

Practical observations on the treatment, pathology, and prevention of typhous fever / By Edward Percival.

Contributors

Percival, Edward, 1783?-1819.
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Publication/Creation

Bath : printed by Richard Cruttwell ; London : Sold by Longman, Hurst, Rees, Orme, and Browne, ..., 1819.

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PRACTICE AND OBSERVATIONS

TREATMENT, PATHOLOGY,

AND
PREVENTION

OF
TYPHOUS FEVER.

BY
EDWARD TILGNER, M.D., F.R.C.S.

MEMBER OF SEVERAL MEDICAL SOCIETIES IN
LONDON, EDINBURGH, AND BERLIN.

PRINTED BY
RICHARD WHITWELL, ST. JAMES'S STREET, LONDON.

AND SOLD BY
LONGMAN, GREEN, REES, ORME, AND BROWN, PATERN-
OSTER-ROW, LONDON.

1892.

FRAGMENTS OF ANTIQUITY

THE HISTORY OF THE

PREPARATION

OF THE

ANTHROPOLOGICAL

INSTITUTION

OF THE

AMERICAN

PEOPLE

AND

THE

PROGRESS

OF

THE

SCIENCE

21.2.11.
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BY

EDWARD PERCIVAL, M. B. M. R. I. A.

MEMBER OF SEVERAL MEDICAL SOCIETIES IN

LONDON, EDINBURGH, AND DUBLIN.

PRINTED BY

RICHARD CRUTTWELL, ST. JAMES'S-STREET, BATH,

AND SOLD BY

**LONGMAN, HURST, REES, ORME, AND BROWNE, PATER-
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PRINTED BY
RICHARD CROFT, ST. JAMES STREET, BATH.

FORGEMAN, HURST, REES, ORME, AND BROWN, PATENT
PRINTERS, 10, NORTH ROW, LONDON.

1848.

TO

ROBERT PERCEVAL, M.D. M.R.I.A.

&c. &c. &c.

MY DEAR SIR,

IN prefixing your name to the following brief Treatise on Fever, I feel equal confidence in the candour and the ability of the judgment to which it is committed.

Allow me to avail myself of this opportunity, to express my deep and grateful sense of your kindness to me, both personal and professional, during the eight years of my residence in Dublin. The friendship you entertained for my late Father was extended to me without reserve; and though now removed from the sphere of your immediate society, I reflect, with unabated pleasure, on

our former intercourse, and have a peculiar satisfaction in thus testifying my sense of its value, when even a suspicion of interested motives can no longer occur.

May I add, that to my late professional brethren in general, and especially to the College of Physicians, who honoured me with so peculiar a testimony of their esteem, on the occasion of my quitting Ireland, I feel undiminished sentiments of grateful respect.

May life and health be long spared to you, my dear Sir, that you may still pursue, with God's blessing, the paths of Science, Humanity, and Religion, which you have cultivated so many years with distinguished advantage to your Country, is the heartfelt desire of

Your ever faithful, obliged,

And affectionate Servant,

EDWARD PERCIVAL.

Bath, Feb 2, 1818.

ADVERTISEMENT.

THE following sheets contain the results of the Author's experience in the treatment of several thousand cases of Fever, which fell under his immediate care whilst Physician to the Hardwicke Fever Hospital in Dublin. A considerable portion of his late Medical Report of that Hospital, for the years 1813, 1814, and 1815, which was published by the "Association of Members of the College of Physicians in Ireland" is embodied in the present work, having been carefully revised, and he trusts rendered less imperfect; to which he has added a large proportion of new matter.

The motive which has chiefly led him to present himself again to the profession and the public, on this important subject of Fever, is the unequivocal evidence from all quarters, that the Epidemic is extending itself over Great-Britain; whilst no adequate measures are adopted, or have hitherto been even devised, for arresting its formidable advances.

In the Spring of last year, "a Select Committee" of the House of Commons "was appointed to examine into the state of contagious fever in the Metropolis;" and their printed Report proves the diligence and fidelity with which they fulfilled their commission. Some necessary provision was made for enlarging the accommodation of the "London House of Recovery," and for extending the salutary influence of its external operations. But no Plan was proposed for obtaining effective co-operation in Town and Country, towards the work of extinguishing, simultaneously, all the sources of Contagion, and preventing, as far as possible, the spon-

taneous production of Fever. That this work may be accomplished by *simple means*, if countenanced by the Legislature, and pursued in concert throughout the country, it is a chief object of the following pages to *demonstrate*. The subject is deeply and universally interesting; and the sad example of Ireland admonishes us not to delay such measures as a wise preventive policy may dictate, in the present emergency.

The distinguished benevolence of the Honourable Chairman, and of his coadjutors, in the Committee appointed by the last Parliament, affords a sufficient pledge, that their exertions will not be wanting, at the present season of increased and increasing danger.

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SECTION I.

Premonitory Observations on the Sources and Increase of the present Epidemic Fever, and on the Means of restraining its threatened Prevalence in England.

