

Observations on the utility of blood-letting and purgatives, in a fever which prevailed in the Russian fleet / by D. J. H. Dickson.

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with the Author's last Review
10

OBSERVATIONS
ON THE UTILITY OF
BLOOD-LETTING AND PURGATIVES,
IN
A FEVER WHICH PREVAILED IN THE
RUSSIAN FLEET.

BY
D. J. H. DICKSON, M.D. F.L.S.
PHYSICIAN TO THE FLEET, AND FORMERLY SUPERINTENDING
PHYSICIAN OF HIS IMPERIAL MAJESTY'S
SQUADRON IN THE MEDWAY.

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ORBITAL VELOCITIES

ON THE THEORY OF

ORBITAL VELOCITIES, AS DERIVED FROM THE THEORY OF GRAVITATION, AND APPLIED TO THE MOTION OF THE PLANETS AND COMETS.

RUSSIAN FLEET

BY

DR. H. DICKESON, M.D., F.R.S., F.R.C.S., F.R.C.P., F.R.C.O., F.R.C.S.D., F.R.C.S.(S), F.R.C.S.(G), F.R.C.S.(E), F.R.C.S.(C), F.R.C.S.(I), F.R.C.S.(A), F.R.C.S.(N), F.R.C.S.(O), F.R.C.S.(P), F.R.C.S.(Q), F.R.C.S.(R), F.R.C.S.(S), F.R.C.S.(T), F.R.C.S.(U), F.R.C.S.(V), F.R.C.S.(W), F.R.C.S.(X), F.R.C.S.(Y), F.R.C.S.(Z).

OBSERVATIONS, &c.

THE following observations, so far as they relate to the general utility of early blood-letting and purgatives, in a fever which, on two occasions, prevailed in the Russian squadron in the Medway, under my superintendence, were written upwards of eighteen months ago; but, being then with the North American fleet, I deferred the final consideration of the subject until my return.

In the meantime, I sent my remarks to Drs Douglas and Dobson, who, from having had the charge of the Argonaut and Trusty hospital-ships, appropriated to the reception of the sick, were peculiarly qualified to appreciate their correctness; and I requested to be favoured with such alterations and additions as their experience should suggest.

I have much satisfaction in bearing testimony to the skill, humanity, and attention evinced by these gentlemen in the very arduous situation in which they were placed; and I am bound equally to acknowledge their zealous co-operation on all occasions, and the readiness with which they have subsequently given me every information in their power. As their opinions are communicated to me as "the entire result of practice and observation, unwarped by prior predilection for any particular theory," I may fairly hope, that their coincidence with my own, as to the practical results, will give these greater weight than, individually, I could have expected them to possess. My object is simply to detail, with all the fidelity in my power, the features of the disease, and the success of the treatment adopted,—a duty which seemed, in some respects, to devolve upon me, and of which ill health, and other irrelative circumstances, have prevented the earlier fulfilment.

I have occasionally adverted to different authors as they occurred to me, in support or illustration of these remarks; but I have also frequently omitted to do so; and, from unwillingness to extend my references unnecessarily, have oftener alluded to

my authorities, or given their meaning, as found in my notebook, than quoted their precise words. In ships recently and hastily fitted out, fever is so frequent an occurrence, that it would be superfluous to dwell upon the rise and progress of that in question, by explaining the consequences attendant upon the equipment of a large fleet, with the utmost dispatch, manned chiefly with landsmen, necessarily subjected to great changes in their diet, habits, &c. and unaccustomed to the privations and exposure incident to their new mode of life. During the voyage to England, sickness increased rapidly in Vice-Admiral Crown's squadron, which had been longer at sea, having sailed from Archangel to join the division at Cronstadt; and, by the time the fleet arrived in the Medway, fever had made so alarming a progress, that it became necessary to appropriate hospital-ships to receive the sick, which were immediately crowded with patients; several of whom were in a dying state, and many in the advanced stage of typhus.

To the previous exertions, and judicious arrangements of Dr Weir, inspector of hospitals, I found myself greatly indebted upon my arrival, some time afterwards.

To the fleet, which, under the command of his Excellency Admiral Tate, consisted of fifteen sail of the line, and eight frigates, &c. were then attached twelve British medical officers,—the services of whom, and of those appointed on subsequent occasions, were of great assistance to me, and advantageous to the squadron. Exclusively of the milder cases, treated by them on board, the hospital and convalescent ships contained, at that time, about 300 patients; but, as shewing the prevalence of the disease, and the result of the treatment employed, it will be better to give the total number, by premising that, between the 18th of December 1812 and the 24th of April 1813, there were received by the Argonaut and Trusty 802 cases; and, again, between the 25th of September 1813 and the 3d of March 1814, were admitted 1006 cases; making in the whole 1808 patients in hospital, generally labouring under fever. Of this number, including convalescents at the time of my arrival, above two-thirds were under cure, and 109 died, during the periods of my inspection, comprehending seven months, which is nearly one man in eleven. The antecedent mortality had been double this proportion, which may be accounted for, by many, at the commencement, having been received in the last stage of the disease, whereas, afterwards, they were generally sent early;—by the greater malignity of the first attacks;—and also by the greater confidence and freedom with which the depletory system was resorted to, in proportion to its success. This, it may

be presumed, would have been still greater, if the patients, in all cases, could have been sent to the hospital-ships at once; but, notwithstanding every injunction to this effect, owing to their distance from the fleet, the state of the tide and weather, and their frequently not complaining immediately, the fever had often made considerable progress before it was detected.

