, in so distinguished a manner, attended to my applications in behalf of the association, would be vain. I will only, therefore, declare that the impression made on my mind is such as time

will not efface, and that my gratitude is too great for words to express. A committee has for some time been engaged, whose endeavour has been to take advantage of the suggestions made by our numerous correspondents, and the results of their labours have been for some time widely circulated amongst the members of the profession, in a prospectus, which recites the following as the principal objects to which the attention of the association will be directed.

1st.—Collection of useful information, whether speculative or practical, through original essays, or reports of provincial hospitals, infirmaries, or dispensaries, or of private practice.

2nd.—Increase of knowledge of the medical topography of England, through statistical, meteorological, geological, and botanical enquiries.

3rd.—Investigation of the modifications of endemic and epidemic diseases, in different situations, and at various periods, so as to trace, so far as the present imperfect state of the art will permit, their connexions with peculiarities of soil or climate, or with the localities, habits, and occupations of the people.

4th.—Advancement of medico-legal science, through succinct reports, of whatever cases may occur in provincial courts of judicature.

5th.—Maintenance of the honour and respectability of the profession, generally, in the provinces, by promoting friendly intercourse and free communication of its members; and by establishing among them the harmony and good feeling which ought ever to characterise a liberal profession.



As one great means of carrying into effect these objects, it is proposed to hold an annual meeting of the members at some one of the provincial towns, changing the place of meeting each year; which meeting will not only be instrumental in producing friendly intercourse between all the members of the Association, however separated by distance from each other; but it will also be dedicated to the promotion of medical science, as one of the members will be annually appointed to give a history of medicine during the past year, or an oration on some subject connected with medical science, or a biographical memoir of some eminent cultivator of medical science, who may have resided in the provinces. This retrospective view of medicine alone, will, I think, stamp a considerable value upon our proceedings, because nothing can be more proper than that, at stated periods, reports should be made of the advancement of a progressive science, and nothing can be more likely to stimulate to renewed exertions those who have been toiling hard in the field of knowledge, than to look back and discover, that a harvest, more or less abundant, has been reaped as the fruit of their exertions.

Various, indeed, are the means by which our annual meeting may be found advantageous in increasing our stock of knowledge. It has been suggested by a very distinguished individual,* that a certain number of members shall be appointed each year; whose duty it shall be, to report on the state of medicine, in the several countries with

* Dr. Conolly, of Warwick.

which we have literary communication. Thus the state of the science in France, Germany, Italy, and America, would become familiar to each of us, and much interesting and valuable information could not fail thereby to be elicited. In this respect, also, the British Association for the advancement of science, may be imitated by us with great advantage. They have appointed committees of their body to select the points in each science which most call for inquiry, and endeavour to engage competent persons to investigate them; and they attend particularly to the important object of obtaining reports in which confidence may be placed, on the recent progress, the actual state, and the deficiencies, of every department of science.

On the last of these points, the collection of reports, an able and zealous member of the British Association, Professor Whewell, says, "A collection of reports concerning the present state of science, drawn up by competent persons, is, on all accounts, much wanted; in order that scientific students may know where to begin their labours, and in order that those who pursue one branch of science, may know how to communicate with the inquirer in another. For want of this information, we perpetually find speculations published, which shew the greatest ignorance of what has been done and said on the subject to which they refer." Additional energy may, therefore, be given to our proceedings, and the zeal of our members be increased, if a certain number of them be appointed, each year, to report at the following annual meeting, the progress of the



distinct branches of medical science, during the year.

We shall not, then, find any lack of good employment for our time at the annual meeting.

The objects to which the attention of the members in general may be directed, are also of paramount importance.

Is there not a rich mine open to the labours of our members, in the department of essays, speculative and practical? There is scarcely a branch of physiological or pathological investigation, which may not be undertaken by means of essays.

*In Physiology.*—After all the laborious and minute researches of the anatomist, there are yet parts of the animal frame of which we know not the uses, scarcely the structure; and there are several functions of which the physiology is still very imperfect.

Of the blood, the chemical investigation has been minutely pursued. Has its physiological condition been investigated with equal care?

The actions of the heart have become the subject of much minute observation, ingenious speculation, and keen controversy. However the inquiry may terminate, the science of physic cannot fail to profit by the labour and intellect so meritoriously devoted to the research.

The respiratory process, and the changes induced by it, have been ably and zealously investigated; yet even here, there is room for more extended inquiry.

Of the brain and nervous system, the knowledge has been greatly advanced in modern times. The structure of the brain has been much more clearly

demonstrated, since the mode of treating it, by transverse sections, has been exchanged for the more rational one, of unfolding its several parts, without injuring their texture, or rudely disuniting them.

Respecting the nerves, the brilliant discoveries of Sir C. Bell constitute an æra in anatomical science. They shed around his name a lustre of no common brightness, and will extend his fame to distant climes and remote ages. They open a field, too, for further investigation, for it is highly probable that the nerves perform other functions besides those of sensation, motion, and volition; and that there are special nerves devoted to several of the more intricate processes of the animal economy, which enlightened research may yet explore.

Of the several abdominal viscera we have yet much to learn. The uses of the spleen, of the renal capsules, of the appendix cœci, are still conjectural, if not wholly unknown. The physiology of the liver is very imperfect. In fine, sedulously as anatomy and physiology have been cultivated for ages, there is still enough unascertained to excite inquiry and repay exertion.

*Pathology.*— In pathology, the field is still more ample, for this branch of science, can hardly be regarded otherwise than in its infancy. It presents but few truths which merit the name of principles, and even the series of morbid changes from which the special diseases, recognised by nosology, result, has been hitherto very imperfectly investigated. Between the first deviation from a state of health, and the generation of a special malady, a most



important period intervenes, which has received very little attention.

The combinations of nervous and vascular derangements, too, their mutual influence on each other, and the modifications of treatment required, according as either obtains the ascendancy, furnish matter for observation and inquiry of the highest moment. In the present state of our knowledge, there is too much tendency to view these states as radically distinct from each other, if not directly opposed; to infer that if one prevail the other cannot co-exist; and, under the influence of an exclusive theory, to adapt the treatment to the partial character thus assigned. Diseases of inflammatory action require depletory treatment and anti-phlogistic regimen. Nervous excitement, when not dependent on increased vascular action, is, oftentimes, best allayed by stimulants and narcotics. To combine these opposite remedies, so as to obtain from each class its beneficial effects, is essential to successful practice. Experience teaches this; many practise it; and to this knowledge may be traced much of the tact by which the experienced practitioner is often distinguished. But theory has not yet developed the principles on which it is founded, so as to render them clear to those who are entering on the practice of their art, or who have not had opportunity for forming their own experience. There is reason to believe that the vascular and nervous derangements continually co-exist, and are intermixed in every conceivable proportion; and if, in the treatment, either be overlooked, the success will be less speedy and less complete.

Among the spinal diseases, are many of which our knowledge is very defective; several for which we have no rational mode of cure. The more prominent of these will readily present themselves.

*Therapeutics.*—The modus operandi of remedies, too, needs further elucidation. Were this more completely investigated, many of our most active and useful medicines might, through analogy, be extended in their applications, and far more safely used. Mercury, for instance, which, when administered according to its more immediate and physiological operation, is capable of extended and accurate use, of which they who judge only from its more remote and curative effects, have but a very imperfect notion. On this question, my friend, Dr. Barlow, of Bath, has thrown light, in one of his papers in the Cyclopædia of Practical Medicine, a work which, as far as it has gone, does honour to our country, and to which one is proud to see the names of so many provincial physicians attached.

All the subjects which I have above mentioned, (and they might be readily multiplied,) may be elucidated by good essays. They, moreover, have been the favoured method by which some of the brightest ornaments of our profession have given their thoughts to the world. Many, whose avocations and cares will not permit them to engage in the more regular and laborious task of a treatise, may render much service by this more convenient, and not less effective way, of communicating valuable information to their brethren.



The history of medicine confirms me in this recommendation of essays to the attention of the members. How much interesting and truly valuable knowledge has been thus communicated to the world. In our own country we may boast of much valuable literature of this kind. In London, the Medical Observations and Inquiries, Medical Communications, Medical Transactions, Memoirs of the Medical Society, and Medico-Chirurgical Transactions, bear ample testimony to the beneficial effects that may arise from the publication of well-selected essays. Since the foundation of the Medical School in the University of Edinburgh, that city has been the favoured seat of medical learning; and how much of the reputation for that learning in our northern brethren, may be attributed to the success of the publication of valuable essays, I leave others to determine; but thus much I may observe, that so long as a taste for Medical Literature shall continue, so long will the Edinburgh Medical Essays, the Essays Physical and Literary, Medical Commentaries, and Annals of Medicine, be read with interest and attention. These publications require, indeed, no commendation from me, as their character and merit are well known, and their utility has long been decided by the general suffrage of the profession. I may, however, be here permitted to observe, (and I make the observation solely with the view of encouraging the exertions of the members of this association,) that many valuable papers, both in the London and Edinburgh Transactions, have proceeded from the pen of provincial physicians and surgeons. Neither should

it be forgotten, that we have already before us, in the brilliant success which attended the publication of the Memoirs of the Manchester Society, and the Essays which have appeared in the Midland Medical and Surgical Reporter, an additional stimulus to engage us zealously in the present undertaking.

But let it never be forgotten, that a long debt is owing from the medical officers of Provincial Hospitals, Infirmaries, and Dispensaries, in the shape of reports of those institutions. It is manifest that, if the valuable results of hospital and dispensary practice, throughout the kingdom at large, could be brought before the public in an authentic shape, the measure would be attended with the greatest possible advantages. At present, little has been done in this way, to which we can appeal with any satisfaction. The Midland Medical and Surgical Reporter has, in this respect, claims to consideration, in affording valuable reports of the Birmingham Town Infirmary, by Mr. Parsons; the Birmingham Eye Infirmary, by Mr. Middlemore; and the Worcester Dispensary, by Dr. Streeten. It is much to be desired that this line of inquiry should be assiduously followed up; for thence would, in future, arise most valuable documents, that, at any rate, would be authentic and impartial evidence, from which conclusions might be drawn or improvements suggested, that might lead to very favourable results in every branch of the healing art. I cannot press too strongly upon the members, the necessity of attention to this subject, and I do so the more earnestly, because I feel that, by the sacrifice of a small



portion of time, the medical officers attached to the several charitable institutions of this kind, might furnish tabular records, giving an account of the principal cases under treatment; and also of every peculiar occurrence, as endemics and epidemics, &c.; any remarkable accident or operation; any particular mode of treatment; any particular formulæ not in general use; and, above all, accurate descriptions of the morbid appearances in all fatal cases. Annals of this kind would not only afford most valuable information to the public, but they would also materially tend to improve the discipline of hospitals, infirmaries, and dispensaries, and lead to a much more systematic arrangement of the respective duties of the officers of these establishments.

Medical Topography, again, is a subject on which we are particularly called upon to exert ourselves. It yet remains as a reproach to Englishmen, that they have done much less than their continental brethren in this very important branch of Medical Learning. To provincial practitioners we must look for the supply of this deficiency. They, alone, in their different localities, have the means of remedying this defect, and of supplying a more perfect system of Medical Topography than we at present possess.

"That great and numerous obstacles," to use the language of a learned author, in an excellent article in the Edinburgh Medical and Surgical Journal, "exist, to a general medical topography of this or any other country, we are most ready to admit; but, we have little hesitation in saying, that the greatest of all is to be found in the apathy

of the resident medical men, from whose cordial co-operation alone any thing of the kind can be expected. Any voluminous work, whether systematic or empirical, must, unavoidably, contain much useless, and some erroneous, matter. To after times it must be left to correct these errors, and prune these redundancies; but we cannot help expressing our regret, that even the germ of a general medical topography of our island has not yet appeared among us, and that we are left with little more than the bills of mortality, from which we can extract any information on the state of public health, of a vast proportion of our most populous cities and counties. From these empirical sources, we have reason to suppose that the loss of human life varies in different proportions, from 1 in 36, the average rate for Middlesex, down to 1 in 73, the calculation for Cardigan; but, for many of the causes of this striking difference, we are consigned to the obscurities and intricacies of conjecture."

I cannot help entertaining the cheering hope, that the members of this Association may, by directing their attention to this highly important investigation, no longer permit it to be said that, whilst the physicians of France, Italy, Sweden, Denmark, Holland, Germany, and other continental states, have all contributed, more or less, to the formation of a national medical topography, England alone has done nothing, or next to nothing, on this subject.

In a densely populated and manufacturing country, where the elements for this sort of inquiry must abound almost more than in any other, it is



somewhat marvellous that this should be the case, and particularly since the importance of the information to be obtained, has been often stated to the public. For it is but justice to the medical periodical press of this country to state, that its conductors have repeatedly endeavoured, but hitherto with not much success, to awaken the profession to the necessity of cultivating this branch of knowledge. The London Medical and Physical Journal, the London Medical Repository, and the Edinburgh Medical and Surgical Journal, have each of them, at times, loudly called for assistance of this kind; and in the latter Journal, particularly, several valuable contributions of this nature will be found, especially in the 67th number, where there is given a very able sketch of a plan for Memoirs on Medical Topography. The Editors of the Midland Medical and Surgical Reporter, also, have devoted attention to this point, and the fruits of it are important. The 1st, 2nd, and 4th numbers of that Journal, contain an account of the medical topography of Worcester; the 2nd and 3rd numbers, a topographical account of Birmingham, by Dr. Darwall; and another number, observations on the population returns of the manufacturing districts, by Dr. Walker, of Huddersfield. Nor must we forget to mention that, in one branch of this inquiry, there seems, of late, to be much promise of advancement. The work of Dr. Hawkins, on Medical Statistics, is, in itself, of great value. The learned author has brought to the subject much zeal and industry, and the result of his researches is a work replete with valuable information upon the dura-

tion of human life in every quarter of the globe, and even in all the cities of any considerable size. Nor must it be forgotten that the profession owes much obligation to Dr. Clarke, who, in his work upon Climate, has faithfully and closely investigated the general physical characters of the milder parts of England, and his researches have proved eminently useful in directing the attention, and guiding the judgment, of medical men, in the application of these situations to the prevention and cure of disease.

Mr. Thackrah has also ably exhibited the effects of the principal arts, trades, and professions, and of the civic states, and habits of living, on health and longevity: with a particular reference to the trades and manufactures of Leeds: and has suggested means for the removal of many ot the agents which produce disease, and shorten the duration of life. To which may be added a very ingenious article in the Cyclopædia of Practical Medicine, on the diseases of artizans, by my friend, Dr. Darwall. All these contributions, interesting as they are, can only be considered as incipient labours in this branch of knowledge.

To any one who is inclined to engage in the duty of collecting materials for increasing our knowledge of Medical Topography, I would wish strongly to recommend a careful perusal of the paper in the 67th number of the Edinburgh Medical and Surgical Journal, to which I have before alluded. The author of that paper divides the objects of inquiry into four general heads, and these again he sub-divides into specific subjects. Under the first head he includes the physical



geography of the place to be described, comprising notices on its botany, mineralogy, and natural history. The second head he refers to the inhabitants, including an account of their food, habitations, customs, &c. Under the third head are classed such subjects of inquiry as are connected with diseases, either endemic, epidemic, or sporadic, which appear under the form of epizootics amongst the lower animals, or which affect the products of vegetation. To the fourth head are referred miscellaneous objects of inquiry, or such as could not be arranged under any of the preceding.

The advancement of medico-legal science, to which it is proposed that the labours of the Association shall be directed, is of the highest importance. The superiority of our continental brethren over British medical men, in their knowledge of forensic medicine, has been long painfully felt by those who are emulous of their country's fame. Dr. Christison, an eminent authority on this question, says, "I have often had occasion to regret that so little attention has been paid in this country, to preserving, in sources accessible to medical men, the interesting medico-legal inquiries which are annually made throughout Britain. The want of authentic documents, embracing the medical facts and disquisitions which have been brought forward on trials in our own country, has obliged our medico-legal authors to illustrate the doctrines they have laid down, by referring to the proceedings in foreign courts of judicature. Valuable, however, as are the records which have been published of these proceedings,

particularly by the medical jurists of Germany, they want, in the eye of the English reader, the interest possessed by domestic occurrences; they are apt, sometimes, to convey incorrect impressions of the scope of medical jurisprudence, and its influence on the administration of British law; and I cannot help adding that, in point of authenticity, the facts recorded must generally fall short of those determined in the course of judicial inquiries in this country; for, however imperfect our prelimiminary investigations may often be, the facts eventually brought out in evidence are in no other country so fairly stated, so minutely inquired into, and so completely put to the test as by the form of trial in Britain." The members of our Association will, I feel assured, maturely weigh the advantages to be derived from their devoting themselves to supplying this defect of medico-judicial facts in our own country; and, as we have already members, on the list for enrolment, from many and distant parts of the kingdom, there can be no doubt but that, by a moderate degree of industry, succinct reports may be published by the Association, of whatever instructive cases may occur in the provincial courts of judicature.

Medical Ethics, also, will claim some attention from an Association like ours. It is strange that, with the exception of a few meagre essays, no attempt has been made to establish a code for the guidance of those who need such direction. In a well organized profession, there could be no difficulty in adapting to its exigencies the doctrines of general Ethics, the principles of which exist in every well governed mind, and are identical in



all circumstances, however variously they may be applied. Except the brief tracts of Gregory and Percival, we have no guidance furnished to us in this respect; and a well-digested code, adapted to the complex and much altered condition of the profession, is yet a desideratum.

It is, likewise, admitted, on all hands, that the organization of the profession which obtains is not what it ought to be; for the whole system of medical polity in this country, is both defective and erroneous. Opinions differ widely as to the evils and remedies, but few are found to commend the existing state of things. This subject is closely connected with the advancement of science, for, if the profession were constituted as it ought to be, and as reason and sound principles dictate, the harmony that would be thus established among the several departments, could not fail to prove a direct means of their co-operating more cordially and efficiently in extending the science and improving the practice.

With regard to the management by which the labours of the Association are to be regulated, I may notice that, for the first year, it is proposed to adopt the following provisional constitution, to be afterwards modified in whatever manner the first Annual General Meeting shall decide.

The Association to have a President, two Secretaries, and a Council.

The several officers to be appointed annually, by a general meeting of members convened for that purpose, at whichever of the provincial towns may be appointed, the place of such meeting being prospectively notified each year.

At this meeting shall be presented a report, prepared by the secretaries, of the general state of the Association, its proceedings, and pecuniary accounts; the report to be afterwards printed, and a copy supplied to every member.

The office of president to be honorary, and conferred on some senior physician or surgeon of eminence, resident in any of the provincial towns comprised in the circle of the Association.

The two secretaries to be resident in Worcester, the place of publication, their duties being to attend to the printing of the transactions, and correct the press; to be present at the meetings of the council, and keep the minutes thereof; correspond with the individual members, and to receive, and submit to the council, all papers transmitted for publication: also to keep the financial accounts of the Association.

The council to consist of — members, to be selected from the principal provincial towns; who may be considered as representatives of the Association in their respective districts.

The council, with whom must rest the chief responsibility of publication, to have full power of deciding on all papers transmitted for publication; and the consent of three of its members must be obtained before any paper can be published. It shall also be the duty of the council to receive the subscriptions, when due, in their respective districts.

Each member of the Association to pay one guinea on admission, and the same amount annually afterwards. The subscriptions to become due on the 1st of January each year.



I may here, also, remark, that if, from the subscriptions being numerous, our funds will admit of such a measure, we have it in contemplation to have a medal struck, to be conferred by the council on any successful prosecutor of medical science.

You must perceive, Gentlemen, it is no ignoble service in which I wish to engage you. Neither is it one of which the benefits can be doubtful. I do not require you to embark with me in the endeavour to build up some hypothetical system of medicine. I do not wish to entice you into some labyrinth of conjecture, where you may be lostin the mazes of fancy. I do not desire to lead you into useless theoretical disquisitions; but I call upon you in the true spirit of inductive philosophy, to be vigilant in the collection of facts, and cautious in drawing conclusions from them; "*At non solum,* (if you will permit me, on this point, to use the words of the immortal Bacon) *copia major experimentorum quærenda est et procuranda, atque etiam alterius generis, quam adhuc factum est; sed etiam methodus plane alia, et ordo, et processus, continuandæ et provehendæ experientiæ, introducenda. Vaga enim experientia et se tantum sequens mera palpatio est, et homines potius stupefacit quam informat. At cum experientia lege certa procedit, seriatim et continenter, de scientiis aliquid melius sperari poterit.*"

What, then, can hinder us from devoting ourselves to the rational, the scientific investigations which it is the object of our Association to institute? Shall we say that we have no leisure for these pursuits? that the practice of our profession

and the cares of life, too much engross our attention for us to engage in so useful an exercise as this which I am proposing to you? Has it not been said by the very highest authority on this question, that "the most active or busy man that hath been or can be, hath, no question, many vacant times of leisure, while he expecteth the times and returns of business, (except he be either tedious and of no dispatch, or lightly and unworthily ambitious to meddle in things that may be better done by others:) and then the question is, but how those spaces and times of leisure shall be filled and spent; whether in pleasures or studies."

Gentlemen, you will, at any rate, admit, that the objects I have thus hastily introduced to the notice of the meeting, are worthy of deep meditation. The contemplation of them appears to me, indeed, to open to us a vast and unbounded prospect, and to beget high and lofty thoughts of our future proceedings. I may be sanguine in my expectations, but I cannot help indulging the gratifying, the cheering, the delightful thought, that, if we engage in this undertaking, as we are bound to do, by the obligations which our profession imposes upon us, with the zeal and alacrity of men anxious for the good of mankind, the Association must be of some use; must have a direct tendency to extend the empire of knowledge, and to increase our power over disease.

"*Valeat quantum valere debet.*"

PROVINCIAL

# MEDICAL AND SURGICAL ASSOCIATION.

On Thursday, July 19th, a Meeting of more than fifty Medical Gentlemen took place, agreeably to advertisement, in the Board Room of the Worcester Infirmary, for the purpose of forming an Association under the above name. The venerable Dr. Johnstone, of Birmingham, was unanimously called to the Chair; there were also present the following eminent individuals:—Dr. Kidd, Regius Professor of Physic, Oxford; Dr. Barlow, of Bath; Dr. Conolly, of Warwick; Dr. W. Conolly, of Cheltenham; Dr. Corrie, of Birmingham; Dr. Evans, jun. of Ross; Dr. Thomas, of Rose Lawn; Mr. Hodgson, of Birmingham; Mr. W. Sands Cox, of Birmingham; Mr. Soden, of Bath; Mr. Hetling, of Bristol; and many others, including most of the resident Faculty of the city and neighbouring towns.

The venerable chairman said that he felt some measure of diffidence in accepting so distinguished a post, at a Meeting like that which he now saw assembled, embracing so large a portion of the talent and respectability of the Medical body; at the same time he felt gratified in serving the important cause which had brought them together. They were met together not to gratify any selfish principle, or any feeling of mere vanity, but for the promotion of the *social principle*, which seeks the benefit of the community, by the advancement of useful and scientific knowledge. That the importance of the object is duly appreciated, the attendance of so large a number sufficiently shews. The present meeting owed much, indeed, all, to the indefatigable activity, zeal, talent, character, and urbanity, of Dr. Hastings, and, as the plan of the proposed society originated with him,

and had been so ably set forth in the circular which contained a prospectus of the intended society, he should, now, by the consent of the meeting, call on that gentleman to read his plan.

Dr. Hastings then read the foregoing address, after which, he mentioned that he held in his hand a paper, on which were inscribed the names of 150 Candidates for membership. In this list were names of eminent men from every part of England. This having been read, the first resolution, by which the Society was formed, was moved by Dr. Kidd, of Oxford, who said, having listened with deep interest to the luminous prospectus read by Dr. Hastings, he felt great pleasure in moving it.

Dr. Barlow, of Bath, seconded the resolution. He said that, from the first moment he had known the object contemplated by the Society, it had his highest approbation.

The second resolution was moved by Dr. Conolly, of Warwick: That the management of the Association be conducted by a President and Council, and two Secretaries, to be elected annually, agreeably to the following Provisional Constitution:—

The Association to be managed by a President, two Secretaries, and a Council.

The several officers to be appointed annually, by a general meeting of members convened for that purpose, at whichever of the principal towns may be appointed; the place of such meeting being prospectively notified each year.

At this meeting shall be presented a Report, prepared by the Secretaries, of the general state of the Association, its proceedings, and pecuniary accounts; the Report to be afterwards printed, and a copy supplied to every member.

At this meeting it is also proposed, that one of the members shall be appointed to give, at the next Annual Meeting, an account of the state or progress of Medical Science during the last year, or an Oration on some subject connected with Medical Science, or a Biographical Memoir of some eminent cultivator of Medical Science, who may have resided in the Provinces.

PRESIDENT.

The office of President to be honorary, and conferred on some senior Physician or Surgeon of eminence, resident in any of the provincial towns comprised in the circle of the Association.

SECRETARIES.

The two Secretaries to be resident in Worcester, the place of publication, their duties being to attend to the printing of the



transactions, and to correct the press; to be present at the meetings of the Council, and to keep the minutes thereof; to correspond with the members of the Association; and receive and submit to the Council all papers transmitted for publication; also to keep the financial accounts of the Association.

COUNCIL.

The Council to consist of —— members, to be selected from the principal provincial towns. The Council, with whom must rest the chief responsibility of publication, to have full power of deciding on all papers transmitted, and the consent of three of its members must be obtained before any paper can be published. It shall also be the duty of the Council to receive the subscriptions, when due, in their respective districts. Each member of the Association to pay one guinea on admission, and the same amount, annually, afterwards; the subscriptions to commence from the 1st of January each year, and to be considered as due, unless notice of its being withdrawn be given to the Secretary, antecedently to the year for which the subscription would be payable; for such subscription each member shall receive a copy of each part of the transactions published. Each volume to contain a list of all the members.

Dr. Conolly said the only difficulty he felt, arose from the circumstance of the resolution not having been placed in the hands of some one more experienced, and of longer standing in the profession. The importance of such an association as it was proposed to establish, was deeply impressed on his mind since he attended the meeting of the British Association lately held at Oxford. He did not, however, intend to make any lengthened observations; but it struck him, on that occasion, that greatly as they could but be pleased at beholding such a constellation of talent from all parts of the country, and grateful as they must feel to that University for their liberality, and great as was the pleasure of meeting so many with whom they could enjoy the intercourse of friendship, still he could not but observe that many members of the Medical Profession wandered about as spectators, rather than as having anything to do with the object for which they were assembled. It was evident that medicine was not a subject for all occasions, that the general ignorance of the public, even of the very terms of the art, rendered the subject uninteresting and unsuitable for a mixed assembly of both sexes, and made it impossible that many subjects could be

understood. The Society they wished to establish, would obviate these difficulties, and he congratulated the meeting on the favourable auspices which attended its commencement; he referred to the activity and respectability of Dr. Hastings, and the high esteem in which he was held; and that they had Dr. Johnstone to fill the chair at the meeting. He trusted that they, who were only in the middle age of life, would look to the fathers in the profession, and carry forward the work to which they had devoted their energies; and that when in their turn they were numbered among the aged, they might look back with satisfaction on some advances in useful science, and leave it to be carried on by their successors with enlarged advantages.

This resolution was seconded by Mr. Hetling.

Mr. Soden, in moving the third resolution, said, at the commencement of this Institution, it was important that they should select as President, one who would do honour to their choice, and therefore he felt great pleasure in proposing the worthy chairman to fill that post; his presence here prevented his saying what he should wish to say on this subject. The resolution was, that Dr. Johnstone, of Birmingham, be elected President of the Association for the ensuing year; that Dr. Carrick, of Bristol, be elected President for the year 1833-4.

Dr. Streeten seconded the resolution.

Dr. Johnstone said, "as the proposition which you have now so cordially carried, is that I shall be Honorary President, I accept it; had it been otherwise than honorary, the period of life at which I have arrived, would have forbidden my accepting the office. I subscribe to an expression of one who was most dear to me, 'that the proper termination of life is when the season of activity and usefulness is past.' From such a termination I hope I shall ever be freed, while any strength or ability remains to serve the interests of my fellow creatures. I cannot find words to express the respect and gratitude I ever ought to feel to the medical profession, for the kindness and respect I have received from that respectable body since my first entrance into life. I feel I cannot fully utter the feelings of my heart. Since I have been in this room, I have had many painful and pleasing recollections rushing through my mind. It is now between 50 and 60 years since I was last within these walls. I was then accompanied by a Gentleman whose memory is venerated by you all, and to whom this Infirmary was deeply indebted for the



very considerable share of its professional labours, which he undertook. He, in the very midst of his days and usefulness, fell a sacrifice to his benevolent exertions in the cause of humanity, by that fatal malady with which this city was then visited, the record of which is familiar to you all. We are now called to meet circumstances of a very similar kind, and it is our duty to meet the case with courage and zeal. Cholera, so novel in its symptoms, so various in its course, which has baffled all medical skill in so many instances, will require the utmost nerve to face it; but we must not shrink from duty in the time of danger, a Physician, or Medical Man, who neglects his duty under any circumstances, deserves to be shot, as much as the sentinel who deserts his post. There are, however, many circumstances which encourage the hope, that the laws of the disease will be understood, and brought under the government of medical science. The number of hospitals which have been established by the General Board of Health, and the universal attention paid to the subject, lead us to this conclusion. It is of especial importance that the Faculty should pay particular attention to the state of the patient, before being taken ill, as it is very evident that the disease is rather a termination of a state in which the sufferer was before the disease seized him.' Dr. J. said he saw similar vomiting many years ago, and the dejections resembled curd of cheese, and therefore the disease was not altogether new. He felt deeply sensible of the high honour now conferred on him, and should be most happy to aid every measure to promote the interests of this association.

The 4th resolution, appointing Dr. Hastings and Mr. Sheppard secretaries, was moved by Mr. Cox, of Birmingham, and seconded by Mr. Watson, of Stourport; the latter Gentleman said, "I feel proud in seconding the resolution; Dr. Hastings I have long known, and the more I know of him, the more I esteem him. Could the men who founded this Infirmary witness what is passing, they would say, their professional children had done well, and I hope their children will do so too."

The remaining resolutions were then respectively put by the Chairman, and carried unanimously.

5th.—That the following Members, with power to add to their number, do constitute the Council for the ensuing year.

6th.—That each Member of the Association do pay the sum of one guinea per annum, towards printing the transactions of

the Associatiou, and defraying the incidental expences, and that subscriptions do commence from the 1st of January, 1832.

7th.—That at each Annual Meeting, the place of meeting for the ensuing year shall be announced, and that the meeting for 1833, shall be held in the city of Bristol.

8th.—That the Council of the Association do select one of the Associates to deliver, at the first Annual Meeting, a retrospective view of the state of Medical Science.

9th.—That the proceedings and objects of the Association be advertised in the principal periodical publications of the day, together with the names of the President, Council, and Secretaries.

10th.—That the Association being now formed, and consisting of the Members whose names have been already enrolled, each future Member, on applying for admission, shall be nominated by two Members of the Association as a pledge of eligibility.

11th.—That a printed circular be sent to each Member of the Association, containing an account of the proceedings of the Meeting.

12th.—That Messrs. Berwick & Co. Old Bank, Worcester, be the Treasurers of the Association; at which Bank the subscriptions may be paid; or at Messrs. Robarts, Curtis & Co. Bankers, London, on account of Messrs. Berwick & Co.

13th.—That the grateful thanks of this Meeting be offered to Dr. Hastings, for the indefatigable trouble he has taken in forming a Society which owes its existence to his suggestion; and for the able, eloquent, and learned discourse with which he has opened the proceedings of this day.

14th.—That the able and luminous discourse this day read by Dr. Hastings to the Meeting, be printed, and sent to every Member of the Association; and that it also form the introductory article to the first volume of the "Provincial Medical and Surgical Transactions.

Thanks were moved to the Chairman by Dr. Kidd, seconded by Dr. Barlow.

The Chairman, in acknowledging this compliment, said, in anything that concerns the cause of science, and the interests of humanity, they might always command his services. He rejoiced in a meeting like this, as he there witnessed the triumph of the social principle; and he would, with all respect and deference, enforce on all present, the subjection of all low, paltry, selfish interests, to the interests of man; and he earnestly



recommended to each member of the meeting, to cherish this *social* principle; it is the principle which promotes peace; it is the principle of true honour; and it is the principle of the Christian religion.

N. B.—All Papers, and other Communications, to be addressed to the Secretaries, Dr. Hastings or Mr. Sheppard, Worcester, and forwarded carriage free.

Those Members who have not an opportunity of paying their Subscriptions to a Member of the Council resident in their district, are requested to pay it through the medium of their own Bankers, to Messrs. Robarts & Co. London, for Messrs. Berwick & Co. Worcester, on account of the "Provincial Medical and Surgical Association."

OFFICERS AND COUNCIL

OF THE

PROVINCIAL

# MEDICAL AND SURGICAL ASSOCIATION.

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EDWARD JOHNSTONE, M. D., BIRMINGHAM.

PRESIDENT ELECT.

ANDREW CARRICK, M. D., CLIFTON, BRISTOL.

SECRETARIES.

CHARLES HASTINGS, M. D., WORCESTER.
JAMES P. SHEPPARD, ESQ., WORCESTER.



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Wm. Conolly, M. D. Cheltenham.
A. Crawford, M.D. Winchester.
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W. Hetling, Esq. Clifton, Bristol.
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Joseph Hodgson, Esq. Birmingham.
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T. J. Todd, M. D. Brighton.
T. S. Traill, M. D. Liverpool.
Wm. Tuckwell, Esq. Oxford.
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Geo. Wallis, M. D. Bristol.
Thos. O. Ward, M. B. Oxon; Wolverhampton.
Jas. Woodman, M. D. Bath.

MEMBERS OF THE PROVINCIAL

## MEDICAL AND SURGICAL ASSOCIATION,

INSTITUTED JULY 19, 1832.

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Wm. Addison, Esq. Surgeon, Great Malvern.
Thomas Agg, Esq. Surgeon, Cheltenham.
R. H. Alexander, Esq. Surgeon, Corsham, Wilts.
Henry Alford, Esq. Senior Surgeon to the Taunton and Somerset Hospital.
James Allardyce, M. D. Physician to the Cheltenham Dispensary and Casualty Hospital.
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J. G. Appleton, Esq. Surgeon, Evesham.
Robert Arrowsmith, M. D. Physician to the Coventry Dispensary.

Charles Bailey, Esq. Surgeon, Chippenham, Wilts.
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Richard Barnet, Esq. Surgeon, Stourport.
John Baron, M. D., F. R. S. Physician to the Gloucester Infirmary.
Samuel Bartheel, Esq. Surgeon, Birmingham.
Thos. Batt, Esq. Surgeon, late Surgeon Royal Fusileers, Brecon.
F. C. Batt, Esq. Surgeon, Abergavenny.
J. R. Beddome, Esq. Surgeon, Romsey, Hants.
Charles E. Bernard, M. D. Clifton, Bristol.
R. W. Bernard, M. D. Cheltenham.
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James Gwynne Bird, Esq. Surgeon to the Swansea Infirmary.
Wm. Bealey, M. D. Physician to the Bath United Hospital.
J. Blackall, M. D. Physician to the Devon and Exeter Hospital.
Edward Blackmore, M. D. Physician to the Public Dispensary, Plymouth.



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Henry C. Boisragon, M. D. Cheltenham.
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Thomas Bradley, Esq. Surgeon, Kidderminster.
Wm. Perrin Brodribb, Esq. Surgeon, Warminster, Wilts.
Joseph Brown, M. D. Physician to the Sunderland and Bishop Wearmouth Infirmary.
Thomas Burman, Esq. Surgeon, Henley-in-Arden.
Samuel Bucknill, Esq. Surgeon, Rugby.
John Burnall, Esq. Surgeon, Chichester.
Richard Bythell, Esq. Member of the Royal College of Surgeons, and Surgeon to His Royal Highness the Duke of Sussex, St. Asaph.

Thomas Carden, Esq. Surgeon to the Worcester Infirmary.
Henry Carden, Esq. Surgeon to the Gloucester Dispensary.
Andrew Carrick, M. D. Clifton, Bristol; Senior Physician to the Bristol Infirmary.
Thomas Chevasse, Esq. Surgeon, Birmingham.
William Church, Esq. Surgeon; Consulting Accoucheur to the Charitable Society for the Relief of Lying-in Women, Bath.
Henry Clarke, Esq. Lecturer on Anatomy, Bristol.
W. O. Cleave, Esq. Surgeon, Clifton, Bristol.
William Colborne, Esq. Surgeon, Chippenham, Wilts.
James Cole, Esq. Surgeon, Bewdley.
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J. M. Coley, Esq. Surgeon, Bridgnorth.
Thomas Collett, M. D. the Oakalls, near Bromsgrove.
Chas. Cooke, Esq. Surgeon, Bromyard.
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William Conolly, M. D. Cheltenham.
T. Beale Cooper, M. D. Evesham.
Robert Corbin, Esq. Clifton, Bristol.
John Corrie, M. D. Birmingham.
Wm. Sands Cox, Esq. Surgeon, and Lecturer on Anatomy, Birmingham.

Joseph Crane, Esq. Surgeon, Kidderminster.
Andrew Crawford, M. D. Physician to the Winchester Hospital.
Stewart Crawford, M. D. Bath.

Henry Daniel, Esq. Clifton, Bristol, Surgeon to the Bristol Infirmary.
John Darwall, M. D. Physician to the Birmingham General Hospital.
C. G. B. Daubeny, M. D. Professor of Chemistry in the University of Oxford.
Birt Davies, M. D. Birmingham.
Francis Davies, Esq. Surgeon, Pershore.
David Davis, M. D. Bristol; Senior Surgeon to St. Peter's Hospital.
Thos. Davis, Esq. Surgeon, Upton-on-Severn.
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John Bishop Estlin, Esq. Surgeon, Bristol.
Lewis Evans, M. D. Physician to the Norwich Hospital.
Thomas Evans, jun. M. D. Physician to the Ross Dispensary.
John Evans, Esq. Surgeon, Chepstow, Monmouthshire.
—— Eve, M. D. Senior Physician to the Taunton and Somerset Hospital.

Wm. Falls, Esq. Surgeon, Hotwells, Bristol.
John James Feild, M. D. Worcester.
George Fewster, Esq. Surgeon, Thornbury, Gloucestershire.
Farnham Flower, Esq. Surgeon, Chilcompton, Somersetshire.
W. H. Foote, M. D. Cheltenham.
John Forbes, M.D. F. R. S. Physician to the Infirmary, Chichester.
Thos. Fowke, Esq. Surgeon to the Dispensary, Wolverhampton.
John Fowke, Esq. Surgeon, Wolverhampton.
Henry Hawes Fox, M. D. Bristol; late Physician to the Bristol Infirmary.
Edward Long Fox, M. D. Brislington House, near Bristol.



Charles Joseph Fox, M. D. Brislington House, near Bristol.
Francis Ker Fox, M. D. Brislington House, near Bristol.
Francis Franklin, M. D. Leamington, Warwickshire.
James Fryer, Esq. Bewdley.

—— Gapper, M. D. Bridgwater, Somersetshire.
Wm. Bennett Garlike, M. D. Great Malvern.
Edward Gee, Esq. Surgeon, Bristol.
Richard Francis George, Esq. Surgeon to the Bath Hospital.
William Gill, Esq. Surgeon, Wolverhampton.
Daniel Gingell, M. D. Thornbury, Gloucestershire.
George Goldie, M. D. Shrewsbury; late Physician to the York Hospital.
Thomas Green, Esq. Surgeon, Bristol.
—— Greville, M. D. Bath.
John Griffiths, Esq. Surgeon to the Infirmary, Hereford.
Thomas Griffiths, M. D. Bristol.
T. Griffiths, Esq. Surgeon, Wrexham, Denbighshire.

Edward Halse, Esq. Surgeon, Hotwells, Bristol.
George Harrison, Esq. Surgeon, Chester.
John Harrison, Esq. Surgeon, Bristol.
Charles Hastings, M. D. Physician to the Worcester Infirmary.
George Edmund Hay, Esq. Surgeon, Bath.
—— Haynes, Esq. Surgeon, Evesham.
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Josiah Hill, Esq. Surgeon, Bristol.
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Charles Hooper, Esq. Surgeon, Kempsey, Worcestershire.
William Hopkinson, M. D. Stamford.
John Horton, Esq. Surgeon, Bromsgrove.
Richard Horton, Esq. Surgeon, Sutton.
James Hughes, Esq. Surgeon to the Denbighshire Militia.
James Hulstone, Esq. Surgeon, Worcester.

John Ingleby, Esq. Surgeon, Birmingham, Lecturer on Midwifery, &c.
J. W. Izod, Esq. Surgeon, Evesham.

James Jaggard, Esq. Surgeon, Warwick.
J. H. James, Esq. Surgeon to the Exeter Hospital.
Thomas James, Esq. Surgeon, Wrington, Somersetshire.
Thomas Jeffreys, M. D. Liverpool.
Egerton A. Jennings, Esq. Surgeon, Leamington.
Henry Jephson, M. D. Leamington.
Edward Johnstone, M. D. (President) Birmingham.
John Johnstone, M. D., F. R. S. Physician to the General Hospital, Birmingham.
James Johnstone, M. D. Birmingham, Lecturer on Materia Medica and Therapeutics.
George Johnston, M. D. Berwick, Fellow of the Royal College of Surgeons.
John Jones, Esq. Surgeon, Kidderminster.
Thomas Jones, Esq. Surgeon; Licentiate of the Apothecaries' Company, Denbigh.
Richard Phillips Jones, M. D. Physician to the Denbighshire General Dispensary and Asylum for the Recovery of Health, Denbigh.
W. G. Jotham, Esq. Surgeon, Kidderminster.
Richard Jukes, Esq. Surgeon, Stourport.
A. Jukes, Esq. Surgeon to the Birmingham General Hospital.

Wm. Kaye, M. D. Cheltenham.
Joseph J. Kelson, Esq. Surgeon, Bristol.
Edward Kentish, M. D. Bristol; Senior Physician to St. Peter's Hospital.
Wm. Kerr, M. D. Physician to the Northampton Infirmary.
J. Kidd, M. D., F. R. S. Regius Professor of Physic in the University of Oxford.
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# AN ESSAY

ON

# THE YELLOW FEVER.

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YELLOW FEVER; *Kendal's fever; Bilious remitting yellow fever; Bulam fever; Coup de barre; Mal de Siam; Fièvre Matelote; Fièvre Amaril; Vomito prieto; Vomito negro; Fiebre Amarilla; Nova pestis; Typhus icterodes; Typhus cum flavedine cutis*, &c. &c.

The anomalies which this disease has been observed to present,—the absence, under the observation of one medical man, of some of the symptoms which during another epidemic had been well marked,—the fact of practitioners having observed that certain symptoms, prominent during one period of an epodemic, have at another period been totally absent;—the fact, too, of patsents in the very same ward of an hospital being frequently found to labour under symptoms so variously grouped as to lead an inexperienced practitioner to believe that he had before him three or four diseases bearing little affinity to each other;—all these circumstances have thrown difficulties in the way of this disease having had a place assigned to it in nosological arrangements free from objections.

By some, accordingly, the yellow fever has been classed with continued fevers, the symptoms not having appeared to them to correspond with those laid down by nosologists as characterising remittents; while, according to the statements of others, of whose accuracy of observation there cannot be a doubt, the disease has assumed the most unequivocal remittent form: indeed, as will hereafter be shewn, there is very respectable evidence in proof of its having, on some rare occasions, assumed even the character of intermittents.

This is not the place to attempt defining what constitutes, rigorously, remittent fever: it is plain that in most countries the opinions of medical men are at variance upon the subject. The remarks of close observers go to prove how frequently remittents may be masked so as to mislead us, if not very much on our guard, as to their true character.

Those therefore cannot, with justice, be accused of much inaccuracy, who, confining themselves probably to their own field of observation, have looked upon yellow fever as belonging to the class of continued fevers; but it is important to shew whether those are right who maintain that the disease bears no affinity whatever to remittents, and that it *never* assumes any other than the continued form. On this point it cannot be necessary to quote more than a few authorities of respectability. Dr. Rush, from his extensive experience at Philadelphia towards the close of the last century, may be considered as entitled to the first place; and in his account of the epidemics of 1793 and 1794, he distinctly notices remissions in several pages:—"The remissions were more evident in this than in the common bilious fever. They generally occurred in the afternoon."* "It,"

* Account of Epid. of 1793, p. 79.

speaking of delirium, "alternated in some cases with the exacerbations and remissions of the fever."* Speaking of the second class of this fever, he says that it was attended "with obvious remissions."† At p. 45 of his account of the epidemic of 1794, he says that the disease "appeared most frequently in the form of a remittent. The exacerbations occurred most commonly in the evening." In another passage, often quoted, "Never has the unity of our autumnal fever been more clearly demonstrated than in our present epidemic. Its principal grades, viz. the intermittent, the mild remittent, the inflammatory bilious fever, and the malignant yellow fever, have all run into each other in many instances. A tertian has ended in death with black vomiting, and a fever, with the face and eyes suffused with blood, has ended in a quotidian which has yielded to a few doses of bark."‡ In an official report from Mr. Campbell, of the army medical department, dated from Montserrat, in 1825, he gives as his reasons for thinking that the remittents, &c. of the West Indies are grades of the same disease, that during a yellow-fever epidemic at Barbadoes in 1821, he observed "the most marked difference in the type and symptoms of cases of patients from the same barrack or hut, where not the slightest doubt could be entertained of the disease being produced in both instances by one and the same morbid cause, yet so modified by physical causes, connected with the patient, as to appear quite different diseases, and certainly requiring different modes of treatment." The frequent occurrence of yellow fever in certain parts of Spain entitles the statements of the medical men of that country to great consideration on the point in question. To begin with the late Dr. Arejula, who was so familiar with yellow fever as it appeared in most of the epidemics which have occurred in Spain within the last half century, —the writer of this article has been repeatedly informed by him that the disease frequently assumed the most marked remittent form. In his description of the Malaga epidemic of 1803,§ he tells us that the bark was found useful during the *remissions*. At p. 71 he is clear on the subject of remissions; and at p. 139, informs us that the disease "without doubt deserves the name of remittent fever."‖ He even says, when describing a black-vomit epidemic, "the termination of our remittent in *intermittent*, which also occurred in some instances at the close of the epidemic, was an indication that the disease was about to be extinguished." The recoded opinions of Dr. Velásquez of Seville are fully in corroboration of the statements of Arejula. The following physicians were contemporaries of the latter gentleman, and had witnessed some of the yellow-fever epidemics of Spain: Dr. Balmis, who called the disease, as it presented itself during the Cadiz epidemic of 1800, "a putrid malignant remittent;" Dr. Flores Moreno, who describes in his work "accessions and remissions;" Dr. Alfonso de Maria of Cadiz, who is a state pensioner in consideration of his services during some of the epidemics of Spain, says, "when the yellow fever degenerated into intermittent." In the third volume of Hurtado's *Decadas*, published at Madrid, may be found a memoir relative to one of the Seville epidemics, with the signatures attached of Drs. Gabriel Rodriguez, Serafin, Adame, Velasquez, and Chichon, to the effect that "sometimes, though rarely, the fever presented itself following the type of an intermittent."* In the *Trozos inéditos* of Dr. Salva, professor of medicine at Barcelona, evidence is to be found of the disease having been observed to assume the remittent form. In conclusion of this part of the subject it may be stated that the records of the Gibraltar yellow-fever epidemics furnish the following names in support of the fact that remissions not unfrequently take place in this disease,—Drs. M'Mullin and Browne, Messrs. Sproule, Wild, Martindale, Amiet, Daw, Donnett, Humphries, Lee, and Hugh Fraser.