THE general and increasing prevalence of Contagious Fever in Ireland has, at length, thoroughly awakened the vigilance of the profession, of the public, and of the vice-regal government in that kingdom; and active measures have been adopted, in the more populous districts, to restrain and mitigate the ravages of the most formidable epidemic which has visited that island in our times.* Of the beneficial operation of these measures there can be no question. They have been devised with much care, and are executed, doubtless, with

* A general and fatal epidemic prevailed in Ireland in the years 1740 and 1741; by which it is computed that 80,000 persons died.

zeal and prudence. But of their sufficiency to meet so great a crisis, time has scarcely been afforded to pronounce judgment. Were we to revert, however, to the period of the first appearance of the Fever, and the early demonstrations of its diffusive mischief, much serious regret must be acknowledged, that a system of preventive discipline, and of organized medical correspondence, was not sooner called into action throughout the country. Such a *plan* was suggested to several medical gentlemen, magistrates, and other well-known benevolent individuals, in the metropolis; who communicated their views officially to the chief persons in the administration, and received from them every mark of courtesy and confidence.* But the alarm was supposed by many well-meaning and otherwise intelligent persons, to be unfounded or exaggerated; and the Viceroy and his chief Secretary, with the most liberal and benevolent intentions, deemed it prudent to pause a while, before the measures, which they had approved upon paper, were carried into execution. In the mean time, the epidemic proceeded, observed or unobserved, in its geometrical march; until the city of Dublin, which for some time had escaped the extraor-

* This communication was made officially in the month of August 1816.

dinary contagion, became involved in the common calamity.* Another plan was then devised, similar in many respects to that before proposed, but less comprehensive in its general design.†

My residence in Dublin at the time when the Epidemic first appeared, and my connexion with a large Fever Hospital, (as one of the Senior Physicians to the Establishment,) gave me such opportunities of marking the character and progress of the fever, as prompted me to become one of the earliest and foremost proposers of the *plan* of preventive discipline first alluded to. Since my removal to Bath, I have not been an inattentive observer of the various and increasing demonstrations of fever, not only in the metropolis and the larger towns

* “The epidemic fever which had prevailed in most parts of Ireland for more than a year past, at length reached this city. Hospital accommodation for the separation of the sick from their families, with other means tending to destroy infection, have been liberally supplied; but the fever has made *steady advances*, and patients now enter the Hospitals at the rate of at least TWO THOUSAND MONTHLY.”—*Report of the House of Recovery, &c. Dublin, by Dr. Barker, Senior Physician, Oct. 1818.*

† In this *latter* plan, also, my name was comprehended; but being then on the eve of quitting Ireland, I could attend only the first meetings held by the very active, intelligent, and liberal Board of Governors of the House of Industry, at the end of September, 1817.

of England,† (where that species of disease is never wholly extinct,) but in the ports of smaller size, and the sea-bathing places on the western and southern coasts of the island. In many places I have learned, that the fever has been distinctly traced to Irish labourers, who have come over in companies, especially in harvest time, in quest of employment. The passengers and the sailors in the Irish vessels have, in many instances, sickened on the

† By a Report of the Bristol Dispensary, which Dr. PRITCHARD has kindly procured for me, it appears, that in the North district, during 12 months, 1817, 34 cases or families in fever were entered for relief: in 11 months, 1818, 176 cases or families were registered. In the South district, 185 for the former period, and 199 for the latter. In St. Peter's Hospital, 117 for the former period, and 219 for the latter. Dr. PRITCHARD intimates that these numerical reports are not uniformly accurate, but they have been framed without bias towards the general question respecting the prevalence of fever. The total for 12 months, 1817, yields 336; for 11 months, 1818, 594, or *nearly double*.

By the Registry of the Fever Hospital in Manchester, it appears, that from November 1816, to October 1817, inclusive, 219 patients were admitted; whereas, from November 1817, to October 1818, inclusive, 577 patients have been admitted, or *more than double*.

By the Registry of the Fever Hospital in Liverpool, it appears, that in the year 1816, there were 185 patients; in 1817, 1141; and in 11 months of 1818, (viz. from Jan. to the end of Nov.) 1683!!

In the House of Recovery in London, in the year 1816, 118 patients were admitted; in 1817, 760; in 11 months of 1818, —.

voyage, and been landed in a state of high fever. This fever has spread by contagion, not only in the dwellings of the poor, but in the houses of the better orders, through neglect of the common precautions of safety. At Liverpool I was informed, whilst walking through the wards of the Fever Hospital, fifteen months ago, that an unusual pressure and mortality had been lately experienced there, which were traced chiefly to those quarters of the town where the poorer sort of Irish live, in dirty and crowded habitations. Since that period I have learned, with regret, that several medical gentlemen have contracted the fever by infection, and some fallen a sacrifice to it.

In several watering-places on the southern coast, typhus has prevailed in the late season, even among the affluent visitors; some of whom, having contracted the infection, have sickened after quitting the place, and introduced the fever into other parts, where it was little known. This has happened in several instances in Bath, some of which have fallen under my own observation; and doubtless in other places, especially in London, similar occurrences must have happened.