I ought here to observe, that the above dates (in both cases commencing with the reception of the sick into the hospital-ships, and ending when my appointment ceased, on the fever being subdued) comprehend two distinct periods of sickness; the ships having remained perfectly healthy from April 1813 till the following September, when fever was revived in the fleet by a large reinforcement of recruits having arrived in crowded transports; but as the disease and the treatment were the same, I have thought it best to give the aggregate result, and to state that my remarks apply to both periods; though in the former, the disorder had attained a higher degree of malignancy before it was controlled. Many of the first and worst cases, as already stated, were admitted in the last stage of typhus, with low muttering delirium, picking at the bed-clothes, subsultus tendinum, hiccup, squinting and involuntary exertions,—and some with a vomiting of dark-coloured fluid, gangrene of the toes, &c.

When I joined the fleet, the fever, in both instances, had become less typhoid; it was reported to me to be “synochus, frequently terminating in typhus, and death, if copious evacuations had not been had recourse to at an early period of the disease.”

It is highly important, here, to contrast the difference of symptoms under this practice, even in unfavourable cases, with those of the patients first received, which had not been controlled by depletion. The tongue was often parched, but not black; there was delirium, but not of the low muttering kind; subsultus tendinum, but without great nervous tremor; seldom involuntary discharges, and no strabismus, nor those appearances of putrescency which mark the close of malignant fever. It appears to me, therefore, an inevitable conclusion, that, by those remedies which repress inflammatory action at the commencement, those graver, or eminently typhoid symptoms, which characterize the advanced stage of such fevers, were prevented. But I am not anxious to designate the disorder, since it has been but too common to connect with the name peculiar ideas of a disease, modifying the treatment, which ought alone to be regulated by a knowledge of its nature and tendency, aided by the pathological light of dissection.

In proof of the highly infectious nature of this fever, in the

first instance, particularly in the hospital-ships, where so much disease was concentrated, it will be sufficient to mention, that nine out of eleven medical officers, attached to the sickly division, and to the hospitals, were attacked in the course of a few weeks. It proved fatal to one surgeon and an assistant; and two assistant-surgeons belonging to the *Trusty* died of the consequences. I was one of the last taken ill, after having been exposed for little more than ten days; which may be readily accounted for, when the powerful exciting causes inseparable from visiting a distant, detached, and sickly squadron, in the middle of winter, are taken into consideration.

The contagion appears to have been particularly powerful in the *Trusty*, which ship had received the first, and consequently the worst cases; as not only the surgeon, and other medical officers, suffered severely, but twelve out of sixteen attendants, accustomed to the duty of waiting upon the sick, were seized with fever, four of whom died.

Several attendants in the *Argonaut*, two assistants, and ultimately the surgeon, were also attacked; but he informs me, that, with one exception, all recovered, in whom he had the advantage of combating the disease at its commencement. It is needless here to dwell upon the value of various prophylatic measures under the heads of separation, ventilation, dryness, cleanliness, better clothing, &c. to which my solicitude was chiefly directed, or the difficulties that opposed their execution. I may, however, remark, that the benefit was in proportion as they were practised, and that the disease gradually became milder, to which the decreasing severity of the weather, as the spring advanced, materially contributed. Indeed, although malignant cases still continued from time to time to occur, in the more general course of symptoms, such as I am about to describe, there was little remarkable; and without keeping in view the tendency to inflammation and disorganization which characterized the progress of the disease, there would have appeared little to warrant apprehension; but, as Dr Haygarth justly remarks, after describing the symptoms of *Typhus mitior*, sometimes even this mild typhus is fatal.

The invasion of this, like many other fevers, was generally preceded by listlessness, languor, and weariness, which, according to the old maxim, foretell disease. This state of indisposition to mental or bodily exertion, was followed by chilliness rarely increasing to rigor, prostration of strength, or a sense of general soreness and fatigue; pain of the head, back, &c.; anorexy. but seldom vomiting, and succeeded by increased heat, though the patient often complained of cold; frequent pulse, but

varying in strength, white tongue, thirst, costiveness, and other symptoms of fever, which often continued for several days before any particular organ appeared to be attacked. In some cases, a higher degree of febrile action was early indicated by flushing of the face, sensibility and glossiness of the eyes, throbbing of the arteries of the neck and temples, with greater heat and anxiety of respiration; but though, in others, the accession was less strongly marked, and the patient made little complaint, except of headach at first, yet symptoms of increased determination to the breast, head, &c. supervened in a few days, unless anticipated; corroborating the observations of Riverius and Baglivi, as to the frequency of visceral inflammation in such fevers.