*History of the disease.*—Previous to entering into details, it may once for all be stated that a disease is here understood in which, along with other symptoms hereafter to be referred to, yellowness of the skin, partial or general, and, towards the fatal termination, vomiting of a black or dark-brown fluid, are frequent, *though by no means constant*, occurrences. As it will be necessary to refer frequently to the yellow-fever epidemics of Spain, and as, notwithstanding all that has been written upon the subject, the identity of yellow fever, as it has appeared in that country, with the black-vomit fever of the West Indies and North America, has been denied, so late as 1828, by a French physician (Dr. Rocheaux), who went to investigate the Barcelona epidemic of 1821, it may be proper here to premise that *the perfect identity* of the disease has been admitted to have been established beyond all doubt, at Gibraltar in 1828, as will be shewn further on.

Among writers on yellow fever, of different nations, the names of respectable men will be found who maintain the doctrine that this disease has only made its appearance in modern times on the continent of America, in the West India islands, and certain parts of Europe. In opposition to this it has been shewn by others, that though in former ages, as in modern times, this disease may not have been observed to prevail epidemically in that part of the neighbourhood of the Mediterranean in which Hippocrates practised, it is not the less true that this close observer had been familiar with a fever in which the two symptoms considered by most writers as characterising the disease, (yellowness of skin and black vomit) were sometimes present. Respecting black vomit, held as being so peculiarly diagnostic, Hippocrates says, in the twelfth section of his prognostics, that if the matter vomited, in the form of fever which he is describing, be of a black colour, it betokens ill. In the first section of his prognostics, vomiting of a black fluid is mentioned as one of the most fatal symptoms; and in the fourth section of the same book this is pointed out by him as indicative of a high degree of malignancy.

We are reminded by Humboldt that the period of the first description of a disease furnishes no evidence of its having only then for the first time appeared; and the *ensemble* of the symptoms of yellow fever being perhaps only to be found fully and accurately detailed by writers of the last century, will scarcely be considered as furnishing conclusive evidence of the non-existence of similar epidemics at periods more remote. Owing to the state of medicine in former ages, and to the fact of practitioners having been so few that the sick were not unfrequently wholly destitute of aid, the exact nature of many epidemics which reigned from time to time, under the names of pest, pestilential disease, black death, yellow death, &c. has not been handed down to us. We have a remarkable proof of this in epidemics which from time to time prevailed in this country formerly, under the name of sweating sickness; for the accounts of that disease are quite unsatisfactory as to its nature. To admit that all epidemics of former ages, within certain parallels of latitude, and termed pests or plagues, were of the character of true plague, while all the epidemic fevers of modern times, which have so frequently afflicted the inhabitants of the same latitudes, *have not* possessed the characters of plague, but those of yellow fever, would be admitting what is but little conformable to the usual course of nature. Père Dutertre, one of the oldest writers on the yellow fever of the West Indies, employs the term *peste*, when detailing symptoms not corresponding with those of plague, but such as peculiarly belong to yellow fever.

To give here even but a partial view of the arguments employed by various British writers in support of and against the statement of the yellow fever having been imported into the West India islands for the first time in 1793, would occupy more space than could with any propriety be devoted to the point. Its importation into the island of Granada in the year in question rested chiefly on the authority of the late Dr. Chisholm, who believed that he had traced, with sufficient accuracy, the origin of the fever to the ship Hankey, which had lately arrived from the island of Bulam, situated on the west coast of Africa. This statement of the importation into the West Indies of a "*nova pestis*," as it was then called, has since given rise to much controversy; but those who consult Bancroft's Essay on Yellow Fever, and a small treatise on the disease published in 1818 by Dr. James Veitch, an experienced naval surgeon, will find details of a very interesting nature, which go to prove that on the occasion in question Dr. Chisholm had certainly proceeded on erroneous data. Indeed there cannot be a doubt that, had he been better acquainted with the history of the diseases of the part of the world in which he then served, Dr. Chisholm could never have adopted the very erroneous opinion that the disease which he describes as so malignant, was one possessing new characters; for it is established by authentic historical proofs, that, long before the year 1793, a similar disease had made frequent ravages in the West Indies, as appears from accounts by Ligon, of an epidemic at Barbadoes in 1647;—by Hughes, of an epidemic in the same island in 1695; and again of epidemics there in 1720 and 1740, by Towne and Warren. Père Dutertre would seem to be the first by whom details of the symptoms and progress of this disease in the West India islands have been transmitted to us.* From the remarkable muscular pains often observed to take place in a patient labouring under an attack, as if from heavy blows, it was then called *coup de barre;* and Père Dutertre, considering it a new disease when he first saw it (1635), termed it "the pest unknown previously in these islands." He notices the yellowness of the skin particularly; and though he says in one part of his work that the disease was imported into the islands by "some ships," and in another page by a particular ship, La Bœuf, from Rochelle,—he says that those "were chiefly attacked who were employed in clearing the land in different islands, and were exposed to the poisonous vapours and exhalations."†

Père Labat, on landing at Martinique in 1649, found the disease raging in that island, and the monks belonging to the convent of his order suffered severely. He tells us in his work that he himself had the disease twice; that people were frequently attacked so suddenly and severely that they fell down in the streets; that hemorrhages from the several natural orifices, and even from the skin occurred; and that the disease usually proved fatal within five or six days. He states that the disease was called *maladie de Siam*, from the belief of its having been imported into Martinique by a ship of war, the *Oriflamme*, "which, coming from Siam with the *debris* of the establishments which had been at Mergay and Bancock, touched at Brazil, where she became infected with the disease which reigned there for seven or eight years."‡ This account of the introduction of the disease into Martinique relates to the year 1688, being some years before his arrival in that island; and his statement would seem to rest altogether on the belief then prevalent as to the circumstances.

At page 337 of Dr. Bancroft's Essay on Yellow Fever, we have evidence of the existence of the disease at St. Domingo in the year 1731; and, in subsequent pages, of its having prevailed there epidemically in 1733, 1734, 1739, 1740, 1741, and 1743. The insalubrity of that island was manifested soon

* Op. cit. p. 62.

† Ibid., p. 62.

‡ Letter to Dr. Miller, New York Med. Repos. vol. vi. p. 249.

§ See his work on Yellow Fever, p. 25.

‖ "Merece sin duda el nombre de calentura remiente."

* "Alguna vez, aunque rara, se presenta la calentura siguiendo el tipo de intermitente."

* Histoire Générale des Antilles.

† Ibid. p. 81, ed. in 4to.

‡ Nouveau Voyage aux Iles de l'Amerique, tome I.

after its discovery; for it appears that the sickness among his men gave Columbus great anxiety. It could scarcely have been expected that any thing very precise as to the nature of the disease from which they suffered should have been transmitted to us. The latest historian, Washington Irving, merely informs us that "when they fell ill their case soon became hopeless." Reasonable inferences may perhaps be drawn from passages in old Spanish historians. Oviedo, in his "*Historia General de las Indias*,"* speaks of a great mortality among Columbus's people in 1494, which he attributes to the humidity of the island. He says that those who returned to Spain were of a yellow or "saffron colour;" that people finding the country so unhealthy objected to go there;† and that in consequence three hundred convicts were at one time sent to St. Domingo. He adds, that if the king offered him the Indies he would not go there. M. Moreau de Jonnès‡ cites§ one or two other passages from Oviedo on the same subject, which we have not been able to verify by a reference to the edition within our reach. Further details are given by Herrera (Madrid 1601) as to the violence, suddenness of attack, &c. of the disease which carried off so many of Columbus's men, at the time in question, in St. Domingo; and he refers to a letter‖ written in 1498 by Columbus to the king of Spain, attributing the sickness of his men on their first arrival to peculiarities in the air and water.

Respecting the accounts of the existence of the yellow fever at remote periods on the American continent, it would appear that Dr. Fournier Pascay, of Paris, who for several years devoted much attention to all questions connected with the disease, considers it identical with a disease referred to by Ferreyra da Rosa, in his account of Pernambuco, printed at Lisbon in 1649. In the beginning of the last century the disease, from its appearance in various parts of Spanish America, under the name of *vomito prieto*, attracted much attention; and it is particularly referred to by the historian Ulloa, who resided for some years in that country. The word *prieto*, it may be remarked, is the Portuguese or nearly obsolete Spanish term for *black*: in Spain the word *negro* is now universally substituted. The first work *ex professo* on the black-vomit fever, as it appeared in South America, is probably a little pamphlet of sixty-two pages by a Dr. Gastelbondo, written at Carthagena (S. A.) in 1753, and printed at Madrid in 1755: he gives his experience of the disease during forty years; says, in the title-page, that he is about to write on a disease of frequent occurrence in that part of the world; mentions change of climate and mode of living among the causes of the disease in new comers; and says that the natives of Carthagena, Vera-Cruz, &c. were not subject to attacks of the true black-vomit fever, though liable to the "*chapetonada*," a disease resembling it in some respects.

In North America the appearance of the yellow fever epidemically, at different times previous to 1793, seems unquestionable; and authorities may be cited for its appearance at Boston in 1693; at Philadelphia in 1695, 1741, 1751, and 1762; at Charlestown in 1695, 1732, 1739, 1745, and 1768; at New York in 1702; and in Virginia in 1744.

We come now to the history of yellow fever in that part of Europe where its frequent appearance epidemically, within the last half century, has so justly excited the attention of the profession and of those governments who rank the investigation of such subjects among their first duties. Some writers (among whom is Sir Gilbert Blane) have stated that the first appearance of yellow fever in Spain was at Cadiz in 1764; next in 1800 in the same city; and at Malaga, for the first time, in 1803. It seems strange that, with respect to Cadiz, those writers should have overlooked the remarkable epidemics at that place in the years 1730, 1731, and 1736, as recorded by different authorities; the two first being very particularly noticed by Villalba, in his curious work "*Epidemologia Española*." It seems equally extraordinary that those writers should have overlooked the black-vomit epidemic which prevailed at Malaga in 1741, described by Dr. Rexano, and since frequently referred to by different authors. With respect to epidemics which are recorded as having frequently prevailed in Spain, previous to those of Cadiz and Malaga just referred to, many consider the evidence imperfect as to the disease having been, in any of them, similar in character to that under consideration; for in those days, as already remarked, all epidemics causing great mortality were called pests, or pestilential diseases. In epidemics called pests, recorded as having prevailed at Malaga in 1676 and 1679, two physicians, Drs. Checa and Molina, sent officially to inquire into the nature of the disease, pronounced it *not* plague. The writings of Spanish medical men being but little known to the profession at large, quotations from some of them on the present subject may be the more admissible. Dr. Hurtado of Madrid, one of the few modern physicians of Spain who have published their opinions freely on the subject of yellow fever, adduces proofs in support of the prevalence of the disease epidemically in former ages in that country. He quotes Dr. Garcia Suelto as being of his opinion that such epidemics appeared at periods much more remote than 1730, and cites him as stating that "the most distinguished men of the profession move as it were in a career new to them, but long known to Spaniards their countrymen. If the medical history of Spain had been more familiar to them, they would have availed themselves of the excellent descriptions and important illustrations to be

* Ed. in folio, 1547, book ii. cap. 13.

† Book iii. cap. 4.

‡ A man of science, formerly a military man, who, since his service at Martinique in 1802, as aide-de-camp, has figured a good deal in the discussions relative to the contagion of yellow fever as well as spasmodic cholera, though not of the medical profession.

§ Monographie de la Fièvre jaune.

‖ Book iii. ch. 15.



found in the work of Antonio Fonseca, on the pest and contagious diseases, and on the epidemic fever of 1621." Hurtado also quotes Sebastian Nuñez, Pablo Correa, Manuel de la Cerda, and others. The frequent application of the word *atrabilis* formerly to any dark fluid ejected from the stomach, tended, no doubt, to create obscurity as to the character of diseases; and in Spain, medical men, for want of a better name, sometimes employed the words *fiebre dudosa* (fever of a doubtful nature) when speaking of the epidemic disease. Escobar is quoted by Villalba respecting an epidemic which prevailed in Carthagena in the autumn of 1648; and in which, contrary to what they observed to take place in plague, was attributed to local causes. Escobar states that in his time the endemic fevers of Carthagena and Alicant sometimes became *pestilential* in the autumnal months. It appears from Villalba's work, that in 1648 other towns besides Carthagena, as Cadiz, Seville, Alicant, and Valencia, were afflicted by the epidemic; and it is remarkable that some of the writers of that period state that the disease *was carried to the West Indies* from one of those towns, from whence it was again brought back to Spain, and commenced fresh ravages at Barcelona, Girona, Tortosa, and "almost in every town in Catalonia." From this we may at least infer that, at the period mentioned, the identity of the Spanish and West India diseases was acknowledged. According to Villalba, three formidable epidemics took place in remote times at Barcelona within a period of eighteen years—one in 1497, another in 1501, and the third in 1515; and as they prevailed in the summer or autumnal months, their identity with the modern epidemics of Spain has been inferred. Villalba records an epidemic at Barcelona in 1589, which lasted from June to December,—the deaths up to the 20th October having been ten thousand nine hundred and thirty-five. On this occasion the resident physicians of Barcelona maintained that the disease *was not plague*. A Dr. Porcel wrote, in 1565, on an epidemic which prevailed at Saragossa in the preceding year, and which ended in the month of December. He states that the symptoms were sometimes very insidious; that the patient seemed to be going on well,—pulse natural, skin temperate, &c.—till the fourth day, when the countenance became altered, and faintings took place, followed commonly by death: he adds that sleeplessness, extreme anxiety, (the patient rolling about the bed,) peculiar pain in the region of the stomach, and vomiting of a fluid (which he calls *colera*) of various shades of colour, took place. He notes, moreover, that the countenance became livid and yellow, (*lívido y amarillo.*) The work of a Dr. Andosilla is also cited, in which he speaks of a disease under the name of *peste*, which prevailed in some Spanish towns in the autumn of 1600. He visited those towns by order of his government, and describes the disease as not having the characters of plague, but others new to him. In 1649, a Dr. Morillo, who had been employed at Marbella and other towns in Andalusia during an epidemic, went also to Gibraltar in that year, to witness an epidemic there, which, according to an old Spanish history of Gibraltar, proved so fatal that the people, losing all confidence in human means, instituted processions to the neighbouring hermitage of St. Roque, which were kept up annually in the month of August, till the surrender of the garrison to the British in 1704. There is a record of that garrison having, in the autumn of 1727, lost five hundred men by fever, but the character of the disease is not described. By a document in our possession from Mr. Hill, deputy inspector-general of hospitals, and bearing date June 13, 1832, it appears that in 1798 the forty-eighth regiment, which was under the medical charge of that gentleman, arrived in Gibraltar from England, and that soon after a severe fever appeared among the men, which carried off about one hundred of them. This fever, which he says was confined to the recruits, of which there were great numbers, "Dr. Harness, then physician to Lord St. Vincent's fleet, and afterwards one of the commissioners to the Sick and Hurt Board, declared to be precisely the same he had seen in the West Indies." In Trotter's *Medicina Nautica* it is stated that 257 deaths from fever took place in the above garrison in 1800, among the military; the average annual mortality among the military there having been only thirty-eight. With respect to Gibraltar, therefore, these facts may perhaps be considered as sufficient to establish that, previous to the remarkable yellow-fever epidemic of 1804, the disease had made its appearance there to a formidable extent: indeed it is well known that, along that part of the Spanish coast, no other form of fever proves so fatal. It may be added that Dr. Monro says in his work on the diseases of armies, that, in 1799, a fever made its appearance at Gibraltar, which he considered similar to that of the West Indies.

As the profession generally cannot be aware of the several places in Spain in which yellow fever has prevailed, we may be permitted to place on record the following list of cities, towns, and villages in which it is admitted to have appeared since 1800:—

*In Andalusia.*

| | |
|---|---|
| Cadiz. | Paterna de la Ribera. |
| Sn. Fernando. | Sn. Lucar. |
| Puerto Sta. Maria. | Arcos. |
| La Carraca. | Xeres. |
| Rota. | Villa Martin. |
| Chiclana. | Espera. |
| Ayamonte. | Lebrija. |
| Medina-Sidonia. | Utrera. |
| Las Cabezas. | Mairena. |
| Los Barrios. | Cordova. |
| Algeciras. | Sevilla. |
| Gibraltar. | Antiquera. |
| Sn. Roque. | Carmona. |
| Alcala. | Ecija. |
| Ximena de la Frontera. | Moron. |
| | Montilla. |

| | |
|---|---|
| Espejo. | Carrana. |
| La Rambla. | Los Palacios. |
| Carlota. | Villafranca. |
| Aguilar. | El Archal. |
| Grenada. | Dos hermanos. |
| Malaga. | Tribujena. |
| Velez-Malaga. | Bornos. |
| Ronda. | Zara. |
| Vera. | Almeria. |
| Estepa. | Ubrique. |

*Total number of places in Andalusia*, 51.

*In Murcia.*

| | |
|---|---|
| Murcia. | Mazarron. |
| Jumilla. | Las Aguilas. |
| Alberea. | Totana. |
| Molina. | Lorca. |
| Cartagena. | Zieza. |
| Yelar. | Ricote. |
| Archena. | Ojós. |
| Alcaria. | Villa-nueva. |

*Total number of places in Murcia*, 16.

*In Valencia.*

| | |
|---|---|
| Alicante. | Alcantarilla. |
| Orihuela. | Palmar. |
| Sn. Juan. | Lebrilla. |
| Guadamar. | Alhama. |
| Peñacerrada. | Tabarca (a small island). |
| Elche. | |

*Total number of places in Valencia*, 11.

*In Catalonia.*

| | |
|---|---|
| Barcelona. | Tortosa. |
| Barcelonetta. | Escala. |
| Asco. | Torreuela. |
| St. Eloy. | |

*Total number of places in Catalonia*, 7.

*In Aragon.*

| | |
|---|---|
| Mequinenza. | Nonaspe. |

*Total number of places in Aragon*, 2.

In Old Castile, 1 (St. Andero.)
In Guypuscoa, 1 (Passages.)

*Total number of places, according to the best information*, 89.

The above list is important, inasmuch as it must remove an impression that yellow fever has never appeared in more than a few places in Spain, and those sea-port towns. Among the places furthest from the coast where it has shewn itself, are,—Cordova, seventy miles in a direct line from the sea; Montilla and Ecija, about the same distance as Cordova; Ronda, sixty miles north of Gibraltar, and at an elevation above the sea of about four thousand feet: Granada, thirty-one miles in a direct line from the sea. In these places, as well as in a great majority of the other instances, the disease appeared to a limited extent only.

Respecting yellow-fever epidemics in other parts of Europe, that described by Palloni, Tomassini, and others, as having taken place at Leghorn in 1804, is the most remarkable. We have an account, by a Dr. Kennedy, of an epidemic at Lisbon in 1736; and from the symptoms there seems little reason to doubt of the identity of the disease with yellow fever. Professor Salva of Barcelona considers a fever with yellow skin which prevailed very extensively in a district of the Canton of Berne, during a period of very extraordinary heat, in the year 1762, and of which there is some account in a volume of the proceedings of the French Academy of Sciences for 1763, as similar to the yellow fever of Spain. Some recognize this disease also in the fever with yellow skin, hemorrhages, &c. described by Frank as occurring in Hungary.

The existence of this fever with its characteristic group of symptoms, occasionally at points higher up the Mediterranean than those already mentioned, rests upon respectable authority: among others which might be quoted, Dr. Alexander, surgeon to His Majesty's forces, who has had ample experience of yellow fever in the West Indies, declares that he witnessed many deaths from the disease in Sicily, soon after the return of Sir John Stewart's army from Lower Calabria in 1806; and that while at this latter place, some cases occurred among our troops. The existence of sporadic cases of yellow fever with black vomit in England and France has been insisted upon by some persons: those referred to in the *Dictionnaire de Médecine*, vol. xxi. p. 17, as having occurred at Paris in the hot summer of 1822, seem most worthy of attention.

In turning to East India records, the mention, at p. 46 of the Bengal reports on cholera, of a fever with yellow skin, which occurred in that presidency in 1816, can hardly be held as conclusive. But we find, in a memoir by Mr. Walsh of the medical department of our army during the late Burmese war, that that gentleman, while in charge of cases of the fever prevalent in the army, was surprised by the sudden appearance of some with black vomit and yellow skin. It is recorded, as has been noticed by Dr. Johnson, in his work on tropical climates, that those symptoms appeared in a fever which prevailed in the hospitals at the Isle of Edam appropriated for the sick of the force employed for the reduction of Java in 1811.

At Sierra Leone this disease is recorded as having occurred, to a remarkable extent, in the year 1823.

Connected with the history of yellow fever, it is always considered a point of very great importance to ascertain whether it be a fact that, in those parts of the world where the disease is observed to prevail epidemically, sporadic cases have occurred in ordinary years. To the mass of evidence on this point, from the West Indies and America, not one word need be added in confirmation of this being the case in those places. In Europe a few only hold out against the statement:—in England, probably not more than two or three. But of late years so much attention has been paid to the subject, that unless people be prepared to prove that symptoms, grouped together in a certain order, in conjunction with similar post-*mortem* appearances, do not always constitute the same disease, it is quite idle longer to dispute the point. Among many other French physicians, who have paid great attention to the subject of yellow fever, and who have recognised the existence of sporadic cases in Spain, are Drs. Pariset and Robert, leaders of the contagionists. In Spain we find the late Dr. Arejula, a leading contagionist in that country, and Dr. Flores Moreno, also a contagionist, admitting it freely in their works; besides Drs. Piguillem, Salva, and several other men of note. The writer of this article is in possession of such a body of evidence, drawn from registers and other authentic sources at Gibraltar, as would, of itself, place the matter beyond all doubt. In the month of April, 1829, the records of the civil hospital in that garrison were examined, and a certificate drawn up and signed by nine gentlemen, to the effect that thirty-eight cases, of which they found details duly recorded in non-epidemic years, were identical in character with the cases which occurred there during the epidemic of 1828. All those gentlemen had seen more or less of yellow fever, and some of them had witnessed two or three epidemics. There is, besides, further evidence in corroboration, by Dr. Gray, formerly physician to the Gibraltar naval hospital;* by Staff-Surgeon Glasse;† by the late Dr. Hennen, inspector of hospitals, in his official reports; by the testimony of medical officers of the Ordnance, the 12th, 23d, 43d, 64th, and 94th regiments, who saw several cases possessing the true character of yellow fever at Gibraltar, either before or since the epidemic of 1828.

The history of yellow fever cannot be dismissed without briefly touching upon its appearance from time to time on board of ships. It cannot be expected that where space is, as here, necessarily limited, all the cases of this kind of which records exist, should be noticed. In 1726 great havoc was made in the fleet of Admiral Hosier, lying off Portobello, by a disease alleged to have been yellow fever. In 1741, Admiral Vernon's fleet suffered from it off Carthagena, (S. A.) In 1742, the disease broke out in the same fleet off Portobello. In 1776, the Spanish ships Angel and Astrea suffered from the disease on their way to the West Indies. It broke out in the squadron of the Spanish Admiral Solano, in 1783. In 1785, in the Spanish ship Sn Ildefonso. In 1793, in the Sn Lorenzo, one of the ships of the Spanish Admiral Aristobal, bound from Cadiz to the West Indies. In the same year in the squadron of the Spanish Admiral Borja. In 1794, on board His Majesty's ships Bedford and Kent. In 1795, on board the Hussar frigate on the American coast. In 1801, on board the ship Penelope, carrying Irish emigrants to New-York. In 1802, in a French fleet from Tarentum, bound to St. Domingo. In 1803, on board the Hibbert on her passage from Portsmouth to New-York. In 1805, in the fleet of the Spanish Admiral Gravina. In 1807, in the Phebe in the West Indies. In the same year in a French squadron in the bay of Cadiz. In 1808, on board the French brig of war, Palinure. In 1813, in an English vessel which arrived at St. Domingo from England, as stated by Dr. Pinedo. In 1814, in a flotilla of Spanish revenue cruizers (*"guarda-costas."*) Since this period it appeared* in the following ships of war, on the West India station: Iphigenia, Wasp, Tribune, Sapphire, Scout, Tamar, Bustard, Thracian, Rattlesnake, Lively, Isis, Scylla, Pylades, and Ferret. But the instances which of late years have attracted most attention, are those of the Pyramus, in 1822, in the West Indies;—of the Bann, in 1823, on the African station; of the Spanish merchant ship Donostiarra, in the same year, in the port of Passages in the Bay of Biscay; and of His Majesty's ship Blossom, in 1830, while engaged in surveying the Honduras coast.

*Symptoms.*—In no disease do symptoms appear to take a wider range than in yellow fever; and, on this account, it is usually considered necessary to speak of two or three, or even of four forms of the disease.

In the mildest form the febrile excitement may not proceed beyond that of mild synochus; indeed experience during epidemics warrants the conclusion that an individual, especially if a child, may pass through the disease with no more than a slight feeling of indisposition for a day or two. In epidemics of ordinary severity such mild attacks may occur in the proportion of one to ten or twelve of the severer grades; and their occurrence will usually be found more frequent as the end of the epidemic season approaches.

In a well-marked case, and in which premonitory symptoms (as *malaise* or slight headach) may or may not take place, the symptoms most commonly present are,—rigors, nausea, frontal, but especially supra-orbital headach, the conjunctivæ injected, and the eyes have a peculiarly brilliant appearance; aching of the calves of the legs and of the knees, more marked than in other fevers, and the rachialgia often quite intolerable. The loaded tongue, as if covered with paste, has been mentioned by authors; but, in our experience, a perfectly clean tongue has not unfrequently been observed in a most dangerous attack. There may be a remarkable trembling of this organ; or it will sometimes be swollen, and have its apex turned downwards. The most characteristic appearance, however, of the tongue, in yellow fever, is the pasty surface, with red edges and apex. In a young and vigorous subject, the heat of the skin may be of the pungent nature described by some writers on fever; but in yellow fever a temperate skin is far from being always an indication of a mild attack. An *impacted* state of the skin is always indicative of danger. Sensibility of the epigastrium frequently exists; but even in the severest cases free pressure can often be employed without an indication of pain being produced by it. Jactitation is a remarkable symptom: the patient tosses his head and limbs about incessantly, unable to procure sleep in any position, or relief from the feel-

* See Lond. Med. Repos., Nov. 1817, p. 417.
† See Sir W. Burnett, on Yellow Fever, 2d ed.

* See Wilson on Yellow Fever, p. 92.

ing of distress by which he is oppressed. In other instances, the patient, while lying pretty tranquilly, starts when approached, and seems terrified when spoken to. He draws deep inspirations; and sometimes, though languid, he will beg to be allowed to get out of bed, in the hope of experiencing relief. From the commencement there is a tendency to costiveness; never, as far as we are aware, to an opposite state of the bowels. As the disease proceeds in its course, the irritability of the stomach usually becomes one of the most remarkable as well as indomitable of the symptoms:—there is often, indeed, little use in directing medicine or drinks, even of the most delicate kinds and in the smallest quantities, as all are instantly rejected; and, altogether without resources, we often find ourselves obliged to look on in the expectation of the arrival of a tranquil moment, when we may again venture on the exhibition of something. Our experience during two epidemics (one in the West Indies, and that of 1828 at Gibraltar) by no means bears out the statement of others as to the *bilious* appearance of what is vomited in the progress of this fever: after having paid the closest attention possible to this point, we must, on the contrary, state, that with the exception of the black-vomit stage, and at the very commencement of the attack, what is thrown up consists of the ingesta and a glairy fluid. Bile is also *usually* absent on an inspection of the stools and urine. But it must be recollected that we are speaking of a disease which, like spasmodic cholera, furnishes exceptions to almost every rule which can be laid down regarding it; and with respect to bile in the urine, we find it occur in some cases, as distinctly admitted by a commission of Seville physicians, in their report of the yellow-fever epidemic in that city in the year 1819.* They mention that they found the urine "yellow, and paper dipped into it was tinged the same colour."

The stage of excitement, with occasional rigors, may vary as to duration, from forty-eight to seventy hours; when the pulse, which up to this time may have been full, rapid, and more or less firm, begins to give way; the eyes lose their brilliancy; the patient in some instances becomes so faint as to be unable to sit, unsupported, on the night-chair. The attack sometimes terminates fatally at the end of the third day; in which case we have quickly added to the foregoing symptoms, a peculiar acrid or *burning* sensation in the stomach extending not unfrequently to the œsophagus; the temperature of the surface, but especially of the extremities, falls rapidly; no urine is secreted; the stools may or may not be very dark; the features shrink; a distressing degree of singultus takes place; and finally, the black vomit. More commonly, however, the disease, in epidemics of ordinary severity, does not proceed so quickly to a fatal termination, but will extend to the fifth, sixth, or seventh day: indeed fatal terminations at periods much later are not uncommon; and a few extending to the twelfth and fifteenth day have passed under our own observation. Yellowness of the skin, varying from the lightest to the deepest tinge, may occur as early as the third or fourth day; but it oftener occurs at a more advanced period. This yellowness is usually first perceptible in the line of the large vessels of the neck, next over the chest, and then over the whole body,* the adnatæ becoming, at the same time, more or less yellow. From about the fourth day hemorrhage, most commonly from the gums and nose, is liable to occur; but it has been observed to take place from every orifice of the body, and even from the skin, and from under the nails. As this stage proceeds, the tongue becomes so black, shrunk, and incrusted, that it has the appearance of having been seared with a hot iron; the pulse becomes more feeble, irregular, and occasionally intermits; the stools are dark and gelatinous in appearance; the singultus becomes most distressing; and, finally, when the symptoms follow this order, coma not unfrequently precedes death. From observations made during the last Gibraltar epidemic, it would appear that in those cases where copious hemorrhage takes place from any of the natural orifices, black vomit and suppression of urine are much less likely to occur.

Where neither yellowness nor hemorrhage supervene, we may have a different group of symptoms set in, which lead to a fatal termination in a shorter time. The countenance of the patient may not indicate great danger; but he is observed to lie, his limbs being uncovered, with his head hanging over the edge of the bed: he seems sensible when spoken to, and will assist to arrange the bed-clothes, which soon again become displaced. The tongue is dry, furred, and brown or yellow at its base; its papillæ are often separated in a remarkable manner, and deep fissures sometimes take place in its substance. The pulse is feeble and intermitting; the stools are usually dark. The irritability of the stomach is more remarkable in those cases. In some, slight spasmodic twitches about the mouth may be observed immediately preceding death. In a few instances trismus has occurred. In the *early part* of the last Gibraltar epidemic, besides singultus, suppression of urine, and black vomit, a very remarkable symptom sometimes took place in these cases a few hours before death; viz. a loud, incessant, and monotonous wailing, extremely distressing to all within hearing; the patient, during the time, lying covered up, apparently insensible to every thing, and incapable of replying distinctly to questions.

Another form is where the deadly nature of the attack seems to be marked in strong characters in the countenance of the patient from almost its very commencement. The features seem shrunk, *decomposed*; the face has a mottled or ash-coloured appearance. The look is suffused, and the eyes are of a dull-red colour. The tongue possesses in this, more frequently than in any other form, the appearance pointed out as being most characteristic of the disease. There is usually little or no vascular excitement, and the surface is temperate, — sometimes below the natural standard from the commencement of the attack. The patient will perhaps say that he does not feel much the matter, and will move about as we converse with him; indeed he often possesses a surprising degree of muscular energy. Here hiccup generally sets in soon, with lividity and coldness of the extremities, only equalled by that which occurs in the worst forms of cholera. The patient does not complain of being cold. In this state the pulse can scarcely be felt at the wrist; sometimes not at all. The stools are sometimes of a light colour, small in quantity, and lying flat in the vessel. The ears and extremities assume a leaden colour; suppression of urine takes place, and the black vomit, with the acrid sensation in the stomach, may quickly set in, which close the scene, not unfrequently within forty-eight hours. But where the two symptoms last mentioned do not occur, life may be protracted to three days; the extremities being for a great part of the time so cold and clammy as to give a shock to those who touch them; and though they lie seemingly ungoverned, the patient is able to move them as he may be ordered. He will lie quiet for hours perhaps, but obtains no sleep; and on being approached, the eyes are found wide open. When asked a question, he seems to understand its meaning, and usually gives a pertinent answer; but he is generally taciturn unless spoken to. In those cases we seldom find that there is any yellowness during the attack.

By a few authors on yellow fever two symptoms have been mentioned as liable to occur, which have not presented themselves under our observation,—intolerance of light and petechiæ. The following symptoms, occurring in typhus, are not, as far as we are aware, liable to present themselves in the disease of which we are treating:—meteorism; the eruption termed *sudamina;* the contraction of an upper extremity; tinnitus aurium; the involuntary passing of the fæces and urine; deafness; sores about the mouth. Bed sores are not liable to occur, as in other fevers in those cases where relapses take place, or where the disease runs a course of many days. Furious delirium is not liable to occur; and though mild delirium and coma not unfrequently take place, the mental faculties in a great proportion of the cases, remain entire to within a short time of the fatal termination. Excoriations, causing great distress, have been observed to take place on the scrotum, penis, and about the anus. The statement as to the occurrence of gangrene on blistered surfaces has in no one instance been verified in the experience of the writer of this article. In some cases he has met with hemorrhage from leech-bites, very difficult to suppress. Anthrax is stated by a few writers to have been occasionally met with in yellow fever.

Infiltration of venous blood into muscular parts has been noticed as occasionally occurring in the disease in the West Indies; and the epidemic of 1828 at Gibraltar furnished a few cases in which a similar occurrence took place.

The observations under a former head preclude the necessity of entering here upon the remittent form of yellow fever.

*Sequelæ.*—With the exception of a very few instances, we find that, in the records of yellow-fever epidemics, chronic organic affections have not been much referred to. Dr. Alfonso de Maria has recorded that, after a Cadiz epidemic, several who had passed through the disease were recommended to go to St. Lucar in consequence of the visceral diseases which followed; and Mr. Munro, in his official report of the disease as it occurred in the seventy-seventh regiment, at Falmouth, Jamaica, in 1827, states that "in cases of recovery from this form of the disease, the patient was generally a considerable time afterwards affected with some organic complaint, either of the lungs, liver, spleen, or other viscera." It may be a question how far some observations of Dr. Rush, regarding the Philadelphia yellow fever of 1794, apply to this point; that "the moderate degrees of it were of so chronic a nature as to continue for several weeks when left to themselves."

*Diagnosis.*—From what has been said, it must be evident that great difficulties stand in the way of affixing pathognomonic symptoms to yellow fever; it has even been observed, especially in regard to children, that those very slight attacks which occur not unfrequently during epidemics, and in which we have not a single well-marked symptom of fever, seem to give the *admitted degree* of immunity, during subsequent epidemics. As in some other diseases, we must rather point out those symptoms usually considered characteristic of an attack, than refer to any as invariably present. Nausea and vomiting, especially after the first twenty-four hours, are far more constantly present and more distressing than in any other form of fever; the quantity ejected is sometimes considerable, though nothing had for some time previous been taken into the stomach: and in this last case what is thrown up, until perhaps about the fatal termination of the disease, is usually colourless, as if simply a secretion from the stomach. Though, as is well ascertained, a black or dark-brown fluid is now and then vomited in other diseases, there can be no question of this symptom forming, at the fatal termination of cases, a very leading character in the great majority of yellow-fever epidemics. It is necessary to speak thus as to the *majority* of epidemics, for here, as in almost every thing else which can be mentioned respecting the disease, remarkable exceptions occur; as, for instance, in the 84th regiment at Jamaica, in the epidemic there of 1827, when, according to the surgeon's official report, the black vomit rarely appeared in the fatal cases: and at Gibraltar, in the epidemic

* Hurtado's Decadas, vol. iii. p. 121.

* In Dr. Bancroft's Essay some interesting remarks will be found on the yellowness of the skin in this fever.

of 1814, when the same was observed there among the military. In young robust persons, the suffused and red appearance of the eyes is held to be among the common signs of the disease; but a much more unequivocal one is, in others more advanced in life, an intense redness of the adnata, but without any brilliancy, the natural secretions of the part being suppressed, and giving to the countenance rather a ferocious expression. The red, or, as it has been called by some, crimson border of the tongue, ranks among the most characteristic signs in the first stage of the malady. Jactitation is of more frequent occurrence, and more severe in degree than in any other disease, spasmodic cholera not excepted. In the forms in which the excitement runs high, the aching across the loins, of the calves of the legs, and of the eye-balls, is more severe than in any other form of fever. Though, on particular occasions in the West Indies, yellowness of the skin has been spoken of as being "as often absent as present," the propriety of considering this as a symptom to be looked for in the majority of cases is evident enough from the name given to the disease by so many writers of different countries. This yellowness may be partial or general, and may vary from the light lemon colour to deep ochre-yellow.* Hemorrhages from the different orifices must also have a prominent place. Suppression of urine is, in desperate cases, infinitely more common than in any other form of acute disease, spasmodic cholera perhaps excepted; and it is probably only in this last disease that we have, as frequently as in yellow fever, the acrid or "burning" sensation in the region of the stomach so peculiarly distressing. It has been attempted to set up, as diagnostic of yellow fever, an excruciating headach confined to the orbits and forehead, without extending to the temples, but the general application of this as a guide has been justly questioned.

*Prognosis.*—The following are among the unfavourable symptoms:—the *early* appearance of yellowness, especially a shade of it similar to what occurs in patches in ecchymosed parts; intense rachialgia; incessant vomiting and jactitation; deep sighing; intermissions or remarkable depression of the pulse; aching of the eye-balls; singultus, and, according to some observers, the appearance of a few drops of blood from the nose at a very early period of the disease. Opposed to some of these may be reckoned among the alarming signs, a feigned gaiety, or an assurance on the part of the patient that he suffers little, at a moment when a practised eye can discover cause for apprehension.

A fatal issue may be looked forward to when the patient, although in possession of his faculties, lies for the most part on his back, in a state of collapse; his limbs pulseless, clammy, and stricken with a degree of coldness considerably below that which is found to take place in a corpse under a similar atmospheric temperature; while probably he complains of agonizing internal heat, and casts off the bed-clothes incessantly. When, on the contrary, the patient lies on his side, completely enveloped in the bed-clothes, the temperature not remarkably reduced, labouring under no very striking symptom, indifferent to passing events, and annoyed at being disturbed, but answering questions rationally; in this case it is often supposed that the patient is enjoying a tranquil sleep: where the acrid sensation spoken of takes place, and which sometimes extends along the course of the œsophagus to the fauces:—when we have, as sometimes happens, from the very commencement of the attack, a knitting of the brows, a sort of scowling, *sinister* look, with the remarkable redness of the eyes, and what may be called a mottled or *party-coloured* skin, in which livid, light olive, and ash-coloured patches of all sizes may be observed shading into each other:—where a loud, monotonous wailing takes place, or a violent, sonorous, heaving of the chest, amounting to the degree of dyspnœa liable to occur from extensive organic lesion:—when lividity of the ears and hands takes place, or livid blotches or swellings on various parts, from the infiltration of venous blood into the cellular tissue:—when we have trismus, or slight spasmodic twitches about the mouth, or long-continued singultus:—when we have profound coma,* or the small whitish stools referred to, or suppression of urine, or, finally, black vomit. With regard to the occasional recovery of patients labouring under any of the foregoing symptoms, the statement in reference to black vomit is perhaps the most worthy of attention; the general impression being that it is *invariably* a fatal symptom. Dr. Rush, in his account of the Philadelphia epidemic of 1793, states that "many recovered who had this coffee-coloured matter."† Mr. Amiel, (now surgeon to the 12th regiment,) who has witnessed three yellow-fever epidemics at Gibraltar, states that he met with two instances in children where recovery took place after the appearance of black vomit. Surgeon Callow, of the 84th regiment, says, in his official report to the Army Medical Board, relative to the yellow fever as it appeared in his corps at Fort Augusta, Jamaica, in the year 1827, that the black vomit "is not invariably fatal; examples more than one in

* Regarding yellowness, it is quite inconceivable how any writer laying claims to the smallest knowledge of this disease could have placed a very light or lemon yellow as the true *diagnostic* colour; for nothing is better known than that the skin may assume a very intense yellow; so that the perspiration is even sometimes found to stain the sheets, as is remarked by Flores Moreno, and was observed in a few instances at Gibraltar in 1828.

* It seems strange that *Dr. Boisseau*, the erudite author of the "*Pyrétologie Physiologique*," should, in his last edition (1831), have given the integrity of the mental faculties as invariable in yellow fever; for, although he is a good deal borne out by the statements of Devese and some others, it is nevertheless certain that in protracted forms the opposite is sometimes the case.

† Page 54.



any regiment are now living." He states that Captain Pack recovered eventually, "though he had a vomiting of coffee-coloured fluid for twelve hours." Dr. Bone, deputy inspector-general of hospitals, who has had an experience of many years in the West Indies, is very precise upon this point in an official report relative to an epidemic at Barbadoes in 1821. He there not only refers to some cases in which recovery took place after having vomited black ("China-ink coloured") fluid, as well as "flaky brown blood, usually the precursors of the real black* vomit," but enters into minute details relative to two cases, ultimately terminating favourably, where the fluid ejected possessed the most unequivocal characters.

Recovery may be hoped for, even where hemorrhage the most profuse takes place from one or more of the natural orifices, if the number of patients be not so overwhelming as to prevent the possibility of allotting to those who are in such a state incessant care and good nursing. Reasonable hopes may be entertained, when, in the ordinary forms of the disease, the pulse is not found to give way remarkably about the end of the third day. Distinct remissions have been remarked as favourable. Surgeon Callow says, "if a distinct remission occurs, it generally proves a favourable indication." If the skin, during the first forty-eight hours, maintain an equable temperature and softness, there is great probability that symptoms of a very severe character will not set in. Serenity of countenance and a facility in moving the eyes are favourable indications; but, with respect to the first of these, it is especially to be remarked that traits, often so light as to escape inexperienced observers, are of high moment; and on this account additional advice should be resorted to whenever practicable, even in what may seem a very mild case. The miliary eruption noticed by certain Spanish writers is to be regarded as favourable; so, in a high degree, are some hours of sleep not broken in upon by vomiting; and so are, as perhaps need scarcely be mentioned, dejections of a proper colour. The restoration of the moisture and bulk of the tongue from the remarkably dry and *withered* state often occurring in the protracted forms, is one of the most promising signs. Whatever be the colour of the urine, its secretion in due quantity is always a favourable point, though not to be considered as one of the most prominent indications of a favourable issue.

On the whole, the yellow fever is considered the most *insidious* of all fevers; for it is known that in persons sitting up in bed amusing themselves, and apparently in a favourable state, the black vomit has suddenly appeared, quickly followed by death, to the utter astonishment of the medical attendants.