The features of fever are so infinitely modified, that I have no intention of delineating all the varieties in the present instance; but I trust I shall not be suspected of the less veneration for such great authorities as Dr Cullen, Fordyce, &c. if I notice here, that my observation has not tended to convince me of the propriety of holding forth an intermittent paroxysm as an epitome of continued fevers in general, or of considering them as merely a repetition of such paroxysms, more or less distinctly marked, with longer or shorter intervals.

I am, therefore, gratified by having since found that Dr Willan, in his reports for 1801, from close attention to the origin, symptoms, and termination of both, is of opinion, that no direct analogy subsists between an intermittent and a malignant fever, propagated by infection.

The most frequent occurrence in the disease under consideration was a sense of dyspnoea, and a cough supervening about the fifth day: in some it assumed more the appearance of simple pulmonic inflammation; in others of pneumonia typhodes. It was occasionally attended also with symptoms of cynanche, and swellings of the parotid and submaxillary glands, which, in a few instances, terminated in mortification and death; and gelatinous-looking effusions were likewise sometimes found in the trachea and bronchial vessels; but these varieties were comparatively rare.

Delirium and coma were very constant attendants at a more advanced period, in unfavourable cases; and it is hardly necessary to remark, that the danger was in proportion to the degree of stupor, and the depraved or oppressed condition of the sensorial and respiratory functions; while, in the more obscure cases, it was better estimated by the countenance, posture, and answers of the patient, than by the pulse or other prominent symptoms. In a few instances in which they occurred, an un-

pleasant cadaverous smell from the body, and much tremor of the hands and lips, indicating great depression of nervous energy, proved fatal symptoms. The same remark was particularly made to me in the Levant, as to tremor of the lips in the plague.

Some authors, as Sydenham, Huxham, &c. mention examples of spontaneous salivation proving critical in fever. Instances of increased determination to the salivary glands sometimes attended here, which could not be imputed to mercurial influence. In myself, without having taken any mercury at all, their action was excited by insensibly acquiring a habit of spitting frequently, until it amounted to complete ptyalism. It accompanied, and diminished with the disease in a remarkable degree on the seventeenth day, and had almost entirely ceased by the next morning.

It had always been considered a favourable omen, as indicating a less powerful character of fever, at least as far as relates to heat and vascular excitement; for in those of tropical climates, I have had but too many opportunities of observing that salivation could not be induced when there was a high temperature and strong inflammatory or febrile action; and I am therefore led to believe that its existence is incompatible with a rapid and ardent form of fever.

I may here add, that, as far as I may judge from personal recollection, the feelings which excited the greatest uneasiness and attention, were a throbbing of the temples for some nights preceding the attack, the headach in the first, and the cough in the latter stage of the disease, together with watchfulness, and a distressing sense of sinking, or extreme prostration, and a tendency to evening delirium, representing the presence of unpleasant objects; but generally so mild, that the mind became sensible of it when painful, and, by opening the eyes and fixing the attention, could be recalled from its alienation.

The duration of the fever was various, often protracted, and without any regular crisis. But, upon the whole, an amendment was, perhaps, most frequently observed on the eleventh day; though in numerous instances on the other odd days also, from the 7th to the 17th inclusive. Few recovered in whom a change for the better was not perceptible by the latter date, which is considered by Sir John Pringle as the most frequently critical. When the disease was prolonged, it generally left a troublesome cough behind, and an excessive degree of debility, from which the convalescence was extremely tedious, but when a crisis took place early the recovery was rapid.

Although I am not inclined to place much reliance on such

calculations, which are very liable to error, the following number of fatal cases, in which the period of attack could be ascertained, shews a great predominance of the odd days: of fifty-six cases that proved fatal in the Trusty, within the month, two died on the 6th, 12th, 14th, and 28th days; four on the 7th; five on the 9th; nine on the 11th; ten on the 13th; six on the 17th; three on the 25th; one on the 8th, 10th, 15th, 18th, 19th, 21st, 24th, 26th, 27th, 29th, and 31st; and none previously to the 6th, nor on the 16th, 20th, 22d, and 23d days of the disease.

The appearances on dissection proved strongly illustrative of the frequency of local congestion and inflammation. There was hardly any organ which was not occasionally found diseased; but the parts most commonly altered in appearance and structure were the contents of the thorax, the brain, and the abdominal viscera. Of these the lungs, probably from the coldness of the season, and insufficient clothing, suffered most frequently; and the effects of inflammation were conspicuous in extensive adhesions of their investing membrane to the parietes of the chest, pericardium, and diaphragm; in effusions of coagulable lymph and serum, or the formation of purulent matter.

The heart occasionally, and oftener the pericardium, exhibited patches of inflammation, with spots of effused lymph, and had formed strong attachments. In one patient they adhered so firmly that the heart was torn in attempting to separate them. The quantity of fluid found in the pericardium varied: sometimes it was considerably increased; at others, there was little or none. In a few patients the liquor pericardii was very turbid, and like whey, or partly purulent: in one, there was about four ounces of pus. In several instances (in some where there was a deficiency, but also in others where it contained a portion of fluid) the pericardium was found so thin, dry, shrivelled, and transparent, as to have the most perfect resemblance to a piece of dried bladder. This desiccated appearance, which occurred more frequently in the Argonaut than in the Trusty, is mentioned by Dr Baillie as having been twice found by himself, and much oftener by Mr Hunter. The diaphragm also sometimes exhibited similar dry patches, and oftener erysipelatous inflammation.

Masses of coagulable lymph were occasionally found in the cavities of the heart, and some of a yellower and more fatty appearance than the other; but, instead of being inflammable, they also shrivelled up, and exhibited the character of albumen or fibrine, when exposed to heat. This separation is not uncommon, however, in patients dying of other disorders; and often

takes place after death, and probably in protracted cases previously, or in *articulo mortis*.

Though strong traces of disease were not so uniformly observed in the brain as in the thorax, yet signs of previous excitement and congestion were often evinced by the fulness of its vessels, the increased vascularity, and sometimes the agglutination of its membranes; and by numerous ramifications of fine, and as if minutely injected capillaries.

Spots or specks of coagulable lymph were sometimes thrown out on the inflamed surface of the dura mater; and effusions of fluid on the outside, or into the ventricles of the brain. In one instance, about four ounces of lymph were found between the meninges; and in some, blood was extravasated on the surface, or in the convolutions of the cerebrum; indeed, effusions of blood or serum had frequently taken place, in those who died with symptoms of compression, about the 18th day.

The abdominal viscera, and their peritoneal covering, often displayed the remains of inflammatory action also, as had been conjectured from the pain on pressure; and the small intestines adhered to each other, and to the wasted omentum. Purulent matter, and serous exudations, containing portions of albumen, were likewise discovered, though less frequently in the abdominal than in the thoracic cavities; and though such effusions, as the consequences of inflammation, are best anticipated by the lancet, yet they may have been sometimes promoted by the intended remedy, if employed too late to be of service.

The liver was less frequently found diseased than was expected; but it sometimes bore marks of inflammation; and, now and then, its convex surface was of a spotted or erysipelatous appearance.

The gall-bladder was seldomer distended with bile than would have been the case, if purgatives had not been so freely employed. Occasional appearances betokened increased determination to the kidneys and bladder;—in a few instances the pancreas felt unusually hard, and firm;—the spleen sometimes exhibited disease;—and in one or two patients, a cartilaginous deposition, of the size of a crown piece, was found on its surface.

There was less affection of the stomach, both before and after death, than I have observed in any other fever.

These are the appearances, noted from the dissections made in the hospital-ships, which I recollect to have seen, or with which I have been favoured, as having most frequently occurred, from the sources I have already acknowledged. Without pretending to enumerate all the nicer changes, or shades of diseased structure, I merely mean to say, that one or more of the viscera be-

came the seat of morbid action, to which the burthen of the fever was directed, either primarily, by local predisposition, or particular concurring circumstances; or was transferred secondarily by association.

Very many authorities might here be quoted in support of this alliance between fever and local inflammation; but it will be sufficient to refer to them collected in the works of Drs Clutterbuck, Beddoes, Mills, and other late writers. Mr Burns, in his treatise on Inflammation, says, "that typhus is always attended with an inflammatory affection of the head, and sometimes of the lungs or abdominal viscera, must be acknowledged by every one conversant in dissection."

In speaking of inflammation, however, it is necessary to keep in recollection the occasional red and vascular appearance of a part, which probably has been frequently mistaken for it. Such an appearance of vascular fulness, in the villous coat of the stomach, particularly from venous accumulation, has been often found where no suspicion of previous inflammation could be entertained; as has been well illustrated by Dr Yelloly in a paper of the 4th volume of the *Medico-Chirurgical Transactions*.

On the other hand, if it be granted that slight inflammations are dissipated after death, it follows, that, to estimate the early and less marked effects of this state, it is necessary that the investigation should take place as soon afterwards as possible. For we should keep in mind the remark of Bichât, that inflamed serous membranes soon lose their redness; and the observation of Drs Rush, Clutterbuck, and others, that congestion, or other morbid states of the brain, produced by disordered action, or minute, yet fatal changes of structure, may have taken place, yet leave little or no marks of disease after death.

Analogous to this, in yellow-fever I have observed the serous capillaries of the tunica conjunctiva red and turgid with blood, which disappeared after dissolution.

It would appear, therefore, that there is danger of error on both sides, unless when the pre-existence of inflammation is rendered unequivocal by adhesions, suppuration, extravasation, effusion, or considerable organic derangement.

Without further enlarging upon these morbid changes, they certainly go far to establish the connection between fever and inflammation in the present, and, by analogy, its frequency in other fevers; for, as far as I am acquainted, traces of inflammation, or of a state nearly allied to it, were discovered in such cases as had appeared to be the most purely idiopathic; and, even when the patient had complained of little or no pain dur-

ing the disease, marks of increased determination or congestion were discovered in some organ after death.

It is therefore highly proper to bear in mind the extensive ravages which have been discovered on dissection, particularly in the glandular viscera, and which have oftentimes taken place, either without exciting sensation, or have been attended only with a dull low degree of pain.