*Morbid appearances.*—1. *In cases of extreme malignity, and terminating rapidly (concentrated form,—congestive form).* The party-coloured appearance remarked as existing during the attack in this form, more strongly marked, the lividity being more prominent, especially in the most dependent parts; and a pale yellow line, mingling with the other colours, can be observed from about the nose to the pubis. The ears, hands, and arms quickly become of a brown-black; the palms being equally dark with the backs of the hands. The penis and scrotum also become particularly dark. This appearance of the body has sometimes given rise to a hasty conclusion that rapid decomposition had taken place; but it does not appear, from observations made during a long time in dissecting rooms, that the odour of putrefaction takes place sooner after death from yellow fever than in other cases. *Cellular tissue*, unhealthy in appearance, but having no yellow tinge. *Muscles*, dusky, and softer than natural; so that they may usually be broken down by pressure between the fingers. *The heart*, same appearance as other muscles. *Liver*, change of colour seldom very remarkable; but light olive patches are sometimes observable, which would seem to indicate that a change similar to what is common in the more protracted forms of the disease had commenced in this viscus. No trace of inflammation, by adhesions, abscesses, &c. Congestion, though not always present in a remarkable degree, has been observed. *The gall-bladder*, remarkably diminished in size, (sometimes shrunk, and in other instances greatly attenuated); altogether empty, or only containing a *minute* quantity of bile of a deep orange-red colour, or of green bile, or of serum, or, more rarely, of pus; its mucous lining in some instances highly injected with blood of a bright red

* Dr. Bone, who seems to have paid much attention to the examination of the fluids ejected from the stomachs of persons labouring under yellow fever, describes them thus:—"1st. The contents of the stomach at the invasion of the disease. 2d. The fluid drank, mixed with green or yellow bile. 3d. The fluids drank, without any admixture or change. 4th. A fluid like indigo or China ink, brought up with some straining: I suppose it to be bile, for it coagulates with spirits of wine. 5th. A brown fluid, resembling urine in appearance. 6th. Brownish blood, not flaky, proceeding from the fauces and gums, and perhaps partly in some cases from the pulpy cardiac opening of the stomach. 7th. Brown flaky blood, mixed with mucous matter, proceeding from the gums, fauces, and stomach, usually the precursor of the real black vomit. 8th. The *real black vomit*, which also is blood altered by its passage through the vessels of the villous coat." At Gibraltar, in 1828, we were led to consider "*black vomit*" under the following forms:—1st. In thin flakes or portions of a brownish black colour, floating, like broken-up wings of a butterfly, in a fairy fluid, or in a fluid resembling an infusion of black tea. 2d. A perfect resemblance to a mixture of soot and water, or to the contents of a coffee-pot when the clear part of the coffee has been poured off. 3d. A homogeneous, intensely black substance, having a jelly-like consistence, and adhering in great abundance sometimes to the mucous coat: this, though never *vomited up*, and therefore more properly belonging to the *morbid appearances*, it is thought may not be altogether out of place here:—it is rarely found in the stomach, the intestines being much more commonly its seat. A simple test of true black vomit has been proposed, which is dipping into it white paper, which it does not tinge.

colour.* *The cystic duct*, in a few instances so completely closed that a probe could not be passed through it.† . *Peritoneal surface*, free from adhesions or other evidence of inflammation. *Stomach*, free from what, in the present day, is admitted by the best authorities to be evidence of inflammation; mere redness, whether in streaks in various directions, or in stellated patches of various sizes, has been on several occasions remarked in the mucous membrane, in the same degree as it is observed to occur in chronic or other diseases, or in cases of accidental death, where there is not the remotest suspicion of gastritis. Spots of a purple colour are much more common than those of a bright red. A perfectly pale state of the membrane is far from being of rare occurrence. Dark streaks or patches in the mucous membrane are not uncommon, and would give an impression of their being occasioned by blood, changed in the capillaries to *black vomit* in its progress to the surface. This appearance no doubt it is which has given rise to the opinion that gangrene of the stomach occurs in yellow fever; but the most careful examinations at Gibraltar, in 1828, fully bear out those observers in America, the West Indies, and Spain, who deny not only that gangrene does take place in the disease under consideration, but also that any lesion whatever of the stomach is to be traced. As the same may be said, very confidently, with respect to the other parts of the body, it would be unprofitable to enter more into details upon this part of the subject; and it need only be observed further that here the contraction of the bladder has appeared to be constant.

2. *Where death takes place after the more ordinary forms of the disease.*—Little *lividity of the skin*, except in dependent parts. Where no *yellowness* has appeared during life, a little may now be observed about the eyes, at the sides of the nose and mouth, along the course of the large vessels of the neck, and about the chest. Where yellowness had existed during the attack, it now becomes more intense and general, and extends to the fat and cellular tissue; but it is proper to state that the assertion as to the pericardiac fluid and that contained within the ventricles of the brain being sometimes tinged yellow, has not been verified under the observation of many who have had ample experience in this disease. *Muscles*, their natural colour and firmness little altered. *Peritoneal surface*, free from adhesions or other evidence of inflammation. *Liver*, presenting remarkable changes of colour. Sometimes (as during the greater part of the Gibraltar epidemic of 1828) the colour has been a pale olive, or mixture of green and yellow, usually taking place uniformly throughout the whole substance of the organ, in some rare instances alternating with dark green, in regular strata, and occasionally taking place in the left lobe only; the liver observed, at the same time, to be studded, or punctuated, very thickly, with minute spots of bright red, being, perhaps, the granulated structure retaining its colour. The colour of the liver is, in some cases, especially in women and children, lighter than here described. In children it has been observed, after having been merely put into water for a moment, to be as pale as box-wood. Another change of colour is to reddish brown, compared by some (Arejula, &c.) to that of red Peruvian bark, and by others to the leaves of an autumnal scene: this was almost the only change of colour which presented itself during the latter part of the epidemic season of 1828 at Gibraltar. Portions of the liver washed, pressed, or bruised in a mortar, did not give out colouring matter, whatever the shade might have been; and portions of the light olive coloured have remained unchanged by long immersion in spirits of wine. Little or no blood exuded from this viscus when deep incisions were made; and when broken up between the fingers, the impression given was what is termed *friability* of texture. No trace of bile has been observed in the pores on the occasion just referred to, nor had the hepatic or common duct been ever found obstructed, like the cystic; no traces of inflammation discoverable, and from the whole of what has appeared upon this subject, the morbid change may be considered as being connected with derangement of *function*. The *gall-bladder*, usually containing bile, of a highly inspissated and sometimes dark tar-like appearance. *Stomach*, not unfrequently found to contain the *black-vomit* strictly so called, and, though infinitely more rarely, may be smeared over with the dark adhesive and jelly-like substance spoken of under another head; containing sometimes an obvious proportion of blood mixed with other fluids; often the ingesta only, or mucus. Rugæ, the "*itôt mamelonné*," together with appearances adverted to under another head, as they are admitted to present themselves very frequently in dissections after diseases of any kind, or, indeed, where (as in the case of accidental death) no disease had existed, need not be particularly entered upon on this occasion. Those who have asserted that ulceration of the stomach takes place in any form of yellow fever, are quite unsupported in the statement by observations made with the greatest attention and on a scale of sufficient extent: that mistakes have here, as on other occasions, often arisen from the facility with which the mucous membrane gives way on handling, there seems little reason to doubt. As to mere "*ramollissement*" of this membrane furnishing a proof of inflammation, this will not be now contended for, it is presumed; and it may be here stated that, on an examination in the case of a death by accident at Gibraltar in 1829, where the man had been in perfect health previously, the whole of this membrane, in the intestines as well as stomach, was, in the hands of experienced persons from Paris, found to be so soft that, with the utmost care, not more than two or three lines of it could be raised at any point, but for the most part not even that quantity. *The œsophagus* presents an appearance, in some of the cases where *black-vomit* takes place, of this being thrown out from its surface as well as from that of the stomach, especially at its lower portion; an abrasion of its epithelion throughout its whole course has been sometimes observed, as in examinations after other diseases. The idea suggested itself at Gibraltar that this denuded state of the tube might give rise to the peculiar burning sensation noticed; but as the same sensation has been observed to occur frequently in cholera, a wider field is open on the point. *Duodenum*, much of what has been observed regarding the stomach will apply here. *Small intestines*,—even in cases where no black vomit had been ejected before death, or where, on inspection after death, it had not been found either in the stomach or duodenum, the black jelly-like substance was sometimes found in the jejunum, but oftener in the ileum; and in some cases where it has been found both in the stomach and ileum, the *whole intervening jejunum* has not presented a trace of it. In a memoir by the writer of this article, from which imperfect extracts were some time ago printed in Paris, the remarkable fact was noticed that the ulcerations so liable to take place during the progress of typhus, as well as other fevers *mali moris*, in that part of the ileum more especially occupied by the glands of Peyer, *are not found to take place in yellow fever*. The most trifling lesion has not been discovered in those parts of the intestine, on very careful examinations. *The colon*, its mucous surface sometimes covered with the adhesive black substance; in a few instances containing a quantity of a pale red fluid, approaching to blood in its character; is occasionally contracted at different parts. Whether we speak of the stomach or intestines, the mucous surface is usually found quite pale on removal of the particular substance described as being black and jelly-like. In the colon especially, but also in the small intestines, another substance has been occasionally found adhering in great quantity to the mucous surface; this has been compared by French writers to a mixture of linseed-meal and water; but it has been found of a lighter colour, so as to resemble the substance found sometimes adhering to the intestines of persons who have died of cholera spasmodica. Regarding red points or patches found not unfrequently in different parts of the intestinal canal, little need be added to what has been said, when speaking of the mucous membrane of the stomach, as to their not furnishing evidence of inflammation. If, as is the opinion of some of the most eminent pathologists of Europe, before inflammation of this surface be admitted it must be shewn to be thickened as well as being red and so soft as not to admit of being torn off in portions of several lines in length, then may it, as we conceive, be with much certainty stated that the phenomena of yellow fever cannot, as has been supposed, be referred to *gastritis*, or *gastro-enteritis*. *The bladder*, in those cases where suppression of urine* took place, found contracted very remarkably, but without lesion. Mr. Linton, of the Naval Hospital, Jamaica, has noticed in one of his official reports, that he considered "the *pancreas* in some cases as being friable in texture;" but this has not been remarked by others who have paid the closest attention in their examinations; and regarding the alterations or lesions alleged from time to time to have been observed in other parts contained within the abdominal cavity, they do not seem to be verified in subsequent examinations conducted on a larger scale.

Within the cavity of the thorax no appreciable lesion of organs seems to be admitted in the more ordinary forms of yellow fever; the change of colour and friable texture of the heart, in the highly concentrated form, has been referred to. False polypi in the cavities of the heart have perhaps been more common in this form of yellow fever than is usually found to be the case after death from other diseases. In a limited number of cases, towards the close of the epidemic of 1828 at Gibraltar, the attention of the medical officers of the garrison was directed by some of the members of the French medical commission to those dark, well-defined, circular patches in the lungs, having very much the colour and consistence of the spleen, which have been noticed in other diseases, and the appearance of which was perhaps merely adventitious on the occasion in question. In the examinations made in the year just mentioned, the blood was not observed of the particularly dark colour attributed to it in this disease by a few writers. The question, however, as to the changes in the chemical properties of this fluid remains open. *Contents of the cranium:* In the course of the last Gibraltar epidemic, as well as on other occasions in the West Indies and elsewhere, extensive observations, carefully conducted, have quite negatived any assertions made from time to time as to morbid changes in the substance of the brain; as an inordinate quantity of fluid in its cavities, or under its coverings; remarkable congestions; extravasation of blood; the effusion of lymph, &c.; even where profound coma had taken place in the Gibraltar cases, morbid states by which this might be explained were not discovered; and the deviations from perfectly natural states observed in any cases, were considered, by those who had most opportunities of making the examina-

* It is to be remembered that, though these appearances were so constant in the examinations made on an extensive scale at Gibraltar in 1828, they have also been occasionally found by pathologists in other fevers, and even in phthisis.

† This, as is well known, occurs in other diseases: if the peculiar valvular as well as spiral structure of the duct be not kept in view, we shall often be misled in supposing that actual occlusion exists.

* In some cases, especially children, *retention* of urine has taken place in this disease and been mistaken for suppression; so that, on a post-mortem examination, the bladder has been found distended above the pubis: the occurrence of this at Gibraltar in 1828 led to the practice of careful examination of the region of the bladder.

tions, as nothing more than the fortuitous appearances which present themselves in a proportion of instances, no matter from what disease death is produced, and which, as is now generally admitted, may arise from stasis, or the longer duration of the last agonies in particular instances: cadaveric changes, too, have, no doubt, given rise to mistakes, particularly as to great vascularity or congestion in the posterior and more dependent parts of the membranes of the brain, as it has regarding the most dependent folds of the intestines. *Contents of the vertebral column*, found to be equally free from lesion as those of the cranium. In examinations conducted on a small scale by a French medical commission sent to Barcelona during the epidemic of 1821, erroneous views had been hastily adopted as to the spine being the *fons et origo mali* in yellow fever; but those opinions were, wholly or in part, subsequently admitted to have been erroneous. Magendie having shewn that a certain quantity of fluid within the theca belongs to a natural state of the parts, errors on the part of future observers are less likely to occur.

Before quitting the subject of morbid appearances, it may be stated that a very remarkable occurrence presented itself in a few instances during the last Gibraltar epidemic,—the infiltration of venous blood, in the most uniform manner possible, into the cellular tissue of the minutest fibres of muscles. The whole substance of the muscles, which appeared almost black, seemed one soft mass, which yielded to pressure between the fingers as readily as the spleen. The blood thrown out became grumous, so that incisions caused but little exudation from the parts; no putrid odour or appearance of sloughing. In one man this infiltration took place into the whole of the muscles of the right thigh, the abductors excepted, from their origin to their insertion; in another the parts involved were the gastrocnemii of the left leg and flexors of the right arm. This man had suffered a good deal of pain in those parts, and the process was very rapid. In a third case precisely half the diaphragm (right side) was found in this state; and the infiltration, bound down by all the foldings of the peritoneum, extended in a most singular manner in one continuous sheet, from the diaphragm, posteriorly, down the right side to the bottom of the pelvis, keeping with great precision a line corresponding to the axis of the vertebral column, and covering every organ, or part of intestine, &c., which lay on that side. The muscles, except in the portion of the diaphragm referred to, were healthy. In this case the disease had run a rapid course, and some of the symptoms were well marked, as yellowness of the eyes and skin, violent jactitation, delirium, singultus, and dark stools, *but no black vomit*: a remarkable tremulous motion of the hands, not common during the epidemic, also took place in this case, near the close of the attack. We were not in those cases able to discover the rupture of any considerable vein. Although Arejula notices in his work the occurrence of large and painful tumours during some of the epidemics of Spain, which, had examinations after death taken place, would probably have been found of the nature just referred to, nothing as to the occurrence, in the yellow fever of parts of Europe, of the precise morbid states here referred to appeared till the publication, at Paris, in one of the numbers for 1829 of the Bulletin of Sciences, of an abridgement of notes, made by the writer of this, of the autopsies at Gibraltar, in 1828. Up to so late a period as 1828, the identity of the yellow fever of Spain with that of the West Indies had been denied by Dr. Rocheaux, who was at Barcelona in the epidemic season of 1821; but the editors of the Bulletin consider all doubt now at an end, "*identité parfaite*" being established by the account of those infiltrations in the cellular tissue in some of the Gibraltar cases. In America and the West Indies those appearances had been particularly noticed by Dr. Chervin of Paris, so celebrated for his researches in yellow fever for many years; they are particularly noticed in a communication to the Academy of Medicine, in 1827, by Dr. Keraudren, from one of the French West-India islands.

*Mortality.*—As has been frequently observed regarding other diseases, the malignity of the cases, and consequently the mortality, is usually much greater in the first than in subsequent periods of yellow-fever epidemics: the violence of the disease has, however, been known to receive, in some rare instances, a fresh impulse, as at New-York in 1822.* In *Hartado's Decades* it is stated that, of the first 134 cases treated at Murcia in 1804, not more than three or four recovered. Dr. Rocheaux, one of the French physicians at Barcelona during the epidemic of 1821, states, in his book on yellow fever, printed in 1823, that in the early part of the epidemic the mortality was in the proportion of 19 out of 20; that towards the middle it became much less, and at the close was only two-thirds.† In the early part of the Gibraltar epidemic of 1828, very few recoveries took place in the Civil Hospital; of the first thirty-five Jews received into the establishment, it is stated that all but one were swept away. On the same occasion, two corps in particular, as officially stated to the authorities by the late Dr. Hennen, then medical chief, were early attacked by the disease in a peculiarly malignant form, and suffered a loss of about one-half of the cases. On some occasions the form of the disease has been so mild that very few deaths have been recorded in proportion to the numbers attacked: even during the same epidemic, from a difference in the localities, or from other circumstances not admitting of easy explanation, there has been less mortality, in proportion, in one regiment,‡ class of persons,

* About the middle of October "the disease became again as fatal, or indeed more so, than at its commencement; the proportion of deaths being to the proportion of sick as *three to four!*"—*Townsend, Yellow Fever of* 1822 *at New-York*, p. 197.

† Vide p. 464.

‡ At Gibraltar, in the epidemic of 1813, the mortality was so much less in the Military Hospital under Mr. Brown, that medical gentlemen were induced to inquire into his practice, which they found did not differ from their own.



or family, without an essential difference in the mode of treatment, and solely arising from the disease having been milder. A full consideration of the subject must prove that the *expectante* system, or any system of "mild popular remedies," cannot be admitted (as has been attempted to be shewn) to be followed by less mortality than what our French neighbours call "*les moyens perturbateurs.*" It does not appear that in their colonies, where trifling means only have been so often resorted to by the French, any good has followed. At Barcelona, in 1821, scarcely a patient survived in the wards given up to the distinguished members of the French commission.* At the period in question, the mortality, under Spanish and French medical men, in the establishment called *Seminario*, was 1265, out of 1739 cases treated. Under the *mild*, or what has been called the French and Spanish treatment, the mortality at Malaga in 1804 was 11,486, out of a population of 36,054. In the epidemic of the preceding year at the same place, 6,684 deaths occurred out of 16,517 attacked. In an epidemic at Xeres a few years ago, one-third of the whole population was swept off, under circumstances when, in the bulk of the patients, a few domestic remedies only could have been employed. Many other similar instances might be cited in proof of our being warranted in employing potent means likely to induce a favourable change in the form of the disease on its first invasion. From the wide range which the symptoms take,—so wide that, but for the *black vomit* being *liable* to occur, as a connecting link in the various forms during the prevalence of an epidemic, we should, from the symptoms, as well as *post-mortem* appearances, often have reason to suppose that different remote causes were giving rise to different impressions,—it is obvious that in no disease is it more difficult to lay down rules of practice, and in none can the medical man's tact and attention be more needed.

*Nature of the disease.*—It has been attempted, on various occasions, to explain the phenomena of the disease by the inflammation of certain organs or parts; and by the majority of those who have adopted this view of the matter, the gastro-intestinal mucous membrane is the part to which the morbid action has been assigned.† As might have been anticipated, we find this doctrine supported by all the ingenuity of Broussais and his followers; but by nobody has it been more strenuously advocated than by M. Boisseau, in his "*Pyrétologie.*"‡ Among the medical men out of Europe who have advocated this last opinion, the statements of Dr. Bone, of the British army, who has been resident for many years in the West Indies, are perhaps worthy of most attention: they are to be found among the many valuable manuscript documents in the archives of the Army Medical Department in London. What has been shewn, however, under the head of *morbid appearances*, will probably establish, to the satisfaction of our readers, that there are sufficient grounds for believing that the primary morbid action is not the alleged inflammation of parts. The inhalation of a specific poison has, as on other occasions, been considered by some as directly productive of changes in the chemical properties of the blood sufficient to account for the derangement of various functions which occur in this disease; but, without denying the probability of this, there is as yet nothing before the public to establish the point satisfactorily. Dr. Guyon, who practised for some years at Martinique, has spoken of this "lésion" of the blood as probable; and Dr. de Fermon of Paris, well known for his acumen in all matters relating to medical science, seems to favour this view of an alteration of the blood, '*primitivement*,' in yellow fever. In the most concentrated and rapidly fatal form of the disease, there is evidence, as has been shewn, in proof of congestion in the liver. By others, the nervous system is considered as primarily affected, and some observations lately made on this subject by Dr. Wilson of the navy, in his very ingenious book on yellow fever, seem particularly worthy of notice; especially with respect to the different train of symptoms to be looked for—on the one hand by the *abstraction*, and, on the other, by the *obstruction* of the nervous power in different individuals. The uniform integrity of the cerebral functions in the first stages of this malady, as observed at Gibraltar in 1828, and as noticed on other occasions by many authors—the extremely frequent integrity of those functions to almost the last moment of existence, in its 'congestive' or most intense and fearful form,—together with the remarkable manner in which (in the last-mentioned form especially) the secretions are suspended,—induced the writer of this, when drawing up a review of the last Gibraltar epidemic (1828), to state his belief that the ganglionic system was involved, *very prominently*, in the series of morbid actions. That this should in any case be the first link of the chain can never perhaps be satisfactorily demonstrated; but on many occasions it appears highly probable from the manner in which several fatal signs concur with the suppression of the secretions, as if some powerful agent had been directly applied to that system of nerves which so specially presides over the secreting organs. But to enlarge on points necessarily speculative would be unfitting an occasion like the present.

*Cause of the disease.*—The more fully this subject is examined, the more evident it must appear that in the present state of our knowledge nothing satisfactory can be arrived at; for although, as will be shewn when speaking of *contagion*, reasonable causes have been sometimes assigned for the appearance of the disease on board ship as well as in certain localities, it

* O'Halloran on the yellow fever of Spain.

† Tomassini, strangely enough, considers not only the gastro-intestinal mucous membrane as the seat of inflammation in yellow fever, but also the liver.

‡ Fourth edition.

has been impossible to assign appreciable causes in many other instances. What can be stated in this respect with regard to Gibraltar, will apply to other places. By ample tables in our possession, it does not appear that either before the appearance of the epidemic of 1828 in that garrison, or during its progress, any atmospheric changes took place differing materially from other years in which epidemics did not occur. The average heat was not greater* than that of the preceding year. The quantity of rain which had fallen up to the appearance of the epidemic was within a fraction of that which fell in 1827. The influence of a prevalent easterly wind had been much dwelt upon in the explanations offered respecting the epidemic at that place in 1804; but in 1828 no unusual prevalence of that wind took place. In fairness, we think that, like many other places which may be mentioned where yellow fever is known from time to time to appear, it cannot be admitted that Gibraltar furnishes sources from which *malaria, in the usual sense of that word*, arises, sufficient to account for the appearance of a malignant fever; neither can we concede to authorities of great respectability, that either there or in various other places the solution of the question is to be found in a crowded population, the filth of the town, or the state of the sewers; though the last may have been an auxiliary. Compared with Gibraltar, places might be mentioned where, as we know, yellow fever does not appear, in which those circumstances obtain in a much greater degree. It may be urged against the salubrity of Gibraltar, that the habitations are for the most part deprived of free ventilation, being backed by a rock of from twelve to fourteen hundred feet high; and that the impinging of the sun's rays, for so many hours daily, on the sloping and inhabited part of the rock, should be admitted to a share in the consideration: but the great mystery is, that with these and other circumstances in operation every year, the disease should only prevail epidemically in particular years. Though a certain degree of heat seems so essential, it by no means appears that epidemics have usually occurred in years most remarkable for heat. If we consider soil and elevation, it must be admitted that here too no satisfactory conclusion can be drawn; for if we find evidence, especially in the West Indies and on the American continent, of the influence of a marshy soil, on several occasions, this does not hold good in other instances; and in those countries, as well as in Spain, many places might be mentioned where elevation, soil, &c. would seem to guarantee immunity, but where, nevertheless, the disease occasionally prevails to a devastating extent.

Notwithstanding what has been here said, we do not apprehend that, in the present day, epidemic or catastatic influences in determining the irruption of diseases will be denied, though not cognizable by our senses, or appreciable perhaps by chemical tests.

*Influence of temperature, &c.*—There is nothing connected with yellow fever which seems so invariable as the decline of the epidemic on the setting in of cool weather. At a temperature of about 50° Fahr., fresh cases soon cease to appear, and in Spain and North America the disappearance of the disease at a particular period is usually calculated upon with precision.

In some epidemics females have remained wonderfully exempt: this was the case during a terrific epidemic at Dominique and Martinique in 1801, as the writer of this witnessed; for while two battalions of the 68th regiment, composed of fine young men, suffered so much from the disease as not to be able latterly to furnish any men for duty, and had lost forty-six officers within six months, not a single woman was attacked; and it may be observed that, in those days, more females were allowed to embark with regiments from home than at present. Children were also exempt on the occasion in question. In some epidemics in Spain the disease has been observed to attack women in a milder form; while in others, as that of Xeres in 1811, they suffered in a particular manner. During the early part of the epidemic at Gibraltar in 1828, the women were attacked with great severity, but subsequently in a milder form. On that occasion, too, children under twelve months had well-marked symptoms.

Particular classes will sometimes suffer more than others: thus, according to a memoir by Mr. Hugh Fraser, lately surgeon to the Gibraltar Civil Hospital, of the first thirty-five Jews who presented themselves to him during the epidemic there of 1828, scarcely a single person recovered. Bakers and cooks have been said to suffer in a greater proportion than common; but perhaps the nature of their occupations permits fewer of these people, in proportion, from leaving a city or town when an epidemic prevails. Negroes are considered as being usually insusceptible of attacks; but even in them a susceptibility has been created, as on certain occasions in America, by a residence for some time in a different climate from that to which they had been long accustomed: indeed, without change of climate, they have, as instanced by Dr. O'Halloran in his report of the Jamaica epidemic of 1825-6, been attacked in considerable numbers, though not with equal severity as the white population. At Gibraltar in 1828, a negro, the servant of a hotel-keeper, had *two* attacks, one of which was particularly well marked. Circumstances connected with localities being equal, the upper classes of society seem, on all occasions, to suffer from attacks in a full proportion. Persons of regular habits do not seem less exempt from attacks during epidemics; but it may be admitted that their chance of recovery is greater than in the case of free livers. Those born or long resident in places where the disease is liable to prevail, will escape from attacks during the prevalence of some epidemics, while in others

* Average at noon, in the autumnal quarter, 76¼
——— in the last quarter, 63¾



(as in that at Barbadoes in 1816, and Jamaica in 1825-6) the old inhabitants will suffer in proportion. A well-marked attack on one occasion gives a great degree of security from attacks during subsequent epidemics: this was stated, some fifty years ago, by Lining, reiterated by Sauvages, and known so well among Spanish medical men, that the late Dr. Arejula placarded the fact on the corners of the streets in Medina Sidonia in 1801, with the view of insuring better attendance to the sick: the claims, therefore, of some persons of late years to any *discovery* on this point, are utterly groundless, as are the statements which would go to the denial of the fact, regarding the occasional occurrence of two distinct attacks at remote periods; and, were this a place for minute details upon every point connected with yellow fever, a list could be furnished of the names and dates of several which took place at Gibraltar. Relapses are very common: at Gibraltar, in 1828, one hundred and two cases of relapse occurred among the military alone; and their names have been registered in the medical office of that place. The occupiers of upper floors have, in many instances, especially at the commencement of epidemics, been attacked in fewer numbers than those on ground floors; and in the West Indies and Gibraltar, families occupying low huts have frequently furnished the first cases. The manner in which the disease has sometimes been confined to a particular extremity of a building, or even to a particular side of a ship, is well illustrated by surgeon Callow, 84th regiment, at Fort Augusta, Jamaica, in his official report for 1827; and by surgeon Wilson, Royal Navy, in his work on yellow fever.

*Treatment.*—It is painful to be obliged to admit that our advancement, within the last half century, towards any thing like a satisfactory treatment of this disease, in its formidable shape, has been sadly disproportionate to the degree of intellect brought to bear upon the subject within that time by professional men of different countries. Even with respect to those forms in which the symptoms, though formidable, are comparatively less intense, it seems very difficult to draw, from a review of what has been done by many, fixed rules for our guidance on certain points of practice. The discrepancy in the statements of respectable authorities regarding the efficacy of a particular line of practice can indeed be no otherwise explained than by the admission that in some epidemics very remarkable peculiarities occur. *Venesection* may be particularly referred to in illustration; for though it has over and over again, after trials in the hands of men who are not to be set down as injudicious, been decried in our West India colonies as well as America; and though it has been generally abandoned long since by the *experienced* practitioners of Spain, we find it, nevertheless, lauded on certain occasions, especially very lately at Trinidad, jointly with the warm bath and other means, by persons of unquestionable judgment. On our first acquaintance with this disease, nothing would seem more plainly indicated than this remedy, when the excitement runs high; but it has been too frequently found that after its employment, even but to a limited extent, the true character of the disease had been masked, and, as the Spanish practitioners express it, that the patient is speedily found to require all the strength which had been *taken away*. Frequently as we have witnessed blood taken from the arm in this disease, under a strong impression that a highly inflammatory action was going on, never has the blood, in a single instance, presented a buffy surface with a firm coagulum; it has on the contrary always formed a loose mass, yielding readily to the pressure of a finger, the serum separating very imperfectly or not at all. It may here be mentioned that our experience by no means bears out the assertion of some, as to the remarkably dark colour of the blood drawn from yellow fever patients. Without any intention to impugn the statements respecting the advantages derived from liberal venesection on particular occasions in the West Indies, it must be declared that the weight of evidence is against its general adoption in yellow fever, even where, *prima facie*, it would seem to be indicated. The valuable naval medical records at Somerset-house being rendered accessible for reference by the liberality of Sir W. Burnett, some highly interesting observations on the point in question will be found in the reports from Mr. Linton, who has been long resident in the West Indies, and for some time in charge of the Naval Hospital at Jamaica. Quite in accordance with our ample experience of the disease, as it has appeared in the West Indies and Gibraltar, this gentleman declares the disease as "decidedly not inflammatory," though "inflammatory symptoms may concurrently or adventitiously take place:"—would adopt the expression "*inflammatio simulata*," as expressive of "irritation or vascular sensibility:"—states that in the records, extending back for many years, the mortality was very great from the depleting system, which, from the *seeming* inflammatory nature of the disease, had been acted upon; and that "the *post-mortem* examinations which have occurred within the last twelve months [referring to a particular sickly season] presented no appearances which could be legitimately ascribed to this state [inflammation]." As in other fevers, circumstances will arise where the application of leeches to the temples, or of leeches and cupping-glasses to the epigastrium, may be strongly indicated; but the experience of others bears out the last-quoted gentleman in a remark that there is great risk of mischief from opening the temporal artery, collapse being very liable to be induced. Having mentioned cupping, it suggests itself (though perhaps not as a very promising speculation) that in the hope of affording some palliation of the incessant vomiting often so very distressing in yellow fever, we may give a trial to dry cupping on the epigastrium, as practised by ancient physicians in their endeavours to relieve the vomiting in malignant cholera. *Blisters*, with this object, are fre-

quently applied at an early stage to the same part; but to Mr. Linton of the Royal Navy the profession is indebted for a suggestion as to their application in another manner with the same view. He states in a report from Jamaica, dated September 1830, that having placed a blister the whole length of the spine in a certain number of cases, the irritability of the stomach was relieved in all except one. Their application to the head is sometimes found beneficial in protracted cases accompanied by cerebral affection. The *warm bath*, where we have not morbid heat of surface with high vascular action, holds its place as a useful auxiliary in the early stage; and where these symptoms predominate, the *tepid bath*, occasionally repeated, is employed by many; or, by some, the *cold bath*, or sponging with cold water, or with vinegar and water. Assiduous friction of the whole surface, after the bath in any form, has been considered beneficial. The promised advantages from Dr. Jackson's suggestion of a cold bath with frictions, immediately after a warm bath, have not been realized. The application of cold by means of wet cloths to the forehead has been found useful in relieving the severe frontal pains liable to occur in persons in the full vigour of life.

Regarding *internal remedies*, they cannot in truth be spoken of in this as in almost all other diseases, for in the generality of cases the irritability of the stomach is so great that hour after hour, at the period when medicines might be hoped to make some impression on the disease, drinks of the mildest kind and medicines of every description, even in the smallest quantity, are instantly rejected; and, driven to total despair of anything being retained, we are often obliged to leave nature to her own resources, in the expectation of an interval of repose. In a disease of this kind it seems quite impossible to explain how, up to the time of his death, large doses of *the bark* should have merited the special favour of Dr. Lafuente, one of the principal physicians connected with the epidemics of Andalusia during some of the first years of the present century. Where remissions take place, as noticed by several authors, as well during convalescence, the advantages from the exhibition of *quinine* seem to be generally admitted; but the doses must be regulated with caution, for given in large quantities, it has not only produced great irritability of the stomach, but much mischief in the head. Among a very limited number of practitioners have *emetics* been at any time in favour. Arejula, the great authority on the epidemics of Andalusia, informs us that in pregnant women he found their exhibition prevent abortion and its usual consequence, death: this, to the extent of a few cases, seemed to have been corroborated in the practice of a Spanish medical man at Gibraltar, in the epidemic there of 1828. In a report drawn up by a commission of Seville physicians, relative to an epidemic which prevailed in the quarter of Santa Cruz, in that city, in 1819, it is stated that much reliance had been placed on the exhibition of antimonial emetics in the early stage.* In No. 16 of the Gazette of Health, there is a paper by Dr. Hacket, surgeon to the forces, in which, referring to a late period of sickness at Trinidad, he states that his "practice commenced in almost every case by an emetic of sulphate of zinc;" and it would seem that in the employment of this, in addition to his other means, he found sufficient reason for being satisfied as to its utility. This may be the place to refer to the exhibition of the nitrate of silver, given by Dr. O'Halloran, surgeon to the 77th regiment, at Jamaica, in 1827, in doses of from four to six grains, so as to act as an emetic; and from which this gentleman at one time conceived that he had received considerable advantages in his practice; but it is proper to state that, however further trials of this particular form of medicine may be warranted, he has not, in a conversation which we have had lately with him on the subject, expressed himself very confidently as to its efficacy. In regard to *purgative medicines*, there seems, among the mass of experienced practitioners, an admission as to the propriety of their employment in those forms where the excitement runs high, although the practice is not without opponents from the modern school, which refers the train of symptoms in this as in so many other diseases to inflammation of the gastro-intestinal mucous membrane. It is not an easy matter to conceive how, in this disease, bulky doses of drastic purgatives, as jalap, &c. could have merited the estimation in which they were at one time held, their immediate rejection from the stomach being always so exceedingly probable. This unquiet state of the stomach has led to a very general practice, especially (but by no means exclusively) among British medical men, of administering, in as small a form as possible, doses of calomel with the view of clearing out the bowels as a first step; and whether in the form of small pills, or the powder in half a teaspoonful or so of gruel cautiously swallowed, there is always a greater chance of its being retained than perhaps any other form of purgative. It would seem, however, that the proposed object may with more certainty be obtained by the application of the croton oil to the tongue, as particularly recommended in the number for August, 1825, of the Medical and Physical Journal, by Mr. Tegart, formerly chief of the medical department of our West India islands. A drop or two on the tongue has not only excited the immediate action of the bowels, without increasing the irritability of the stomach, but has also been observed to favour the secretion from the kidneys, a point perhaps of no small importance. In the paper by Mr. Hacket, which has been referred to, written this year (1832), no small share of success in the treatment of the yellow fever at Trinidad is attributed to the croton oil, which it would appear this gentleman gave in large doses, as well as exhibiting it in the form of enemata; for after mentioning the emetics of sulphate of zinc, bleeding in the warm bath, the shower bath, and enemata

* Decadas de Hurtado, vol. iii. p. 120.



of salts and castor oil, where there was much excitement, he states that "croton oil was invariably given to the extent of three or four drops. I have known this repeated thrice through the night; and it is most worthy of remark, the more irritable and distressed the stomach,—though, *primâ facie*, to those unacquainted with the great febrifuge virtues and extraordinary powers of croton oil in restoring the peristaltic motion of the intestines, which seems in other diseases to be inverted altogether, this irritability, hitherto our bane, (I may almost say the very leading feature and peculiarity of tropical fevers,) would be to them a cogent reason for not administering the oil—yet in almost all such cases it was found invariably to be triumphant, so that in the morning we generally found our patient thus treated with a perfect or nearly perfect remission." He says, a little further on, "the power of croton oil in allaying gastric irritability and general nervous excitement, as well as restoring the circulation to the surface, and thus relieving the congestive state of the internal and deep-seated central vessels, is really extraordinary; and though it may seem for the moment, when first given, to increase that irritability, yet after a little time I have hardly ever seen it fail in producing the desired end." Much as we are taught by experience not to be too confident in our expectations of the efficacy of medicines, from the advantages which may seem to result from their employment in particular instances, there is enough here, from a gentleman who has had ample field of observation, to draw special attention. According to an official report referring to the events of the epidemic of 1821 at Barbadoes, Dr. Bone, deputy inspector-general of hospitals, who had a very important charge at the time, relied chiefly on the exhibition of opening medicines of the saline class; during the first twenty-four hours, for instance, four ounces of Rochelle salts, with or without two grains of tartarised antimony, given in small doses. But if what he considers as obstruction of the gall-duct took place (shown by the absence of bile from the dejections), he continued this solution, with perhaps small doses of the extr. cathart. for three or four days, or until bile appeared. He varied his saline medicines to Seidlitz powders, Cheltenham salts, soda tartar., or potass. tartar.; or he gave the cassia fistula; and this, with the occasional use of the warm bath, seems to have been his widest range of practice. That on the occasion in question Dr. Bone should have displayed sound judgment cannot be doubted, from his extensive experience for many years in the West Indies, and from the remarkable degree of tact which he has displayed on many practical points connected with yellow fever. How far any of the alleged advantages derived from this practice may be attributable to the views lately promulgated by Dr. Stevens, it is impossible to say, as the question of the advantages of the exhibition of neutral salts in yellow fever, on the principle of their immediate action on the blood, is involved in controversy. But whether in reference to the exhibition of small doses of neutral salts as here spoken of, or to the popular remedies long in use in Spain, of large doses of the supertart. potassæ, or of olive oil or of castor oil, the difficulty always presents itself as to those means being generally applicable in a disease where the excessive irritability of the stomach forms so prominent a character. *Enemata* are very generally had recourse to as useful auxiliaries: one consisting of sea-water only was preferred by the late Arejula of Spain. In the West Indies and other places a proportion of the ol. terebinth. has been sometimes used with the other materials. At Gibraltar, in 1828, the employment of enemata of every kind was not unfrequently found impracticable from distressing excoriations which took place about the anus.

*Mercury.*—On a review of the different modes of practice adopted in this proteiform disease, within the last forty-two years, by practitioners in the British West India islands, the United States, and Gibraltar, this remedy seems to have best maintained its ground; for though it be quite true that it has from time to time fallen into discredit from persons having, in the course of an epidemic, frequently found that, like all other human means, it made no impression on the most aggravated forms of the disease, it nevertheless has stronger testimony in its favour than any other practice which can be named. The late venerable Chisholm said, after a consideration of the subject during thirty years, "Are we then, from any vain or unfounded apprehension, from reasoning drawn from false premises, or from uninformed or prejudiced minds, to yield up the result of our own frequently reiterated experience?—to relinquish the best aid [*i.e.* mercury] which we can bring to the support and relief of our fellow creatures suffering under so direful a malady?—Forbid it humanity!—forbid it heaven!"

Since the history of the American epidemics of 1793 and 1794, by Rush, numberless have been the publications in which the practice, either by inunction or otherwise, has been recommended, and the medical archives of our army and navy contain very strong evidence of the great advantage to be expected from the remedy in one shape or other (though not to the exclusion of other means) in those cases where a hope from the employment of any remedies can be entertained. Among the latest authorities in its favour is Mr. Linton, of the Naval Hospital, Jamaica, the gentleman before quoted as having had long experience in the West Indies. He states in his official report of December, 1829, that in his practice, after purging, the bath, and blisters, he gave calomel every two hours, in doses of from five to ten grains, and that, where the symptoms made rapid strides, he commenced mercurial frictions at an early period. He states in a previous report that, where he had been tempted, after the first calm from various remedies, not to push the mercury, he "had frequent reason to regret this *misplaced confidence*." He says, "In every instance, as soon as the mouth became affected by the mercury,

so that ptyalism was unequivocally established, the patient might confidently be pronounced convalescent." He remarks, with great judgment, and in doing so he is perfectly borne out by the experience of others, that "there is, however, a condition of the gums, which are only to a certain degree affected by mercury, which is often confounded with ptyalism, and which has frequently induced some medical writers, unacquainted with or prejudiced against the use of mercury, to affirm that several patients die in a state of ptyalism. A strong mercurial halitus may be perceived; the gums are swelled, spongy, and livid, and a clammy, thick secretion of mucus, *not saliva*, takes place; but under these critical circumstances farther progress of ptyalism is arrested." Under these circumstances, and the symptoms not yielding, Mr. Linton recommends that the internal use of the remedy should be suspended; that generous nourishment, warm baths, and stimulants should be had recourse to, and frictions then continued in the hope of obtaining the desired end. In one of his reports he alludes to trials of the medicine in a particular form: "in three cases which recovered under similar circumstances, I have latterly employed a solution of oxymuriate of mercury with decided good effect; but when the stomach is very irritable, this form of medicine is inadmissible." Another gentleman of long experience in the West Indies, (Dr. John Arthur,) states in an official report from Barbadoes, of the 17th of March, 1821, "I believe far the most recoveries have been after the use of this medicine in one shape or other." It is stated in a report of the same year by staff-surgeon Hughes of Berbice, that calomel was given with "*great advantage*, and one satisfactory conclusion to be deduced from its operation, when it affects the mouth, was that of the patients being on the side of safety." In a report from surgeon Callow of the 84th regiment, relative to the Jamaica epidemic of 1827, he states that he "relied considerably upon the specific action of mercury for ultimate cure;" that he employed the blue-pill "certainly with advantage," and inunction as an invariable adjuvant. It has been stated by Dr. Francis, when referring to the treatment adopted in the epidemic of 1822 at New York, that "mercury was considered by some physicians as conspicuous among the curative means." The history of the Gibraltar epidemics furnishes the names of many experienced men who have seen good reasons for relying much on the use of mercury in this disease; among these, Mr. Amiel, now surgeon to the 12th regiment, should, perhaps, stand first. This gentleman having witnessed epidemics in that garrison at three different periods, and closely observed the effects of treatment the most varied, considered mercury, up to the last case in 1828, as his "*sheet-anchor*."

It is scarcely possible to name a British author on yellow fever whose views do not accord more or less with those expressed in the extracts here given. Mr. Wilson, of the Royal Navy, the author of a work of great merit in many respects, published in 1827, when referring to the treatment even of those aggravated forms "where the nervous torpor and vascular atony are great, and where re-action is tardy, irregular, and imperfect; where the patient, without complaint of pain, lies prostrate, letting the head fall from the pillow, or pushing the pillow away, the countenance being ghastly, pale, or livid in colour, and fatuous in expression, the iris scarcely influenced by light,"—informs us that "calomel ought to be administered in most cases from the beginning; it should not be delayed beyond the operation of the purgative medicine. The quantity of this most valuable remedy and its manner of combination with others, must of course be varied according to circumstances; but the dose must on the whole be large and often repeated. If the character of the disease be not changed at an early period, its end will generally be in death." He adds, "with the other remedies recommended, I have given, and would give, ten, fifteen, or twenty grains of calomel twice or thrice daily, with a grain or a grain and a half of opium to each dose, according to the state of the digestive organs." The other means to which he here alludes are warm-baths of high temperature, ("above that which a person in health could bear,") and continued for some time, and assiduous friction after their employment; warm purgatives, combined with aromatics; warm drinks; warm stimulating injections; occasionally a little brandy, oil of terebinth in small doses; blisters over the epigastrium, between the shoulders, and to the head. He says that he was not deterred from this practice, in the forms alluded to, by the nausea and vomiting so characteristic of this fever. Like what occurs sometimes in the stage of re-action in cholera, he found it useful to abstract blood cautiously in the period of re-action following the low state of the animal energies here referred to. The *rationale* of Mr. Wilson's practice is extremely ingenious and well worthy of attention. He admits, as all must, "that in many cases the resources of our art have little influence on the disease, and that in its worst forms it is utterly beyond control." Indeed, it is not permitted us to be too sanguine as to the efficacy of any remedy in even a seemingly mild case of this "*perfidious*" disease; and the specific action of mercury, even after baths and aperients, will often fail to take place, the torpor of the absorbents being quite insurmountable; but as in an infinity of cases we can have no right to assume that this is the case, it must rest with the judgment of practitioners to decide how far they may be warranted in withholding a remedy standing so recommended as this does from various quarters.*

* The remedy was adopted by Palloni, in the yellow-fever epidemic of 1804, at Leghorn. Among the Spanish practitioners who have adopted it are Dr. Flores Moreno, of Cadiz, Dr. Ardevol, of Gibraltar, and Dr. Bobadilla, also of the latter place, who had experience in epidemics of Andalusia during thirty years, and who was so confident of the remedy (chiefly in the form of inunction) that, on the invasion of the epidemic of 1828, he memorialized the governor of Gibraltar to be suffered to treat some of the military exclusively on his plan. The exhibition of mercury of late years by some of the best practical men in Great Britain and Ireland, not only in fevers *mali moris*, but in diseases purely inflammatory, including arachnitis, will probably tend to dissipate the prejudices of the French against the remedy. They have, indeed, already, by the admission of Messrs. Louis and Trousseau at Gibraltar, gained advantages from the adoption of mercurial frictions at Paris in puerperal peritonitis, a case of which seldom recovered under former practice there. Perhaps, too, as, according to the same gentlemen, two of every three cases of typhus die at the Paris hospitals, advantages might be looked forward to there by the adoption of the more energetic system of those British practitioners who find the exhibition of mercury diminish the mortality in this last disease.

* Surgeon Macdermot, 4th regiment. Official report to the Army Medical Board, December 20, 1821.



Of one thing we have ourselves been convinced by ample experience, that though patients may often do well under other treatment, the medical attendant will be *infinitely less likely* to be taken by surprise, when ptyalism once sets in, by the sudden invasion of those symptoms which, within a couple of hours perhaps, are known to cut off a patient who seems to be in a state of convalescence, or nearly so. An objection is often made that, in the employment of these means, "*we lose time*;" and a very excellent objection it must be considered to be when it can be shewn that in the average of epidemics (for it is quite a delusion to speak of what takes place on particular occasions) other plans are found more useful.

Previous to dismissing the subject of the exhibition of mercury in yellow fever, it may be well to quote an observation from a gentleman in the West Indies, which goes to meet another objection sometimes made: "calomel does not, that I can perceive, produce any better effect in doses of twenty grains than in those of five; but even in very large doses I have *never* known it to cause hypercathartsis or any other bad symptom."*

The foregoing extracts are selected from a great mass to the same effect, as they complete the evidence that, up to the latest epidemics, mercury has been considered as holding a prominent place among the remedial means from which most hopes are entertained in yellow fever.