Accordingly, it was often very difficult to appreciate, here, the extent of mischief going on, where it was only indicated by the maintenance of obscure febrile action, or by some sympathetic affection; for in some cases it was discovered to be considerable, when the patient had made little or no complaint; and in others, the injury was found to be much greater in a part which had not been suspected, than in that of which he had complained.

I cannot, in consequence, avoid noticing here, the obscurity in which the diagnosis is often involved, and the frequent risk of deception, arising from implicitly receiving, as the seat of the disease, the part referred to by the patient. We should never forget, as Dr Monro well observes in his *Morbid Anatomy*, that sympathy between near, and even distant organs, renders the source of disease obscure,—and that distant sensations, and sympathetic feelings, often create the most acute pain, and give the first notice of internal mischief. I need hardly observe, how peculiarly this caution must be applicable in the morbid state of the sensorium, arising from the complicated phenomena constituting fever, when the confusion or indistinctness of the patient's perceptions is so apt to lead him to refer his uneasiness to a wrong source.

The influence of one pain in obscuring another, as a physical law of sensibility, was well known to the father of medicine; nor has it escaped the universal observation of the father of our drama: "But when the greater malady is fixed, the lesser is not felt."

We have so many instances on record of concealed mischief going on in this way, which has not been suspected until developed by dissection, that it is of great consequence to have the errors of sensation, or, more strictly speaking, of reference, in fever, constantly in view; and I trust I shall be pardoned for pressing such sources of fallacy more generally upon the attention; since, by placing less reliance on the more prominent features, and by scrutinizing the minuter shades of disease, we become enabled to estimate the result more correctly.

In dangerous fevers, particularly where the brain is much affected, we have too often but a very inaccurate criterion, if we

measure the extent and danger of diseased action by the pain, or by the state of the pulse, &c. Thus, while in many, these symptoms were amply sufficient to lead to the anticipation of a fatal event, it was difficult to reconcile the uniformity of this result in others, when they were much less considerable.

But, without attempting to reason upon a subject where the pathology is so obscure, and often, perhaps, evanescent, as that of the brain in fever, it may be remarked, that the fatal injury which this organ sustained, seemed oftener to be a secondary than a primary affection, and the consequence of sympathetic connection with some of the other primarily diseased viscera.

The idea of the brain suffering secondarily is farther countenanced by analogy; as, in many cases of wounds and accidents, in different parts of the body, we find that the apparent is often not proportional to the real danger; nor, except by sympathetic transference to the sensorium, is the local injury sufficient to account for the unfavourable result.

The perfect resemblance between sympathetic and original fever is here well worthy of observation; for often, consequent upon such local injuries, have arisen symptoms possessing all the characteristics of, and not otherwise distinguishable from, idiopathic fever; and indeed to this cause, viewed as an accidental and independent disease, the death of the patient in such cases has been, not unfrequently, but erroneously attributed.

The appearances on dissection which have been enumerated form a commentary on the observation of Riverius: "*Febres acutas et malignas rarissimè sine visceris alicujus inflammatione incidere.*" They strongly demonstrate the propriety of venesection; and, accordingly, the benefit derived from this remedy was great in proportion as it was freely and early employed. When it could be so used, it was natural to expect that, in many instances, the disease would be crushed in its birth; but it seldom could be arrested when the symptoms had made any progress. In such cases, when the tendency to inflammation and congestion was lessened, but not destroyed, it often became necessary to resort to the repeated abstraction of blood; and although I was by no means friendly to this evacuation after the first days of fever were passed, yet that it was occasionally employed in smaller quantity, at a more advanced period, not only without any bad consequence, but with evident relief, I cannot doubt, not from personal observation alone, but from the different reports that were made to me on the subject.

When the fever could be attacked soon after its invasion, a large bleeding, repeated according to its effects, appeared to be the most beneficial practice in the Argonaut; and, if not suf-

ficiently early to cut short the disease, it prevented or mitigated the symptoms of increased determination to the chest, or head, so apt to supervene.