In the cases of profuse hemorrhage which frequently occur, the stomach is usually more retentive, and a bitter infusion, with a proportion of sulphuric acid, is found beneficial. The bleeding from the mouth is so excessive sometimes as to excite great apprehensions, but a strong solution of arg. nitr., applied very freely over the gums or other parts from whence blood is chiefly observed to flow, will often check it. In this stage of the disease every thing may be expected if circumstances admit of incessant good nursing, with the frequent supply, in small quantities, of nourishing articles of diet, as sago, arrow-root, broths, panado, &c., and wine or porter. This may be the place to refer to the hemorrhage from leech-wounds, formerly stated as likely to occur, and which it is extremely difficult to suppress when in soft parts, as the epigastrium; here minute bits of lint, dipped in the tinct. ferri mur., and pressed on each bleeding point by means of a probe, will be found more effectual than even the application of caustic in substance.

The occasional employment of other remedies, as saline draughts, sudorifics, opiates, ether, various cordials and aromatics, call for no particular remark. Where the remarkable "burning sensation" takes place, extending sometimes as high as the pharynx, from about the cardiac orifice of the stomach, calcined magnesia and prepared chalk have each afforded occasional relief; but these cases must be considered as utterly hopeless. When in the advanced stages great exhaustion has been produced by the incessant vomiting and want of sleep, a moderate dose of opium and capsicum, in minutely-divided pills, has sometimes produced a better effect than other medicines.

The most grateful *drinks* are spruce or ginger-beer, or a mixture of the white of egg, sugar, water, and some aromatic. As no small consideration in the management of patients, the *temperature of the hospitals or apartments* demands great attention. From what they have seen useful in other fevers, those unacquainted with the peculiarities of this disease are very apt to err on the side of over-ventilation, whereby, in some of its forms and stages, the vital energies are liable to be lowered perhaps to an irretrievable degree in an inconceivably short space of time; hence *tents*, or slightly-constructed huts, or temporary buildings are always objectionable. During the epidemic of 1828 at Gibraltar, a visit was made to one of the hospitals by Dr. Broadfoot, Mr. Amiel, and the writer of this article, when it was observed that in two of the wards an extraordinary proportion of the patients were doing well, and that in almost all these the specific action of mercury on the salivary glands had taken place. On inquiry it was established that, from an accidental circumstance, these wards were what might be called, *very badly ventilated;* and the circumstances altogether struck Mr. Amiel so forcibly that he instantly returned to his own hospital (12th regiment) and altered the plan of ventilation which had been previously adopted. This may at least be sufficient to draw attention to the point.

*Contagion.*—Those who have in the least entered into the subject of yellow fever must be aware of the total impossibility of giving, here, even a slight sketch of all that has been brought forward from time to time on this part of our subject. The discussions regarding a great mass of details, up to a certain period, may be said to be condensed in the works of Blane, Fellowes, and Pym, on the side of contagion; and of Bancroft, Jackson, Maclean, and Burnett on the opposite side. The elaborate works of

Dr. Bancroft especially (" *Essay on Yellow Fever*," " *Sequel to an Essay on Yellow Fever*,") embraced whatever could at the time be deemed the most essential points for consideration. From his analysis of the events of 1793 in the West Indies, as well as from statements furnished by other writers and the details given in the first part of this essay, it must be evident that Dr. Chisholm could not have been acquainted with the history of the disease when he stated that it made its first appearance in those islands in the year just mentioned. Dr. Bancroft's arguments against the importation of the disease in that year by the ship Hankey are greatly strengthened by the facts brought forward in a pamphlet on yellow fever by Dr. Veitch, of the Royal Navy.

It is usual to refer to Père Labat's statement of the alleged importation of the disease into Martinique, in 1682, by the ship Oriflamme, from Siam; to which it is objected that he has merely given vague reports of circumstances which occurred several years before his arrival in that island; and that if, as he states, the disease had been contracted at Brazil, where the ship touched, it was palpably erroneous to say that it had been imported from Siam. In the second volume, page 119, of Dr. Chisholm's work on the fevers of the West Indies, he gives an account, also, of an importation of the yellow fever into the island of Martinique while in our possession in 1796, which is very circumstantially proved to be erroneous in a paper to be found in the eighth volume of the Medico-Chirurgical Transactions, by Dr. Fergusson, inspector-general of hospitals, who happened to have served at the time with the troops on board the ship alleged to have imported the disease. There can be no doubt that among those who supported the views of Dr. Chisholm on contagion, respectable names are to be found; but even so soon after the periods to which he refers as 1801, when it fell to our lot to witness devastating epidemics in Martinique and Dominique, our experienced medical chief, Dr. Theodore Gordon, did not think it expedient to suggest any measures applicable to contagious diseases, nor did an apprehension upon the subject of contagion ever escape the lips of any of our seniors with whom we served. As regarded the men and officers on this occasion, an individual coming in contact with the disease for the first time could hardly, perhaps, form an opinion worthy of much attention; but a most remarkable circumstance was the *total* exemption of women and children under a certain age, as already noticed in the historical part of this essay, although no steps were taken in the way of precautionary measures.

In examining the official documents to be found in the office of the Army Medical Board in London, the following passage, contained in the report of inspector-general Tegart, dated 10th of March, 1823, is particularly striking: " In the various annual reports of the medical officers in this command, I have not seen one favouring or supporting the theory of contagion: they are all on the other side." This seems the more remarkable, as isolation of yellow fever cases, to a greater or less extent, was a measure approved of a short time before by Mr. Inspector Green, one of those gentlemen who had previously served in the West Indies about the time of Dr. Chisholm. Mr. Tegart, referring in his report to certain cases which occurred at Antigua in 1801, says, " The result is that this was decidedly yellow fever, and that the disease ceased on removal from the place, and was confined solely to those persons who occupied the room. Here is cause and effect." It must be admitted that, among the advocates of the contagion of yellow fever, very few are to be found in the West Indies in the present day. Dr. John Arthur, however, in an official report from Barbadoes, of the 17th of March, 1821, furnishes a mass of details, the result of his own observation, favouring that side of the question; and although most of his details on this point may be considered by some as only *simulative* of contagion (the great error of former observers) as they relate to individuals exposed equally or nearly so to other general causes prevalent at the period, the document is one which deserves on every account to be referred to, and especially should a parliamentary investigation on the subject of the contagion of yellow fever be again instituted in this country. Among the few who have of late years advocated the doctrine of contagion in the disease as it prevails in the West Indies, surgeon Callow of the 84th regiment is to be mentioned. In an official report, detailing the events connected with the epidemic of 1827, in his corps, at Fort Augusta, Jamaica, he states that, after a certain time, " strong evidence of the disease propagating itself began to appear." His chief reasons for coming to this conclusion seem to be that the attendants about the sick of every denomination suffered remarkably, and that the surgical patients were also attacked. In the report itself, however, unbiassed persons will discover the following reasons for hesitating before they draw similar conclusions:—1st, he states, that previous to the breaking out of the epidemic, he made an official report on the defects of the building occupied as an hospital, and situated close to the *lagune*, whence disagreeable odours arose: 2dly, that, during the epidemic, the winds in the night " had generally blown from N.W. very strong for some hours, a very unusual circumstance," the more prevalent winds from E., S., or S.W., preserving, as he states, the low sandy point on which Fort Augusta is built, from more frequent sources of sickness. 3dly. He describes the barracks as being in three ranges or divisions, and that, up to a certain day, every case which occurred had been *at the extremity of each range of barrack*, " *and in no other*;" a very remarkable fact certainly. 4thly. It appears that, after his regiment removed from Fort Augusta to a camp-ground near Stony-Hill, it became healthy, any fresh cases being,



as he admits, traced to their origin in the Fort: some of the men confessed, indeed, that they had been ill previous to the move. Dr. Weir, physician to the forces, in commenting on these events, in an official report dated Kingston, February 13, 1828, remarks that " there are some circumstances connected with the history of the lately prevailing epidemic, which, viewed in the abstract, might seem to favour the theory that this disease is endowed with a self-disseminating property; but, on the other hand, such would appear to be far outbalanced by many powerful facts: of these no little weight is due to the simple and well-authenticated truth, that a change of *locale* invariably and almost instantaneously arrests the destroyer in its progress, and that too without any bad consequences, as is well instanced in the above, and in the removal of the 33d and 22d detachments to Port Royal, where the royal artillery occupied the very same barrack, without suffering in the slightest degree." We have, in the circumstances just referred to respecting the 84th regiment, several points within a small compass, which should never be lost sight of in the consideration of such questions. The exemption of hospital attendants, in the following instance, will by many be probably ascribed to the circumstance of *the building occupied as an hospital having been in a more healthy situation than that of the 84th regiment at Fort Augusta*:—" I have now, however, the heart-felt satisfaction of stating that, from the 20th of June 1821, to the 20th of February, 1822, which includes the whole period of the sickly season, not one medical officer, white servant, or person employed in any capacity in the Naval Hospital* establishment, who had been attacked with yellow fever, or any species of fever."†

Dr. Bone has resided in the West Indies for many years, and has from time to time drawn up elaborate reports upon yellow fever, frequently referred to by the members of the department to which he belongs; it may, therefore, be stated, for the benefit of those in search of information on this subject, that he says, in the same report, " the first important result which I have proved in the Naval Hospital is that the *yellow fever*, as it is called, cannot by any possibility be communicated from one person to another." He states that thirty-five white servants had been employed, and concludes by observing, " So few in the West Indies believe the doctrine [contagion] that they may very safely be permitted to enjoy their own opinions: they cannot do much harm."

We cannot pass over the official statements of Mr. Hartle, deputy inspector-general of hospitals, who has served in the West Indies through the various grades of the medical department of our army, during a period of more than thirty consecutive years. His report for 1822 contains particulars of a most interesting kind relative to the introduction (without subsequent diffusion of the disease) of many cases of the yellow fever into the island of Antigua: in one place he remarks, " It is a pleasing reflexion, and a source of great gratification to me, that, notwithstanding one hundred and seven cases of yellow fever, as distressing and malignant as any I have before witnessed, have been by three vessels imported into this island since September 1821, we have not a single instance of any individual but those directly exposed to the local causes [ships] having been attacked." He states that the sick received on shore from one of those ships (Dasher transport) were attended by Europeans. Mr. Hartle's account of the yellow fever on board the Pyramus frigate, which arrived in Kingston Harbour from Barbadoes, with many of her crew affected with the disease, on the 3d of January 1822, is highly important. The following are the principal facts recorded by this gentleman. Neither the officers nor men had been exposed to solar influence or other exciting causes. One of the principal reasons assigned for the breaking out of the disease was that this ship had been " injected with coal-tar, which, with bilge-water, caused remarkable effluvia." The only ships on the station injected with coal-tar were the above, the Esk sloop of war, and Dasher transport, " all of which suffered, the former and latter especially, with a similar type of disease, yellow fever, in its most malignant form." He states that the crew of the Pyramus were landed and the ship dismantled. When the limber-boards were removed, the effluvium from the hold surpassed every thing which he had " ever before experienced." A boatswain looking into the hold from the lower deck, while an inspection by proper officers was going on, fainted, and passed afterwards through a formidable attack of the disease. Mr. Hartle himself, who was one of the officers appointed to examine into the state of the ship, escaped with slight indisposition. This gentleman states, respecting the others, that " every individual present at the opening of the holds and limber-boards was attacked by the prevailing disease." Although the frigate had been only six months from England, and was believed to have been a short time out of dock, four large mud-boats of filth were removed from her at Antigua, which was nine inches in depth in the hold. The negroes employed in removing this mass were obliged to go on deck occasionally, so insufferable was the stench, and three of them had the characteristic disease. The after-magazine, immediately under the gun-room, was found in the worst state, and this accounted, in the opinion of Mr. Hartle, for every officer's servant and servant of the gun-room mess having suffered. Objections hav-

* A splendid establishment, appropriated for some years past to the accommodation of the sick of the army.

† Official report from Dr. Bone, deputy-inspector-general of hospitals, Barbadoes.

ing been made to the removal of the crew beyond the dock-yard, after their landing on the 15th, several cases occurred up to the 30th, in consequence, as was discovered, of the men having gone on board clandestinely; the crew were therefore encamped at some distance from the dock-yard, while a cleansing and thorough purification took place; and, on returning on board, their general state of health continued good.

Within the last few years much valuable information upon yellow fever has been from time to time furnished by Dr. W. Fergusson, inspector-general of hospitals; and it is to be regretted that want of space precludes the possibility of extracting, as freely as would be desirable, from documents furnished by a gentleman of such great experience, tact, and candour. His paper in the eighth volume of the Medical Chirurgical Transactions is particularly interesting, and refers chiefly to transactions which occurred while he was principal medical officer in the West Indies, in 1816, &c. Dr. Fergusson is quite adverse to the doctrine of contagion in yellow fever; and it will be admitted, as we conceive, that the facts which he has adduced in the paper just mentioned, are calculated of themselves to make a powerful impression. He shews that, without restraint as to intercourse, situation alone has given great comparative exemption from yellow fever to raw soldiers from England over civilians; that the disease "is confined, in all the islands, to the sea-coast;" and that, "at Barbadoes, our hospitals, of late years, have been in a regular course of importation of the yellow fever from the navy; but not even inoculation has been able to produce the disease upon any member of the hospital corps, by whom I may truly say that the sick have been received with open arms; for the anti-social doctrines of ideal contagions are not preached among us here, to the prejudice of duty and humanity." Speaking of the general impression at St. Domingo, on the subject of contagion, during our occupation of that island, he says, "I never even heard the idea started, nor do I recollect a single precaution, advice, or observation, that acknowledged the existence of contagion, ever being directed to the medical staff from any quarter. I appeal to the writings of Dr. M'Lean, the living evidence of Mr. Weir, Dr. Jackson, Drs. Theodore Gordon, Borland, Inspector Warren, and all the medical officers who served there to bear me out in this assertion. I appeal to the evidence of every medical officer now serving in the West Indies, that has ever had experience of the disease (for there may very probably be found contagionists among those who never saw it) to say whether in their lives they ever met with a case of yellow fever that could with greater feasibility be traced to personal communication with a subject labouring under the disease, than to the ordinary natural causes from which it has been proved to originate." Dr. Fergusson's remarks go to corroborate the curious fact occasionally to be found in authors as to "different parts of the same town being differently affected; and so limited often is their influence, that one story of a house,* or one section of a ship, will be strongly affected by it, while other parts of the same tenements remain healthy." In the paper from which these extracts are taken, will be found details of the highest value relative to the disease in question, as it prevailed among the crew of the Regalia transport, employed in carrying black recruits from the coast of Guinea to the West Indies in 1816; and from which it appears that the crew were in good health previous to taking in many tons of green wood at Sierra Leone; that great sickness (chiefly dysentery) prevailed among the blacks during the voyage; and that several deaths took place; but the yellow fever was altogether confined to the crew; and, in the words of Dr. Fergusson, "the ship, on her arrival at Barbadoes, was not put under restraint or quarantine, but communicated freely with the sea-ports of Barbadoes, the Saints, Antigua, and Guadaloupe; landing the severally ill or dying subjects of that disease amongst the inhabitants, and at the hospitals at Barbadoes and Antigua, without communicating infection at any of these places; and finally, after having undergone a thorough purification, sailing from Guadaloupe for Europe, crowded to a very great degree with rebel French prisoners and their families from the jails, under the most dangerous circumstances of health, with a case of yellow fever actually dying on board the day before she left Basseterre roads, but without communicating any such fevers to the unfortunate passengers, leaving any behind her at Guadaloupe, or importing any at the ports she ultimately reached." Dr. Fergusson, when speaking of an epidemic which took place in the following year, says, "what a different interpretation the facts I have collected would have borne, had the present epidemic that afflicts the islands broke out in the ordinary course of the seasons, a year earlier, at the time the Regalia was here." We shall only offer one more extract: "At Martinique they established a strict quarantine, particularly directed against Guadaloupe, and they have been consumed with yellow fevers; but at Dominique, Tobago, St. Vincents, &c. where they established none at all, they have not had, in as far as I have learnt, a single case, although at the last-mentioned islands both the Tigris and Childers ships of war imported distinct well-marked instances of the

* At Gibraltar, during the epidemic of 1828, we observed this to have been the case in a very remarkable manner in some instances; and Dr. Ramsay, surgeon to the forces, states, in an official report dated Barbadoes, 20th December, 1825, that, "in certain barracks and hospitals the very diagonal of particular apartments will afford a tolerably accurate demarcation of safe and unsafe position of beds." See on this point also Dr. Wilson's work on yellow fever (1827), in which the disease is shewn to have been confined to men whose berths were on a particular side, or in a particular part of a ship.



disease from *Point au Pitre*, on the evacuation of Guadaloupe."

Previous to closing this sketch of the question of contagion as connected with the importation of yellow fever into our West India colonies, it may be worth while drawing attention to an extract of a letter from Mr. Showers, ten years colonial surgeon of Sierra Leone, the first being the very year (1816) in which the Regalia sailed from that place:—"During my ten years' stay at Sierra Leone I never saw any other fever, [the ordinary fever of the country;] but when a fever broke out there similar to the yellow fever of the West Indies,* attended with black vomit, which was supposed to have been brought there from the Mediterranean by a ship called the Caroline, this I recognised as a different fever from the one I have just described, from the common fever of the country; and to my knowledge none of the medical men then at Sierra Leone had any difficulty in distinguishing it as a new and different disease."† Mr. Showers adds, at the close of his letter, that respecting the fever of 1823, he had "his doubts whether it was imported or contagious; I am much of opinion that it proceeded from the atmosphere;" which doubts he was the more justified in entertaining from the known fact that for two years previous no yellow fever epidemic existed at any port in the Mediterranean. To those who had been led to believe that the true black-vomit fever had been not unfrequently *exported* from the coast of West Africa, its reputed birth-place, this visitation as a perfect stranger, and its alleged importation from Europe, must appear somewhat strange. The healthy state of the Regalia transport previous to her sailing from Sierra Leone, together with what appears by Mr. Showers' letter as to the non-existence of the yellow fever there in 1816, would seem to favour Dr. Fergusson's idea of its having been produced by the great quantity of green wood‡ just laid in previous to her sailing, and to "foul ballasting that had not been changed for years." However it may affect the question of contagion, it would, considering the mass of evidence now before the public from various sources, be quite idle to deny the spontaneous breaking out of yellow fever on board of ships in the West Indies, and, more rarely, in other places: one of the best authenticated instances is that of the Bedford, seventy-four, in Gibraltar-Bay, so far back as 1794, of which there are official records at Somerset House. In that year yellow fever was not prevalent in the garrison, and the crew arrived in perfect health from the Mediterranean on the 24th of August. On Sunday the 6th of September, the crew having been mustered, every man answered to his name; but in the course of the week one hundred and thirty were sent to the hospital, with fever possessing the characteristic symptoms: eleven died before the 24th of September, and others were left dangerously ill on the departure of the ship that day. In this case the only feasible cause assigned was the shifting of the shingle ballast, after the ship arrived, with the object of *trimming* her. The disease did not extend beyond the sailors of this ship. The fact, (considered at one time as an indubitable proof of the propagation by contagion,) of the sailors of the British brig of war Carnation having been attacked with the disease when put on board the French brig Palinure, by which she was captured, near Martinique, in 1808, as stated in the *Dictionnaire des Sciences Médicales*, would admit of the explanation of their having, in common with the previous cases existing in the Palinure, originated from sources within this ship, and independently of *persons*. The following is among the most recent instances of the spontaneous irruption of black-vomit fever on board ship. His Majesty's ship Blossom had been for some time employed in the summer of 1830 in surveying the Honduras coast; and in the month of August the disease commenced, which obliged the captain to go into Belise harbour, to obtain medical assistance from the garrison, into the military hospital of which forty-eight cases were received between the 11th and 30th of August: two officers and eight men died, and "these cases were attended with black vomit," according to the gentleman who had charge of them, assistant-surgeon Watts, of the second West India regiment, who had previously served in Jamaica, and who forwarded notes of the circumstances in his official return to the Army Medical Board for the quarter ending the 24th of September, 1830. Mr. Watts adds that the disease did not extend to the other ships, or to persons on shore. In a report from Dr. Lindsay, surgeon of the Blossom, to the heads of his department, relative to the event in question, he says, "I am of opinion that the cause of the present illness arose in the ship herself." Among the naval surgeons of the present day, of practical knowledge in this disease, we do not find many supporters of the doctrine of contagion; and among the observations on this point published of late years, Dr. Wilson's stand pre-eminent. The following from Mr. Mortimer, while serving as principal naval medical officer at Barbadoes, are forcible: "We do not allow the fever of the West Indies, commonly called 'yellow fever,' to be at all infectious in any of its forms or stages. We have never known of an instance of its communication to patients at the several naval hospitals, whilst under care for other complaints, though such patients have never been interdicted, on the contrary encouraged to offer every additional aid for the greater comfort of their suffering brethren."*

* The year 1823 is here referred to.

† See Mr. Showers' Letter, dated Malta, 27th July, 1830, in Dr. Aiton's Dissertations on Malaria, &c. 1832.

‡ In the official report of Mr. Hartle, lately referred to, it is stated, on the authority of Mr. Mortimer of the Royal Navy, that the Nayden frigate having taken in green wood at Dominica, lost one-third of her crew by fever.

* See Communication to Commissioners of Transports.—*Med. Chir. Rev.* vol. viii.

Passing now to the American continent, our limits admit but of a few brief remarks. Up to the year 1793, almost all the medical men in the United States were believers in the communicable nature of yellow fever; but each successive epidemic diminished the numbers, so that in 1825, according to an American commercial almanack, while five hundred and sixty-seven were against the doctrine of contagion, twenty-eight only remained in favour of it, throughout the whole country; the latter number being in all probability now reduced, as some of those mentioned were very aged. The public manner in which the celebrated Dr. Rush, once a believer in contagion, retracted his opinion, after farther observation, is matter of historical notoriety. At New York the doctrine of contagion is still ardently supported by two physicians in particular, —Professor Hossack and Dr. Townsend, who have both written much upon the disease. The facts which presented themselves to Dr. Beck in the course of the last epidemic at New York (1822), caused his public retraction of faith as to contagion in the following year;* and Dr. Townsend appears to have admitted† that, of about two hundred persons of all grades of the profession in that city, three or four only believed lately in the transmissible nature of yellow fever. "In 1793 the professors were almost unanimous in the belief of its contagious character, and no little courage was required to brave the storm an opposite opinion would have awakened. In this generation an equal unanimity prevails in the profession as to the non-contagious nature of the disease; and he who advances the opposite doctrine seriously, is deemed no more worthy of notice, much less a refutation, than would be an advocate at this time of the Ptolemaic system."‡ Upon this highly important question, the following unpublished statement from the pen of M. La Roche, French consul at Philadelphia, cannot but be important: it is extracted from a letter, which we have had in our possession, to a friend of his in Paris, dated the 20th of July, 1830. "A friend of mine, Dr. Morrel, has lately arrived from the Havannah. During a few days' passage three persons died of yellow fever on board, and a fourth, taken ill on board, died in the New York quarantine establishment. The sick *were all cabin passengers*, and received the germs of the fever in the port. The other passengers, who merely embarked at the moment of departure, without having waited in port, remained well, and that notwithstanding the inevitable contact arising from twelve or fifteen persons sleeping in a small cabin. Dr. Morrel and the other passengers were placed in quarantine, but during the time every body went to see them."

Much interesting matter relative to the evidence on the subject of contagion in the yellow-fever epidemics which have from time to time prevailed in America, may be obtained by consulting various pamphlets published by Dr. Chervin of Paris, who has made the subject of yellow fever his particular study for many years of his life. In those pamphlets will be found evidence of zeal in the cause of science quite unparalleled, as well as of impartiality in his proceedings in search of truth. It is quite impossible, in the present day, to meet the subject of contagion of yellow fever fully, without a knowledge of the nature and extent of his researches. Here, with a view of shewing their value, we may give a few extracts from the commission appointed by the Academy of Sciences in Paris, in 1827, to adjudge the prize designed for labours in medical science. The *commissaires* were MM. Portal, Boyer, Chaptal, Dumeril, Dulong, Gay-Lussac, de Blainville, Frederic Cuvier, and Majendie.

The report made by the above gentlemen, after stating some unusual steps taken by Dr. Chervin to ascertain the contagious or non-contagious nature of the yellow fever at Guadaloupe, to which place he had proceeded from Paris, for the sole purpose of making investigations, proceeds thus:—"This is nothing!—It was, on the contrary, then that Dr. Chervin conceived the wisest and vastest plan that ever a medical man formed for the interests of humanity.

"It was no longer sufficient for him that he had satisfied himself that the yellow fever was not contagious in Guadaloupe; it became necessary to ascertain whether it did not possess that character in other localities and in other latitudes and climates. It was above all things necessary to convince the governments of Europe, so that commerce might be freed from unnecessary precautions, felt to be burthensome, and that nations might be saved great expense in sanitary establishments. In attaining his object, Dr. Chervin was only impelled by his ardent philanthropy—no other means, but the sacrifice of his patrimony—no support but his own inclination and physical powers—let it be declared, to the honour of humanity, that by such means alone enterprises of this kind could be accomplished; and in fact, what a powerful government could scarcely hope to obtain at great expense, Dr. Chervin proposed to himself to obtain.

"Dr. Chervin performed this gigantic undertaking, to which the history of medicine furnishes no parallel, in a fortunate manner, but with unheard-of efforts, and perseverance above all praise."

Speaking of his having collected the evidence of hundreds of medical men in all parts of the world where the yellow fever is known to prevail, the report continues—"He visited, in eight years, all the colonies belonging to France, England, Spain, Holland, Denmark, Sweden: he visited all parts of North America, where the yellow fever has shewn itself, from New Orleans to Portland, in the state of Maine; so that from Cayenne to this last place he traversed over and made investigations in 37 degrees of latitude."

"It [the commission] therefore proposes to adjudge him a prize of 10,000 francs: undoubtedly a poor reward for the many sacrifices which he must have made; but when a person has, like Dr. Chervin, merited so much from science and humanity, and shewn such disinterestedness, *on voit la couronne et non pas sa valeur*."

In a work of high character* Dr. Chervin's labours in the cause of truth are thus alluded to: "Observe, in regard to this last subject, [viz. the error of attributing to contagion what should be referred to local causes,] what occurred respecting the yellow-fever epidemic of 1821, in the unfortunate city of Barcelona. Read the work of the French Medical Commission† appointed to examine into that epidemic, and it will be impossible for you (admitting as true the statements therein contained) not to admit the existence of contagion. But afterwards, when you have read the precious documents collected by Dr. Chervin with a degree of zeal and patience truly admirable, you will rest convinced that the circumstances which led you to be of the same opinion with the commissioners as to the reality of contagion, are any thing but conclusive; thenceforward the idea of contagion will be effaced from your mind, *comme un vain songe*; and, pressed on every side by the evidence of observations, you will be compelled to attribute to *local* infection‡ those circumstances which, misled by inaccurate statements, you had placed to the account of contagion."

That in North America the disease has not been propagated by the removal of persons labouring under it, even when carrying with them their bedding, &c. has been shewn by observations made there during many years by medical men (some even professed contagionists), in instances of upwards of thirty cities and towns, according to a report upon Dr. Chervin's documents, read at the Academy. By those documents it also appears that attendants of all classes on yellow-fever patients constantly remained exempt from the disease in that country, *where the hospitals were placed out of particular local influences*. This it appears was the case at the hospital at Bush-hill, near Philadelphia; in that of Belle-vieu, near Fort Stephens; in that of the navy at New York; also in those of Norfolk, Baltimore, Providence, Newport, Boston, and New London. These most important facts are verified by Drs. Chapman, Redmond, Coxe, Mease, Lehman, Mitchell, Parish, Jackson, Perkin, Miller, Tucker, Thomas, Backe, Harlon, Coates, &c. of Philadelphia; by Drs. Anderson, Brown, Walker, Drake, and Osborne, of New York; by Dr. Archer, of Norfolk: by Dr. M'Cauley, of Baltimore; by Dr. Weston, of Providence; by Drs. Turner and Waring, of Newport; by Dr. Townsend, of Boston, and Dr. Lee, of New London. Proofs to the same effect, collected in the West Indies, were laid before the Academy in 1827, by Dr. Chervin.

Dr. Pariset, medical chief of the quarantine department in France, has admitted that the yellow fever "is not contagious in America,—whether it had ever been so, or has ceased to possess that property."§

With respect to South America, the points bearing upon this part of our subject have perhaps been more fully entered upon by Humboldt than by any other person. In his Political Essay, (vol. iv.) he mentions that at Vera Cruz the idea of the importation of the disease from the Havannah and other places had been from time to time entertained; but by the facts which he furnishes, there seems to be no reasonable cause for doubt as to the disease being indigenous at the former place. The subject of contagion is investigated by this celebrated man in the spirit of philosophy for which he is so remarkable: we are shewn by him to what an extent one test of the communicable nature of a disease—that of taking people, actually ill of a disease, into healthy districts—has been applied, and the result proved to be entirely against the doctrine; that not only at Xalapa, and higher up in the interior, but at the farm of Encero, a short distance from Vera Cruz, the disease is found to confine itself to the persons of those who may arrive with it in their systems from the latter place, notwithstanding the freest intercourse with others. Every observation made by Humboldt throughout his works, relative to yellow fever, is of high interest: one seems peculiarly deserving of attention; which is, that although the disease usually prevails among the newly arrived every year at Vera Cruz, it never prevailed epidemically there between 1776 and 1794, although the intercourse with the Havannah and other places where the disease continued to prevail, was quite free. He even says that during the eight years preceding 1794, "there was not a single example of the *vomito*, although the concourse of Europeans and Mexicans from the interior was extremely great, and the sailors gave themselves up to the same excesses which are now laid to their charge."† Such a fact is the more worthy of notice, as it does not appear to have depended on unusual atmospheric states during this period; and one can scarcely concede any very great degree of importance to the circumstance of the streets of that city having been for the first time paved in the year

* New York Med. and Ph. Journ., No. viii. p. 472.

† *Chervin.* De l'Opinion des Médecins Américains, p. 11.

‡ See Amer. Journ. of Medical Sciences, August, 1829, p. 523.

* Dictionnaire de la Médicine et de Chirurgie, vol. v. article *Contagion*.

† At the head of which was, be it remembered, Mons. Pariset, Medical Chief of the Quarantine Department.

‡ We know that in France the word *infection* is exclusively applied to *places*, not to transmission of a disease, directly or indirectly, from person to person.

§ "N'est point contagieuse en Amérique, soit qu'elle ne l'ait jamais été, soit qu'elle ait cessé de l'être." Bulletin des Sciences Méd., tom. xii. p. 126.

† Political Essay on the Kingdom of New Spain, vol. iv. p. 194. Dutaste, who practised in Martinique for some years, informs us of a similar exemption at that island between the years 1807 and 1816; and that old inhabitants remarked intervals of even twenty-five years between epidemics.

1775, seeing that the disease has recurred so often since 1794, and has prevailed so frequently in the well-paved streets of St. Piere Martinique, of Cadiz, Seville, Gibraltar, &c.

To turn now to a view of the question as to whether this disease has been proved in Spain to have possessed the property of propagating itself from person to person, immediately or mediately, it appears that so far back as 1761, (21st October,) a royal edict was issued at Madrid, which set forth that all experience of the intercourse between the Havannah and Cadiz had proved that the black-vomit fever was not contagious. It would appear from this that the opinion of the court physician Cervo, sent to inquire into the nature of the Cadiz epidemics of 1730 and 1731, had been more regarded than that of Navarette, who attributed their origin to importation from America. It seems very curious that the late Dr. Arejula of Cadiz should, when he wrote his work on yellow fever in 1806, and which is so valuable in many respects, have laboured under the great error of the black-vomit disease of the Havannah, Vera Cruz, &c. being a different disease from that now so generally known by the name of yellow fever, and admitted to be identical. He appears in the strange dilemma of contending for the contagion and importation of the disease under one denomination, *(yellow fever,)* while he admits freely that in America "a succession of ages proved to the medical men that the disease was not communicable:"—and speaking of Spain, that "our ships never brought the germs of the black-vomit, even though they had the disease on board when leaving our possessions." This physician, with Drs. Coll and Amellor, also of Cadiz, made a declaration that the medical men commissioned to inquire into the causes of the epidemics of 1732 and 1734, pronounced it not to have been propagated by contagion. In all subsequent epidemics, a great majority of the Spanish practitioners have favoured the doctrine of importation and contagion; but it would appear from the assertion of Professor Salva of Barcelona, in his *Trozos inedidos*, that the public opinions of some had been influenced by political or other causes, for he does not hesitate to state, that when with a view to illustrate the subject of the contagion of yellow fever, he applied for information, private opinions as to its not possessing that property were obtained from some of those who had publicly declared the contrary. A commission, instituted at Cadiz to inquire into the origin of the epidemic of 1810 in that city, declared that in none of the six epidemics which had appeared previous to 1805, could the origin of the disease be traced.* The importation of the disease alluded to by the commission as having taken place in 1805, had reference to the disembarkation of about two hundred cases from the fleet of Admiral Gravina on its arrival from the West Indies. The commission admit that though many of the cases had the most characteristic symptoms, and though the communication with the city was completely free, "the disease did not spread, nor was it in any way communicated." It is also stated that though many cases were sent to the Aguada Hospital at Cadiz from a French fleet in 1807, with which a free communication was permitted, the disease did not spread. In addition to the authorities cited at the commencement of the present subject, many details connected with the origin of yellow-fever epidemics in Spain up to the year 1820, and which cannot possibly be entered upon in detail here, are to be found in Hurtado's "*Nueva Monografia;*" in his "*Decadas;*" in Mr. Doughty's book; in the writings of Dr. Pariset; and in various pamphlets published in Paris since 1827 by Dr. Chervin.

Regarding Gibraltar in particular, we may be allowed to state that a residence there within the last few years brought us into frequent contact with a gentleman who had been present during the existence of the disease in the years 1810, 13, and 14,—Mr. Amiel, many years on the medical staff of Gibraltar, and now surgeon to the 12th regiment. The evidence of this gentleman, comprising the fullest details upon every point, goes to refute the statements made regarding the importation of the disease at any of the periods in question, and is fully corroborative of the evidence upon the subject placed before the public by Sir W. Burnett and Dr. Bancroft. The only forms in which Mr. Amiel's statements have come before the public are, a short memoir printed at Gibraltar, and a paper to be found in the Edinburgh Medical and Surgical Journal for April 1831. We have been assured by him that the impression given* by the present superintendent of quarantine in this country, as to the disease having been cut short in 1810 by his recommendation of segregating the cases, is utterly fallacious; for, as has also been specially certified to us by Dr. Bobabilla, another practitioner resident during many years in Gibraltar, the progress of the disease was stopped, *as it is always found to be*, by the setting in of a cold wind from the north. It must be obvious that placing a point like this on its true footing is of the highest importance to the public. Notwithstanding the body of evidence on record against contagion in all the Gibraltar yellow-fever epidemics up to the year 1814, and though from Bancroft's works it appears that among the medical men of that garrison the majority of opinions had been greatly against it, it was nevertheless impossible that unbiassed persons should be uninfluenced by the statements published by two officers of the quarantine department,† who, having been on the spot, had ample opportunities of arriving at the truth on

* "En ninguna de estas epocas, exceptuada la de 1805 ya que vino de fuera, se ha podido averiguar con exactitud, el origen de esta calamidad publica." "At none of these periods, except 1805, (in which it was imported) could the origin of this public calamity be determined with exactness." *Extract from the Report of the Commission.*

* See Pym on the "Bulam" Fever.

† Ibid.—Fraser's (W. W.) Letter to Lord Chatham.



such points. The circumstance here alluded to is the assertion that, during the epidemic of 1813 at Gibraltar, the people employed in the dock-yard there, having been strictly separated from the rest of the garrison, remained free from the disease. Here, then, was evidence fully in support of the utility of quarantines, and of the propriety of separating, on future occasions, the healthy from the sick. But what was the astonishment of the profession on finding that mis-statements had here taken the place of facts, as shewn by Dr. O'Halloran,* who had served in a regiment at Gibraltar for some years subsequent to the period. During a residence at Gibraltar, we had ample means, by referring to the declarations of the official authorities at the dock-yard, of confirming the assertion of Dr. O'Halloran as to several cases of the fever prevalent in 1813 having occurred there, as well as some deaths; indeed the names of twenty-three (of which seven proved fatal) could be here given were it necessary: so that regarding the original statements, no impressions favourable to the accuracy or candour of the quarantine officers who made them can be entertained; and in the justly severe remarks of Dr. O'Halloran on the subject, to which no reply has been made, future observers of circumstances connected with the public interest have received a salutary warning.

The terrific epidemic of 1831 at Barcelona gave a new impulse to the question of the contagion of yellow fever. The statements furnished by the medical commission sent from France† to make researches into the nature and origin of that disease, left a strong impression on the minds of many in the profession favourable to its possessing a communicable property; and the "*Histoire Médicale*" displays literary powers of a high order on the part of Dr. Pariset, who was at the head of the commission. The same gentleman, however, (Dr. Chervin,) who had devoted so much time and labour, as already shewn, in procuring authentic information in the West Indies and America relative to the question of the transmissible nature of the yellow fever, followed Dr. Pariset step by step some time after, not only at Barcelona, but through all parts of Spain where circumstances had been detailed respecting the propagation of the disease. The result has been,—not a mere series of assertions against assertions,—but a collection of documents duly authenticated, such as had never before been laid before the public on any question of this kind. As elucidating a long-pending question of high importance to society, their value may be judged of from the opinion of the Academy of Medicine, which has been already referred to. We regret that space will not permit our furnishing many valuable extracts from the works of this gentleman, published in 1827 and 1828.* We are furnished with the statements of Dr. Pariset and others regarding a multiplicity of events connected with the appearance and progress of the yellow-fever epidemics of Spain; and it cannot but be admitted, we think, that Dr. Chervin has shewn, in a manner the most conclusive, that many inaccuracies had crept into those statements, and that the events warranted conclusions quite opposite to those which had been come to. Dr. O'Halloran, who went to Barcelona to observe the epidemic of 1821, had, previously to Dr. Chervin's visit there, pointed out some of the most important errors of Dr. Pariset; and in his book, already referred to, some interesting statements are furnished relative to occurrences at other points.

An event very remarkable in the history of yellow fever, and but little spoken of in England, occurred in 1823 at the little port of Passages in the province of Guypuscoa, a place well known to many British naval and military officers, it having been the rendezvous for transports while the British troops occupied the Pyrenees in 1813-14. It is difficult to give an idea of this singular port, situated at the bottom of the Bay of Biscay, and forming a sort of appendage to St. Sebastian's, from which it is distant but a very short way. The entrance is between precipitous rocks, and is so narrow and oblique as to be with difficulty discoverable at a very short distance. This miniature town consists for the most part of one small street, placed as it were on a shelf of scarped rock, and so narrow that it does not admit of the passage of carts or horses, while the rock forming the base of the mountain of Olearso is in some places literally in contact with the houses, which are badly ventilated, filthy, dark, and crowded. Let us take the events in question from the account given of them by Dr. Arrutti, a physician long resident in that part of the country, and who, while he would lead us to believe in some places that he considered the disease within certain points contagious, yet relates the facts which took place under his observation with such perspicuity and candour, that it is impossible to perceive the smallest intention on his part to mislead. We are informed that, in June 1823, a brig named Donostiarra sailed from the Havannah with a clean bill of health; and that, having lost one man on her voyage, (from ordinary disease as far as was known,) she obtained pratique in the usual way at

* O'Halloran on the Yellow Fever of Spain, p. 168.

† Dr. Pariset, medical chief of the quarantine department, with Drs. François and Bally. This is but an occasion to enter on the alleged political motives by which this commission might have been influenced, with a view to favouring the adoption of the famous *cordon sanitaire*, previous to the invasion of Spain in 1822.

* In the "*Revue Critique*" by Dr. de Fermon of Paris, printed in 1829, a *resumé* of the occurrences here spoken of may be found.—Dr. Reider of Vienna, who has also made yellow fever the subject of particular investigation, and undertook, for the purpose, voyages at different times to the West India Islands and the American continent, states, in a memoir published at Vienna in 1828, that the disease "was never imported into Europe or anywhere else;" and that "it never originates in, or is propagated by contagion." He deplores the manner in which governments are misled, and the best interests of humanity sacrificed, by those who endeavour to maintain the present system of quarantine.

Corunna, after ten days' quarantine. She subsequently put into St. Andero, and arrived at Passages on the 3d of August, with all on board in perfect health. This vessel had been latterly employed in the trade of these ports. As she had been at Corunna and St. Andero previous to her arrival at Passages at the date just mentioned, she was not put into quarantine at the latter place. The cargo, consisting chiefly of sugar and tobacco, was discharged soon after her arrival; and for several days a great many people of all classes went on board, but without any disease having broken out among those individuals, among the crew, or in the part of the town where the cargo had been deposited. On the 15th, a custom-house officer, who had been several days on board, was taken ill, and he died on the third day, black-vomit having appeared. This man was said to have been much engaged in the hold looking after contraband goods. On the 22nd, a man who had been down for some time in the hold surveying the ship's timbers, likewise died. Some of the planks of one of this vessel's sides having been found greatly decayed, twelve carpenters were employed in removing them, and six of the twelve were attacked in quick succession. The opening in the side of the ship commenced on the 19th, and on the 23d the disease began to appear in an unequivocal form in the houses close to which she was moored. Dr. Arrutti proceeds to shew *in detail*, and in the most satisfactory manner, that the disease did not extend beyond a certain number of houses at or near the *Plazuella de la piedad*, opposite the ship; that where others were attacked whose habitations were at a distance, it was occasioned by their having remained for some time within the space to which the malaria from the ship appears to have been limited, and the names and occupations of those persons are given. The heat was excessive in the middle of September, being, as he states, 23½° Reaumur, (about 96° Fahr.,) and the course of the wind favoured the conveyance of the noxious emanations from the ship to the houses near it: he gives the number of each house in which persons were attacked, and names the points beyond them to which individuals labouring under the disease went, and where, notwithstanding the adjuncts of *crowded, filthy, and badly-ventilated habitations*, the disease did not spread beyond the individual: for, as he says, "whether they died or recovered, to none out of the focus was the disease communicated."* In the same page he says, "The inhabitants of Passages took the precaution of not making long delays in the focus of infection; they visited their relatives and friends, and performed towards them all the rights demanded by humanity and society, and the disease became extinct almost in its very origin." He observes, "It therefore results that this fever, examined according to the character it presents, does not offer a character of contagion from individuals."† And again, "It was afterwards discovered that many, evading the sanitary regulations, passed out without certificates of health, and took with them clothes, even from the houses where people had died; but notwithstanding this, there was not the least spreading of the disease in the neighbouring country. If any deaths took place in Loyola, Renteria, or elsewhere, the disease in such cases had been contracted within the focus of infection." Finally, Dr. Arrutti observes, "If this disease had been transmissible by individual contact, what could have put a stop to its progress?—no human power: for the people who had been in the closest contact with sick, convalescents, and clothes belonging to the sick, distributed themselves, when the cordon was about to be placed, at St. Jean de Luz, St. Sebastian's, Bayonne, and other places." Here then, as we are necessarily obliged to conclude, is an instance—not of yellow fever imported,—nor, rigidly, of *the cause* of yellow fever imported, but a development of the disease by the concurrence of a certain number of agents. On other occasions yellow fever has been observed not to break out until vessels had been cleared of their cargoes; and in this instance the great heat which is stated to have occurred, reverberated as it must have been from the mass of rock close to which the lightened ship was moored, may be easily understood as having been highly favourable to the extrication of a noxious principle from her decayed planks.* In another account of this epidemic, given by Dr. Montes in the 14th vol. of *Hurtado's Decadas*, its origin is attributed to sources within the town itself, and totally independent of the ship, as publicly declared at the time by Dr. Zeubeldia; and that a similar epidemic prevailed there in 1780.† There is no discrepancy, however, in the statements as to the disease not having been propagated from person to person; though, as before intimated, Dr. Arrutti seems to apply the word contagion; to the extension of the disease within the limits of the noxious emanations from the ship. It appears that no inspection, such as took place in the case of the Pyramus, had been instituted here. From Dr. Arrutti's statements we can now comprehend the possibility of some

* Page 70. † Loc. cit.

* The origin of this disease at Passages, from sources on board unconnected with the death of the individual during the voyage, has been, on one occasion at least, admitted by Dr. Audouard of Paris, a professed contagionist.—*See Revue Medicale, Sept.* 1824. p. 38.

† We were not aware that yellow fever had appeared at any other point on this part of the Spanish coast, till looking over lately the official report from Dr. Bone already referred to. This gentleman says, "At St. Ander, in 1813, none of my assistants, orderlies, [army attendants on sick,] or nurses, employed with the cases of yellow fever treated in the *Casa blanca* in the quarantine hospital, were attacked with it."

‡ We had been long in communication at Gibraltar with a Spanish practitioner of great experience, (Dr. Rohadilla) and considered him for some time a believer in contagion, in the sense of direct or indirect transmission of a disease from one person to another; but to our surprise he assured us, that, at an hospital in Los Barrios near Gibraltar, some years ago, he explained to every body how the attendants of all classes on yellow-fever patients were not more liable than others to attacks.



fever cases having occurred among the men of this last ship, while they were living in the dock-yard at Antigua, even without their having, as stated, gone on board secretly.

As, in the same year in which the above occurrences took place at Passages, another remarkable circumstance occurred, which has been frequently alluded to, it may be here mentioned, previously to referring to the events connected with the subject of contagion in the last epidemic to be noticed.

By an official report drawn up and published in 1824, by Dr. (now Sir William) Burnett, one of the commissioners of the Medical Department of His Majesty's Navy, it appears that in the early part of the preceding year a fever made its appearance at Sierra Leone in a form different from the usual remittents of the country, and stated to possess symptoms characteristic of yellow fever. The importation of this disease by the merchant-ship Caroline, as at one time alleged, is completely refuted in this report; and at page 24 an extract of an official document from the gentleman at the head of the medical department at Sierra Leone is given, in which it is stated, that from all the evidence which could be procured in the colony, there was reason to conclude that the disease was *non-contagious*. A curious circumstance, to which there is perhaps no parallel on record except that which, as formerly stated, occurred under our own observation in the West Indies in 1801, is related by this gentleman, viz. "that European females and children were perfectly exempt."

Under date of the 23d December 1823, a statement was circulated through the army by Sir Gilbert Blane, calculated certainly more than any thing which had previously appeared to prove the importation and subsequent diffusion of yellow fever by persons labouring under it. It appears that His Majesty's sloop-of-war the Bann left Sierra Leone for the Island of Ascension at the latter end of March, 1823; that a malignant fever, of which several died, prevailed among her crew, during and for some time after the voyage; and that, on the eighteenth day after her anchoring at Ascension, a disease alleged to have been similar, and in some instances accompanied with black vomit and yellow skin, broke out in the small force composing the garrison of that island, which consisted of thirty-five individuals, officers and men of the marines and artillery, besides women and children. It appears by the details given in Sir William Burnett's report, that an error (of little importance perhaps) had crept into Sir Gilbert's statement regarding the perfect health of the crew of the Bann when she left Sierra Leone; but what is of very great importance has been omitted by the latter gentleman in his letter, though supplied in the very candid statements of the former,—viz. "On reference to the journals of medical officers who at different times had charge of the garrison before the appearance of the late epidemic, an abstract of which is in the Appendix, not only has dysentery and hepatitis been very prevalent, as well as occasional attacks of fever, but likewise a fever called the bilious remittent, in the year 1818, attacked almost every man on the island, which the assistant-surgeon attributes to an unusually wet turtle-season, when the men are much exposed by watching at night to turn these animals. Moreover there is, in the journal of Mr. Robert Malcolm for 1818, a case of this disease, which commenced on the 1st of June, and terminated by death on the next day, with all the symptoms of yellow suffusion and black vomit, &c., which are said to characterize the yellow fever; and having shown this case to the surgeon of the Bann, now in London, he declares it to be exactly similar to the cases of fever which lately proved so fatal in the Bann, and amongst the marines at Ascension."* Here then, whatever might have been the nature of the disease which prevailed in the Bann and at Ascension in 1823, we have evidence *of the existence of the same disease in the island, and about the same time of year, in* 1818, *without the remotest suspicion of its having been then imported.* This, on the obvious principle that what may in one year happen on a small scale, may, from an extension of the cause, happen on a larger scale in another year, greatly enhances the force of the concluding part of Sir William Burnett's sixth position, "that a disease similar to the fever in the Bann might have prevailed in that island though the Bann never had any communication with it."† He tells us that "the principal medical officer at Sierra Leone has come to the same conclusion in his official report;" and we suspect that, closely investigated as questions respecting the present subject have lately been, and greatly augmented as the facts bearing upon the question of contagion have been within the last few years, the majority of the profession who have paid attention to yellow fever will be likely to come to the same conclusion, rather than admit as a *propter hoc* that which, as far as any evidence goes which has yet appeared, was simply a *post hoc*. Sir William, though favouring, under all the circumstances, the belief of the importation of the disease on the above occasion, candidly leaves the question open, and furnishes all the details within his reach, to enable the profession to form an opinion. He points out erroneous statements as to the particularly healthy state of the island from the period of our occupying it (1815) to the epidemic year 1823. He says, "Out of one hundred and thirty cases of disease which are recorded in these journals, twelve died and nineteen were invalided; and though perhaps all the fatal cases are inserted in the journals, it is well known that those documents seldom contain more than a third of the cases which actually occur." He tells us that, although, at the time of the arrival of the Bann, the little garrison was in good health, and that, according to the medical gentlemen in charge, although at a period immediately preceding this event "they were on the whole very healthy, yet they were by no means exempt from disease."‡

* Page 10. † Page 52. ‡ Page 11.

He admits "that after a most careful inquiry it is impossible to trace the fever in question directly from the Bann to any individual of the garrison of Ascension:"* and indeed it appears that the first person attacked with the characteristic symptoms was not one of those known to have been in the ship or in contact with the sick, but a boy, on the 11th of May, respecting whom "it is neither known nor believed that he had any nearer communication with the sick of the Bann than passing daily at no great distance from the tents to feed his father's poultry, and he was never on board that ship."† The tents here alluded to were, as pointed out by Sir William at page 5, occupied as an hospital for the accommodation of the sick from the Bann immediately on her arrival, and were situated at about five hundred yards from the garrison, and *all intercourse was interdicted*. He informs us that up to this time the restrictions on the intercourse between the ship and the garrison had not been much attended to, several individuals having been on board after the landing of the sick; but that from the time of the boy's illness "every proper precaution was taken for preventing the extension of the disease to the outposts; notwithstanding which, six men, two women, and seven children were taken ill at Springs, but fortunately none at the Green Mountain, though one of the men belonging to that post had been on board the Bann at the sale before mentioned." We shall only add that the surgeon of the Bann, "an excellent and intelligent officer," ascribed the disease to the long stay of the ship in port at Sierra Leone, where the crew had been much exposed to the sun's rays in re-fitting her rigging, &c.; and that when this vessel had been, in 1821, on the Jamaica station, a fever, with yellow skin and black vomit in some of the cases, appeared among a party of forty men, put on board for a passage, who had suffered imprisonment with hard labour at Panama for four months;‡ which disease, according to the surgeon's journal, did not extend to the crew, nor could he "trace a single instance of disease to contagion," although "the smallness of the vessel, and other circumstances, would not admit of a separation between the sick and ship's crew."

That there were, on a *prima facie* view of the irruption of the fever in Ascension, reasonable grounds for suspecting the agency of contagion, there cannot be a doubt; but, as may now be seen, it is far from being established by anything like legitimate induction from evidence, that the one was the cause of the other; and, added to all that is now known upon the subject of yellow fever, many will probably join with us in believing that, admitting the transmission of this disease from individuals in this instance, would be illogical and nothing short of admitting that to be *vrai* which is shown to be only *vraisemblable*.

We shall close this essay by referring to some of the facts bearing on the subject of contagion, as they occurred during the yellow-fever epidemic at Gibraltar in 1828,* when it fell to our lot to observe its rise, progress, and termination. For minute details, full of interest, we can confidently refer to what has since been published by the following gentlemen of unquestionable veracity:—Mr. Wilson,† attached for many years to the duties of the Civil Hospital at Gibraltar; Mr. Hugh Fraser,‡ in charge of the Civil Hospital for some years, having previously served there in the 12th regiment; Mr. Amiel,§ now surgeon to the 12th regiment, a gentleman who has been for more than thirty years in His Majesty's service, and had witnessed the disease at Gibraltar in the former years specified, as well as sporadically on other occasions; Dr. Smith,‖ surgeon to the 23d regiment; and Dr. Chervin,¶ one of the members of the medical commission which arrived at Gibraltar from Paris towards the close of the epidemic of 1828. Besides these, the French government has published a series of documents furnished by the medical commission, to which is appended, on the part of one of them (Dr. Chervin), a declaration that statements of some consequence, afterwards shown to have been erroneous, had obtained a place in the collection.

After having paid the utmost attention to every point connected with the first appearance and progress of the epidemic in question, it would be an utter dereliction of our duty towards the public, to attempt, under the guise of extreme candour, to cast unwarrantable doubts on the many important statements made by the gentlemen whose names are above given, in proof of the disease not having been imported, and of its not having, under any circumstances, been communicated from person to person: we are enabled, on the contrary, to declare that most of the important facts cited by those gentlemen in proof of non-contagion, were verified under our own observation while on the spot. A reference to some of the publications pointed out in the notes will show how individuals have been

* Page 53. † Page 14. ‡ Page 47.

* Here, as matter for future reference, a view of the mortality from yellow fever at Gibraltar is given for five years in which the disease appeared there to a remarkable extent, from 1804 inclusive.

| Years | 1804. | 1810. | 1813. | 1814. | 1828. |
|---|---|---|---|---|---|
| Military and their families . . . . | 860 .. | 6 .. | 391 .. | 114 .. | 507 |
| Civilians . . . | 4,864 .. | 17 .. | 508 .. | 132 .. | 1,170 |
| Total . . . | 5,733 | 23 | 899 | 246 | 1,677 |

† See papers in Nos. 352, 353, and 354 of the Lancet, which were translated into French and notes added by Dr. Chervin, in 1830.

‡ Papers in London Medical and Physical Journal, March, April, and May, 1831, and in Medico-Chirurgical Journal, January, 1831.

§ Edinburgh Medical and Surgical Journal, April, 1831.

‖ Edinburgh Medical and Surgical Journal, No. 105.

¶ *Lettre à Monsieur le Docteur Monfalcon. Réponse à Monsieur le Docteur Lassis. Réponse à Monsieur Guyon.* Letters in the *Gazette des Hôpitaux*, 27th August and 10th September, 1831.



publicly denounced to the world as having garbled and distorted circumstances in a manner which must for ever hold them up to the indignation and contempt of the profession at large. Indeed we cannot but regret that usage will not permit, on an occasion like this, an exposure of the conduct of interested persons, whose foul labours were directed to pervert truth on a question upon which, for generations to come, the lives of thousands must depend, and for which they so well merit exposure and punishment.

At the commencement of the epidemic there were very few medical men in the garrison who could be called anti-contagionists. Conceiving that our then medical chief, the late Dr. Hennen, was disposed to make up his mind too soon against importation and contagion, some of us* wrote to him, indeed, confidentially, requesting that he would give further attention to the reports regarding the importation of the disease by a Swedish ship from the Havannah, called the Dygden; but an impartial consideration of all the facts which passed in evidence before us subsequently, left no doubts in our mind as to the cause, though mysterious in its essence, being of a strictly local nature. At the strangely-constituted board appointed at Gibraltar to enquire into the origin of the disease, and at which, to the astonishment of all who had read the works of Bancroft and Burnett, the present superintendent of quarantine in England was named president, much passed over which a veil must be drawn here; and we shall only place on record the full opinions of two of the members, they being certainly most entitled to weight with the public. Mr. Judge Howell says, "Upon a careful review of all the proceedings before this board, I am of opinion that the evidence brought forward has totally failed to prove that the late epidemic disease was introduced from any foreign source, either by the Swedish ship Dygden or by any other means; and I am further of opinion that the late epidemic had its origin in Gibraltar." Colonel Chapman, (now Major-General Sir Stephen Chapman, Governor of Bermuda) says, "Judging from the evidence produced before the board, the manner in which it has been given, together with the description of persons who have been brought forward as witnesses, I am decidedly of opinion that the late epidemic disease is of local origin. As to the importation of the late epidemic, I am of opinion that the attempts to prove the introduction of the disease, after months of previous inquiry, by those who wished to prove it, have totally failed." The latter part of this needs, we presume, no illustration. Three voices, including that of the president, were in favour of the importation of the disease; according to another member, it might have been from foreign and local causes conjoined; while the seventh (the captain of the port) declined, through delicacy, recording an opinion.* On the above occasion the examinations of some of the medical gentlemen attached to the army were most imperfect, *the progress of the disease among the men under their charge not having been entered into; and several of them were not examined at all!*

That a local cause of yellow fever, unconnected with persons, was in operation through a certain space at Gibraltar, in the latter months of 1828, was amply demonstrated in every possible way in which such a point could be proved. To some of the most striking occurrences bearing on the subject we shall here revert, leaving, for want of space, many valuable details, as they have been furnished by the several gentlemen formerly referred to. The failure of proof as to the importation of the disease has been admitted by the army medical board in England, to whom a copy of all the proceedings of the Gibraltar commission was sent for examination. It was shown that the disease made its appearance exactly about the same time of year as on all preceding epidemics at Gibraltar and other parts of Spain;† and that, as on all former occasions, the morbific influence was limited to the western face of the rock, and to a small village (occupied by fishermen and by a small military post) situated at the base of the rock, on its eastern side. On the sandy plain called neutral ground, several thousand of the civil population, as well as three regiments of infantry and some sappers, were placed under canvas or in huts, soon after the epidemic made its appearance: on two plateaux, situated at different elevations on the southern extremity of the rock,‡ three other regiments, with a detachment of artillery, were also encamped. Although very great intercourse subsisted during several weeks between the places where the disease prevailed and the three points here specified; and though, up to the appearance of the last case, there were no measures in force which could be considered efficient in a disease avowedly contagious,—for medical men fresh from their full wards were daily in contact with the healthy persons in the camps,—still the disease did not attack the persons on the neutral ground, or on the plateaux, unless duty or occupation obliged them to pass certain limits, and respire, for a longer or shorter time, the atmosphere of particular localities—the part of the town itself, called the 24th district, being the most dangerous of any. If any cases had their origin beyond the points spoken of, they must have been very few in number, as among our army

* Dr. Smith, 23d regiment, and the writer of this, surgeon at the time to the 43d Regiment: the letters here referred to were found in Dr. Hennen's office after his death.

* To show the facility, at any time, of falling into the error of assigning, as a cause of the Gibraltar fever, that which may be only a coincidence, the above gentleman laid before the board a document shewing that between 1814 and 1828, *eight hundred and forty-four ships had entered there from different countries where the disease is known to prevail.*

† The first cases usually appear in August, though *avant-coureurs* have been not unfrequently observed in July. On one occasion only, as far as we are aware of, has an epidemic appeared earlier in Spain—that at Malaga in 1804, which broke out in June.

‡ Windmill-hill and Europa-flats.

medical friends at Gibraltar, by whom the point had been frequently discussed with us after the epidemic, scarcely a single well-authenticated case could be made out, among the military or their families, where an attack had taken place among those who had not entered the regions of malaria.*

The following facts have been placed on record relative to this epidemic; it will be perceived how far they are calculated to set at rest a question of prodigious importance to a great portion of mankind. With scarcely any exceptions, security from attacks was obtained by the military and civil part of the population at the three points of encampment mentioned, as well as on board of ships lying in the bay, to which many of the latter fled. It was shewn that, though many individuals who had been in close contact with the sick in the town, &c. had removed to camp, taking with them their bedding and some furniture, no spreading of the disease in the camps or huts took place. Up to about the 20th of October, the convalescents underwent no process of purification previous to their being sent from hospital to their respective camps. By reference to Mr. Hugh Fraser's papers it will be seen that this gentleman, who was surgeon to the civil hospital, had, for want of room, been obliged to discharge a great number of persons from that establishment before their convalescence had been well established,—some indeed with hemorrhage still from their mouths,—that several of these people took with them articles of bedding to the small tents and huts in which their relatives resided, without the disease having been transmitted to the latter. By Mr. Amiel we are shewn that his regiment (the 12th) became soon free from cases after they encamped on the neutral ground, a few only having occurred among men who may be supposed to have carried out the seeds of the disease in their systems;—that so long as this regiment sent no men into town on duty, no attacks took place; but when the town duty was resumed, cases again occurred, and exclusively among those men who had been so employed. He gives us the important fact, that "ninety-two women of that regiment, and one hundred and ninety children, who never were allowed to repass Bay-side barrier, continued perfectly healthy; and one woman only, (the armourer's wife) who, during the period, obtained leave to enter and stay a few days in the garrison, caught the fever and died of it. Several of these women passed the night in the same beds with their husbands, attacked with and labouring under the epidemic fever; and, besides, continued, as well as their numerous children, to use the same bedding, after the men had been removed to hospital; but in no instance was the disease contracted by the wife or the children after that full exposure." Were we to point out one situation more calculated than another to favour the transmission of a disease by personal contact, it would be that of several individuals living in the small space of a tent or hut; yet we see that, put to this test, there was no transmission. Dr. Smith, in his paper referred to, shews that in the 22d regiment, the disease, notwithstanding exposure to direct or indirect contact with the sick, was also confined to those who had been within certain bounds; and he exposes fallacies in certain statements relative to people on board vessels in the bay, whose safety, we can join him in averring, did not arise from their having been cut off from communication with persons or things from the town. In a regiment, (43d,) of which we had, on the occasion in question, the medical charge, we can aver that on summing up all the occurrences, the following clearly appeared:—that although our regular hospital servants had been greatly harassed at an early period of the epidemic by attendance on yellow-fever patients, none of them were attacked until nearly one month after the admission of the first case; not, indeed, until the disease had attacked individuals who were not employed in attendance on the sick, but lived on that part of the rock where the hospital* is situated:—that, in the course of the first month of the epidemic, a party of temporary attendants, consisting of from two to four, or more, was sent daily from a remote barrack or camp to do duty in the wards of the hospital for twenty-four hours; their employment absolutely comprised whatever can be conceived of the most assiduous nursing during the night as well as by day; and the result, according to an investigation made afterwards, was, that, in the first place, no greater proportion of the sixty-nine men (the total number so employed) had been attacked, than of the whole mass of the regiment which had not been on this service about the sick; and that, in the next place, any of them who happened to be attacked within a period of several weeks after, were ascertained to have been on duty (guards, &c.) within the points where the atmosphere was most deteriorated. Here, then, we have, in a manner, an *experimentum crucis*, on such a scale as cannot be denied to give it the highest importance in the eyes of the profession. We took the precaution to have the names of these sixty-nine men, together with other particulars, duly registered and verified by the adjutant of the regiment, in a document forwarded to the office of the colonial secretary in London. The next remarkable fact regarding attendants on the sick was, that of several medical men (six or seven of whom had but lately arrived at Gibraltar) employed at an hospital on Windmill-hill, and at another in a low situation near the neutral ground, not one suffered from the disease: the same immunity was extended to the servants employed *at those points*, among whom were some who, not having passed

* At one time the writer of this essay, not aware that this was found to have been so generally the case, gave it as his opinion officially, that the morbific principle might, during epidemics, occasionally affect persons a few hundred yards beyond the rock.

* A fine building, calculated for the accommodation, under ordinary circumstances, of the sick of five or six regiments,—situated at an elevation of one hundred feet on the S. W. part of the rock, near the entrance of the bay.



through former attacks, could not be said to have escaped on that account. We took great pains to procure the names of the women who washed for the sick of the army during the epidemic, and it can be confidently stated that the result of inquiry, as to the numbers attacked, was quite in opposition to the doctrine of the disease being communicated indirectly by means of articles of dress, &c. Another point to be considered is, whether immunity from attacks took place where pains had been taken to exclude all communication, direct and indirect, with the sick. At the dock-yard this did not, in 1828, prevent individuals from being attacked; neither did prisoners confined in solitary cells at the "Moorish Castle," situated within the walls of the town, escape attacks. We are aware, too, that among the private families on the western face of the rock, who took precaution by seclusion, cases also occurred. On the neutral ground, on Windmill-hill, on Europa-flats, as well as in ships in the bay, persons who thought proper to adopt precautions may be said to have escaped; but the same, we are quite sure, may be said of those who, *living there*, adopted no such precaution as shutting themselves up. The only step holding out security at Gibraltar or any where else, as is now so generally understood every where, and as had been practised many years ago in some parts of Spain, is to remove quickly from the malaria points; and this, according to all experience, would seem a measure eminently entitled to the appellation of *sanitary*.

The foregoing materials, drawn from sources so varied, will probably aid the profession at large in forming an opinion upon a long-agitated question.

Sir James McGregor Bart
with Dr Forbes's compts.

# FEIGNED DISEASES.

*From the Cyclopædia of Practical Medicine.*

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# FEIGNED DISEASES.

It is our intention to notice under this head all that class of alleged corporeal disabilities which are either pretended or intentionally induced. In strictness of classification, cases of this kind should be arranged in four groups:—

1. Feigned diseases, strictly so called, or those which are altogether fictitious.

2. Exaggerated diseases, or those which, existing in some degree or form, are pretended by the patient to exist in a greater degree or different form.

3. Factitious diseases, or those which are wholly produced by the patient, or with his concurrence.

4. Aggravated diseases, or those which, originating in the first instance without the patient's concurrence, are intentionally increased by artificial means.

It is not, however, our intention to adopt this classification in the present article. We shall arrange all the diseases under one head, and in alphabetical order; this method being more simple, more in accordance with the general plan of this work, and affording greater facilities for practical reference. We may also here observe, that, for reasons of convenience, we shall apply the term *feigned* to all the varieties of these disabilities.

The following are the classes of persons by whom diseases are chiefly feigned, and the causes of their being so:—

1. Men apprehensive of being levied, or actually levied, or forced into the military or naval services: conscripts; men liable to serve in or to be drafted for the militia; impressed seamen. The cause of diseases being feigned by such persons is the hope of being deemed unfit for the duties of the public service, and thus to escape it altogether.

2. Soldiers, and seamen in the navy. The causes which induce these persons to feign disease are chiefly the following:

*a.* To obtain their discharge from the service, with or without a pension.

*b.* To avoid the performance of the duties imposed on them; to escape some particular service that is disagreeable to them, or to obtain some other that is agreeable; to obtain a removal from one climate or station to another; to obtain the ease and comfort of an hospital, &c.

*c.* To avoid an apprehended or adjudged punishment.

Soldiers and sailors feigning disease are commonly designated as *malingerers* or *skulkers*. The latter term is exclusively used in the navy.

3. Slaves. These unhappy persons feign diseases from many of the motives which influence the soldier and sailor, whose services are compulsory; only they do not seek for a permanent discharge from their labours, which they know to be impossible, except indeed by death. Their chief objects are to obtain relief from labour, and to enjoy the comparative comforts of the hospital.

4. Persons who have subjected themselves to the control of the laws, and are either undergoing punishment or in apprehension of it; persons about to undergo a trial for some alleged offence, or about to be punished for the same; prisoners for debt, or other offences, civil or criminal. The motives of such persons for feigning diseases are sufficiently obvious, viz. to evade or escape punishment or restraint.

5. Persons in civil life who have received slight injuries, and who greatly exaggerate their degree or consequences. This is generally done with the view of extorting a disproportionate compensation from the party injuring.

6. Persons in the lower ranks of life desirous of exciting the attention and compassion, and consequently the bounty of the public, or a maintenance in idleness. This class comprehends the professed mendicant, whether vagrant or stationary, whether gipsy or gentleman-beggar; and also persons in the lower ranks among the poor, who occasionally in this manner practise on their richer neighbours. Under this class, also, come persons in the lower ranks of life who wish to obtain relief from benefit societies, or from the parochial funds, or to gain admittance into or to remain in workhouses, hospitals, &c.

7. Persons not at all in poverty nor living in a constrained position, who assume the semblance of disease from some inexplicable causes. These are chiefly females; but the class is on the whole very small.

We might add to these, other classes from various conditions of life, from the boy "creeping like snail unwillingly to school," up to kings, warriors, statesmen, and various others in high stations, whom history records as having assumed sickness to gain particular objects;*

* Many great names, illustrative of the statement in the text, might be mentioned. The plan adopted by Ulysses to avoid leaving his young bride for the war of Troy, is familiar to the classical reader. The particular manner in which this royal malingerer chose to exhibit his alleged infirmity, and the mode of its detection, are pleasing illustrations of the rude simplicity of early times. The king goes as usual to his agricultural labours, but not as usual like a sober ploughman; he yokes together in the same plough a horse and an ox, and sows his field with salt in place of corn. With the view of putting to the test his alleged disease, Palamedes places Telemachus in the furrow before the father, who betrays his sanity by carefully avoiding the infant. The history of the feigned insanity or idiocy of the elder Brutus is equally well known; as is that of Amnon the son of David, who "made himself sick" for a more guilty purpose. Charles, Duke of Bourbon, constable of France, wishing to desert to the emperor, "feigned sickness in order to have a pretence for staying behind." (Hume.) In like manner,

——"Hotspur's father, old Northumberland,
Lay crafty-sick."

but the above, we believe, contain nearly all the cases that are likely to come under the notice of the medical practitioner.

Some diseases or disabilities are much more easily feigned than others, and the imposture is more difficult to detect. In those diseases of which the symptoms are naturally obscure, or variable and uncertain, much care should be taken not to come to a wrong conclusion. Every medical practitioner knows that there are some diseases which are not indicated by a change of the pulse, an alteration of the natural colour or temperature of the body, or by any evident derangement of its functions. There are also other diseases the symptoms of which are capable of being imitated by the effects produced by certain drugs, or by the use of certain external applications, &c. An intimate knowledge of the anatomy, physiology, and pathology of the human body, and of the effects of the articles of the Materia Medica, is therefore essential to enable the medical practitioner to obviate false conclusions and detect imposture in such cases.

When a medical practitioner is called upon to examine, for the purpose of legal investigation, or to treat a doubtful case of disease, he should endeavour to obtain all the information he can respecting the person's moral and physical habits, his probable motives, &c. &c.; and he should also consider whether the alleged causes of the disease are founded in fact, or are probable. Another important point is, to endeavour to ascertain whether the pathognomonic symptoms of the alleged disease are present. "It is obvious," says Dr. Cheyne, "that the more we know of disease by reading and observation, the more patience and temper we possess, the more successful shall we be in the detection of imposture. I am convinced that simulated disease will soonest be discovered by those who conduct the inquiry in the most scientific manner, carefully applying the case in doubt to the description of the disease in standard works of pathology."*

It is difficult for the simulator of a disease to give a consistent account of the origin and progress of his alleged infirmity. By a little management on the part of a medical practitioner, an impostor will almost always be led to enumerate incompatible symptoms, or greatly to exaggerate unimportant lesions. He is constantly prone to overact his part. He is too anxious to impress upon the medical attendant the reality and the severity of his sufferings. Remarks are thrown in purposely to obviate objections, and to reconcile the mind to what may seem extraordinary in the narrative; all of which are very unlike the bold simplicity of truth.

With the view of inducing a detected or even suspected impostor to acknowledge his deceit, severe measures, such as the infliction of pain, &c. remedial agents, and even formal corporal punishment, have been occasionally adopted. This practice, however, if it were justifiable, will be frequently found to fail even in the army or navy, where patients are under the control of strict discipline. But it ought to be a general rule that means should never be adopted in the treatment of a doubtful case which we should regret having employed if the alleged disease were to prove genuine. Soldiers and sailors commonly return to their duty when they are deprived of all hope of succeeding in a scheme of imposture; and finesse will often succeed in detecting impostors where harsh measures would completely fail. Dr. Davies, surgeon to the East India Company's depot at Chatham, had a soldier under his care with an alleged affection of the back, which, the man asserted, rendered him unable to move or be moved from his bed. His alleged disability had existed for about a month without any indication that he intended to return to his duty. For the convenience of being watched, &c. he had been accommodated in a ward by himself. Dr. Davies, who considered him to be an impostor, saw no prospect of his *giving in*; but he eventually put in practice a measure which led to detection. He went to the window of the ward in the dusk of the evening, and after gently tapping upon the glass, he in a low voice called the man by his name. He was at the window in an instant, and Dr. Davies had the pleasure of congratulating him on the recovery of the power of locomotion. The man forthwith went to his duty.

Sometimes impostures are discovered entirely by accident, even when they are not at all suspected to exist. The following is a curious instance of this kind. A seaman on board H. M. ship Otter feigned a chronic decline so effectually that he not only deceived his surgeon but the physician of the Naval Hospital to which he was sent; and he was about to be discharged from the service, when the true nature of his case was elucidated in an unexpected manner. The mail from the seaport where the man was in hospital was robbed, and the letters were broken open with the view of searching for money. The robbers were however taken, and the letters recovered. Among the opened letters was one from the man in the hospital to his wife, wherein he informed her that his scheme had succeeded, that he was going to be invalided on a certain day, and desiring her to make good cheer against his arrival. This letter was forwarded to Capt. W., and in consequence of its contents, the man, although seemingly in almost a dying state, was returned to his ship. The letter being read to him, and his hopes thus destroyed, he at once returned to his duty.

It is frequently useful to depart from the usual mode of examining doubtful cases; preconcerted plans being thereby disconcerted, and an impostor puzzled. One of the writers of this article was requested to look at an old soldier who had been long in a civil hospital on account of an alleged contraction of the left knee, the real existence of disease being doubtful. The examiner went to the left side of the bed upon which the man was lying, and after looking at the contracted knee he desired the man to lie upon his face, by which change the right extremity assumed the place of the left in the bed. The examiner's hand was then placed upon the *right* knee, which became gradually flexed, while the contraction of the left knee disappeared. This man's attention was so completely engaged with the right knee when it was under examination, that he forgot that it was his left knee which he had alleged to be contracted.

It might be an amusing subject of inquiry how particular diseases come to be assumed in preference to others. Our limits will not permit us to enter upon this investigation. A principal, if not the chief cause, is the relative facility with which diseases may be feigned or formed; some, as we have already observed, being much more easily assumed than others. Imitation of the real diseases which the impostors are in the habit of seeing is also at once a frequent source of their knowledge, and the exciting cause of their putting it to account. We have thus known soldiers and sailors carefully study and mimic numerous ailments of their comrades. We remember the case of a soldier who imitated admirably and successfully the gait of a patient with hip-disease, which he had studied from the life in a boy who actually laboured under that affection.

We know not that any excuse is necessary for the extent of the consideration which we purpose to give to the subject of the present article. Certainly none will be expected by those of our readers who either now practice, or formerly have practised, in the medical departments of the army or navy, who are fully aware of its great importance. If there be any practitioner in civil life who entertains doubts on this point, the facts detailed in the present article will, we think, be found more than sufficient to remove them. And although it is especially in the practice of the medical officers in the public service that cases of feigned diseases occur, yet their occurrence in private practice, particularly among the patients of our hospitals and dispensaries, is by no means extremely rare; and many of them are of such a kind as to expose the knowledge or ignorance of the physician or surgeon more positively and more conspicuously than any other cases. Many of them, also, become the subjects of legal investigation, and require medical testimony to be given in courts of law.

In the army and navy it is the duty of the medical officers to protect the public service from impositions of this kind; and it is well known to those officers who served during the late prolonged wars, how seriously the service both of the army and navy suffered from such impostures being oftentimes successful. On the decision of the medical practitioner as to the true character of doubtful cases, very frequently depends the acquittal or punishment of the alleged invalid; and every one must feel the responsibility of such a position. It is well known to those who have had opportunities of judging, that men in the army and navy, more particularly the latter, have been often treated and punished as impostors, who were really labouring under disease; and also that real impostors have often received the immunities and privileges that ought to belong only to the diseased. The scene in *Roderick Random*, of the captain and doctor curtailing the long sick-list, is probably only a slight exaggeration of what Smollett may himself have witnessed in the olden time of the navy; and although no such scene could be exhibited now-a-days, it must be allowed that nothing but that firmness of purpose which can alone be founded on the knowledge of disease, will always enable the medical officers in that department of the public service to protect the rights of humanity and the dignity of the profession of medicine.

1. *Abdominal tumour.* (Ascites, tympanites, physconia.)—Various affections of the abdomen characterised by external swelling are often both feigned and formed by persons desirous of obtaining certain objects under the cloak of disease. We have seen dropsy simulated for some time successfully, merely by the individual pushing the abdomen forward while in the erect position, and elevating the spine when lying on the back; probably, at the same time, keeping up the distension by means of very short expirations. A complete exploration of the uncovered abdomen will always detect imposition of this kind. It has been proposed in such cases to observe the patient when asleep; but such simulators are sometimes prepared for this test, and wrap themselves up so completely in the bed-clothes that the end cannot be obtained without awakening them.

A more effectual mode of deceiving is, to distend the abdomen by the introduction of foreign substances. Instances are said to have occurred among the French conscripts where water was actually injected into the cavity of the peritoneum, and a true factitious ascites thereby produced. Fodere mentions the case of a woman who produced a simulated ascites by inflating the cellular substance of the abdominal parietes with air, through a small and scarcely perceptible puncture in the groin.* Manual examination or palpation would immediately detect this kind of deception. Tympanitic distension of the abdomen by artificial means has been more extensively and

to avoid the battle of Shrewsbury. Essex, the favourite of Elizabeth, is said to have feigned a violent disease to move her compassion; and Raleigh pretended "madness, sickness, and a variety of diseases to protract his examination and procure his escape." (Hume's James I.) Pope Julius III. feigned sickness to avoid the holding a consistory; "and that he might give the deceit the greater colour of probability, he not only confined himself to his apartment, but changed his usual diet and manner of life." By persisting in this plan, however, he contracted a real disease, of which he died in a few days. (Robertson's Charles V.)—It would be easy to add greatly to the above list from the stores of tradition and authentic history, ancient and modern.

* Letter to Dr. Renny, on Feigned Diseases; Dublin Hospital Reports, vol. iv.

* Médecine Légale, tom. ii, p. 485.

more successfully practised. MM. Percy and Laurent mention the case of a young soldier who had the power of distending his abdomen enormously by swallowing air. Presenting himself in this state, with clothes made for the occasion, he had no difficulty in obtaining his discharge. He got rid of his tympany at will, "par le moyen d'eructations bruyantes et non interrompues, par haut et par bas."* The following extract from Dr. Cheyne's excellent paper on feigned diseases, in the fourth volume of the Dublin Hospital Reports, will shew the extent to which this mode of deception is sometimes carried. "In the year 1811, from thirty to forty men of the 84th regiment were admitted into the King's Infirmary, labouring, as stated on the admission-ticket, under dropsy and intermittent fever. The abdomen was greatly distended and felt tympanitic; the tongue, with few exceptions, was clean; pulse regular; urine natural, and bowels in general costive. The men complained of pain in the right side, and many of them of pain over the whole abdomen, with excessive thirst, drinking more than a gallon of water daily. The disease was at first considered a consequence of the Walcheren fever; but, from the numbers increasing, and all with the same symptoms, Dr. Harvey was led to conclude that the complaint was feigned. Under that impression he prescribed a solution of Glauber salts in weak tobacco-water, which he called the *infusum benedictum*; a cupful of this detestable compound was given in the morning, and repeated every fourth hour till it operated, and with perfect success; all who were in the hospital recovered speedily, and the disease, which was becoming epidemical, soon disappeared; however, sixteen had succeeded in obtaining their discharge before this method of treatment was discovered." It was reported that the men produced this artificial tympany by swallowing large quantities of chalk and vinegar. Is this probable?

Simulated dropsy, or other abdominal tumour, is a common deception of mendicants, and is by them usually accomplished by the aid of cushions fitted to the belly. A remarkable case of this kind is related, in the *Act. Nat. Cur.*, of a woman who practised this imposition for forty years, and made a comfortable livelihood by it. No tumour was found on examining the body after death, but a pad found in her wardrobe, weighing nineteen pounds, and fitted to the shape of the abdomen, explained the case. A man not long since obtained his living in Edinburgh by the same means; on being detected he enlisted as a soldier.

*Abstinence, partial or total.*—Abstinence for a great length of time is sometimes feigned in order to excite public curiosity, and, consequently, commiseration and charity. Abstinence beyond a moderate period is contrary to the usual course of nature, and therefore strong suspicion may always be entertained when extraordinary fasting is alleged. The most noted imposture of this kind in recent times is that of Ann Moore, the fasting woman of Tutbury. According to her own account she fasted from March, 1807, for a period of six years. She certainly fasted for nine days and nights.* For numerous references to similar cases the reader is referred to the *Litteratura Medica* of Ploucquet, art. *Inedia*.

3. *Animals in the stomach.*—Mendicants occasionally allege that they have an animal in their stomach. There was a man not long since in Edinburgh who was remarkably successful in deceiving the public by pretending that he had such an inmate, which he said occasionally came to his throat, a statement he attempted to corroborate by making the most frightful grimaces. It may be mentioned, as in some degree illustrative of the means of deception in such cases, that one of the writers of this article has now under his care a patient affected with partial obstruction of the pylorus, who has the power of producing the most extraordinary noises in his stomach by throwing the abdominal muscles into strong action. The stomach is no doubt enlarged, and as it generally contains an immense quantity of liquid and also much air, the sounds are occasioned by the rapid commixture of these fluids of unequal density. There is a case recorded in the 9th volume of the Edinburgh Medical Journal, which is remarkable inasmuch as Dr. Spence, the reporter, details the circumstances as gravely as if he had no doubt of the fact. A woman, twenty-one years of age, having been indisposed for a few days, took some cathartic medicine, and passed by stool "a reptile of the lacerta species." The animal, of which a particular description is given, on the sole authority of the patient, is stated to have been between four and five inches long, and considerably thicker than a finger.

4. *Blindness, total or partial.*—This disease is frequently feigned by wandering beggars, and also by men in the military and naval service. The most common form of assumed blindness is amaurosis; but at other times paralysis of the eye-lids, producing blindness by preventing the access of light, is the alleged disability, and in this case an artificial ophthalmia is often induced at the same time. In feigned amaurosis, if the simulator is skilful and courageous, the deceit is with the more difficulty detected, because in true amaurosis there is sometimes a certain degree of motion in the iris. A remarkable case of pretended blindness is related by Mahon, in which the patient was placed on the steep bank of a river and desired to walk forward. He unhesitatingly did so, and fell into the stream. This test was considered as a proof of the reality of the disease; but he was afterwards induced, on a promise of being discharged the service, to confess that the disease was feigned.† In this case the pupil contracted perfectly; and although this may be no certain proof of soundness of the organ, it is

* Dict. des Sc. Méd. t. xli. p. 328.

* Edin. Med. Journ. vol. v.
† Méd. Légale, tom. i. p. 366.



perhaps fair to admit immobility of the iris on exposure to light as a sign of disease. In the following case the deception was equally complete, but the detection came from a different quarter. A seaman on board the Utile frigate, pretending to be totally blind, and believed to be so, was on one occasion permitted to go on shore, and was attended by a man to lead him about the streets. These two happened to quarrel, and even came to blows, when the blind man finding, as might be expected, that he was likely to have the worst of the fray, suddenly regained the use of his sight, and soon got the upper hand of his astonished guide. The latter being worsted, took to flight, was pursued through a great part of the town by his former protegé, and, finally, received a severe beating from him. Next day the impostor was severely flogged, and never afterwards exhibited any deficiency of vision.

Blindness under the form of amaurosis used to be simulated to a great extent by the conscripts for the French army, and for some time with the desired effect. A dilated pupil and an inactive iris, the leading symptoms of this disease, may be induced by the extract of belladonna, the substance supposed to have been employed. When a sufficient length of time is permitted, the means of detecting this fictitious amaurosis are obvious. It has been stated by good authority that two hundred conscripts were exempted from serving in the army by using belladonna.

*Intermittent blindness* (nyctalopia, hemeralopia) is much more frequently and successfully feigned by soldiers and sailors, more especially in warm climates, where the real disease is of very frequent occurrence. In tropical countries night-blindness occasionally prevails among Europeans epidemically, and hence arise at once the source of the imposture and the difficulty of detecting it. Night-blindness is a common disease in Egypt, and was frequently feigned by our soldiers in the expedition under Abercrombie. "Of some corps," says Dr. Cheyne, "nearly one-half of the men were affected with this complaint, or pretended to be so, for which, however, a remedy was soon found. In the parties engaged in the works, a blind man was joined to and followed one who could see, in carrying the baskets filled with earth; and when the sentries were doubled, a blind and a seeing man were put together, and not without advantage, as during the night bearing upon an outpost is often of more importance than sight."* In tropical climates sailors frequently feign this disease with the view of escaping night-duty. It is hardly possible to detect the imposition by mere symptoms, as in the real disease the aspect and functions of the eye are perfectly natural in full light.

5. *Cacheria, malacia,* or *pica Africanorum.* (Mal d'estomac, dirt-eating.)—This is a disease which often produces the most extensive ravages among the slaves in the West-Indies, carrying them off slowly, but with the certainty of a pestilence. It is not nearly so common now as formerly, negroes being much more valuable to their masters, and better treated. It is often a real disease, but it is often, also, a practice voluntarily adopted by the unhappy beings who are the subjects of it, with the object and with the effect of producing death. Still more frequently, perhaps, it is a mixture of real and factitious disease, the primary disorder of the stomach prompting to the ingestion of crude substances, and thus giving the particular direction to the suicidal propensity. Whether it exists as an irresistible propensity, or is adopted as a means of producing disease, the practice of dirt-eating is always done in secret, and is invariably denied. All kinds of earth are eaten indiscriminately, such as the common soil or mould, and the plaster of houses, &c. The disease produced is truly a cachexia, marked by disorders of various functions, diminution of the colouring matter of the blood, &c. and terminating in general dropsy. The patients first complain of pain of stomach (hence its French name), then breathlessness, and inordinate pulsation in the heart and large arteries, particularly of the carotids and aorta, on motion. They become bloated, their nails and the palms of their hands becoming white, and their lips, gums, tongue, &c. quite pallid. These symptoms continuing, anasarca follows, and death, in the great majority of cases, closes the scene. When the practice is carried to a great extent, it may be discovered by examining the stools, which will be found to consist in a great measure of the earth swallowed. Emetics are also administered for the same purpose, and the ejected matters being washed, the earth will be found to subside.*

Various means have been adopted to prevent this practice, and, among others, the affixing to the face an apparatus to prevent eating altogether except in the presence of the overseers; but all are found of no avail while the insignia of slavery are on their bodies, and the hope of freedom in another life is in their hearts. "Negroes," says Dr. Williamson, "anticipate that they will, upon death removing them from that country, be restored to their native land, and enjoy their friends' society in a future state." And upon this, the last consolation of those wretched beings, one of the means of checking the suicidal epidemic is founded. The negroes imagine that if decapitation is performed after death, the transition to their native country is prevented, and hence has been exhibited the horrid spectacle of the heads of the dead negroes placed in some conspicuous situation before their fellows.†

6. *Catalepsy.*—This disease has often been feigned, sometimes in its characteristic form, but more commonly in some of its imperfect varieties. We have nothing to add to the notice of this simulated affection in the article CATALEPSY in this work.

7. *Circulation, disorders of the.*—*Disease of the heart.*—In the French army, during

* Loc. cit. p. 146.

* Dancer's Jamaica Practice of Physic.
† Williamson's Med. and Miscell. Obs. on the West Indies, vol. i. p. 93.

the rigid operation of the conscription, almost every severe disease was simulated with the view of obtaining exemption from service, and many were adopted by the conscripts, the simulation of which must have been suggested by persons well acquainted with disease. The authors of the article on simulated diseases in the Dictionnaire des Sciences Médicales mention two cases which were intended to pass, and very nearly did pass, for aneurism of the heart or great vessels. In one of these a ligature was found tightly bound round the neck, and another round the top of each arm. On removing the ligatures, the purple and swollen state of the countenance disappeared, so that the man did not look like the same person, and the disordered action of the heart ceased. In the other case, a very fine ligature was so tightly bound round the neck as to be almost hid by the folds of the skin. This young man announced himself as affected with organic disease of the heart, and his terribly swollen and livid face certainly gave credibility to his statement.

It would appear from the testimony of several writers on the complaints of soldiers and sailors, that these persons are in possession of means of great power to derange the functions of the heart, and thereby to simulate and even to produce disease of that organ. Dr. Cheyne is convinced that many soldiers have the power of quickening their pulses and giving violence to the heart's action, and states that he has frequently found a soldier's pulse at the time of an expected visit, one hundred and twenty or one hundred and thirty, and the same reduced thirty or forty beats within a quarter of an hour upon his repeating his visit unexpectedly.* Seamen are said to produce such a temporary quickness of pulse by striking the elbow forcibly against a beam of wood, and this state they quaintly term *the elbow-fever*. More or less permanent derangement of the circulation is produced by the internal use of tobacco, digitalis, tartar emetic, &c.; and it is well known to all old medical officers in the army and navy that these means are familiar to the skulkers and malingerers of the two services. A much more effective means of deranging the circulation, and, indeed, many other functions, is afforded by white hellebore taken internally; and it appears from a paper of Dr. Quarrier, published by Mr. Hutchinson, that it has been extensively used in the army for this purpose. The practice was introduced into the regiment of marine artillery by a man who had formerly lived with a veterinary surgeon. This man not only produced the disorder in himself, but sold his secret and his drugs to many others. When a sudden and decisive result was sought for, as much as a drachm of the hellebore was administered; but for the more slow and progressive mode of deception, a small dose, such as from four to ten grains daily, was prescribed. The larger dose usually occasioned vomiting, purging, syncope, tremors, and great nervous irritability, which were followed by great and inordinate action of the heart and arteries, and this was in its turn succeeded by great debility, and sometimes by a disposition to paralysis. By the smaller dose, the stomach, after a short time, became completely disordered, and much nervous irritability and consequent derangement of the circulation ensued. Various other symptoms were observed in consequence of this poison, and in some cases a fatal result was very nearly induced, and would have been so in many cases, Dr. Quarrier thinks, had not the medicine fortunately been adulterated. Many men succeeded by these means in obtaining their discharge from the service.*

8. *Contraction of the limbs producing lameness.*—This disability is often feigned by soldiers, and sailors, and very frequently by mendicants and persons who wish to escape the punishment of "hard labour." A convict who was confined on board the Retribution hulk at Woolwich, during the period of his sentence, which was seven years, kept his right knee bent so as not to touch the ground with his foot all that time; and he was on that account not sent to hard labour with the other convicts. He was commonly employed in executing light jobs, which he could do in a sitting posture. When he moved from place to place, he used to hop upon the left foot with the assistance of a stick. At the end of the seven years he was discharged, and upon going away he very coolly observed, "I will try to put down my leg, it may be of use to me now." He did so, and walked off with a firm step without his stick, which he had previously thrown away.