In the Trusty, the treatment deemed the most successful was, where the patient lost within the first week or ten days between sixty and eighty ounces of blood, by taking away from sixteen to twenty-four ounces at a time. When the fever was violent, a larger quantity was abstracted in a shorter period; but it was not often necessary to exceed thirty-six ounces in twenty-four hours, at two or three bleedings. After the tenth day it was not often considered proper to bleed, or only in smaller quantities, when indicated by symptoms of pressure upon any particular organ, or by the appearance or renewal of inflammation. When this remedy had been neglected at the beginning, or the patient was admitted on an uncertain day of the distemper, small bleedings of six or eight ounces, repeated according to the effect, were found safer than larger ones, which might have proved too debilitating, and were serviceable in preventing or moderating the consequences of inflammation and congestion. An able physician, Dr Parry, in his *Elements of Pathology*, page 317, thinks "it is probable that subsultus tendinum, convulsive motions of the limbs, and hiccup, which often concur with delirium in various fevers, arise from long or violent irritation of the brain by sanguineous impulse." It is certainly in favour of this idea that effusions of blood or serum were generally found in the brain of those who died with these symptoms about the 18th day; and that, in some patients where small bleedings, graduated by the pulse, were tried even as late as this, when delirium, subsultus, startings, and coma, indicated an oppressed or irritated state of the sensorium, these symptoms were diminished, the respiration became freer, and the intellect more distinct after its employment. Under this treatment some apparently hopeless cases assuredly recovered; but it oftener failed. It is allowed that the presence of fever is most certainly detected by the state of the animal functions, and of the pulse; but to the latter there are many exceptions. I need not here adduce the many authorities that might be quoted in support of my own observation, to shew that the pulse, in many cases, has been found little affected in the worst fevers; that it is often little, if any, quicker than natural; and that it is sometimes preternaturally slow. But I believe it to be unnecessary to dwell upon its fallaciousness, or on the little information it often affords as to the propriety or quantity of blood to be taken, particularly where the head is much affected. In the early stage of disease it is often small, low, feeble, and irregular, previous to

considerable reaction ; but, when the accession of this state is characterized by increased heat, hard, full, and frequent pulse, throbbing of the carotids, and other symptoms of excessive determination, the indication is sufficiently manifest. This state of increased action, however, does not always follow, but the pulse continues low and contracted, or labouring and oppressed, until relieved by evacuations, when it rises, becomes fuller, and more equal ; - an effect which, with correspondent improvement in the intellectual powers, I have often seen produced by purgatives, as well as by venesection, in tropical fevers.

In this depressed state, the employment of a remedy, by no means passive, requires nice discrimination ; for it is necessary to distinguish between that period of diminished energy preceding reaction, where it would prove injurious, and that in which, to use the language of Sydenham, " all the symptoms of weakness proceed from nature's being in a manner oppressed, and overcome by the first attack of the disease, so as not to be able to raise regular symptoms adequate to the violence of the fever," until " it could disengage and shew itself" by bleeding. Vol. II. p. 351.

It is impossible, therefore, from the state of the circulation, to lay down any infallible criterion for the employment of blood-letting in fever. The safest is the hardness of the pulse, and a white tongue, as indicating inflammatory action ; and, upon the whole, it was generally considered at least safe to bleed in the early stage, where the heat was increased, and the pulse above 100.

The degree of resistance of the artery against the finger was considered a better guide than the size of the pulse ; if it was firm and equal, bleeding was generally proper ; if easily compressed, soft, or undulating, the contrary ; if it felt tense, or corded, or the stroke was described as sharp, harsh, jerking, or rebounding, it was considered indispensable ; but, in using such terms, we must be aware how difficult it is to attach precise and determinate meanings to words, and that the same pulse will be described very differently by different reporters.

In speaking of the fallacy of the pulse, I ought not to omit noticing the unequal distribution and power of the circulation which not unfrequently obtain in fever, as another source of error, if we judge of its force, in the vessels near the heart, by those of the extremities ; for it may be strong and bounding in the central, yet weak and languid in the distant arteries. Some marked examples of this kind occurred from exposure to severe cold for several hours in boats after depletion ; in consequence of which, I grounded my applica-

tion of the necessity of having a decked vessel to convey the sick to the hospital-ships. These patients, notwithstanding the application of warm blankets, &c. continued to complain of an extreme sense of chilliness, with coldness, and a sunk languid pulse in the extremities, while the face was hot and flushed, and the large vessels of the neck and head were greatly excited, indicating what Mr Hunter calls action without power, and shewing the danger, in such a case, of appretiating the state of the internal circulation by that of the radial artery. This unequal and partial distribution of heat, which seems to have engaged the attention of the ancients much more than the pulse, is very unfavourable in fever; and the same is the case whenever the actual condition of the patient and his feelings are much at variance; as, for example, when he complains of a much greater degree of either heat or cold than is indicated by the touch or by the thermometer.

With respect to the comparative advantages of large or of frequently-repeated small bleedings, in early fever, both plans were employed here, and with various results; the latter may be often useful and safe, where the former would be inadmissible. But, at the commencement of the attack, or where some important viscus is threatened with inflammation, I must give a decided preference to the large and sudden abstraction of blood, while there is yet any chance of anticipating or removing congestion, or of cutting short the fever. The one will, of course, be preferable while we have these objects in view; the other may be useful in mitigating symptoms where the expectation of crushing the disease can be no longer indulged. It is also evident, that the occurrence or renewal of inflammation later in fever may justify a cautious and limited detraction of blood, when the loss of a larger quantity could not be borne.

The same advantages were derived from venesection in cases of relapse. Mr Sheppard, who was surgeon of the convalescent ship, upon whose judgment I place great reliance, remarks: "From cautious experience of the advantages of blood-letting, the activity of fever often induced me to bleed largely, occasionally twice or thrice within the first twenty-four hours of the relapse. Nothing short of experience of decided benefit from this remedy could have justified the practice in that state of disease." He further observes: "Notwithstanding the advantages resulting from depletion, the blood drawn exhibited no inflammatory character."