Mr. Hutchinson considers this imposture as that which is most common in the navy next to ulcer, and relates some curious cases. A young seaman fell from the yard-arm into the sea, and pretending, when taken up, that he had struck his loins on the ship's anchor during his fall, and had thereby broken his back, he was sent to Deal Hospital. No external evidence of injury could be discovered, but he obstinately persisted in his story, and in proof of the alleged fact he constantly kept his trunk bent at nearly right angles with the lower extremities. When a rug was placed on the floor, and he was laid on his back upon it, his legs and thighs were kept erect in the air; and when these were pressed down forcibly, he rose suddenly to a sitting posture, as if his hip-joints were anchylosed. He persevered in his deception for some time, but was soon after detected in the act of deserting from the hospital, running lustily for his liberty. A sailor on board the Druid pretended that his arm was contracted, and so immoveable was the elbow-joint that the ulna and humerus had the appearance of being anchylosed. From long want of use the muscles were wasted. The man had been for a long time excused from duty for the supposed disease. Mr. Hutchinson detected the imposture by a stratagem. Being brought up to be punished, and while

* Loc. cit. p. 165.

* Hutchinson's Pract. Observations in Surgery. Second Edition, p. 149.



eagerly engaged in conversation with the captain, his attention was withdrawn from the limb, and Mr. Hutchinson, who had hold of it, suddenly straightened it without the least effort, in the presence of the whole crew. The man was punished, and immediately returned to his duty with the perfect use of his limb.*

The following cases have come to our own knowledge. In a line of battle-ship, an excellent seaman, and a favourite with his officers, suddenly withdrew from his duty, alleging that he had been seized with a violent pain in his loins which prevented him from assuming any other than a bent position. He was long treated as a real sufferer, and every kind of application (many very severe) was used for his recovery, but in vain. After a period of many months, the surgeon was superseded by another, who soon began to entertain suspicions of the reality of the disease, and made every effort, both by severe treatment and watching, to detect him. But, by day and night, asleep or awake, the patient still retained the same position. At length, however, this accomplished dissembler, like the pretended blind-man formerly mentioned, was betrayed by the violence of his own passions. One day, being accused by a messmate of skulking, he was so incensed that he started up erect, and with all his power inflicted a severe chastisement on his accuser. He now confessed his deceit, and alleged as the cause of it the unjust and injurious conduct of one of his officers.

A seaman on board the Heron sloop pretended that he had lost, in a great measure, the use of his lower extremities, which were contracted; and he was for a long time carried by his messmates from one part of the ship to another. He was at length sent to the hospital at Barbadoes to be surveyed, and being declared an impostor, was ordered to be taken on board his own ship to be punished. On his way from the hospital, however, being made aware of what was waiting him on board, he suddenly started up in the cart, and leaped into a field of sugar-cane, and, although pursued by his attendants, succeeded in making his escape.

During the late war, a seaman was received into Gibraltar Hospital on account of a fractured leg. When this was nearly cured, he began to pretend that the ancle-joint was contracted and the foot turned inwards. This position he obstinately maintained for twelve months, in spite of every effort to restore the limb to its proper position, and in defiance of the harshest treatment. One night, however, he contrived to get intoxicated, and the surgeon having occasion to visit his ward during the night, found him lying perfectly naked on his bed, and his ancle quite straight. He was immediately returned to his ship as an impostor, was punished, and exhibited no longer any contraction of his ancle.

While transcribing this for the press, a flag-officer of the navy informed the writer that he was once member of a court of officers who invalided a seaman on account of a contracted knee-joint, which had resisted all kinds of treatment for a long period. On the day after he was discharged, he was seen walking upright by this officer in the town of Sheerness, and, being pursued, made his escape by a most nimble and active use of his legs.

One mode employed for detecting these pretended contractions is to place a tourniquet on the limb above the joint, by which the muscles are prevented from acting, and the joint becomes in consequence moveable. In cases of marked imposition of this kind, the naval surgeon has sometimes transferred his patients to the captain. In cases of stiff knee-joint, the practice adopted by one disciplinarian was to cause the skulker to be lashed on the back, with small cords, by the boys, until he could *run away* from them. Of course, no surgeon would give his sanction to such treatment.

9. *Deafness.*—Loss of hearing is not unfrequently feigned in the army and navy, and also by persons in civil life who wish to escape a public trial or to excite commiseration. Simulated deafness is, in general, alleged to come on rapidly, whereas the real disability takes place very gradually. Two recruits complained that they had been suddenly attacked with deafness without any previous illness. The state of the meatus was natural, and no sign of inflammation existed. The surgeon first employed the antiphlogistic regimen, and then inserted a seton in the nape of the neck, which was regularly dressed in the morning. In eight or ten days they both declared that they had regained their hearing, and requested to be allowed to return to their duty.* As in the case of blindness, the natural but involuntary language of the countenance generally evinces that the impostor continues to gain intelligence of what is going on around him through the organ of hearing. Cases of this kind are commonly detected by a little stratagem, such as making a sudden noise near the patient, or suddenly mentioning something deeply interesting to him, and watching the effect on his countenance or pulse. Foderé mentions several examples of soldiers who betrayed themselves on hearing a sudden noise. Mr. Dunlop mentions the case of a soldier in the York Military Hospital, who feigned deafness so well that firing a pistol at his ear produced no effect. He was, however, detected by the same experiment made after he had been put to sleep by opium: he then started out of bed.†

Accident also has sometimes led to a discovery of imposture, when there was no suspicion entertained respecting the alleged loss of hearing. A remarkable instance of this is recorded by Sir Walter Scott, in the introduction to Peveril of the Peak. A woman pretending to be both deaf and dumb, lived several years in a family, and afforded no

* Loc. cit.

* Cheyne.

† Beck's Jurisprudence, p. 17.

suspicion of being an impostor, until, on an occasion of great surprise, she forgot her part and suddenly expressed her feelings "in loud Scotch." In the same work a beautiful illustration of the manner of detecting the imposture, by exciting strong emotion and watching its influence on the circulation, must be familiar to every reader.

10. *Deaf-dumbness.*—This is a very common imposture among mendicants. It is also not unfrequently feigned in the military and naval service. It is of importance to know, that if a person has ever acquired the use of speech and is able to move his tongue, his dumbness cannot be real. Many singular examples of this imposture are recorded by authors; but the most remarkable is that of Victor Foy or Travanait, detailed at great length by Fodéré.* This man, after deceiving a vast number of medical men in different countries, was at length detected by the Abbé Sicard. Dr. Cheyne mentions the case of a soldier who exhibited this disability for no less a period than five years, but recovered his speech upon being discharged from the service. On one occasion this man was accidentally shot in the ear by an awkward recruit, on which occasion he "expressed pain and consternation by a variety of motions and contortions, but never spoke."†

In a case of a seaman on board the Utile, who pretended to be deaf and dumb, the surgeon, appearing to be deceived by him, made very formal and ostentatious preparations for an operation upon his throat, and while his attention was thereby engaged, he applied a lighted candle to the man's fingers. He resisted this test, however; and having represented his case to the Admiralty, the surgeon was dismissed his ship for cruel, or at least unprofessional, treatment of his patient. Shortly afterwards, the sailor being still detained in the ship, recovered both speech and hearing. He subsequently pretended to have lost his speech only; but, finding that this faculty was not considered essential to the performance of the severest duties of a seaman, he speedily regained his tongue. This man was of a very different temper from the simpleton of whom Parr speaks. "How long have you been dumb, my good friend?" says a passenger, with the most insidious humanity. "Three weeks, Sir;" replied the incautious deceiver.‡

11. *Diarrhœa and dysentery.*—Bowel complaints are sometimes feigned by soldiers and sailors and others, more particularly in countries where dysentery is prevalent, as in India. The motive for simulating this disease is commonly the escape from some particular duty. The imposture is easily detected by obliging the patient to use a night-chair; but care must be taken that he does not borrow, buy, or steal the leading symbol of dysentery, or manufacture it expressly for the occasion. Mr. Hutchinson informs us that he has known convicts break down in their urinary utensils a figured motion, and intimately mix it with the urine so as to induce the belief that it was in reality a diarrhœal evacuation;* and one of the writers of this article was informed by a West-Indian planter that the same deception is practised by the slaves in that country to escape labour. He knew an instance of a negro who had nearly rooted out all his teeth by tearing his gums with iron nails, in order to procure blood to make the factitious dysenteric motion more complete. These unhappy persons do not always content themselves with feigning these affections; they actually produce them by deleterious substances taken into the bowels; and Mr. Hutchinson says he has not unfrequently known them fall victims to their own imprudent attempts. It would appear that the seamen under Mr. Hutchinson's care made use of vinegar and burnt cork to effect their purposes. Mucous discharges are produced by introducing suppositories of soap or other irritating substances into the rectum, and these may be subsequently mixed with blood.†

12. *Ear, diseases of.*—A purulent and fetid discharge from the ear has been simulated or induced by soldiers with the usual object of obtaining their discharge or escaping from duty. An instance is mentioned in the *Dictionnaire des Sciences Médicales*, where honey was used to simulate a morbid discharge; and the cheat was very near proving successful. A more common practice is to introduce irritating substances, such as cantharides, into the auditory canal, and thus to excite inflammation and purulent discharge; and to render the discharge more disagreeable, rancid oil and other stinking matters have been afterwards employed. In these, as in so many other cases, careful examination will detect the imposition.

13. *Emaciation and debility.*—An appearance of unsound health is occasionally simulated for the purpose of procuring an exemption from some disagreeable service, or to obtain leave of absence, change of climate, &c. The means commonly employed are abstinence from sleep and food for a considerable time, drinking to excess of strong liquors, and frequently taking small doses of the tartrate of antimony.

*Partial* emaciation, or wasting of the limbs, is a much more common resource of the impostor, more particularly among mendicants. In the army or navy it is hardly possible for the individual to find time or opportunities to produce the compression by which it is effected. Sometimes, however, the circumstance, not very rare among adults, of one arm being considerably smaller than the other, is taken advantage of, and the impostor pretends that the wasting is of recent occurrence, and is accompanied with loss of muscular power or with pain. The Earl of Gloucester, afterwards Richard III., had an arm of this

* Loc. cit. p. 478.
† Loc. cit. p. 144.
‡ Parr's Medical Dictionary.

* Loc. cit.
† *Cheyne*, p. 170.



sort, and is related to have taken advantage of it for purposes of deception.

Every one must have seen mendicants at country fairs, exhibiting one or both arms hanging down fleshless and motionless by their sides. Almost all these have been in the first place intentionally produced by long continued bandaging, and the greater number have in reality become powerless.

Partial wasting of a limb may, however, be a real disease; we are not, therefore, to decide on such cases without due examination. In most instances the knowledge of the surgeon will enable him to discriminate between the real and the pretended disability; but we have known instances in which the discrimination was extremely difficult.

14. *Epilepsy.*—This disease is very frequently simulated in the streets. It is also not seldom feigned by soldiers and sailors for the purpose of procuring their discharge. Nevertheless, the practitioner who is intimately acquainted with the pathognomonic symptoms of epilepsy, and pays proper attention to the case, will generally be able to satisfy himself whether an alleged paroxysm of the disease be simulated or not. During a feigned paroxysm of epilepsy the contractions of the different parts of the body do not come on simultaneously; and if a patient be narrowly watched, he will be discovered to open his eyes occasionally for the purpose of observing what effect his exhibition has upon the by-standers. The simulator of epilepsy is unable to produce the red, bloated countenance and contorted face which accompany the real disease, or the immobility of the iris on the access of light. He is also apt to exhibit the appearance of foaming at the mouth either in too slight or in too great a degree. The latter result is produced by a piece of soap kept in the mouth. A marked difference between the real and feigned disease is, usually, that in the latter the patient courts publicity for his exhibitions, and makes no attempt to conceal his malady, while the real epileptic is almost always extremely desirous of hiding his infirmity. It will, likewise, be found on inquiry, that the feigned paroxysm is apt to come on very opportunely to promote the attainment of some object of desire to the patient, while the real disease shews no such intelligent consideration. It is further to be observed, that the skin is comparatively cool when the contraction of the muscles is involuntary; but if the agitation of the body be voluntary, the skin is covered with perspiration. A feigned paroxysm of epilepsy usually terminates much more abruptly than the true disease, and the convulsions are not succeeded by the comatose or soporose state that generally supervenes on the epileptic convulsion.

The most decided proof of epilepsy is, however, an insensibility to the influence of external agents; consequently, when any evidence of sense is excited by stimulants during the paroxysm, it may generally be inferred that the symptoms are counterfeited. For the purpose of testing the degree of insensibility various means may be tried in doubtful cases. The following are some that have been used by military and naval surgeons, and often successfully.

1. A powerful general shock to the system, as by a pailful of cold water suddenly dashed upon the patient. We have more than once seen this treatment succeed in putting a period to the paroxysm; but we did not always, on this account, satisfy ourselves that the disease was feigned. So powerful a shock is not unlikely to arrest real convulsions.

2. A strong impression made upon particular senses. Mr. Hutchinson mentions a case supposed to be feigned in which the convulsions were instantly removed by blowing "some fine Scotch snuff" up the nostrils through a quill. This induced another fit—a fit of sneezing—that lasted nearly a quarter of an hour; and there was no return of the epilepsy while Mr. Hutchinson remained in the ship. The same practice was tried in real cases of epilepsy by this gentleman, but he never could produce any similar effects, although the patients were not snuff-takers. Dr. Cheyne thinks the most powerful stimulant that can be used in such cases is a few drops of alcohol introduced into the eye, and relates a case where the pretended epilepsy was instantly arrested by it. The introduction of stimulating or very nauseous remedies into the mouth, so as strongly to impress the sense of taste. Stuffing the mouth with common salt, or forcibly introducing a solution of aloes, &c. is thus often effectual in putting an end to the feigned disease.

3. The apprehension of pain or danger, excited by the proposal of an operation in the patient's hearing, or by actually placing him in a situation where he must injure himself if the convulsive movements are continued. We are informed by a naval officer that he once saw a tremendous epilepsy instantly cured by an order being given to introduce a red-hot ramrod into the patient's anus; and the dread of the actual cautery, though in a somewhat less formidable mode, has often proved a powerful remedy in similar cases. Perhaps an equally effectual plan is to *propose* to pour boiling water on the legs, and actually to pour *cold* water. Dr. Cheyne relates an ingenious expedient put in practice in a case of feigned epilepsy, by Mr. Young, surgeon of the 10th regiment. A large barrack-table was put upon another of the same dimensions, and the pretender placed, in the midst of his paroxysm, upon this elevated bed. The fear of a descent put an immediate termination to the epilepsy.*

In concluding these remarks, we wish to impress upon the mind of the young practitioner that he is not to be too positive in imagining that he will always be able to decide with certainty whether the ostensible epilepsy is feigned or real. In all doubtful cases, it is due to his own character as a man of honour and feeling, and due to the beneficent profes-

* Loc. cit. p. 154.

sion of which he is a member, that he take the side of mercy; and if he is ever justified in denouncing a patient as an impostor, and thereby consigning him to punishment, he is certainly never justified in being himself the instrument of the punishment. Dr. Cheyne, a man of the greatest experience, and distinguished alike for his candour and accurate observation, informs us that he is "in possession of sufficient evidence to prove that real epilepsy has often been considered feigned;" and our own experience irresistibly leads us to adopt the same conclusion.

15. *Excretion of calculi, &c.*—Soldiers sometimes feign this affection with the view of obtaining their discharge, and unwilling recruits to prevent their serving in the army. A fit of nephralgia, or passing of gravel, is even pretended, and an alleged calculus exhibited. A similar imposition is practised by females, and occasionally under such circumstances as render it very difficult to account for their conduct. A most remarkable case is recorded in the Edinburgh Medical Journal (vol. vii.) of "a young lady, of rather high rank," who feigned this disease, and was believed to have excreted, with great pain, a vast quantity of calculi, "not less than several pint measures in two or three years." The rudest chemical experiments proved the pretended calculi not to be of animal origin; they were in fact "common sand and pebble stones." No motive could be assigned for this extraordinary conduct. A similar case in a boy, ten years of age, is mentioned in the Annals of Philosophy, vol. iv. p. 76; and Dr. Thomson of Edinburgh discovered a similar imposition in a woman, by detecting micaceous particles in the alleged gravel.*

A still more common deception perhaps, and one much more extravagant, is the pretended excretion of calculi from the vagina. Many instances of this fact are mentioned by authors, and many others might be added. In a case mentioned in the Medical Comm., vol. iv. calcined bricks were pretended to be passed from the vagina, and some were extracted from it. A case was mentioned to us not long since, of a young woman from whom many fragments of coal were extracted by a surgeon. But the most remarkable instance of imposition that has come to our knowledge is that of a young woman, the daughter of a farmer near Edinburgh, who, after feigning, forming, or sustaining an immense variety of affections, in uninterrupted series, from 1817 to 1830, at length fixed upon the excretion of bone from the vagina as the great and abiding malady. Among the diseases real, feigned, or factitious, which this girl exhibited, were hepatitis, epilepsy, amaurosis, aphonia, deafness, paralysis of the arm, gravel, anasarca, hæmatemesis, irregular convulsions, gastralgia, dyspnœa, vomiting of substances resembling liver and bone, and retention of urine. Bone was first detected in the vagina in 1824, while the surgeon was introducing the catheter, and from this period an immense quantity was either extracted or excreted; some pieces were even extracted from the bladder. She was admitted into an hospital in 1825, where she still continued to pass bones, believed for some time to be those of an extra-uterine fœtus; but a complete stop was put to the complaint by secluding the patient from all access to such materials. After her discharge the alleged excretion returned. She had an illegitimate child in 1828, and was finally married to a respectable farmer in 1830. Another young woman, in a respectable rank in life, pretended to pass vesicular bodies from the vagina, and many were extracted by surgical aid. At first the disease was considered natural, but eventually it was discovered, by Professor Thomson of Edinburgh, that the alleged hydatids were artificial vesicles prepared from the intestines of a pig. These were so constructed as to resemble a string of beads.

It is hardly necessary to say anything respecting the means of detecting such impositions; it is, however, important that the young practitioner should be made aware of their occasional existence.

16. *Fever.*—This disease is frequently feigned, and also in some degree produced artificially. Soldiers and sailors pretend to have an accession of ague during the night, and present themselves as if in the interval, to the surgeon. Sometimes they simulate the fit at a time when they can be more readily discovered. Dr. Cheyne mentions the case of a soldier who pretended to be in *a chill*, and who was seen to be shaking violently: upon throwing down the bedclothes, however, he was found not in the cold, but in a sweating stage produced by his own exertions. This exposure put an immediate termination to the paroxysm.* Such persons, Foderé says, often imitate admirably the chattering of the teeth of the cold fit. They likewise use means to produce a greater semblance of fever. Great heat and perspiration, and a quick pulse, are produced by strong exercise immediately before the hour of the visit. In the section on disordered circulation, we have noticed various means adopted for the purpose of disordering the action of the heart and arteries, most of which are equally applicable to the production of the disease now under consideration. The skin is sometimes scrubbed with a hard brush to produce redness; and the tongue is very frequently coloured artificially white, brown, or dark, with chalk, pipe-clay, tobacco, brick-dust, and brown soap, &c. according to the convenience or knowledge of the impostor. The sanguinary pirate Leon, who was lately executed at Gibraltar, very nearly succeeded in deceiving his medical attendants by simulating fever, colouring his tongue brown, &c. In all these cases close observation will almost always detect the imposture; and most certainly a few days' confinement will do so. It is only an ephemeral fever that can be feigned with any prospect of success.

17. *Fracture.*—We have seen several soldiers who simulated lameness, and alleged that a thigh bone had been fractured, by which means the limb had become shortened. This imposture is easily detected by placing the man upon his back and examining both the thighs: the muscles of the limb falsely alleged to be shortened will be found hard and in full action, while the muscles of the other limb are inactive and soft. We happened to know one instance of a soldier who obtained his discharge by alleging that he had a plate of metal in his skull, which he said had been introduced there in consequence of the bone having been fractured; and we are also aware of an instance where a medical officer was found fault with for having approved of recruits "with plates introduced into their heads." The simulators of this disability must have met with very credulous auditors, for it is to be presumed they did not examine the heads said to be thus mended.

* Beck's Jurisprudence, by Dunlop, p. 7.

* Op. cit. p. 175.



18. *Hæmatemesis.*—This affection is readily simulated, and frequently has been so by soldiers, sailors, slaves, and other persons. It is effected by procuring blood, and after swallowing it, producing artificial vomiting, whereby it is disgorged. The blood is generally that of some animal; but slaves in the West Indies have been known to swallow their own blood to effect their object. A remarkable case is mentioned by Sauvages, of a girl who feigned hæmatemesis to escape from a convent, and who brought up in the presence of the physician several pounds of blood on several successive days. It was at last discovered that she secretly drank bullock's blood before the visit.* This imposition will in general be discovered, at least in situations where the medical attendant may reasonably expect to meet with feigned diseases, by narrowly examining the symptoms—when a discrepancy and want of harmony will be found among them which nature never presents. When any suspicion is excited, the detection may be made at once by watching the patient, and cutting off the possibility of his obtaining the materials necessary to the simulation.

19. *Hæmaturia.*—This disease has been sometimes simulated by taking substances into the stomach which have the quality of reddening the urine, such as beet-root, the fruit of the prickly pear, madder, &c.; it has, however, been much more frequently attempted to impose by mixing foreign substances with the urine, particularly blood, after it was excreted. The authors of the article *Feigned Diseases* in the Dictionnaire des Sciences Médicales inform us that blood has even been injected into the bladder with this view. A little attention suffices to discover factitious hæmaturia, however produced.

20. *Hæmoptysis.*—This is a disease very commonly feigned by soldiers and sailors, and also by mendicants. The cough is easily assumed, and the sanguineous expectoration is produced by pricking or cutting the gums, throat, or some part of the mouth, or by cutting the fingers or arm and sucking the blood, or by procuring the blood of animals, or by artificially tinging the sputa of a red colour by some foreign substance. Sylvaticus mentions the Armenian bole as being used for this purpose;* Dr. Beck, brick-dust; and Mr. Hutchinson vermillion paint. Dr. Cheyne justly observes that the absence of the symptoms which generally attend real hæmoptysis, such as cough, dyspnœa, fever, &c. will naturally excite suspicion, and the appearance of the sputa will confirm this in such cases. The factitious will be very unlike the real sputa of hæmoptysis. The use of the stethoscope will greatly aid in the diagnosis in doubtful cases. It ought to be a rule in the army, that simple spitting of blood, unaccompanied by signs of organic disease of the lungs, is not a sufficient cause for the discharge of a soldier.

21. *Hæmorrhoids.*—The discharge of blood from the anus is easily feigned or imitated. It appears also that hæmorrhoidal tumours have been very artfully constructed by means of small bladders, inflated and tinged with blood, and attached to a substance introduced into the rectum.†

22. *Hepatitis.*—This affection is often simulated by soldiers who have been some time in India, when they wish to be discharged. They are commonly well acquainted with the symptoms of the disease, and frequently tell a tolerably consistent story. The countenance and general appearance of an impostor of this kind are, however, often at great variance with his oral testimony. In doubtful cases of alleged organic disease of the chest or abdomen, the person to be examined should be undressed, as he is then unable to conceal whatever evidence of health may be supplied by a plump frame and muscular limbs. An opportunity is also thus afforded of properly exploring the cavity in which the disease is alleged to have its site.

It is not an uncommon practice with officers in the navy on foreign stations, who are desirous of returning to England, to feign some disease in order to be invalided to a more temperate climate. In the West Indies in particular, this practice was formerly of frequent occurrence; and it is a curious fact that the disease most frequently assumed, and successfully, was that now under consideration, and which is by no means very common among sailors in that country. The causes of this preference in favour of hepatitis are, no doubt, the supposed facility of imposing the belief of its existence on a superficial observer, and the generally received opinion of the tendency of all tropical climates to generate it.

The fact just stated might lead to some curious statistical mistakes. Suppose, for instance, information were sought respecting the relative prevalence of different diseases in different climates among persons in the navy. If the official records of the medical department

* Nosol. Method. t. ii. p. 299.

* Institutio medica de iis qui morbum simulant deprehendendis.—*Madrit.* 1594.

† *Percy* and *Laurent*, op. cit.

were inspected for this purpose, it would be found that a large proportion of the invalids from the West Indies were affected with hepatitis; and it is probable that the proportion might be greater than among the invalids from the East Indies. Now there cannot be a doubt that liver-disease is, in truth, *much* more prevalent in the latter climate than in the former. Owing to particular circumstances those invalided for complaints of this kind from the West Indies are chiefly officers; and the much greater proportion of this class than of common seamen, in the invalid lists, might be considered as indicating some peculiar causes of hepatitis among officers in that country.

Dr. Cheyne has some very sensible remarks on the feigned hepatitis of soldiers. He says that "when men who have not been in warm climates obstinately complain of pain in the right hypochondrium, and when we cannot discover any enlargement or fulness of the liver, when the pulse and breathing are undisturbed, the secretions and excretions natural, and when the alleged pain resists topical bleeding and blistering, and mercurial purgatives, the sooner we send them to duty the better." Persons in this class often eventually succeed in their object of dismissal from the service, chiefly from the mistakes of the surgeon. "Such subjects," says Dr. Cheyne, "have often come under my care with their flesh and strength reduced by repeated courses of mercury, their gums absorbed, and teeth shaking in their sockets, whose livers were sound (probably they never were otherwise), but whose broken health required that they should be invalided without delay."*

23. *Hernia and Hydrocele.*—Both these diseases have been frequently simulated. The means most frequently used to effect the object, is inflating the cellular substance of the scrotum. But more artful and more severe means have been adopted. Cases are related in the Act. Nat. Cur. of inflated bladders being applied to the scrotum to impose on the ignorant; and it is to the great discredit of the medical profession that some of its members have aided in the production of deceptions of a more scientific description. In the year 1828, two medical men were tried in France for having, respectively, produced in four conscripts swellings of the testicles. It was sworn by one of the conscripts that the operator injected into a wound made by him in the scrotum, a red-coloured liquid which gave him excessive pain. The operation was followed by violent inflammation of the testis. The other operator applied caustic to the scrotum with the same result. This last individual, a surgeon of the name of Desplats, was sentenced to the pillory and five years' imprisonment. The practice of inflating the scrotum is much more common, because more easy. Sir Astley Cooper mentions the case of a man at Norwich who imposed on the surgeon by this means, and thus escaped serving in the army: and we have more than once seen the same plan adopted, but without success, by impressed seamen. A small blow-pipe, or the stalk of a tobacco-pipe, is the instrument commonly used. It is hardly necessary to say that no surgeon *ought* to be deceived by a case of this kind.

Some men have the power of retaining the testes in the groin by the voluntary action of the cremaster muscles; and the swellings resulting from such a position of the parts have been mistaken for hernia.*

24. *Hydrocephalus.*—Chronic hydrocephalus has been simulated at least in one case which we shall quote from Sauvages, who terms the case, after Mangetus, *physocephalus artificialis.* In the year 1593, a mendicant exhibited his child for gain as a monster, on account of the immense size of his head. This preternatural appearance was produced by the daily insufflation of air under the scalp, by means of a pipe introduced into a small perforation on the vertex. By this operation, repeated for several months, the scalp at length became extended to an enormous degree. Being detected, this wicked father was condemned to death.†

25. *Hydrophobia.*—One would hardly expect that this disease should ever have been feigned. MM. Percy and Laurent, however, mention a case of the kind in a conscript, which, although terrifying the examiners at first, was eventually cured by the threat of suffocation between two beds.

26. *Incontinence of faeces.*—We have known this disease feigned. A boy on board the Desirée frigate pretended that he could not retain his fæces, and was frequently found voiding them on all occasions and in all places. Being deemed an impostor, he was severely punished, and at last confessed that he had been advised to do so by his aunt, that he might be discharged the service: this result he was very near obtaining. The following remark of Dr. Cheyne, relative to this pretended malady, is very judicious. "When a patient alleges that he cannot retain the contents of the bowels, the sphincter ani ought to be examined, and if it contracts upon the finger, opium, with solid food, must be prescribed, and a watch set over the individual: if he passes solid fæces in bed, he will be a fit subject for a court martial."

27. *Incontinence of urine.*—It is somewhat singular that a disease so very rare as this is among persons not advanced in life, should be one very commonly feigned, more particularly by soldiers. This arises, probably, from the circumstance that the infirmity is easily simulated, and is one particularly inconsistent with the habits of neatness and cleanliness required in a modern soldier. This disease was extremely common among the French conscripts during Napoleon's wars. Its very frequency of occurrence among soldiers is in itself a strong presumption of imposition; and if it makes its appearance at all in an epidemic form, we may be almost certain that it is feigned. MM. Percy and Laurent say they have had no fewer than fifteen pretended cases of this

* Loc. cit. p. 172.

* *Hutchinson*, loc. cit.
† Nosol. Method. t. ii. p. 497.



kind at one time in a recruiting depôt; and Foderé witnessed its occurrence, almost in an epidemic form, in consequence of two soldiers having obtained their discharge on this account. Dr. Cheyne notices a somewhat similar circumstance in an English regiment, in consequence of the facilities the soldiers found in imposing upon a practitioner unacquainted with military practice.

Independently of evidence derived from collateral circumstances, there are many means of detecting simulated incontinence. When the disease is real, the clothes of the individual usually exhale a strong ammoniacal odour, which is not often the case when the disorder is feigned. The simulator commonly chooses the time and place which appear to him the best for wetting his clothes: if he sleeps with another person, he is more apt to wet his bed than when he sleeps alone; and if he is furnished with clean straw to lie upon, he does not commonly wet it before the morning. In real incontinence, more especially if it has existed some time, the glans penis is stated by MM. Percy and Laurent to be pale and shrivelled, from being kept constantly wet with the urine which comes away *guttatim;* and Foderé says if a ligature be passed round the penis in such cases, the urethra will soon be found distended above it. It is evident, however, that this test cannot be depended upon. In the Austrian army, a man who alleges that he has incontinence of urine is furnished with a urinal and obliged to do his duty. In the French army it was customary to compress the penis between two pieces of wood; and Foderé informs us that he succeeded in putting a stop to a fictitious epidemic of this kind by applying a sealed ligature to the penis, which was only allowed to be undone by a person appointed for the purpose. MM. Percy and Laurent prescribed with perfect success in a case of this kind, twenty lashes on the loins, with the avowed object of strengthening the debilitated part; and the surgeon of a regiment mentioned by Dr. Cheyne, speedily put an end to a pretended epidemic of the same kind by prescribing a cold bath twice a day in Lough Neagh. Such means as these, with blisters to the perineum, and other appropriate but disagreeable remedies, will almost always put an end to this alleged disability, even when we have not been able to demonstrate to the simulator himself that we have detected him. When this is once effected, there is never any difficulty in curing any feigned disease. The most effectual mode of detecting simulated incontinence is that prescribed by Mr. Comyns, an army surgeon, and afterwards by Dr. Hennen and Mr. Hutchinson, viz. to administer a strong opiate at bed-time, and to watch the length of time the urine is retained during sleep; or to introduce the catheter unexpectedly, to ascertain the quantity of urine found in the bladder. In real incontinence, the bladder will not retain its contents after a certain time during sleep, or under any other circumstances. The following ingenious method was successfully used by an army surgeon to detect and cure a fictitious infirmity of this kind. The surgeon having ascertained from the patient how long he could retain his urine, (of course a very short period,) caused him to undress and stand before him with the abdomen exposed. Upon observing the abdominal muscles called into action to aid in the expulsion of the urine, he suddenly and forcibly thrust his fingers against the belly so as to prevent the voluntary muscular effort. This he repeated as often as he saw the action renewed, until the alleged period of expulsion was long passed. He then dismissed the patient with the remark that he had retained his urine long enough to enable him to do his duty.

The opposite state of *retention of urine* has been sometimes feigned, more particularly by female convicts. A strict watch will always detect such an imposition.

28. *Jaundice.*—The yellow colour of the skin in this disease has been simulated by painting it with an infusion of curcuma or tincture of rhubarb, &c.; and it is said clay-coloured stools have been imitated to perfection by taking daily a small quantity of muriatic acid. What it is impossible to feign or to form, however, is the yellow colour of the conjunctiva, and the want of this will always detect the imposition. It will rarely happen that a simulator will be so ingenious as to produce, at the same time, the yellow skin, the pale stools, and the dark-coloured urine. An ingenious device for altering, at least, if not rendering yellow, the conjunctiva, was that of a French conscript, who always put snuff in his eyes before the surgeon's visit.*

29. *Madness.*—Mental derangement, in some of its forms of idiocy, melancholia, or mania, has been in all ages assumed as a means of attaining certain objects of desire. The names of many persons famous in ancient and modern times are associated with this imposture. Madness is most commonly feigned in civil life by prisoners to escape punishment. In the army and navy, and among slaves, it is feigned with the same object, as well as to escape from disagreeable labour; but in the army and navy it is still more commonly feigned with the view of obtaining a discharge from the service. In the latter department of the public service, during the late war, in which so many hearts were broken by the hope too long deferred of returning home, every surgeon of experience met with instances of simulated insanity; and it was equally common among the numerous prisoners of war detained for so many years in this country. All the forms of disordered intellect were feigned; but the most common was that of furious madness, assumed with the view of effecting a temporary purpose, such as the evasion of punishment, the removal to an hospital, &c. When the design was to obtain a discharge from the service, melancholia or idiocy was the form adopted. In several instances the simulators succeeded in gaining their ends; in many others they were detected; and we fear that in not a few instances real

* Dict. des Sciences Méd. loc. cit.

insanity was mistaken for feigned, and the patients were treated as impostors. This fact ought to lead the medical officers in the public service to study with great care the indications of insanity, and ought moreover to induce them, wherever there is a shadow of doubt, to lean to the side of mercy. It is infinitely better that they should be deceived, than that a poor wretch, already suffering under the most grievous of natural calamities, should undergo additional misery from their ignorance.

The discrimination of the fictitious from the real disease is not always so easy as those who have never witnessed both are apt to imagine. It is true that when we consider the very peculiar and complex phenomena which characterize true madness, and reflect on the general ignorance of those who attempt to imitate them, we have no right to expect such a finished picture as could impose on persons well acquainted with the real disease. And yet when, on the other hand, we consider how imperfectly the operations of the intellect, both in a state of health and disease, are known to medical men in general, and how few opportunities the medical officers in the public service have of observing the phenomena of insanity, and reflect how natural it is for the feelings of honourable men to take the part of ostensible distress, it need not surprise us that the pictures drawn even by such rude hands have imposed on educated minds. But it is less because fictitious madness has been treated as real, than because real madness has been treated as fictitious, that we are so anxious to direct the attention of junior medical officers in the army and navy to the study of the characteristic features of the disease. These can be only thoroughly studied in the receptacles for the insane, but much knowledge of importance may be derived from books. Referring the reader to these sources, we must content ourselves in this place with a few general observations.

The form of madness that can be assumed with most facility is that of furious mania; and yet the cases of this which we have witnessed have been all lamentably defective as imitations of nature. The actors always overdid their part. They sought to personify the notion of madness usually entertained by the vulgar, viz. the total abolition of the rational faculty, instead of its partial perversion. It is still more difficult to simulate the quiet half-rational insanity of the melancholic or monomaniac; as nothing but careful observation of persons so affected can qualify an individual for such a difficult task. This statement might be illustrated in a curious and interesting manner by a reference to the writings of poets and novelists. Such persons are obviously much better qualified to paint the disease now under consideration, than the ignorant soldier or sailor; and yet it would not be difficult to point out, in the numerous delineations of insanity presented by authors, such glaring deviations from nature as could not fail to strike any one versed in the history of the disease. Shakspeare, Goethe, and a few others perhaps, might stand the application of the severest test; but the common class of writers who have attempted such delineations have failed completely.

Idiocy has been more successfully imitated; and, perhaps, this may be accounted for by the opportunities which most men have enjoyed of studying the character in the instance of the poor idiot, still to be met with at large in almost every village. Conscripts have pretended that they were incapable of being taught the commonest duties of a soldier; and we knew an instance of a young *player*, drafted into the army, who acted the part of an idiot so effectually that he soon obtained his discharge. Almost immediately after this he enlisted into another regiment, and then deserted.

Independently of the mental phenomena of insanity, there are many physical conditions of the system often present in this disease, which it is hardly possible to feign, such as the expression of the countenance, the state of the eye, of the tongue, &c. One very common symptom, and one indeed invariably present in the earlier stages of furious mania, and in most of the forms of monomania, is sleeplessness; and this it is hardly possible for any man to feign. A real madman will be many days, even weeks, without sleep. This circumstance alone, if properly taken advantage of, will suffice to detect most impostors; and in order to derive from it all the advantages which it is capable of yielding, a strict and uninterrupted watch should be kept on all patients who are suspected of imposition. In the case of a seaman who enacted under our own eye the part of a furious maniac, in hopes of escaping punishment, sound sleep overpowered him on the second night of his attempt. Abstinence from food is another circumstance respecting which there will often be observed a marked discrepancy between the real and the pretended madman.

A strict watch will also generally detect in the simulated disease, great variations of violence, incoherence, or other symptoms, having reference to the visits of the medical officer, the being overlooked, &c. A pretended maniac will often be tranquil when he believes himself alone, or only in the presence of those of whose opinion he is regardless. A bold and clever dissembler will, however, not leave himself thus exposed to detection. We are informed by a gentleman, once in charge of French prisoners of war in this country, that he has known men (afterwards detected and admitted on their own confession to be impostors) carry their simulation to so exquisite a height as to eat their own excrements, even when shut up in their cells, suspecting they *might* be overlooked.

Real madness is seldom sudden in its attack; feigned madness very generally is so. The real disease usually exhibits itself at first in slight and almost imperceptible deviations from the habitual modes of thinking and acting, not reaching its height in many cases until after a progressive increase of months, or even years; although, perhaps, the change at last



from a comparatively slight degree of hallucination to extreme violence has been sudden. The feigned disease, on the contrary, is rarely preceded by such indications, but bursts out in full violence at once upon the application of some exciting cause. And yet this rule is not without exception in both cases. We have seen instances of sudden and furious insanity in civil life without any premonitory sign.

The circumstances under which the alleged insanity has supervened, the man's previous character, the probability or improbability of the disease being assumed, and many other obvious considerations, will all materially assist the diagnosis. For instance, if we find a man not previously liable to be so affected, nor hereditarily disposed to insanity, suddenly exhibit the appearance of this disease under an impending trial or punishment, or other threatened evil, which might be averted by such a state, there is certainly a presumption in favour of the disability being feigned. It is however to be borne in mind, that the very same apprehension of exposure, disgrace, or punishment, which affords motives for simulating insanity with the view of escaping them, may give rise to the real disease. Instances of this kind have been mentioned to us as occurring in the public service, and it would be easy to supply others from history and the records of jurisprudence. For this reason, and because we believe with Dr. Cheyne on other grounds, that "we are in more danger of supposing insanity simulated when it is real than of considering that disease to be real when it is only pretended," we must strongly protest against the decision in any case, that the disease is feigned, solely because there appears a strong reason for its being so. Taken in conjunction with the actual phenomena and other collateral circumstances, the consideration of the probable motives will, however, no doubt, in many cases greatly aid the diagnosis.

The existence or non-existence of causes known to predispose to insanity will be considered in every particular case, and they will have their due weight. Of this kind are previous attacks of the same malady under circumstances where there existed no apparent motive for deceit; the existence in the patient's family of a similar disease; eccentric habits, or what may be termed the maniacal temperament; a decidedly strumous habit; the application of strong exciting causes of a moral nature; physical disorders, especially such as are known to affect the brain, as prolonged intoxication, previous injury of the head, the repression of cutaneous eruptions, &c. &c.

It is well remarked by Dr. Cheyne, that in real insanity there is often the greatest insensibility to decency, propriety, and comfort, evidenced by the grossest language in persons previously of very pure minds, by exposure of the person, spitting heedlessly in all directions, passing the excrements in bed, or plastering them on the walls of the cell, &c. circumstances not likely to exist, at least in the same degree, in simulated cases. Yet this only affords us collateral aid in the diagnosis. Foderé has related the case of a young woman, undoubtedly a pretender, who committed every kind of indecency in her cell; and the miserable trait formerly noticed of a prisoner of war devouring his own excrements, is a convincing proof that nothing is too disgusting to appal a determined will.

In addition to the means of diagnosis supplied by the actual phenomena of the malady, by its previous history, and by other collateral circumstances, we have, in suspicious cases, a very important means in the institution of plans calculated to outwit an impostor or to overcome his obstinacy. Many harsh measures have been had recourse to in the army and navy with this view, which are altogether unjustifiable, except in cases of the clearest imposture. In no case, however suspicious, is the medical practitioner authorized to go beyond the employment of means of a strictly professional kind. He may, indeed, use all the artillery of annoyance supplied by medicine, and he may even *threaten* extra-professional infliction; but he must never go beyond this line. When convinced of the imposition in the case of a soldier or sailor, it is the duty of the medical officer to state his opinion to his military superiors; the *punishment* of such a crime is altogether foreign to his station and profession. Still, both the threat and the actual infliction of punishment have often put an end to simulated madness. In a case which occurred in the navy, a sailor who evinced a great desire to throw himself overboard, but was for a time prevented, at length succeeded in doing so; immediately on reaching the water, however, he began to swim vigorously, and called loudly for a boat. Upon being taken on board his madness had disappeared, and it did not return. The practice of former times would sanction a conjecture that this might have been a case of real insanity cured. In the case of the girl mentioned by Foderé, his informing the keeper in her presence that on the morrow a hot iron would be applied between the shoulders if she was not better, was immediately followed by great amendment. Actual punishment has often been advised, and even employed, where there existed merely suspicion of imposture; and, although condemning the practice, we must admit that it has frequently been successful in detecting deceit. Zacchias relates a case in which a physician recommended corporal punishment, on the principle that, if the madness were simulated, the cheat would not stand the test, and if it were real, the flagellation would do good as a derivative; and the event proved the accuracy of the first opinion.* The same means, however, and others equally severe, have often been employed without such a fortunate result, in equally suspicious cases. Examples of this sort, we have reason to know, were by no means extremely rare in the army and navy during the late war. A melancholy instance of real insanity treated as feigned is related in Mr. Marshall's Hints to young medi-

* Foderé, p. 460.

cal Officers (p. 140 ;) and we could enumerate others of a similar kind which occurred in the navy.

Some cases have come to our knowledge where deception was believed and punishment inflicted, yet, in which evidence of the reality of the disease was most conspicuous. In one of these, which occurred on board H. M. ship ———, two circumstances ought at once to have opened the eyes of the surgeon, viz. the periodical recurrence of the affection, and the total sleeplessness that prevailed during the paroxysm. They were also, we suspect, much less uncommon in civil life formerly, when the execution of the laws against vagrants was more summary than at present.

In this, as in all other feigned diseases, impressing the impostor with the hopelessness of his attempt to succeed in gaining his object, will be found the most effectual means of putting an end to the simulation. A few words intentionally dropt in the patient's hearing, but as if incidently, expressive of the expectation entertained by the medical attendant that the case would be cured, and of intended perseverance in the treatment then pursued, have often proved prophetic. We have known instances of a stop being almost immediately put to simulated madness by sending the soldier to the depôt for the insane.

It is fortunate that the very treatment most suitable to the recovery of persons really deranged is that which is most intolerable to the impostor. None but the most determined characters will be long able to resist the horrors of solitary confinement, bread and water, and the constant pain of blisters and other counter-irritants. Seclusion is particularly necessary in all such cases, as nothing tends so much to keep alive the hopes and the courage of the impostor as the consciousness that his raving is heard by his fellows, and the belief that an impression favourable to his views may be made on the minds of his officers, by the continued exhibition of his miserable state.

30. *Malformation.*—Deformity, such as curvature of the spine, elevation of one shoulder, shortness or distortion of a limb, inversion of the feet, &c. are occasionally simulated by soldiers, and sometimes with so much success that they obtain their discharge on that account. It may be said that a man who feigned dedeformity would readily be exposed by a medical practitioner who is intimately acquainted with the healthy configuration of the human body. This opinion seems to be well founded, yet cases occasionally occur from which it would appear that a simulator of deformity is not easily detected. We are acquainted with more than one instance where a board of medical officers have recommended recruits to be discharged from the army on account of alleged great deformity, but who were, in fact, remarkably handsome well-made men, and afterwards enlisted and were approved for service.

31. *Needles in the body.*—Among the various factitious disabilities, induced or voluntarily submitted to by patients, the singular one of the introduction of needles into some part of the body deserves particular notice. The two following cases will point out the character of this affection.

In July 1818, a young woman was admitted into Richmond Hospital, Dublin, on account of a painful swelling of the left hand and arm, somewhat resembling that which occurs in phlegmasia dolens. The inflammation continued to increase, diarrhœa supervened, and her general health became greatly impaired from the constant pain and irritation of the disease. Amputation was performed close to the shoulder-joint on the 21st of September. On examining the arm, eight or nine needles were found in the palm of the hand and forearm. The cause of the inflammation was now evident. This woman eventually confessed that she herself introduced the needles into her hand and arm, and she would assign no other reason for so doing but that she was tempted by the devil. An unwillingness to labour so as to procure a livelihood seems to have been the efficient cause of her exciting inflammation for the purpose of being admitted into an hospital. For several years after her arm was amputated she was employed in Richmond Hospital as a servant.*

The case of Rachel Hertz is perhaps still more remarkable. At about the age of fourteen, on the 16th of August, 1807, this woman became a patient of Professor Herholdt of Copenhagen. From this date until February 1819, she suffered under a variety of anomalous complaints, and especially an affection resembling hysteria, or epilepsy, or both. About this time a tumour appeared near the umbilicus; and being opened, a needle was extracted from it. From the 12th of February, 1819, till the 10th of August, 1820, a period of eighteen months, this woman had a number of abscesses formed in different parts of the body, from which two hundred and ninety-five needles were at different times extracted. Her superior and inferior extremities became paralytic, and continued so for a long period; but she eventually recovered. Swellings, or abscesses, containing needles, continued to appear from time to time; so that from the 28th of May to the 10th of July, 1822, one hundred were extracted, altogether amounting to three hundred and ninety-five. It was supposed by Professor Herholdt and Dr. Otto that she had swallowed the needles during her paroxysms of hysteria or epilepsy; but the truth was ascertained in a very simple manner. A young girl was observed in the act of introducing needles under the skin of her arm; and being asked who had taught her that trick, her answer was, that she had seen Rachael Hertz introduce needles under her skin.

32. *Ophthalmia.*—Factitious ophthalmia is, we believe, rare in civil life. It was very frequent among the French conscripts during the late war; no fewer than twelve per cent. of the inefficient conscripts belonging to the department of the Seine, during a period of ten years, were rejected on account of "impaired vision—diseases of the eyes." During the first ten or fifteen years of the present century, inflammation of the eyes prevailed to a great extent in some regiments of the British army, and there is much reason for supposing that factitious ophthalmia was then frequent. The following is one of the most extensive instances of factitious ophthalmia that has come to our knowledge. In the year 1809, three hundred of the men of two regiments which were on duty at Chelmsford, became affected with ophthalmia. The healthy men of the corps were removed to another station, and the sick remained in hospital, but under military command. Information having reached their commanding officer that one of the nurses of the hospital was in the habit of going to a druggist's shop for the purpose of purchasing medicines, suspicions were excited; and in conjunction with the medical officer in charge of the hospital, he made a successful attempt to discover whether the men had any drugs in their possession which might be employed to excite inflammation of the eyes. Accommodation having been provided for about twenty-four men, the number contained in one ward, at midnight the officer made his appearance in the hospital; the men were roused from their beds and forthwith marched in a state of nudity to the new ward. The old ward was secured for the night; and next day when the beds were examined, a number of small parcels of corrosive sublimate were found concealed. Means were taken to prevent a supply of this article, and in a very short time two hundred and fifty of the men had recovered, and were then marched to their respective corps.

The means that have been known to be used by soldiers to produce ophthalmia, besides the above, are powdered alum, snuff, salt, lime, tobacco-juice, &c.; also, mechanical irritation of the eye by hard bodies, extraction of the eye-lashes, &c. Presumptive evidence is, in general, all that can be obtained respecting the production of this disease; but many circumstances are calculated to excite suspicion in the situations where it is likely to exist. Among soldiers it has been found that the *right* eye has suffered chiefly, because this is the important organ to a modern man of war. The extreme rapidity of the progress of the inflammation in the factitious ophthalmia is often a guide to the real nature of the disease: it sometimes reaches its acmé in a few hours, a circumstance never observed in the natural disease. It is much more difficult to detect the disease in a chronic state. It is not improbable that the destruction of the eye among soldiers has been promoted by the large pension which government has allowed to those who are discharged on account of impaired vision. Formerly every man who became blind of one eye was discharged and received a pension for life of ninepence per day. This usage is, however, amended in the new pensioning warrant; for it is there ordered that "no soldier shall be discharged for the loss of one eye, whether it be the *right* or *left*." This regulation, if put effectually in execution, will in all probability lead to a great diminution of the prevalence of ophthalmia in the army.

When the disease is once detected, the cure of it is obvious; but much difficulty is often experienced in putting an end to it where it is merely suspected. When perfect seclusion cannot be obtained, as in the navy, a strait waistcoat has been used to prevent the patient tampering with his eyes.*

33. *Pain.*—There is perhaps no morbid affection more frequently feigned than this; among the disabilities assumed for the purpose of obtaining a mere temporary object, there is certainly no one so often met with. It is the usual resource of the worthless and mean-spirited among soldiers, sailors, and slaves, to obtain a few days' respite from labour. The vulgar see little in real disease but pain, or they at least look upon pain as the common symbol of disease, which they regard as something superadded to and existing separately in the body. They constantly describe any chronic ailment as an entity; "it goes here, it flies there, it works in the bowels," &c. These flying or migratory pains are very common among soldiers and sailors, and are known by the cant name of "*the all-overs;*" they are readily detected by a little art. If the surgeon listens attentively to the narrative, and begins to catechise his patient with apparent simplicity and good faith, he may bring him to admit the existence of any symptom however absurd, and thus to betray himself.

By the more cunning and more resolute the existence of severe pain, fixed in some particular spot, is feigned with more success, and often indeed with astonishing constancy. Many instances are recorded, and several have come to our own knowledge, where individuals have supported their assumed character for a long period, under every privation and much real suffering. A remarkable case of alleged pain in the mamma, in a female mendicant, is related by Lentin,† which could only be admitted as feigned on the clearest evidence. This woman went so far as to solicit, and at length to obtain, the amputation of first one mamma and then the other; and, not content with this, she afterwards wished one of her hands to be amputated on account of a similar pain, of which she alleged it to be the site. This woman was proved to be an impostor in respect of part at least of her alleged maladies; and she was considered by Dr. Lentin and other competent judges as equally so in regard to the pain. The following cases related by MM. Percy, Laurent, and Fodéré, are remarkable examples of the same kind.

A young man having been deceived by a recruiting officer, who promised that he should be made an ensign on his joining the regiment,

* Phrenological Journal, vol. ii.

* *Hutchinson*, loc. cit.

† Beytraege zur ausübenden Arzney wissenschaft, Leips. 1797.

formed the resolution of attempting to obtain his discharge by simulating disease. He complained of having a deep-seated pain in the left knee-joint, on account of which a great variety of remedies were applied, including blisters and moxa. The leg became by degrees extenuated, and he was sent to the baths. At last, after being four years under medical treatment, he obtained his discharge. Upon leaving the hospital, some of his comrades accompanied him a little way on the road, whom he treated with wine; and before they parted he took off the wooden leg he had worn for three years, and threw it into the fire, saying, at the same time, "they deceived me, and I in my turn have deceived them."

A soldier came under Foderé's care in the hospital of Martigues, complaining of a violent pain in the left leg, which he represented as arising from his having slept on the damp ground. During a period of eight months the most severe and painful external applications were made, and medicines given internally without effect. He still continued in bed, being unable, as he said, to stand. The leg having become wasted from the repeated use of blisters and issues, and apparently shorter than the other, and he being moreover pallid and emaciated in consequence of the severe regimen to which he had been subjected, Foderé at length obtained his discharge. While waiting for this, however, he was one day detected marching without any assistance, and, being taken up, at last acknowledged the imposition.*

Pains are also frequently feigned in the internal cavities of the body; and probably these may often be more easily detected than such as are alleged to have their site in the external parts, inasmuch as pains of a simply nervous character are perhaps of less frequent occurrence in the former situation, and pain depending on other causes will be accompanied by other appropriate symptoms. Still it must be admitted that detection in cases of this kind is more likely to be obtained through means of collateral evidence than by the absence of positive and sensible indications of disease. Every experienced practitioner has witnessed cases of most severe pain in almost every part of the body in persons who could not be suspected to feign; and the whole history of that great and increasing class of diseases termed *Neuralgiæ* is but a melancholy testimony in favour of the possibility of real pain being unmarked by any certain external signs. Too often, we fear, has the absence of symptoms in such diseases been the cause of great additional suffering to the victims of neuralgia in the public service; and we cannot more emphatically impress on the mind of the young medical officers in the army and navy the necessity of caution in such circumstances than by relating the following cases.

A young soldier, under the care of Foderé, complained of violent pains in various parts of his body, now in one limb, now in another, in the chest, head, &c., unaccompanied by any other symptom. Considering these pains as fictitious, Foderé refused to give the man his discharge; but he nevertheless died in the hospital without any new symptom. "After his death," says Foderé, "I anxiously explored, by means of the scalpel, all the old seats of the pains, but could discover nothing, in the membranes, the muscles, the nerves, or the viscera; and I was forced to believe that life had been destroyed by the long continuance of the pains. Since then," the author adds, "I have often preferred rather to be too lenient than to run the hazard of being again unjust."*

A seaman on board one of His Majesty's ships applied to the surgeon, complaining piteously of a pain in his shoulder preventing the motions of the arm. He could assign no cause for it, alleging that it came of itself and gradually increased to its present violence. No external mark could be discovered, and it being suspected to have arisen from some slight strain, it was ordered that the part should be rubbed with a common liniment. This was continued for a fortnight without relief; blisters were then applied and kept up for another fortnight. There still appearing no external sign of disease, the surgeon, suspecting imposition, ordered the man to move his arm before him. The poor fellow hesitated, and, begging to be spared, was allowed to rest for a few days, when the arm was forcibly moved by another person. It was in vain that the man entreated them to spare him; the surgeon, confident in his fancied knowledge, and resolved to punish what his nosology told him was imposture, ordered a rope and a weight of eighteen pounds to be brought; he was commanded to swing the one, or to bear from the other the punishment which his alleged *crime* deserved. He implored, he hesitated; when the rope, laid on with no slight hand on his shoulders, made him seize the weight; but scarcely had he freed it from the deck when he was forced by pain to throw it down. This scene was exhibited for some time, and sullen resentment at length getting the better of patience, gave additional force to the surgeon's opinion. The man was about to be returned to his duty, and to be punished as an impostor, when a fatal evidence appeared to testify against the sentence of his cruel and ignorant judges: a slight swelling showed itself on the part with signs of fluctuation; it was laid open, and purulent matter, to the extent of nearly two pounds, was discharged! In this case, which we know to be authentic, ignorance was as conspicuous as barbarity. Such a scene could hardly occur in these days, and we heartily trust it never may in those which are to come.†

34. *Paralysis.*—Palsy is frequently pretended among mendicants, and it is also occasionally

* Op. cit. p. 473.

* Méd. Légale, t. ii. p. 471.
† See Med. and Phys. Journ. for January 1808, vol. xix. p. 1.



feigned in the army and navy. The pathognomonic symptoms of palsy commonly involve some organic alteration, which it is scarcely possible for a man to simulate with success if his case be carefully investigated by well qualified persons. The fact, however, that impostors have been successful, is a sufficient warning to medical practitioners to devote much attention to the examination of doubtful cases. Coche, a French surgeon, who has given much of his attention to feigned diseases, says, "la simulation de cette maladie (palsy) n'est que ridicule;" but experience has proved that, however ridiculous, it has often been successfully practised. Dr. Cheyne mentions several cases of this kind, in two of which the pretended paralytics evinced ludicrous proofs of their still possessing the use of their limbs immediately after they had succeeded in gaining their discharge. It ought always to be considered a very suspicious circumstance in a soldier or sailor if the loss of power is confined to a single limb, as the arm, as such a form of paralysis coming on in adults is extremely rare. In a case detected by Dr. Cheyne, his opinion of the disease being feigned was chiefly founded on the following considerations: because there co-existed no other signs of disease; because the countenance indicated health and intelligence; because the function of the brain was undisturbed, and all the senses were entire; because paralysis of the arm is a complaint frequently feigned by soldiers, but very rare in reality.

Feigned paralysis has been frequently detected by subjecting the patient to a powerful electric shock. A case occurred in the New-York state prison which resisted all medicines until this remedy was tried. Upon receiving the shock the patient jumped up, ran into the hall, and asked for his discharge from the hospital.* Mr. Hutchinson detected an imposition of this kind in a sailor, by administering a dose of opium to the patient, and then tickling his ear during sleep; to relieve the irritation "the paralysed hand was instantly raised to the ear, which he rubbed with no small degree of force, and then turned round upon his left side, dragging the bedclothes over him with his heretofore useless arm." Of course the discovery was complete. The editor of the journal in which Mr. Hutchinson's essay first appeared mentions a similar case in a soldier detected by the same means: in this case the sound arm was previously bound down to the side, under pretence of thereby benefiting the disabled limb.†

*Shaking palsy* is simulated chiefly by mendicants. When the general health appears to be good, little attention need be paid to the shaking. For the diagnosis of this disease see the article PARALYSIS.

35. *Phthisis.*—It could scarcely have been imagined, *a priori*, that a disease like phthisis, attended with such complexity of symptoms, and marked by such conspicuous alteration of the external parts, would have ever been chosen as a subject of the malingerer. The following extract from Dr. Cheyne, however, will show that this has really been the case; and as this form of simulation has never come under our own view, we shall content ourselves with the remarks of this excellent observer:—"The soldier, not content with representing one feature of consumption, will often undertake a perfect portrait of that disease, and this he will sometimes execute with great cleverness. The thought would seem to strike him while in hospital under treatment for catarrh, or recovering from fever accompanied with pulmonary irritation. His cure all at once seems suspended; his food, he says, *stuffs* him, and he begs to be replaced on spoon or milk diet; he coughs much at the period of the daily visit; he suppresses his cough for some time previously, so that if there is any defluxion, it may be expectorated at that period. He expresses a wish to be let blood or blistered for a pain of the chest; begs for some medicine to relieve his cough; applies for a furlough; in short, so well does he act his part, that unless the surgeon is very circumspect, he will discover, when too late, that he has been made a dupe of."*

It is needless to observe that a thorough acquaintance with all the phenomena of the real disease will enable any one, who is on his guard, to detect an imposition of this kind. Auscultation will be, in such cases, a most powerful, and frequently an infallible means of ascertaining the truth.

36. *Polypus of the nose.*—This has been imitated by the matchless ingenuity of the French conscripts, by introducing the testes of cocks and hares' kidneys into the nostrils.†

37. *Pompholyx.*—This affection of the skin is sometimes simulated by the application of blistering-plaster. The imposture may often be detected by carefully examining the vesicles, as parts of the flies are apt to adhere to them. In a young woman who lately produced this affection in order to retain her comfortable position in an infirmary, this was the case; and, upon examining her box, small fragments of blistering-plaster were found secreted.

38. *Pregnancy.*—An impregnated state of the uterus is sometimes pretended, to gratify the wishes of relations; to deprive a legal successor of his claim; to extort money; to obtain remission of labour; or to delay the execution of punishment. A medical practitioner, who has to give an opinion on a doubtful case of pregnancy, would require to make himself intimately acquainted with the signs of real pregnancy, and he ought especially to consult the best works on legal medicine. Auscultation promises to be the most successful means of discovering whether an alleged case of pregnancy be real or merely pretended. (See AUSCULTATION.)

Pregnancy is very frequently feigned by negro slaves in the West Indies with the view

* Dunlop's *Beck*, p. 12.
† Med. and Phys. Journ. vol. liv. p. 93.

* Loc. cit. p. 160.
† *Percy* and *Laurent*, op. cit.

of obtaining ease; as masters are accustomed to indulge them, when pregnant, with repose from the severer kinds of labour. Besides the assumption of the sickness and other common symptoms of pregnancy, they place pads on the abdomen to deceive the sight. When they apprehend a discovery, they pretend that they have had an abortion, and often speedily recommence the same course of deception. They know by experience that it is an easy matter to feign the early symptoms of pregnancy. A case of simulation of this kind, which was carried to a very refined pitch, was mentioned to one of the writers of this article by the gentleman on whose estate it occurred. A female, whose repeated alleged abortions had excited the suspicion of the overseer, and who was in consequence assured that nothing short of ocular demonstration would obtain belief, had the ingenuity to mutilate and prepare *a lizard* so as to deceive her cunning inquisitor. This imposition, however, was afterwards completely detected. These pretended *grossesse* are occasionally locked up some months before the expected period of delivery; and instances have been known where they have remained confined for many months after this period has passed.

39. *Prolapsus ani.*—This disease has been simulated by partially introducing into the anus a sheep's bladder or gut containing blood, leaving a portion externally to represent the prolapsed rectum. Ambrose Paré mentions a case of this kind; and the authors of the article in the *Dictionnaire des Sciences Médicales* another.

40. *Rheumatism, Lumbago, &c.*—This class of disabilities is frequently feigned by the members of benefit societies, and by soldiers and sailors when they wish to evade a particular duty or to procure their discharge. Rheumatism, when severe, is commonly marked by some functional derangement or organic alteration, which it is difficult to simulate successfully. With respect to soldiers and sailors they ought very rarely to be discharged on account of alleged rheumatism, &c. &c. unless in cases where there is an obvious organic change, such as great extenuation of a limb or nodosity of the joint. As in the case of simple pain, it is often difficult to discriminate these fictitious cases of rheumatism from the real disease. Still an attentive observer will in most cases be able to detect the feigned disease.

The following remarks by Dr. Cheyne on this subject are very judicious, and well deserving the attention of military and naval practitioners: "Chronic rheumatism is distinguished by some disorder of the digestive organs, impaired appetite, a look of delicacy, a degree of pyrexia in the evening, yielding in the latter part of the night or early in the morning to perspiration. Some emaciation, wasting of the muscles of the affected limb, fulness of the veins, and puffy enlargement of the affected joint, take place. There is in general an increase of the temperature of the affected part. These symptoms are much influenced by the state of the weather, and they in some degree yield at length to proper treatment; whereas those who feign this disease usually retain their appetite and looks; have no diurnal return of fever, and no inflammatory symptoms. They give a glowing account of their sufferings, alleging that they have entirely lost the use of the part affected, which seldom happens in genuine rheumatism. There is for the most part no adequate cause assigned for the complaint; no relief from remedial treatment is acknowledged; and while real rheumatic affections are aggravated by damp, the impostor complains equally at all times."*

41. *Short sight.*—This being a state of vision easily feigned, and, when real, incapacitating the subject of it for the duties of a soldier, is one of the most common disabilities pretended by unwilling recruits. It is also assumed by soldiers in order to obtain their discharge. During the operation of the French conscription, and particularly in the early part of it, before effective means of prevention were taken, short-sightedness was feigned to a singular extent by the young conscripts. In the department of the Seine, of every thousand conscripts who were exempted from service in consequence of disabilities, from the year 1800 to 1810 inclusive, fifty-eight were excused in consequence of being near-sighted. At last the alleged disability became so common that a law was passed forbidding men to be exempted on this ground; and all such persons were ordered to be employed as pioneers, hospital-servants, &c. Besides being assumed where it does not exist, this defect can be produced by the habitual use of concave glasses; and this practice was extensively adopted by the young men in France liable to serve. In short-sighted persons, the *crow-feet* wrinkles at the corner of the eyes are strongly marked, and there is an habitual frowning or knitting of the brows; but these signs are by no means unequivocal. The surest tests are enforcing the employment of concave glasses suited to the exact degree of imperfection assumed by the simulator, and putting him to read a book quite close to the eye. If able to read a book in this position *without* the glasses, and unable to read with the proper glasses at a corresponding distance, we may be almost certain that the disability is feigned. And yet even in this we may be mistaken. MM. Percy and Laurent mention a young schoolmaster, who, in expectation of being some day drawn for the army, practised reading with all kinds of glasses before hand, and when he was drawn he obtained his exemption without difficulty. When any doubt is entertained regarding the existence of this defect, the most advisable measure is to follow the example of the French government, and place the individuals in situations where long vision is less necessary. This disability is rarely feigned by sailors, because, if real, it would not incapacite them for the duties required of them.

42. *Somnolency.*—Occasionally persons allege that they are unable to undergo any fatigue, and sometimes that they are incapable of muscular motion on account of a constant and irresistible sleepiness. Dr. Hennen has recorded a most obstinate case of this kind.* Another case is detailed in the Edin. Ann. Reg. vol. iv. The subject of this case was a soldier in the Somerset militia, and only eighteen years of age. He had been confined for desertion. From the 26th April to the 8th July, 1811, he lay in a state of apparent insensibility, and resisted every means which it was deemed advisable to attempt for the purpose of rousing him. These means consisted of thrusting snuff up the nostrils, electric shocks, &c. &c. It was at last conjectured that the torpidity might be owing to a fall, whereby his head might have been injured, and the operation of dividing the scalp was performed for the purpose of ascertaining whether there was not a depression of the cranium. The requisite incisions were made, the scalp was drawn up, and the skull examined without a word of complaint. When the instrument destined to scrape the bone was applied, he once, and only once, uttered a groan. As this case seemed to be hopeless, the man was discharged and conveyed to his parents. Two days afterwards, he was seen two miles from home, cutting spars, and carrying reeds up a ladder.

The following case of feigned somnolency, or loss of sense, is a good example of the obstinacy with which the symptoms of disease may be simulated for the purpose of avenging an injury, or to obtain unjust compensation. A clergyman hearing his wife and servant-maid disputing in the kitchen, went below, and interfered so far as to repel some rudeness offered by the girl to her mistress, which he did by pushing her to one side. The girl fell against the dresser, either by accident or design, whereby she received a slight contusion over her eye. She then ran to the street-door, and told the people that she had been almost murdered by her master; and to corroborate this assertion, she fell apparently into an epileptic fit. Shortly afterward she was conveyed, as one expiring, to an hospital, and the clergyman and his wife were dragged to jail. The windows of his house were broken, his furniture was thrown into the street, and an account of the dreadful murder cried over the whole town. The girl lay for ten or twelve days without showing the least sign of sense or recollection. Mr. Dease having been called into consultation, soon detected the imposture, and the woman almost immediately disappeared. The terror and shame of being so publicly exposed made such an impression on the mind of the clergyman that his life was brought into the most imminent danger, and the expenses attending his confinement greatly injured his fortune.†

Somnolency is, however, a real disease, and may originate without any obvious cause as a symptom of other diseases, or from external injury. Persons whose minds are alienated will frequently remain in bed for several weeks together in a semi-comatose state, resisting every argument and intreaty. This fact, and the following histories of real somnolency, will teach the medical officer to be extremely cautious in pronouncing any such apparent affection to be simulated.

Rudolphi, when in Milan, in 1817, witnessed the case of a journeyman book-binder, nineteen years of age, who was affected with a curious sort of sleepiness, in some degree resembling intoxication. In Rudolphi's presence he fell asleep, although he still continued to fold sheets along with the other workmen. His eyes were shut, and when it was wished to excite his attention, a loud knock was given on the table, by which he was awakened, and then he answered questions. The voice of one of the workmen, who was his friend, excited his attention, even when the tone was low. Upon being partially roused, he looked about with his eyes half open, and seemed to be aware of what was going on around him; for example, when a sheet was purposely folded wrong and given to him, he appeared to be displeased. He wrote a note in Rudolphi's presence. His comrades used sometimes to lead him about when he was asleep, and to make him play at billiards, &c.; but he did not recollect that he had been so employed after he awoke. When allowed to remain asleep for a few hours, he began to snore, nodding his head as many persons do when asleep.

A strong and active hussar, after many an ineffective effort during eight months to rouse him from a state of somnolent listnessness and inattention to his person and duties, was discharged from his regiment, being generally considered as a *skulker*. Being forwarded to Chatham, he came under the care of Dr. Burrell, of the 72d regiment, who, from an absence of every other symptom of disease, was at first led to adopt the same opinion. In the course of a week, however, some difficulty of articulation was discoverable, greater heaviness in his look and sluggishness in motion appeared, which in a few days ended in coma, convulsions, and death. On dissection, two tumours of a firm medullary structure were discovered, in contact with each other, one of the size of a pullet's, the other of a pigeon's egg, situated in the right hemisphere of the brain, and projecting considerably beyond its surface.*

A seaman belonging to one of His Majesty's ships fell from a considerable height, and pitched upon his head: on examination, no fracture or depression could be discovered, the only mark of injury being a tumour of the integuments, which soon disappeared. From the moment of the accident, however, the patient exhibited symptoms of coma, inatten-

* Op. cit. p. 175.

* Military Surgery.

† Dease's Remarks on Medical Jurisprudence.

* Dub. Hosp. Rep. vol. iv. p. 138.

tion to surrounding objects, &c.; and he was therefore bled largely, purged, &c. The soporose state continuing without any other marked symptom, and there being discoverable not the slightest inequality of the bone, or other local indication of any injury beneath, the surgeon began to suspect imposition, and had recourse to the most vigorous counter-irritation, by blisters to the head, &c. partly on account of the painful impression produced by these means. This man at length was invalided, and on his way to England was seen by the gentleman to whom we are indebted for this interesting history, in the Naval Hospital at Gibraltar. At this time he lay in a listless semi-comatose state, rousing up when spoken to, opening his eyes and answering questions very rationally. A very marked symptom in this case was the incessant action of the left hand in alternate flexion and expansion, a symptom which had come on immediately after the accident, and had never since left him by day or by night. When the hand was restrained he seemed more uneasy, and as soon as it was disengaged the motions were resumed. He was sent to some of the naval hospitals in England, and his subsequent history is not known until he came under the care of Mr. Cline in May 1800, in St. Thomas's Hospital. At this time, says Sir A. Cooper, he was in a great degree destitute of sensation and of voluntary motion; his pulse was regular, his fingers were in constant flexion and extension. *He had a depression near the superior edge of the left parietal bone.* Mr. Cline trephined him, removing the depressed portion of bone, and the man gradually and completely recovered.*

43. *Syncope.*—A most disagreeable part of the duty of the medical officer is to attend at the corporal punishment of soldiers and sailors. On these occasions it is not rare for the culprit to feign fainting, in the hope of having his punishment remitted; and the medical officer is sometimes called on to decide. In other circumstances, also, syncope is simulated by soldiers and sailors with the view of obtaining particular ends; and it is occasionally the resource of the mendicant to impose on the charitable.

Except in the extremely rare case of persons having a voluntary power over the action of the heart, there can seldom be any difficulty in discriminating the fictitious syncope from the real. The total suppression of the pulse, or its great diminution in point of strength and volume, the coldness of the surface and of the perspiration, the paleness of the countenance, cannot be assumed at will; and without these, the seeming exhaustion or alleged loss of muscular power will not impose on any person of experience. The state of the countenance alone suffices to indicate the real disease in almost every case.

It is hardly necessary again to inculcate on the mind of the young military or naval surgeon, that he must, in all cases where the slightest doubt exists, take the side of mercy. It is better that he should be a thousand times imposed upon, than that a fellow-creature should be punished while labouring under a severe disease, to say nothing of the risk of death occurring if the syncope is real.

44. *Swelled leg.* (Barbadoes leg.)—Tumefaction of the leg is sometimes excited by soldiers by putting a concealed ligature round the leg and letting the limb hang over the side of the bed during the night. There was a case not long since in Fort Pitt General Hospital, which was supposed by some of the medical officers nearly to resemble Barbadoes leg. This man had been sent home from India to be discharged. On admission into the hospital his thigh measured in circumference twenty-two inches and three-quarters, the calf of the leg seventeen inches and a half, and the ancle fifteen inches. Six days after the ligature had been discovered and removed, the thigh measured twenty inches, calf of the leg fifteen inches, and the ancle fourteen inches. Close examination will almost always detect the impression of the ligature in such cases, and the practice may be prevented by inclosing the limb in a box, or wrapping it in a marked bandage.

45. *Ulcers.*—The formation or irritation of ulcers by artificial means has been in all ages a fertile source of successful imposition to that class of persons who live by exciting the compassion and charity of the benevolent. In former times the more cunning and less daring vagrants imitated ulcers by fixing certain foreign substances on the skin, such as dry, shrivelled leaves, part of the skin of a frog, and even pieces of flesh. A curious case is quoted by Fodéré from an old French surgeon, Pigray, of a young woman who presented herself to the king of France to be *touched* for a large open cancer of the breast, but which, although "le mieux simulé et contrefaict qui se puisse voir," Pigray discovered to be a slice of *spleen* fixed on the mamma!*

The actual formation of ulcers has been much more practised, and in the compulsory military service of all countries has been often carried to a very great extent. This was particularly the case during the late war among the French conscripts, and in the army and navy of this country. The most common site of these artificial ulcers, indeed almost the exclusive site in the army and navy, is the leg, a place, no doubt, selected partly because their existence in that position effectually incapacitates the patient from military duty. These factitious ulcers are either formed entirely by art, or, which is the more common case perhaps, artificially aggravated into great and severe affections from slight sores occurring naturally, or from slight accidents. The means used to effect these objects are very various: vesicants, irritants, caustics, compression, friction, puncture, excision, &c. &c. Sometimes a portion of skin is cut out, and then some irritating substance, such as lime, arsenic, corrosive sublimate, tobacco, the skin of salted herrings, acids, &c. applied to establish the ulcer, after which it is kept up by milder kinds of irritation. Mr. Hutchinson says, that the use of mineral acids is most difficult to detect. There was an old woman, who lived contiguous to the recruiting depôt at Dublin, who had the credit of carrying on a great deal of business in this way among the recruits. Her applications appeared to be a mixture of quick-lime and soft-soap. But one of the most approved methods of operating is the firm compression of a copper coin against the tibia; and we have reason to know that this was the most common practice in the navy. Copper has always enjoyed a great reputation as acting injuriously on the animal body, and it is probable that this reputation has been the chief cause of its being employed to produce or aggravate ulcers, although its main effect depends on the mechanical impression produced by it. Mr. Hutchinson once found, in dissecting the leg of a sailor, which he had amputated for extensive caries of the tibia, a half-penny imbedded between the muscles, "nearly three inches from the margin of the ulcer," and which the man confessed to have thrust into the ulcer nine months before.* Friction with sand seems also to have been extensively employed to produce ulcers; a process termed in the flash language "*fox-hunting.*"† An experienced eye will readily distinguish between an ulcer of recent formation asserted to be old, and one really old; but it is not so easy to discriminate one of long standing, kept up by repeated slight irritation, from a natural ulcer. In some cases, after the establishment of the ulcer, so refined has been the imposition that a blister has been applied *round* it, with the view of producing the red glossy appearance possessed by the cicatrix of ulcerated parts. But the most distinguishing difference is the ready curability of the factitious ulcers, when secured from the tampering of the patient.

When once a soldier or sailor is suspected of keeping an ulcer open, the obvious means of the treatment are, seclusion if practicable, and defending the ulcer from injurious applications. The most common methods adopted by medical officers to effect this last object have been to seal the bandages, or to inscribe on them, after they are applied, coloured lines drawn along the limb in such manner that it would be impossible to re-produce them if the bandage were removed and re-applied. Even these precautions have not always been found sufficient. Some of Mr. Hutchinson's patients kept up mechanical irritation by means of pins thrust through the bandages. He was therefore under the necessity of locking up the whole limb in a wooden box contrived for the purpose, and this he found an effectual remedy.

46. *Vomiting.*—Some persons possess the power of expelling the contents of the stomach at pleasure, and thereby simulate disease of that organ. In 1828, a soldier was for about six months in the General Military Hospital, at Dublin, on account of supposed disease of the stomach, chiefly indicated by a frequent disgorging of his food. About the end of that period it was ascertained that, instead of losing flesh, he increased in weight, a circumstance which was considered conclusive evidence that he did not suffer under any material disease. He was forthwith discharged from the hospital, and we have ascertained that he afterwards performed his duty efficiently. Vomiting became epidemic in the hospital during the time this man was a patient, but it ceased as soon as he was returned to his duty. Percy, in his article on simulated diseases, in the Dictionnaire des Sciences Médicales, mentions the case of a drummer who for a long time deceived the medical officer of an hospital by ejecting the contents of his stomach. He could at pleasure regurgitate his food. In a quarter of an hour after he had swallowed soup, he used to return the whole, apparently with great pain and general distress. It was eventually discovered that he privately purchased solid food, particularly hard-boiled eggs, which he did not vomit, and the imposture was thus detected.

Mr. Hutchinson mentions a case of feigned, or rather of factitious vomiting in a sailor, which was produced by voluntary compression of the epigastrium. The vomiting returned periodically, and upon the cause being discovered, was at once prevented by securing the patient's hands. Mr. Hutchinson adds, that he is thoroughly convinced of the existence of this power in certain persons to excite vomiting by pressure on the region of the stomach whenever they please.* Dr. Cheyne says that vomiting is voluntarily produced by some persons by swallowing air and then eructating, in which process part of the contents of the stomach is brought up along with the returned air.† We are, however, cautioned by this distinguished physician not to be too hasty in deciding on the nature of vomiting in suspicious cases, as he himself confesses to have been in one case deceived by a pretended vomiting, and in another to have considered a case of vomiting as feigned which eventually proved fatal.

47. *Wounds.*—These have often been feigned when they had no existence; have been greatly exaggerated when slight; and have been artificially produced by the patient or with his concurrence, in a very aggravated form.

*a. Factitious wounds.*—The pretence of being wounded when uninjured, or of being severely wounded when only slightly hurt, has ever been the resource and refuge of the coward in the day of battle. This practice has even been carried to such an extent as seriously to affect military operations. Cæsar, in his account of

* A. Cooper's Lectures, by Tyrrell, vol. i. p. 312.

* Fodéré, tom. ii. p. 486.

* Loc. cit. p. 88.
† *Dunlop*, in Beck, p. 3.

* Loc. cit.
† Dub. Hosp. Rep. p. 165.

the blockade of Utica, speaking of the wounded in a skirmish wherein the enemy were driven with great terror into their entrenchments before the city, says, "qui omnes, discessu Curionis, multique præterea, *per simulationem vulnerum*, ex castris in oppidum propter timorem se recipiunt. Quâ re animadversâ, Varus, et terrore exercitûs cognito, buccinatore in castris et paucis ad speciem tabernaculis relictis, de tertiâ vigiliâ silentio exercitum in oppidum reducit."* In the official report of the capture of Tarragona by the French, in 1811, Count Contreras, the governor, complains of having lost a great many officers in the last defence by their having *feigned wounds* in order to avoid military duty.† "I have many times known," says Northcote, "cowardly lubbers during action come tumbling down the ladder with most violent groans and complaints, though, at the same time, they have received little or no hurt, and all I could do or say could not prevail on them to make a second trial of their courage, nor go up again till the action was all over. Nay, I have been told by those quartered at the same gun, that some dastardly fellows have actually put their feet or stood in the way of the carriage, on purpose to be hurt, that they might have a plausible pretence for going down to the doctor, which I must own I have great reason to believe, having sometimes met with such contusions in the legs and feet, occasioned (according to their own confession) by the carriage, but at the same time so slight as was scarce worth mentioning; though sometimes very violent, at other times there was scarce any injury or contusion to be perceived, notwithstanding the most grievous complaints of pain and uneasiness."‡ Very distinguished men have had the meanness to simulate wounds. In one of his expeditions, Gustavus Adolphus is said to have pretended that he had received a contusion in the leg from a musket-ball, and, as a proof of the fact, exhibited a red spot on his leg and a corresponding blemish on his boot, which refused to receive the usual polish.§

One of the writers of this article was requested to visit an officer for the purpose of examining a gun-shot wound, which he alleged he had received from the enemy in his left arm. Upon examining the site of the wound, no injury could be discovered, except an abrasion of the cuticle, about the size of a large pea. The injury seemed to have been occasioned by a pen-knife rather than by a bullet. Care had been taken to destroy the sleeve of the jacket, so that it was impossible to learn any thing positive regarding the alleged cause of the wound by examining the clothes. Officers have been frequently accused of feigning wounds or contusions after a battle with the view of having their names recorded in the Gazette, or for the more sordid purpose of claiming a pension.

In a case of feigned wound without loss of continuity, which came under our own notice, the man had stained the part to represent the purplish yellow hue of ecchymosis on the decrease, alleging that the contusion had been received some days previously.

*b. Factitious wounds. Mutilation.*—The infliction of wounds by the individual, chiefly for the purpose of mutilation, is a practice which has prevailed in all ages and countries where military service has been forcibly imposed upon men. Mutilation was a frequent practice among the conscripts of ancient Rome, more especially during the decline of the empire; and it would appear that it is from the most common species of mutilation among them, viz. by cutting off the thumb (*pollicem truncando*) that our modern word *poltroon* is derived. At first this sort of mutilation exempted the individuals from service; but afterwards the law was altered, and in the prescribed levy from any district, two maimed recruits were only reckoned as *one*. Soldiers who voluntarily disabled themselves were branded and still retained in the service. Mutilation was very frequent among the French conscripts during the wars of the Revolution and the Empire; and the same regulation was eventually adopted in France among the Romans, viz., the retention in the service of all men whose mutilation could be proved to have been intentional. A species of mutilation very common among them was the extraction of the incisor teeth, or the filing them down below the gum, a condition of parts which prevented the soldier from biting off the end of his cartridge in loading his musket.

Mutilation has been very prevalent in the army and navy of this country; and the modes in which it has been effected have often been more than usually bold and severe. The wounds have frequently been inflicted during battle, or in a crowded barrack-room, with the view of giving greater plausibility to their alleged accidental occurrence. Frequently, however, more especially in the navy, the act of self-mutilation has been openly practised.

During the late war a naval officer went on board a merchant vessel at Yarmouth for the purpose of impressing seamen, and while on board said, jestingly, to a boy about ten years of age, that he would take him with some others; upon which the lad ran below, and immediately returned with one of the fingers of his left-hand cut off, exclaiming—"You can't take me now! My father cut off three fingers that he might not be pressed, and I have done the same!" A seaman in the Ambuscade cut off his thumb in the presence of his officers, in a sudden fit of anger and despair at being kept in the service at a time when some others were discharged; and several instances have come to our knowledge where seamen cut off the whole or greater part of their hands, with the

* De Bell. Civ. lib. ii. 35.
† Courier, July 30th, 1811.
‡ Northcote's Marine Practice of Physic.
§ Historical Sketch of the last Years of the Reign of Gustavus IV. of Sweden, p. 57.



avowed purpose of obtaining their discharge. Others, again, who have committed similar mutilation of their persons, have pretended that they were done by accident.

In many cases of mutilation the object of the men is two-fold,—to procure their discharge from the service, and to obtain a pension. The self-inflicted wounds of soldiers are most commonly produced by the musket; and they almost always pretend that they have been accidental. During the period of four years from 1824 to 1828, there were twenty-one soldiers pensioned in Ireland on account of injuries they had received in one of their hands by the explosion of their own muskets. Recent regulations in the army deprive soldiers of pensions who are disabled by such accidents, except they occur in the performance of military duty; and if the mutilation is proved to be intentional, the individuals are still retained in the service, although unfit for the ordinary duties of a soldier. Mutilation occurs in the army more frequently in the hands and fingers than in any other part of the body. In one regiment, however, where the practice became so far epidemic that nine cases of mutilation by the explosion of muskets happened in the course of six weeks, the lower extremities chiefly suffered. We have known a number of cases of mutilation occur among soldiers when they were on a visit to their friends; and little doubt could be entertained that the maiming was voluntary. The injury commonly occurred about one or two days before the expiration of the furlough.

Mutilation has been practised, but much more rarely, by parish paupers, with the view of obtaining immunity from labour. It has also occasionally occurred among slaves in the West Indies; but we have been told that their animal courage is seldom sufficient to prompt such bold measures.

There will rarely, if ever, occur any difficulty on the part of the surgeon in detecting the imposition in the case of wounds being alleged to exist when no wound has been received. In the case of self-inflicted wounds or mutilation, however, it will not always be easy to prove that they have been intentionally produced. The proof will rest sometimes on the nature of the wound, sometimes on the circumstances under which it is stated to have occurred, and sometimes on other collateral circumstances. In the case of a soldier or sailor it will often be a matter of great importance to the individual, that the decision come to is the true one; as it will frequently have the effect of obtaining for him his discharge from the service, and perhaps a pension, or of depriving him of both advantages, and perhaps entailing punishment also. In forming his opinion of the probability of the wound being self-inflicted, the surgeon will be guided by the consideration of the nature and extent of the wound, its situation, the nature of the alleged cause, &c. For instance, if the wound be of such a kind as renders it improbable that the patient either could or would have inflicted it; if it be of great extent and more than sufficient to effect the object the perpetrator may be supposed to have had in view,—if it be in a part of the body to which the patient's hands, or an instrument wielded by him, could not have reached,—the probability certainly is that it is accidental. On the other hand, if these circumstances are reversed, and if the mode in which it is stated to have occurred is improbable or impossible,—if the alleged cause or instrument is ill calculated or not at all calculated to produce the effect,—the surgeon will be more disposed to regard it as voluntarily inflicted. The examination of collateral circumstances will often afford more positive evidence than grounds of a merely medical kind. The following case affords an example of both kinds of evidence. A seaman on board one of His Majesty's ships lopped off two of his fingers with an axe upon a post, in the fore part of the ship termed *the manger*, and in the confusion of the moment left them there. He then ran down into the hold, and uttering a piercing cry rushed on deck, exhibiting his mutilated hand, and asserting that he lost his fingers by the accidental collision of two water-casks. Here the character of the wound sufficed to disprove the truth of the alleged cause;—no collision of casks could produce so clear a wound, or so complete an amputation; still more certain evidence, however, the man's own stupidity afforded; for shortly after his two fingers were found on the manger, and lying near them the axe which had divided them.

The improbability or even impossibility of a wound being inflicted by the patient himself, is, however, no certain proof that it has not been inflicted intentionally; since the unhappy men have been known, like the ancient Romans, to assist each other in the perpetration of this partial suicide. Instances of this kind have been mentioned to us both in the army and navy; the wounds being produced both by fire-arms and cutting instruments. During the late war we remember an instance of a father cutting off one of his son's fingers to prevent him serving in the militia. There was a young convict on board the hulk for boys at Chatham, not long since, who placed his right arm over a space between two beds, and got a companion to strike the fore arm with a long piece of wood. Both the bones were thus fractured; and even after the arm had been put up in splints, he found means to displace the bones, and thereby prevented a perfect union.

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In concluding this article, we cannot dismiss from our minds the possible impression it may leave on the minds of junior medical officers in the public service; whom we would guard, on the one hand, if possible, from suffering a spurious humanity to be detrimental to the interests of the army or navy, and, on the other, with even more anxiety, from the vain desire of acquiring temporary consideration by a stubborn and cruel incredulity, or by an affected

shrewdness in detecting imposture where no imposture may exist.

There are cases mentioned in the preceding part of this article, which shew, indubitably, that the simulation of disease has frequently been practised without the existence of any interested motive, indeed without motive of any kind; that there is, in short, a species of monomania of which this simulation is the characteristic. Such cases may occasionally be remembered with advantage.

But there is another consideration equally worthy of being entertained by all who do not wish the common feelings of a man to be lost in those of a mere disciplinarian. For notorious malingerers we are in no degree disposed to plead; but when instances of deception become *frequent*, in any country, in any garrison or station, in any regiment, or in any ship of war, the question may very reasonably present itself—is there not something wrong in the arrangement of the place, in the government or administration of the particular portion of the community in which such frequent deceptions are resorted to;—something which, acting injuriously on the bodies or the minds of the men, is therefore not beneath the consideration of the medical officers of the establishment, who alone can appreciate the mischief, and by whose mediation alone it is likely to be remedied? The privilege conferred by their profession, of being *the friends of mankind*, is one which ought not to be willingly resigned.

The negro-slave, and the conscript of an imperial conqueror, may be equally placed beyond the pale of such considerations; but the British soldier or sailor ought never to be so: even the convict is not shut out from mercy. The condition of both soldiers and sailors has, during late years, been much ameliorated; and deceptions are less frequent both in the army and navy than of old. These amendments in their condition have often arisen out of the representations of enlightened and humane medical superintendents. Wherever, therefore, we repeat, the instances of imposture are numerous,—wherever these manifestations of discontent are frequent among men whose general characters afford an assurance that in ordinary circumstances they would not prefer pain and privation to duty; the circumstances in which such opposite and desperate resolutions are taken, should undergo the most scrupulous and fearless investigation. Such a duty is enjoined by an authority higher than any temporary authority to whom its performance may happen to be disagreeable.

(*J. Scott.—J. Forbes.—H. Marshall.*)



Sir James McGregor Bart
with the Author's best wishes

# PSEUDO-MORBID APPEARANCES.

BY ROBERT B. TODD, M.B.

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# PSEUDO-MORBID APPEARANCES.

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There are three conditions in which any tissue or organ of the body may be found, between which it is necessary to discriminate with accuracy, in order to form correct inferences in morbid anatomy. The first of these is the natural or healthy, which we find to present certain varieties either of colour or density, according to the age of the subject. The second is the abnormal or morbid, and is to be regarded as the result either of some perversion of the development of a part, or of the influence of disease upon it. The evidence of this condition is derived in the one case from some congenital malformation, and in the other from certain appearances which the texture of the part exhibits, and which vary in aspect and extent, according to the duration and violence of the disease: these are the morbid appearances. The third condition differs from both of those above-mentioned, yet in some points resembles the morbid. This condition is in general produced by causes which come into operation after death; sometimes, however, they may partially take effect a short time before death; and sometimes it may owe its rise to other causes, hereafter to be noticed, and only in action during life. The appearances which characterize this condition of the tissues of the human body may be denominated *pseudo-morbid appearances*, as being liable to be confounded with and as it were simulating those which are morbid.

Although the attention of pathologists has been a good deal directed to this subject of late years, we find but little written upon it, and the term pseudo-morbid in limited use. Dr. Yelloly, in a paper published in the fourth volume of the Medico-Chirurgical Transactions, was the first to point out that the mucous membrane of the stomach may exhibit an increased degree of vascularity under certain circumstances, independently of inflammatory action. In France, the extravagant assertions of Broussais, who, in order to establish a favourite hypothesis, pronounced every increase of redness to be indicative of inflammation, had the good effect of inducing anatomists to inquire whether other causes than disease could similarly alter the aspect of the tissues. By the researches of Trousseau and Rigot,* and also of M. Billard,† much light has been thrown upon the post-mortem changes which occur in the body, and which give rise to appearances often very similar to those of inflammation. We are likewise indebted to John Hunter, Allan Burns, and more recently to Dr. Carswell and Orfila for much interesting and valuable matter, which we shall presently have occasion to notice.‡

It may be well to state our reasons for the

* Archives Gén. de Méd. October and November 1826, and July 1827.

† De la Memb. Muqueuse Gastro-intestinale.