The total amount of blood most frequently abstracted in the course of this disease has been already stated; but, in some few extremely plethoric and robust constitutions, from 100 to

150 ounces, and upwards, were taken away, with both successful and unsuccessful results. In one case of extremely violent fever in the fleet before my arrival, and where extravasation was afterwards found in the brain, I was informed that 200 ounces of blood had been withdrawn; but there are very few, if any, instances where the propriety of so large an evacuation may not be held questionable.

Like the pulse, the appearance of the blood was not a faithful index of the expediency of venesection. Though frequently, it did not generally exhibit the buffy coat; and, in many cases where it was soft and florid at first, it became firm and buffy under subsequent bleedings. However, if there was a large proportion of crassamentum, this remedy was not deemed less necessary.

In many instances the coagulum seemed soft, and as if dissolved in the serum; while, in others, the surface appeared like half-warmed jelly. In blood drawn late in the disease, or examined afterwards, the serum was often found of a firm gelatinous consistence, and of a straw colour, with not an eighth part of crassamentum, and that of a very loose texture, and of the appearance of currant-jelly. The presence of petechiæ did not prevent early depletion in this disease. On the contrary, they were obviously connected with increased excitement, and determination to the surface, and very often disappeared after, though they were not always prevented by the detraction of blood. It is, however, necessary to discriminate between petechiæ occurring at an early, and those which sometimes appear in the last stage of fever, when the circulation is languid, and the vital powers are failing.

In estimating the general value of phlebotomy, considerable allowance ought, no doubt, to be made for circumstances, such as the season of the year, and the robust habits of the Russians; but it was also practised upon the attendants and others with similar good effects, and, the reports add, upon the old as well as the young;—an observation which I should feel considerable hesitation in receiving, without explaining that there were very few with aged or debilitated constitutions.

In a typhous fever which afterwards prevailed among the Danish and American prisoners of war, and in which a glossy and turgid appearance of the eye was often the first indication of the disease, Dr Dobson of the Trusty informed me, that he found venesection attended with the same success as in the Russians; but, while he is firmly of belief that no other plan was equally successful, he candidly acknowledges that, in many cases, his expectations from the lancet were altogether disap-

pointed, while, in others again, it seemed to save several who were studded with petechiæ,—a symptom that often manifested itself within thirty-six hours of the attack. After reverting to the failure of the lancet in cases where he had reason to expect success, he concludes,—“ But these failures by no means argue against the propriety of the practice, where no other measure was equally successful ; inflammation was still present, and to its consequences death was, in every case, clearly proved by dissection.”

In endeavouring to account for this contrariety of result in cases seemingly analogous, the operation of moral and physical causes, and particularly the varying influence of confinement and mental depression on different constitutions, with many other considerations, ought not to be overlooked.

To those who would infer that, if fever and inflammation be so frequently connected, and follow each other in the relation of cause and effect, blood-letting ought to be more uniformly proper and successful in fever, it may be answered, that, even could its existence be always immediately ascertained, yet such is the variety in the kind and degree of inflammation, according to the seat, nature, and period of the disease, as greatly to modify the result ; for, in fact, with the exception of greater fulness of the vessels of the part, owing to the peculiarity of structure and the mutability of the animal powers, very different, and even opposite conditions, have been comprehended under this general term. It therefore by no means follows, that this operation should be indiscriminately resorted to ; or, even setting aside its injudicious employment as to time or quantity, that it should be expected to prove uniformly successful in fever ; for we know that this is far from being the case even in the purer phlegmasiæ, and that the diseases of this order neither always admit, nor can they be always arrested by extensive depletion. Upon the whole, however, I am inclined to think that the results were more favourable in the Russian than in the later fever ; and, after making all deductions, that they were amply sufficient to prove the great superiority of this mode of treatment. The whole of the medical reports, and particularly those of Dr Douglas, concurred to substantiate the efficacy of early and decided blood-letting ; and, when the many bad cases admitted into both establishments are taken into consideration, I think it may be fairly concluded, that the success was fully as great as could be expected in a disease so complicated as fever, and so often attended with dangerous congestions. Farther than I have above stated, I cannot pretend to lay down any precise directions for the employment of venesection. The

difficulty of going beyond general rules for the use of a remedy whose power is so much dependent upon the fluctuating state of the animal economy under disease, will be readily acknowledged. We must be guided by the evidence of local affection, by the nature, temper, and period of the disorder, and particularly by the actual effect produced by the operation; for, in different circumstances and persons, it will be borne with very different results, under symptoms apparently similar; hence the discordance of opinion,—the applause and censure that have attached to this remedy, since the earliest eras of medicine. What I have seen certainly authorizes me to believe that early blood-letting may be extended to cases of fever, in which it has been generally considered at least equivocal, if not prohibited. In favour of its late employment, which must ever require great caution and discrimination, and which can only be justified under very pressing symptoms, I have nothing whatever to say beyond what is comprised in the maxim of Celsus, “*Multa in precipiti periculo recte fiant, alias omittenda.*”