‡ Although distinct treatises on this subject are rare, we must not omit to state that it has received due attention in several modern works, either on morbid anatomy in general, or on particular parts

adoption of a hybrid term, *pseudo-morbid*, in preference to others more generally in use. Let it be observed that we employ the term in question to denote those appearances in any given tissue which might be mistaken for the effects of morbid action in that tissue. To apply the terms *cadaveric* or *post-mortem* to such phenomena would be to limit their number and causes; whereas it will appear in the sequel that some tissues of the body may present appearances which must be regarded as *pseudo-morbid*, and which result from the action of causes operating *before* death. We are not aware that the term is employed by any writer except the author of an analysis of MM. Trousseau and Rigot's papers above-mentioned, which is to be found in the 28th volume of the Edinburgh Medical and Surgical Journal, and Dr. Christison, in his very valuable and elaborate work on Poisons. Under this denomination, then, we would be understood to include all appearances in the dead body which might be mistaken for morbid appearances, whether they arise from the action of causes antecedent to death, or whether they be strictly such as are now generally spoken of as *cadaveric* or *post-mortem* appearances.

In the great majority of cases, a more or less gradual diminution of the vital powers precedes dissolution. The influence of life in preserving the integrity of the membranes of the body, whether it act through the nervous system or in any other way, gradually diminishes, and a corresponding change is manifested. This is most conspicuous in the capillary circulation, which becomes impeded to a variable extent in several places, the vessels being less capable of resisting the force of gravitation. This disturbance of the capillary circulation may be noticed in almost every tissue in the body. In the agony of death, the same cause, it is natural to expect, will operate to a greater degree, and at the same time the occasional muscular contractions, which often mark the final struggle, must mechanically cause irregular distributions of the blood in the sanguiferous system. The extent to which these irregularities take place is in general proportionate to the strength of the patient (inversely), to the duration of the struggle, and in some cases, we conceive, to the degree of fluidity of the blood itself (directly). Any one who has ever watched a patient in the last stage of typhus fever will not want further testimony in favour of the accuracy of the preceding statements. The general cutaneous *hyperæmia* of the back and dependent parts indicates that the laws of gravitation have begun to operate to a much greater extent than during the state of health.* We may also adduce the *pneumonie des agonisans* of M. Laennec, the *engouement de position* of Andral, or the *pneumonie hypostatique* of Piorry, as additional corroborative evidence.

But even when life is in full vigour, local sanguineous determinations may occur independently of the immediate operation of disease on the part in which they appear. Thus the performance of particular functions may cause an afflux of blood to the particular organs; as for example, while the function of digestion is going on, we find that a marked change is produced in the colour of the mucous membrane of the stomach. Again, if any obstacle occur to the free return of the venous blood, there is in general formed a congestion of the capillary system to a greater or less extent; this is more conspicuous where the veins are destitute of valves, as in the mesenteric veins, the pulmonary veins. Hepatic disease, by compressing one or more ramifications of the vena portæ, and some forms of disease of the heart, are very frequent causes of the local determinations to which we allude.

With the cessation of life is removed all opposition to the full scope and play of gravitation and chemical affinities, the former of which was partially in operation during life. The manner in which the fluids seek the dependent parts is clearly to be attributed to the action of gravitation. In fact it has been proved to be so caused, over and over again, by the simple experiment of turning the body occasionally, so as to change the dependent parts; in this case the blood is invariably found to leave the vessels that were before lowest to seek those that now are so. Bodies being usually placed supine after death, the integuments on their posterior surfaces are uniformly found congested, but if the body be placed immediately after death on the face and abdomen, a similar congestion will present itself in the integuments covering those parts.

The effects produced by the operation of chemical affinities are apparent in the alterations in the texture, the density, and the specific gravities of the tissues: gases are evolved, new fluids are formed, and the membranes are often considerably discoloured; in short, in the action of these affinities consists the putrefactive process, whereby new compounds are formed, and the former constituents of the body almost wholly vanish. We find considerable variation in the period of commencement and rapidity of course of this process, not only as regards different bodies compared with each other, but also with respect to particular parts of the same body. The age and habit of the individual, the quantity of the fluids, the kind of death, as well as the circumstances which preceded it, the season of the year, climate, state of the atmosphere, are so many circumstances which exert a powerful influence on the rapidity of the phenomena of this process, as must be familiar to every one who has studied anatomy even in the most superficial manner.

To the action of these same chemical affinities, we think, may be fairly attributed, at least in part, a very evident cadaveric phenomenon; namely, that increased porosity of the membranes by which the contained fluids are allowed to transude through the coats of the canals or sacs which hold them. We say *increased* porosity, for it must be admitted as the result of recent experiments, that transudation may take place to a slight degree even during life.* Life, then, must be supposed to operate in limiting this porosity, by preventing the action of the chemical affinities; when life ceases, these affinities come into play, and there takes place a separation of the molecules of the tissues to a degree proportionate to the extent of action of the same affinities. There is no part of the body in which we do not observe this phenomenon; it is not confined to sacs with simple parietes, but extends also to those of which the walls are compound; we observe it to take place through the coats of vessels, through the walls of any or all of the membranous viscera, and even through serous membranes.

The alterations which are produced, then, on the several organs or membranes of the body by the action of the agencies above detailed, may be stated in general to be—1. such as affect the colour of parts; 2. such as alter their density or consistence; 3. such as alter the contents of a natural cavity, as for example a serous sac, by increasing or diminishing the quantity, or altering the nature of fluid in it.

We proceed to consider these effects as they manifest themselves in the different parts of the body, and we shall adopt the order usually followed in making a post-mortem examination, commencing with the external integument and the cellular tissue, then proceeding to the contents of each of the three great cavities, head, thorax, abdomen; and, finally, to the arterial and venous tissues.

1. *The external integument.*—The alterations in colour which the skin presents after death, are almost the only phenomena which it exhibits liable to be mistaken for those of disease; and even they are so distinct in the mode of their formation, that any mistake must arise from a very superficial examination. Spots of various degrees of redness, and also varying in extent, are almost uniformly observable on the dead body. In general they are of a dark red, which increases in depth of colour with the length of time that has elapsed from the death of the subject. As this cutaneous discoloration is principally owing to the influence of gravitation, we find it uniformly on the most dependent parts, the occipital portion of the scalp, the posterior surface of the neck, the back, nates, posterior parts of the thighs and legs. That it is confined to the skin may be seen by cutting into the corion where the redness exists. It is moreover to be observed that this redness is vascular, and that the surface of the skin presents the appearance of a ramiform distribution of vessels. This is important, as characterizing the kind of discoloration arising from gravitation, and distinguishing it from that which may be the result of the pressure of ligatures or vestments, &c. on the surface before death; for in this latter the redness will be found to be diffused and uniform, without any appearance of vessels.

But cutaneous discolorations or lividities may occur in situations not dependent, and at a more advanced period after death, being phenomena purely cadaveric. When decomposition has fully set in, and gases are being disengaged in the stomach and intestines, the surface of the skin of the face and neck becomes of a livid colour; the superficial veins are full, and streaks of a dark colour indicate the course of most of them. This congestion Chaussier attempted to explain by attributing it to the compression of the right auricle of the heart by the diaphragm, which was pushed up by the stomach distended with gas; and he states that by producing a similar distention of the stomach artificially, viz. by the introduction of a fermenting mixture into it, he was enabled to exhibit similar effects on the cutaneous capillary system. The compressed right auricle causes in the blood a retrograde motion from venous trunks to branches, from the branches to the capillaries, which is the more easily done, as at this period the blood has to a considerable degree resumed its fluidity. To this fermentation and gaseous development may be attributable, as Chaussier further observes, the passage of pieces of food from the stomach into the pharynx, larynx, and bronchi, the passage of worms into the bronchi, nasal fossæ or mouth.*

2. *The cellular tissue.*—The subcutaneous cellular tissue is generally more or less discoloured in the neighbourhood of or immediately beneath the cutaneous discoloration. Here, however, the change of colour takes place from a two-fold cause,—the gravitation of the fluids in the vessels, as well as the transudation of the serous portion of the blood through the vascular parietes. These two causes generally reduce the subcutaneous tissue to an anasarcous condition, which of course increases with the progress of decomposition; the serous portion of the blood, too, becomes more and more tinged by the colouring matter. We need hardly refer to the common appearance of the cellular membrane under the integuments of the back, with which every student of anatomy is familiar, in proof that this is the ordinary condition of that membrane, and that too within a very short period after death, as the effect of gravitation and transudation. But as putrefaction advances, and the blood resumes its fluidity, we observe ecchymoses to form in the subcutaneous tissue, the distinction of which from the effects of contusions before death is sometimes an important task for the medical jurist, and is rendered

of it. We need hardly refer to Andral's invaluable Treatise on Pathological Anatomy. In Laennec's work, also, and in those of Bertin and Hodgson, constant allusion is made to appearances supposed to be cadaveric or produced in the agony of death.

* See an interesting essay by Bourdon, entitled "De l'Influence du Pesanteur sur quelques Phenomènes de la Vie." Paris, 1823.

* See the experiments of Poderé on absorption; of Dutrochet; and the Observations of Bouillaud on Dropsies.

* *Chaussier*, Médecine Légale, & Table des Phénomènes Cadavériques.

more difficult by the fact that these ecchymoses do not seem to be formed under the influence of gravitation, being found even in elevated parts. Although it does not strictly come within the range of this article, it may be proper to mention that the following circumstances, noticed by Orfila, will assist in distinguishing these cadaveric ecchymoses from such as may have been formed by violence or otherwise before death:—1. Their situation, which will generally be found in those localities where the cellular tissue is very lax and distensible, as in the occiput, loins, eyelids, and scrotum; 2. the general evidence of an advanced stage of putrefaction presented by the dissolving condition of all parts of the body; 3. the uniformity of colour presented by these ecchymoses, which is not usually observed in those made during life.*

Subcutaneous ecchymoses, however, may be produced by direct violence applied to the body shortly *after* death, as has been proved by experiment by Dr. Christison, and as may often be seen in the dissecting rooms. Effusions of blood into the intermuscular cellular tissue, it is important to bear in mind, may likewise be produced by violence to the body after death. During the winter 1830-31, we had occasion to notice this fact upon bodies which, from the then imperfect state of the laws regarding dissection, were conveyed to London tightly packed in boxes from distant parts of the country. In such bodies extensive extravasations of blood into the cellular membrane between the muscles of the back were uniformly present. This fact had been likewise previously well ascertained by the happily devised experiments of Dr. Christison on the occasion of the murders committed at Edinburgh.†

We do not find any induration of the cellular tissue of a pseudo-morbid character; but it may be remarked, although the fact cannot have escaped the most superficial observer, as a post-mortem result, that this tissue is frequently emphysematous, and, indeed, always so after a certain period in the work of decomposition, but sometimes very soon after death, as in some low and putrid fevers, &c.

3. *The head.*—On opening the cranium, the attention is first directed to the quantity of blood contained in the small venous trunks which are seen ramifying on the surface of the dura mater and in the sinuses. It was long ago noticed by Vicq d'Azyr, and subsequently by Marc, that the straight sinus and torcular Herophili uniformly contain coagulated blood, in consequence of the blood when fluid flowing to that dependent position. On the same principle we may expect to find the superficial veins of the dura mater more distended towards the posterior portion of that membrane. With respect to the general appearance of the dura mater, the anatomist has only to take care that he attributes a condition of hyperæmia of it, whether local or general, to its proper cause: in consequence of the fibrous character of this membrane it is not liable to a diffuse discoloration, such as some of the other tissues are, nor do we find any alterations of its consistence which are at all likely to be mistaken for morbid ones. In fact it resists the putrefactive process for a considerable time, as do all membranes of the same nature. It is proper, however, to remember that a *hyperæmia* of this membrane may be developed in the progress to decomposition, by the disengagement of gas in the stomach, and the compression of the right auricle, in the same manner as Professor Chaussier supposed some cutaneous lividities to be produced, as already alluded to.

When the dura mater, with its adherent layer of arachnoid, has been slit up, so as to expose the visceral layer of the latter membrane, and in fact to open into the arachnoid sac, the anatomist generally looks first for some effusion between this membrane and the subjacent pia mater. We fear that in general too much stress is laid upon the occurrence of effusions between the arachnoid and pia mater. Here what is really a natural condition is very apt to be mistaken for a morbid one; and, on the other hand, the total absence of effusion is too often regarded as indicating a state of health, when such a conclusion can be by no means constantly deduced. The interesting discoveries of M. Majendie relative to what he has termed the cephalo-spinal fluid, deserve more attention than seems to have been bestowed upon them by most practical pathologists. The principal conclusions at which he has arrived are the following:—1. That in the state of health there exists a fluid between the visceral layer of the arachnoid and the pia mater, both of the head and spine; the quantity of which is never below two ounces in the adult, and often amounts to five in subjects of large stature, and whose cranium is not of small dimensions;—that the fluid contained in the spine communicates with that in the head, and vice versâ, so as to pass freely from one cavity to the other;—and that a portion of the same fluid is found in the lateral, the third and fourth ventricles of the brain, which communicate with the space between the arachnoid and pia mater by an opening situated at the inferior extremity of the fourth ventricle, between the upper part of the spinal marrow and the valve of Vieussens. 2. That this fluid may be demonstrated in full quantity either during life, or at a short time after death; but after a period of little more than twenty-four hours it becomes absorbed, and therefore diminished in quantity, or altogether removed: if after that period sub-arachnoid effusion of this kind exist, it is to be considered either as entirely a post-mortem appearance, or the remains of the natural effusion, to which had been added a quantity of fluid, the result of morbid action. 3. That a diminution as well as an increase in the quantity of this fluid is capable of producing serious disturbance in the functions of these important portions of the nervous system. It is plain, therefore, from the above abstract of Majendie's discoveries respecting this cephalo-spinal fluid, that it would be always difficult, and often impossible, to decide whether a sub-arachnoid effusion be a natural, a morbid, or pseudo-morbid phenomenon. Unless the effusion be very considerable, and have been found very shortly after death, we cannot with certainty pronounce it to be the effect of disease. But those which are found forty-eight or seventy-two hours after death are for the most part pseudo-morbid, being caused by the transudation of the serous part of the blood through the vascular parietes, so much so that, in opening a body two or three days after death, we may invariably expect to find sub-arachnoid effusion to a greater or less extent. We conceive that a due attention to these facts connected with the cephalo-spinal fluids will sufficiently account for the surprise or disappointment which some have expressed respecting the want of coincidence between the severity of symptoms and the extent of effusion.

The degree of colour of the pia mater is often increased by the same causes which we have already enumerated as influencing post-mortem sanguineous determinations: in this case it will always be found that the other tissues within the cranium which admit red blood are similarly congested. In some cases this congestion may go so far as to produce extravasation; and if the body has lain long after death, the serum effused between the pia mater and arachnoid will be more or less tinged with the red particles of the blood. We may here remark further, that sanguineous extravasations from apoplexy, if extending into the cavity of the ventricles, will communicate their colour to the cephalo-spinal fluid, provided the natural communication of the internal cavity of the brain with the sub-arachnoid cavity be not interrupted.

With respect to the encephalon itself, it may be stated that in general (such obvious cases as apoplectic clots, abscesses or tumours being excepted) it is extremely difficult, nay, often impossible, to decide between the morbid and pseudo-morbid states of this organ. This latter state is such as manifests itself by a change in the colour and consistence of the cerebral tissue. As to colour, we find it, here as elsewhere, influenced by the quantity of fluid blood in the viscus: in the cortical substance, from its much greater vascularity, that discoloration is most likely to appear; and it is of the first moment to distinguish it from the redness of inflammation, because we find that the same colour may be the result of an active determination of blood to the brain, as well as arise from a mechanical congestion of its membranes and substance. To determine this question it will be necessary to note accurately certain collateral circumstances—the condition of the arterial and venous system of the head generally—the degree of plenitude or vacuity of the heart, whether it afford any obstacle to the free return of the blood, or by an increase in its propelling power magnify the momentum of the columns of blood to the head—the position in which the head of the individual has been laid since death—and also whether putrefaction has begun, or the degree to which it has advanced.

The alteration in consistence, by a diminution of it, (*softening,*) is the most constant and obvious change which the brain and spinal marrow present. This softening is equally the result of disease and of the tendency to decomposition. Before proceeding to indicate the distinctions between these two kinds of softening, it may be well to notice that in the state of health different parts of the cerebro-spinal axis present a marked difference as to consistence. Thus, in the adult, the spinal marrow is softer than either the cerebellum or cerebrum; the cerebellum than the brain; both these parts softer than the pons Varolii. In the child the spinal marrow is firmer than the brain, and more resisting than in the adult.*

The morbid and pseudo-morbid softenings present many characters in common, as to situation, colour, smell: indeed, we have no sign sufficiently free from ambiguity to indicate either of these conditions with certainty: both attack the grey substance most frequently, and before the white; both exhibit the same varieties and shades of colour—with this exception, that in the morbid softening we often see the affected part of a bloody tinge, arising from a slight sanguineous effusion: sometimes a purulent infiltration is found, which is obviously decisive. In the extent of these two forms of ramollissement, we have a more certain indication of their cause; the pseudo-morbid will generally be found to pervade the whole cerebral mass, varying perhaps in degree according to the above-mentioned scale of natural variations of consistence, but the morbid ramollissement is almost invariably circumscribed. We say *almost*, because a morbid ramollissement has been met with of unusual extent, occasionally in the adult, but more frequently in the new-born infant. A state of general ramollissement of the brain is met with in cases of general anasarca, and differing very much from morbid softening. It arises from the infiltration of the brain by the fluid effused in the cranium and beneath the arachnoid. It can be produced in the dead body by injecting water through a small opening made in the head; the whole fluid injected will not be found in the serous membrane.†

M. Orfila suggests the propriety of pronouncing with caution on a morbid ramollissement merely from its locality being defined, because the cadaveric softening does not begin at the same time in all parts; the fornix, septum lucidum, and walls of the lateral ventricles, being the situations in which it first shews itself.

* *Orfila*, Leçons de Médecine Légale.

† Ed. Med. and Surg. Journal, vol. xxxi. p. 243.

* *Orfila*, Exhumations Juridiques, tom. ii. p. 225. Such is undoubtedly the case at the usual period after death when post-mortem examinations are made. But we are disposed to think with Calmeil, that immediately after dissolution the spinal marrow is of firmer consistence than the brain. The Essays of this author on the Anatomy and Physiology of the Spinal Marrow are well worthy the reader's attention. Vid. Journal de Progrès des Sciences Méd. tom. xxxi.

† *Gendrin*, Hist. Anat. des Inflammations, vol. i. p. 188.

The spinal marrow is remarkable for the rapidity with which it softens. Every anatomist knows that in order to dissect that organ satisfactorily he must obtain it from a body quite recently dead, and that even then a short exposure to the air causes a rapid diminution in its consistence. The internal grey substance seems more prone to this diminution of consistence than even the white, and hence the great diversity of opinion among anatomists respecting its exact form and characters in a state of health. However, in this organ there does not appear, so far as we at present know of its morbid states, any difficulty in distinguishing the pseudo-morbid softening from that which is caused by disease; for the circumscribed locality of the latter, with the augmented vascularity of the surrounding portion, and slight sanguine tint of the softened part, will in general be sufficiently characteristic. We are not aware that such a decidedly pathological general ramollissement of the cord has been found as we have noticed in the brain.

4. *The thorax.*—On opening the chest in the usual way, the membrane of the pleura first attracts notice. After the lapse of some time from death, an effusion is invariably found in this serous sac, which is liable to be mistaken for a morbid one. The subserous cellular tissue and the pulmonary substance being abundantly pervaded by fluids, it follows that a transudation of them must necessarily occur after a certain period, and of course they will be collected into the sac of the pleura. The bloody colour of this fluid, its serous character, the absence of any organizable matter such as serous membranes are prone to secrete, are sufficient to prove that this is not a morbid phenomenon; moreover, it will seldom be found except in a body examined at least forty-eight hours after death, and its quantity will be in proportion to the condition of the body as to decomposition. Sometimes, but rarely, gaseous effusions take place in the pleural sac; they are in general complicated with old pleuritic effusions, and result from their decomposition, thus constituting one of the species of pneumothorax described by Laennec. Whether this disengagement of gas takes place before or after death is not easily determined; probability is in favour of the latter, but the experiments of Gendrin seem to indicate the presence of a variable quantity of gas in the chest in very acute pleurisies, appearing just when the inflammation seems to have arrived at a certain degree of violence.

In the mucous membrane which lines the air-passages, from the larynx and trachea to the minutest bronchial ramification, discolorations occur from various causes, which are extremely likely to deceive even a practised eye. In the larynx, trachea, and larger bronchi, this discoloration is not so variable. We here find a passive hyperæmia from the gravitation of the blood, in which case the mucous membrane is only partially congested. We also find here a congestion from obstruction to the circulation generally, dependent on disease of the heart; but in the minute bronchial ramifications we find not only the influence of gravitation or transudation after death producing alterations in the aspect of the membrane, but likewise these causes are apt to take effect in the struggle of death, or even some time before death in very debilitated persons. The progress of putrefaction in general produces a very marked and diffuse brown colour of the mucous membrane, much more intense in the smaller tubes. To be able to decide upon any one of the above species of hyperæmia of the bronchial membrane will require a careful consideration of coexisting circumstances. In the latter instance the general condition of the pulmonary and the other tissues as to their state of preservation, will materially assist; in the other cases the injection is ramiform, and the membrane does not appear so uniformly dyed, the redness being chiefly limited to dependent parts; and the state of the heart or great vessels will assist further in deciding upon the true nature of the redness. These circumstances will direct us in discriminating any of these different forms of redness not only from the others, but also from that which is produced by inflammation. Inflammatory redness, it should be remembered, is often accompanied with some secretion, either a viscid and adherent mucus, or a pseudo-membranous exudation, or even purulent fluid, all which are unequivocal proofs of the morbid nature of the colour of the membrane.

In examining the pulmonary tissue itself, we experience considerable difficulty in distinguishing between its pseudo-morbid and morbid conditions. We can say with confidence, from tolerably extensive opportunities for studying the subject, that there is no one point in morbid anatomy more difficult to pronounce upon with certainty, than whether a hyperæmia of the lung be inflammatory or not. Every one must have experienced how unsatisfactory are the signs of the second stage of pneumonia—the *engouement* of authors. It is obvious that this difficulty is greater the longer the period which may have elapsed since the death of the subject. It however rarely happens that a patient dies in the first stage of pneumonia; most frequently we find that the disease has in one portion of the lung advanced to its second stage *(red hepatization)*, and very frequently the third stage *(grey hepatization)* is exhibited in the same lung along with the two preceding. Where either of the forms of hepatization exists, there can be little doubt as to the nature of the congestion in any other part of the lung. Moreover, we may remark that the inflammatory congestion affects the upper as well as the dependent parts. The following observations from Andral will show how he estimated the difficulty of laying down any distinction between inflammatory and the pseudo-morbid hyperæmia. "It is," he says, "in the lungs as in the intestines, where a local accumulation of blood may be found in the dead body, which has had no share in producing any of the morbid phenomena observed during life, but was formed during the last moments of existence, or after life ceased altogether. Hence it follows that the existence of a simple congestion, especially when it occupies the most dependent portions of the lung, is not sufficient to prove that a process of irritation or inflammation had been going on there during life. Does an alteration in the consistence of the part afford a more certain criterion to judge by in such cases? For a long time I was of opinion that when the lung was red and gorged with blood at its posterior portion, and at the same time was softer and more easily broken down than natural, it was a proof that the hyperæmia was caused by inflammation; but I have since altered my opinion, and am now convinced that whenever the sanguineous congestion is so great that the lung contains a larger proportion of blood than of air, the pulmonary parenchyma is invariably soft and friable. The reason of this fact will readily be understood if we reflect that, when the lung contains a much larger proportion of air than of blood, the parietes of the bronchi, when pressed by the finger, press in their turn on the compressible fluid they contain, and in this way, by compressing or expelling the air, retire before the pressure of the finger, and so escape being ruptured. But when the lung contains a larger proportion of blood than of air, the former fluid being almost wholly incompressible, the pulmonary tissue cannot recede from under the finger, and is therefore easily ruptured."* And in another section he remarks, "as the anatomical characters of the hyperæmia are precisely the same in both these cases, it follows that, in this instance at least, the true nature of the lesions found on dissection can only be known by the nature of the symptoms observed during life."†

We can hardly suppose it possible that gangrene of the lung and any post-mortem congestion of it could be confounded together. The peculiar smell from a gangrenous spot is a certain indication of its true nature. However, if any condition do appear closely to resemble gangrene, by carefully washing the suspected portion of lung in clean water we shall in general succeed in exhibiting the sound pulmonary texture.

In the pericardium the signs of disease are so very obvious that we know of no phenomenon which that membrane can present which could be considered pseudo-morbid. There is found, however, in its cavity, after a certain time, a sero-sanguinolent effusion in small quantity, which, like a similar one above noticed in the pleura, is to be regarded as a cadaveric result. (See HYDRO-PERICARDIUM.)

Except after the lapse of a considerable time from death, we have never seen any post-mortem condition of the substance of the heart which could be mistaken for a morbid one. We not uncommonly meet with softening of the muscular texture of the heart; and this may arise from so many different causes, that Andral has enumerated six varieties of it; with any of these may be confounded a true cadaveric softening, which, however, generally does not appear for a long time after death. The best criterion of the true nature of a softening of the heart's parietes may be formed from the state of the internal membrane; if that membrane be healthy, or do not partake in the diminished consistency of the heart's parietes, then the great probability is in favor of this condition being the result of disease. But when the internal membrane is of a deep red colour, and is more or less softened, while at the same time there is no appearance of any lymph or other product usually resulting from inflammatory action, then we consider it impossible to determine with certainty to what cause the softening is to be attributed. In some instances the blood has been known to transude through the walls of the heart, and form ecchymoses either between the fibres or on the external surface. Such ecchymoses will want the regularity of form which those formed during life would possess, and rarely, if ever, take place except in an advanced stage of decomposition. We have twice seen numerous ecchymosed spots on the hearts of patients who died of purpura hemorrhagica; but these should be considered as morbid, and attributable to the same cause as the cutaneous ecchymoses.

The internal membrane of the heart often presents an obviously pseudo-morbid alteration in its colour. When the examination of a body does not take place for forty-eight hours after death, or in very warm weather for a longer period, we may invariably expect to find this membrane of a red colour to a greater or less extent. That portion which lines the dependent parts of the cavities will always be found so, and to a greater degree than the rest, because the colouring matter sinks through the coagulum so as to come immediately in contact with the internal surface of the heart; and this will account for the fact, that except at a very advanced period in the cadaveric decay, this redness generally appears in patches, and those most intense which are most dependent. A precisely similar redness will occur under circumstances which can leave no doubt that it took place during life; but as this subject is closely connected with the appearances of the internal coats of arteries, we shall defer any farther remarks upon it till we come to that section of our article.

The fibrinous masses which are almost uniformly found in the cavities of the heart are not to be considered in every instance as morbid productions, as the older pathologists thought; in general they are formed after death, or immediately before it, and merely form the natural disposition of the fibrine to assume the solid form. However, some of these coagula have been found organized, some containing pus, others with pieces of bone on them or in them; whence we must conclude that these fibrinous masses may be formed before death, and produce considerable disturbance of the circulation.*

5. *The abdomen.*—Of all the serous membranes, the peritoneum is most liable to *morbid* effusions. But in this cavity, as well as in that

* Andral's Pathol. Anatomy, by Townsend, vol. ii. p. 503.
† Op. cit. vol. ii. p. 500.

* Dr. Harty has given a very elaborate narration of the symptoms of two cases, which in his opinion were produced by these so-called polypi of the heart, Dub. Med. Transactions, vol. i.

of the pleura, we generally find a post-mortem effusion after thirty or forty hours; which, like that of the pleura, is in general coloured by more or less admixture with blood. This fluid will always, except it be in very great quantity, be found in the pelvic portion of the peritoneum. In the serous membrane itself, we know of no pseudo-morbid appearance likely to occur, except we name that softening produced by contact with the acid contents of a perforated stomach, which we shall presently notice more fully. The discoloration arising from contact with the gall-bladder is too evident to be mistaken for disease.

In examining the exterior of the intestinal tube as the intestines lie in the abdominal cavity, we observe appearing through the serous coat vascular ramifications more or less numerous and more or less filled with blood. Here we observe well illustrated the effects of gravitation on the blood within the vessels of the intestines; those coils which are lowest, namely those which hang into the cavity of the pelvis, always presenting the deepest colour, and also the most depending portions of all the parts of the canal.

There is no membrane of the body which presents pseudo-morbid colouration arising from so many different causes, as the gastro-intestinal mucous membrane: we speak now of the colour which results from particular distributions of the blood in its vessels. In the first place, we may notice that the *act of digestion* produces an increased degree of redness of the mucous membrane of the stomach as well as of the small intestine. The effect produced by digestion on this membrane has been well noticed by Gendrin; he says that the membrane becomes of a rosy hue, deeper in young than in old subjects; and that it is owing to the action of this function may be very well inferred from the fact that only that portion of the membrane is coloured which is in contact with the chymous mass. It is also remarked round the portions of digested matter which are found in the lower part of the small intestine. It appears, too, that the degree of colour depends very much upon the quality of the food, being less intense when the food is of a bland nature. This has been proved upon two dogs, to one of which milk only had been given, to the other an equal quantity of rich broth highly seasoned; the mucous membrane of the latter was of a deep red colour, while that of the former was very slightly altered. Fasting also has the effect of altering the colour of this membrane, giving it a rosy hue in its whole extent; in this way differing from the effects of digestion, which produces only a partial colouring.

A third cause of alteration of colour results from "the passive hyperæmia," to adopt the language of Andral, "which has always a tendency to take place in the last moments of life in the parts abounding with capillaries." In this case the colour is generally of a darker hue, and the greatest quantity of blood is found in the vessels of the depending portions of the intestines.

Any obstacle to the free return of the venous blood, whether it reside in the liver, or from compression of the vena portæ itself, or whether it is to be found in the heart, will produce increased vascular injection of the mucous membrane; the blood in such cases will be of the venous kind, and the injection extensive, and even universal; varying, however, according to the period before death at which the obstruction commenced.

Such are the circumstances which operate before death in producing pseudo-morbid colouring of the mucous membrane. In the true inflammatory redness, there is generally some degree of thickening of the membrane, as well as a viscid mucous secretion in variable quantity. The redness, too, is not affected by position, being equally great on the upper as in the depending portions; and in a more advanced stage of the inflammation there may be lymph or purulent matter.

After death, we find the blood accumulating with greater rapidity, and in a more marked manner in the depending parts. This phenomenon may be observed as to the mode of its occurrence, by removing a coil of intestine, tying it at each extremity, and hanging it up; after some time the blood will be seen to leave the upper part, and accumulate in the lower portion of the intestine. If there be much blood in the capillary system of the mucous membrane, we observe another cadaveric phenomenon, after the body has lain for some time: the mucous membrane, and of course the villi, are gorged with blood, which presently begins to ooze out upon the surface, and to pass into the cavity of the intestine. This we lately saw well exemplified in the case of a young gentleman who died of fever, and whose body we could not obtain permission to examine till five days after death. All the upper portion of the small intestine was free from sanguine congestion, but that part of it which lay in the pelvis was found to be of a dark red hue externally; the mucous membrane being gorged, especially at its inferior part, and the cavity of the intestine full of fluid blood. This phenomenon is easily explained if we consider how freely the blood passes from the larger mesenteric veins to the villi, which moreover, from the researches of Ribes, appear to contain more veins than arteries; it is also further accounted for by the great facility with which an intestine may be inflated by blowing air into its principal venous trunk. Contact with the spleen produces a redness of a different kind, being more of a uniform stain or tinge of the membranes in its vicinity. This obviously arises from transudation of the blood from this vascular body through its coats. After a certain period we find the blood to transude through the coats of the larger vessels of the stomach and intestines so as to produce a more or less continuous stain, or extravasation of blood in the cellular membrane on each side of the trajet of the vessel. This appearance must be familiar to every one who has examined a stomach in an early stage of decomposition; the stain is distinctly visible on the mucous surface, and may also be noticed on the peritoneal surface. The period at which this transudation may take place will very much depend on the season, the temperature of the room, and perhaps the state of the blood.

There are two other causes of discoloration which it is well to remember, although the appearances they produce may not be very apt to be mistaken for morbid ones. One of these is the presence of gases in the cavity, which may alter in various ways the colour of the blood collected in the coats of the intestine. The action of the bile too, by soaking into and combining with the mucous membrane, produces a very obvious change in its colour, and this may even extend into the stomach. There is a third cause of discoloration resulting from the action of the gastric acid on the blood, which we shall notice more fully after considering the other effects of that acid.

In inspecting the alimentary canal, we should not neglect to observe accurately the nature of its contents, for sometimes some coloured fluid may be found among them which may impart its colour to the membrane. Dr. Christison quotes a case in which a suspicion of poisoning had arisen from the inspector hastily referring the altered colour of the inner membrane of the stomach to inflammatory action. It was ascertained that the deceased was in the habit of taking a strong infusion of corn poppy, (*papaver rhœados,*) which, when administered to dogs, produced appearances identically the same. The inference was obvious.*

It will thus appear, that in attempting to form a judgment as to the precise nature of any coloration of the alimentary mucous membrane, there are numerous sources of fallacy which it is important to avoid. It is in the stomach that most of these pseudo-morbid appearances occur, but many of them likewise are to be met with in the intestines. They may be classed as follows: 1st, those which are produced antecedent to death, and 2nd, those which are strictly post-mortem or cadaveric. Under the former are comprehended, 1, those produced by the stimulus of digestion; 2, those resulting from long abstinence; 3, the result of passive hyperæmia toward the close of life; 4, such as arise from a disturbed state of the circulation owing to a retardation in, or obstacle to, the free return of the venous blood. Under the cadaveric may be enumerated, 1, that arising from post-mortem hypostasis, which is sometimes accompanied with cadavaric hemorrhage; 2, that produced by contact with a vascular body like the spleen; 3, those stains or streaks resulting from transudations of the blood through the coats of the larger vessels, more especially of veins; 4, that produced by the action of gases evolved into the cavity of the intestine, upon the blood contained in its vessels; 5, that from imbibition of the bile; 6, that from contact with some coloured fluid in the intestine forming part of the ingesta; and, lastly, that produced by the action of the gastric acid, of which we have yet to speak.

* Vide Christison on Poisons, p. 121.

Attenuation or thinning of the mucous membrane is occasionally met with as a morbid phenomenon. We sometimes, however, find it caused mechanically by a continued distention of the tube. Thus Billard relates a case in which he found a mass of lumbrici in a portion of small intestine, which was so distended by them that it almost equalled the cæcum in volume, and its wall was so thin as to permit the worms to be seen coiled up in its interior. We lately examined the body of a young girl, in which the cæcum was distended with fæces to such a degree that it extended across the upper outlet of the pelvis to the left iliac region. From the excessive attenuation of the wall of the intestine, the fæces were distinctly visible through it.

Softening of the mucous membrane is an alteration of texture which equally takes place under the influence of morbid causes as of others of a different nature. Nobody denies the existence of softening of the gastro-intestinal mucous membrane consequent upon inflammation; but it may reasonably be doubted whether it arises from that cause so frequently as has been supposed. Neither can this alteration of consistence be considered as a frequent result of the putrefactive process, for unless the membrane be exposed to air, we find that it softens slowly. Andral has found its consistence unimpaired eight or ten days after death, and in bodies which exhibited abundant signs of advanced putrefaction. Even when exposed to the air it softens slowly, as Billard did not perceive any change till the sixth day of the exposure of a portion of mucous membrane, and in a situation where the sun's rays could exert their full influence upon it. Hence we may with reason reject putrefaction or decomposition from the list of causes of this alteration, seeing that the majority of post-mortem examinations take place within forty-eight hours after death.

To John Hunter we are indebted for the first notice of what must be considered a very important fact, viz. that in the body of an individual dead soon after digestion has commenced, the mucous membrane of the stomach, the great end especially, may be found dissolved, and even the wall of that viscus perforated, and this through the solvent power of the gastric juice, "that menstruum which the stomach itself has formed for the digestion of food."* Without inquiring into the grounds on which so many subsequent writers or experimenters attempted to refute or deny Hunter's hypothesis, we shall content ourselves with referring the reader to Dr. Carswell's very able paper on this subject,† in which he will find the opinions of Jæger, Laisné, Gairdner and others, fully discussed, and pass on to state the facts which appear fully to establish the original opinion of the great British physiologist. The first circumstances in favour of this opinion are those related by Hunter himself, viz. the fact of having found a solution of the

* Hunter's Animal Economy, p. 231.

† See Edinb. Med. and Surg. Journ. v. 34, p. 282.

stomach in two persons killed suddenly and shortly after having taken food; the frequency of the solution in fishes, who generally died of violence and with the stomach full, and in other animals killed violently and during digestion.

Spallanzani, Adams, Cooker, and Carlisle afterwards confirmed these experiments. Some failures, however, occurred in the attempts to produce this phenomenon at pleasure in animals, and hence the confidence of subsequent experimentalists was somewhat shaken. Some observations strongly corroborative of the Hunterian doctrine were published by Allan Burns; he found the stomach dissolved and perforated, and not only this, but every viscus with which the fluid that escaped from the stomach came in contact was also softened in its walls; and as a still further confirmation, he observed, on examining the body two days after his first inspection, that the solution had extended considerably. Recently Dr. Carswell, in the paper above referred to, has fully succeeded in proving that this softening takes place in healthy animals killed during digestion, and that, in whatever part of the stomach "this function was going on most actively, or an accumulation had taken place of the products of secretion, there the organic alterations had also occurred." Finally, a case has occurred to Dr. Sharpey, as related by Dr. Christison, precisely analogous to that of Mr. Burns. "On proceeding to open the body of a child for the purpose of dissecting the nerves, he remarked that the stomach was perforated and gelatinized, but the adjoining parts uninjured. He then sewed up the body in order to shew the appearances to some of his friends next day. By that time the peritoneal surfaces of the spleen and left kidney were found much softened and pulpy where they lay in contact with the hole in the stomach."*

Such, then, is the evidence upon which we would attribute a form of softening (and perhaps the most frequent) of the mucous membrane of the stomach to the action of the gastric juice, and it may be added that this action may go on to produce a perforation of the wall of the stomach. The softening is generally observed at the most depending part, most commonly the great sac: here the membrane appears like jelly, yet hardly so firm. "When raised between the fingers the coats crumbled to pieces like a recent pseudo-membrane," and often the serous coat is similarly softened. The only alteration of colour in the mucous membrane is that of being rendered rather whiter than the natural hue. The perforations resulting from this cause of course vary in extent according to that of the softened tissues; we find them, therefore, of all sizes, sometimes so great as to involve a considerable portion of the stomach. The margins appear half dissolved, fringed, and generally formed of the serous membrane, and for a considerable distance round the mucous membrane is gelatinized. Moreover, as has been first noticed by Dr. Carswell, the bloodvessels distributed on the softened parts and also on every part which had come into contact with the fluid, were altered in colour, so as to form brownish, brownish black, or pure black arborescences. When the fluid could not come in contact with the membrane, the vessels exhibited their natural colour. It may be stated further that the fluid found in these stomachs at once reddened litmus. In the instances of this form of perforation which have occurred in the human subject, no symptoms whatever of gastric disease were present before death, the patients having died of disease of some other organs or by violence. Thus, according to an abstract which we take from Dr. Christison's work, it has been found in women who died of convulsions after delivery, in children who died convulsed or of hydrocephalus, after death from suppuration of the brain both idiopathic and traumatic, from diseased mesenteric glands, from nervous fever, and after sudden death from fracture of the skull and hanging.

The softening of the mucous membrane thus formed is to be distinguished from that which is the result of morbid irritation during life, as well as of that produced by the introduction of irritant poisons. Cruveilhier has described a condition of this membrane in the stomach of children, which he calls "*ramollissement gélatiniforme.*" This softening, like that above described, extends to the other coats of the stomach and even causes perforation. In short, this affection described by Cruveilhier has the strongest possible resemblance to the pseudo-morbid softening of Hunter; but the evidence adduced in favour of its morbid character is derived from certain symptoms supervening a short time before death. We know of no means whereby we can distinguish between these two alterations, except, perhaps, the dark colour of the blood contained in the vessels of the softened part, which, if the alteration described by M. Cruveilhier were the effect of morbid irritation, would not be likely to occur. On the whole, however, we are strongly disposed to the opinion that the *ramollissement gélatiniforme* of Cruveilhier is a pseudo-morbid phenomenon, and identical with that caused by the action of the gastric juice.

In a true pathological softening there are uniformly present some additional signs of inflammation; thus, we sometimes have redness of the membrane, and generally an increased opacity and a thickening of the submucous tissue; and it may be indifferently found on all parts of the stomach, even where the gastric juice could not come in contact with it; moreover, here likewise we have not the black discoloration of the blood which is a remarkable character of the softening by the gastric juice.

The perforation which results from this softening must be distinguished from that caused by inflammation or by rupture. The existence of signs of inflammation in the serous membrane would be unequivocal evidence; but sometimes the perforation or rupture occurs at too short a time prior to death to allow of the production of peritoneal inflammation, in which case the appearance of the margin of the opening, the state of the surrounding membrane, and of the submucous tissue, will assist in forming a conclusion.

We have alluded to the effect which the gastric fluid produces when brought into contact with the blood in the vessels of the stomach. The effect is nearly similar to that produced in the case of poisoning by acetic acid, related by Orfila in the Annales d'Hygiène for July, 1831, namely, a black or brownish black discoloration of the blood, without affecting the coats of the vessels. In the instance under consideration, however, the discoloration is not so extensive as in that of poisoning by the acid, the quantity of acid in the gastric juice being so small. But we sometimes meet with a brownish black discoloration from morbid action, which may be distinguished chiefly by the fact of its occupying the villi of the membrane, and by the gradation through which the colour passes from red to brown, and from brown to black; to which we may add that the discoloration by the gastric juice is most conspicuous in the large trunks. The absence of all appearance of transudation, as well as the state of the other tissues, will sufficiently indicate that the black colour is not caused by putrefaction.

In the parenchymatous viscera of the abdomen there are no pseudo-morbid appearances worthy of notice; they are chiefly such as are produced by mechanical obstacles to the free course of the blood, or such as are caused by the operation of the principle of gravitation. In some bad states of the blood the liver and spleen have been found softened in their texture to such a degree that they almost appeared to be thus altered by putrefaction; however, in general, the effect of putrefaction is to diminish the size of those organs, while the reverse often takes place in the case to which we allude.

6. *The bloodvessels.*—It is not uncommon to find considerable vascularity of the cellular membrane forming the external investment of arteries. The minute vessels ramifying in this tissue, called vasa vasorum, are minutely injected, and form beautiful arborescences freely anastomosing over the surface of the arterial tube. These often are produced as a mere mechanical effect, or as the result of gravitation. The alterations of colour which the internal coat of arteries exhibits deserve particular attention. Every one must have observed that if an artery be slit open, its coagulum or blood removed, and its inner coat exposed to the air, it quickly acquires a bright-red colour. Again, if the blood remain fluid for some time after death, if its fibrine be less contractile than in the healthy state, the inner coat of the arteries will be generally found to be deeply coloured. In examinations made when putrefaction has fully set in, a similar colouring of the same tissue will uniformly be seen. Again, if a coagulum exist in an artery, and the colouring matter have sunk to its most depending part, that portion of the inner coat will be coloured which is in contact with the colouring matter of the clot. Finally, by inclosing some blood in an artery, and keeping it there by ligatures, we are able to produce a red colour in its internal membrane. Such are the different ways in which a red colour or stain of the inner coat of arteries may be produced, very similar to that which is the first indication of inflammatory action in it. In veins similar discolorations, and from the same causes, are observed, and in them those arising *post mortem* take place much more quickly than they do in arteries. The red colour of the inner membrane of either arteries or veins can be but little depended on as a sign of inflammation; nor, indeed, can we derive any conclusion from it at all unless it be accompanied with an albuminous exudation or other unequivocal product of inflammatory action.

In the preceding detail of the various pseudo-morbid alterations which are to be met with in the principal tissues of the body, our design was, not to exhibit to the reader the difficulties in the way of forming a correct estimate of the condition of any structure, but to convince him, and in the most practical way, of the necessity for and utility of observing great caution in deciding upon the presence or absence of disease. We shall bring this article to a close by stating a few conclusions suggested by the consideration of the subject, which may serve as useful directions in making or recording post-mortem examinations.

1. Before proceeding to examine a body, the inspector should invariably ascertain, with as much accuracy as possible, the length of time which may have elapsed since the death, and it should be noted in the record of the inspection. The neglect of this has rendered many apparently valuable cases, noted in some of our standard works, utterly inconclusive. We allude more especially to cases in which serous effusion has been found round the brain or spinal marrow. 2. The reporter of post-mortem inspections should in no case content himself with merely stating what he conceived to be the state of a tissue, as, for instance, "*that such a membrane was inflamed,*" but he should be careful to note, as clearly and as concisely as may be, the appearances which presented themselves, and any concomitant circumstances calculated to unfold the true nature of those appearances, whether morbid or pseudo-morbid. This precaution need not, however, preclude any remarks as to the impression conveyed at the time of examination, but it is obvious that it will have the advantage of recording a plain statement of facts, from which each reader may have equal means of deriving a conclusion. 3. There are some points respecting the examination of certain parts worthy of attention. In every case of suspected disease of the spinal marrow, the spinal canal should be opened before the head, in order to form an estimate of the precise quantity of fluid that may happen to be effused. The advantage of this is apparent from what we state respecting the free communication between the two portions of the cephalo-spinal fluid. The brain should not be removed from the cranium until the ventricles

* Christison on Poisons, p. 127.

have been examined, that as little as possible of the fluid may escape. Of course this is only applicable where the head is opened before the spine. As to the manner of opening the head, we have generally preferred to do so by sharp and strong blows of a hammer, so as to crack the skull round, the head being supported by the other hand, and not placed upon so unyielding a fulcrum as a table or block. We have found this method preferable to that of sawing, which, we conceive, disturbs the parts more, and, unless the saw be very sharp, is always extremely tedious; not to mention the difficulty of preventing the saw from injuring the dura mater, or even the substance of the brain itself.

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