In farther support of these observations, I might here adduce, were it necessary, many high and well-known authorities, ancient and modern, in behalf of blood-letting in fever. But such a review would far exceed my object, which is impartially to pourtray its effects in the disease in question, not to advocate its cause in fevers in general; certainly not the indiscriminate or incautious application of this remedy, in habits debilitated by disease, intemperance, long residence in warm climates, or in unhealthy situations;—far less to countenance its rash employment late in this disorder. On the contrary, I am well persuaded that its late or injudicious use in dangerous fevers, such as those I have been most conversant with in the West Indies, would infallibly accelerate the fatal catastrophe; but, in climates where the disease is far less rapid, and where, from experience of its nature and tendency; of its pressure upon some vital organ; or of the inefficacy of other modes of treatment, we have reason to apprehend that it will run on to a fatal termination unless relieved, we are certainly warranted in making the attempt; and the success with which it was made in some of the above instances alone, is, I conceive, sufficient to justify this conclusion.

In leaving to be weighed in the varying scale of opinion the above evidence in behalf of early blood-letting, as a remedy for fever, the inference that the reverse of this proposition has often been assumed from theory, and not from experience, will probably be allowed to have some influence with the most sceptical, when it is reflected, that they who have written in its favour

have practised what they recommend; while it is hardly to be supposed that the humanity of those who are against it would permit their giving a fair trial to a measure which they believed to be injurious. In this fever, unfortunately, the cold affusion was but seldom deemed admissible, from the frequency of pulmonary, or other topical congestions.

Without entering into the different views with which epispastics have been used, they were employed with their usual good effects in mitigating pain and local symptoms; and they often proved serviceable in relieving the head at a later period of the disease.

It is, I trust, every day becoming less necessary to say any thing of the ill effects of opium, bark, or wine, in the early stage of continued fevers; in the debility left by the disease, the latter proved a most valuable and grateful cordial.

In appreciating what has been said of the effect of venesection, it should be recollected, that, in all cases, purgatives were freely used at the same time.

It is now well understood, that the value of the latter class of remedies is not limited to the mere removal of the fecal contents of the bowels, but that they may be so managed as to obviate or relieve a tendency to topical congestions elsewhere; and also to produce a considerable effect upon the general system, by the increased quantity of fluids they cause the various glands and exhalent arteries to pour into the intestines.

Thus they become not only eminently subsidiary when blood-letting is proper, but more universally useful in diseases in general, in proportion as they are more uniformly applicable.

They were here considered not only indispensably requisite in the first instance, and assisted by enemas when necessary, but they were liberally exhibited throughout the disease; and very often the bowels could not be kept sufficiently active unless they were repeated day after day. Though not a new, it is a most important observation, that all uncertainty as to the full operation of this class of remedies can only be removed by inspection, without which the practitioner is very apt to be led to imagine that the patient, from his own report, or that of the nurse, has been sufficiently purged, when, at most, he may have had only two or three partial scanty dejections. There is another reason for this; purging, though oftener carried to an insufficient length, I have reason to believe, in some instances, has been pushed too far, and hence its due limits can only be ascertained by personal observation. While we are producing foul, dark, fetid evacuations, we may naturally expect that we are benefiting and relieving the patient; but when the bowels have been freely

cleansed, and the system does not require further reduction, to keep up a constant state of irritation, by purging, can only prove wasting and injurious.

On the other hand, by those that have not had much acquaintance with fevers, it is hardly possible to calculate the quantity of medicine sometimes required to overcome the torpor of the intestinal canal; the morbid accumulations that have been discharged, after repeated purgatives; and, in some cases, the speediness of their reproduction.

In tropical fevers, especially, I have seen very striking examples of the abatement of fever and delirium, after the operation of purgatives; and it is therefore of great consequence to be aware, that the febrile symptoms are often maintained, or renewed, by the retention of vitiated secretions, or other morbid contents of the intestines; as also of the quantity of dark coloured offensive matter that is often discharged, after the patient has been thought sufficiently purged, and its speedy reaccumulation, in some cases, in order to estimate the extent to which it may be necessary to persist in the use of evacuants.

The choice of purgatives was not restricted in the present fever, where the stomach was so retentive: jalap and calomel was the purge most frequently employed, and, upon the whole, perhaps, the most efficacious. The latter was found a valuable addition to other cathartics, but it was seldom exhibited with any farther view, as the biliary system was little affected, and chronic visceral derangement, as a consequence of fever, rare.

Dr Fordyce, and other eminent practitioners, have observed that medicines of this class, when combined, occasion less sickness and pain, and are more certain in their operation, than when taken singly; a remark in which I beg fully to coincide. A mixed purgative, I am clearly of opinion, operates more effectually, and, at the same time, more easily, and in a smaller dose, than any remedy of this description individually.

Upon the whole, although, from their general and extensive utility, purgatives claim a great superiority in the treatment of various diseases, and of fever in particular, yet their value ought not to derogate from the efficacy, nor supersede the use of other agents; for, in the severer forms of fever, we find that blood-letting, purging, and the cold affusion, greatly, and mutually, assist each other.

Clifton, February 1816.