But it is superfluous to enlarge on the generally admitted fact, that contagious fever is

now epidemic in various parts of England; that its natural tendency, if unchecked, is to extend itself more and more widely;* and that this principle of propagation is fed by continual supplies from the sister kingdom. *Proximus ardet Ucalegon*. The great question is, in what manner the progress of this epidemic may most speedily and effectually be arrested. The mere vicissitudes of *temperature*, in the heats of summer and the cold of winter, have manifestly failed even to moderate the pestilence. Whatever may have been the influence of previous untoward seasons, in favouring the first production of fever, no evidence has yet appeared of the controlling agency of later and more salubrious seasons. Hereafter I propose to notice the influence of climate and season, in *modifying* the specific character of fever; in this place I advert only to the generic distemper, which has baffled every vicissitude of

* Dr. MILLAR, of Glasgow, in a printed "Letter to the "Fever Committee" established there, laments the "failure" of their efforts to suppress the epidemic; "so far from destroying the contagion, (says he,) it has amplified and expanded, and is at this moment more alarmingly prevalent than seven months ago, at the time you commenced your career."—Glasgow, Nov. 12, 1818. Page 10.

Dr. M. estimates the number of persons afflicted with fever in Glasgow alone, during the last twelve months, at *four thousand*. Page 31.

weather, throughout a year of extraordinary temperatures.

In like manner, the return of plenty, of wholesome crops, and of general employment for the labouring community, although it may have prevented much aggravation of the mischief, has proved wholly inadequate to resist the productive quality of contagion.

What, then, are the positive means of controlling the future progress of contagion throughout the country? I answer, in the terms which have been repeated and confirmed by almost every medical authority from the time of Dr. LIND,—SEPARATION, CLEANLINESS, and VENTILATION.*

The primary measure to ensure the public safety is to *separate* the healthy from the sick. This must be done in every case, and in all circumstances; since almost any risque of cold or privation is preferable to the certainty of

* Ample documents on this subject will be found in the writings of Dr. HAYGARTH, (more particularly in his Letter to Dr. PERCIVAL, on the Prevention of Infectious Fevers, &c. A. D. 1801) in the "Proceedings of the Board of Health in Manchester," A. D. 1796 to 1804; and "A Collection of Papers intended to promote an Institution for the Cure and Prevention of Infectious Fevers," published by Dr. CLARK, of Newcastle, A. D. 1802. Of the labours of my much respected friend Dr. HAYGARTH, in this department, I may be allowed to speak in the language of Dr. HEBERDEN: "The zeal and ability which he has manifested upon this

contracting infection. In the houses of the affluent, and even of the middle classes, separation is easily effected, by giving the patient an airy apartment, and avoiding all personal contact with him, except such as his necessities may require. But in the cottages, cellars, or lodging-houses of the poor, where the whole or greater part of a family are obliged to inhabit the same room, to respire the same atmosphere, and to lie whole nights in close contiguity, it is impossible to effect, and therefore fruitless to attempt, an adequate separation. Hospitals, whether established or temporary, furnish the only resource for the labouring poor, when afflicted with fever; yet, strange to say, not only fevers, but *infectious* diseases generally are, by Charter, excluded from almost every County and City Infirmary throughout the kingdom. It is to be hoped, indeed, that such prohibitions, however legally framed, will be overruled by the good sense and humanity of the Governors of Hospitals, wherever the prevalence, or even the existence, of fever is ascertained among the poorer classes. The dilemma itself

“very important subject, will do him lasting honour. By
 “the numerous facts he has collected, and by the solid
 “judgment he has shewn in the conclusions which may be
 “made from them, he has greatly illustrated the nature of
 “infection.”

is of sufficient importance to deserve the interference of the Legislature, at least to indemnify, if not to make it onerous on, the administrators of such charities, to receive into the wards patients in fever preferably to all other claimants. That this is actually done in several hospitals, the letter of whose laws is thereby infringed, reflects only credit on the governing and medical officers of such institutions. But a slavish adherence to technical regulations has operated, and may continue to do so, in a multitude of cases, to the loss both of health and of life, if it be not distinctly and universally inculcated as a duty, to supersede such preposterous inhibitions. There can be no objection to appropriating to this most important of all classes of disease, a part of any well-ventilated Hospital. The safety of this measure was long ago demonstrated, by the experience of Dr. LIND, in the Haslar Hospital: the same plan was afterwards beneficially adopted in the Dumfries Hospital, A. D. 1776; in the Edinburgh Infirmary, 1777; in that of Chester, 1783; that of Liverpool, 1786; in Manchester, and several other towns, somewhat later. It is sanctioned, also, by the practice of the incomparable hospital at Woolwich.

It were needless, at this day, to explain or commend the uses of hospitals appropriated to

the cure of contagious fevers. One remark only I shall take occasion to offer, viz. that in any town, village, or hamlet, not enjoying such an asylum in its vicinity, one or more airy dwelling-houses, might, at very little cost, be prepared for temporary use as a fever hospital. The sick should be separated from the healthy, on the very instant that the fever is discovered; nor should they be restored to their friends or society, until their convalescence is fully established.

Cleanliness is not less essential than separation, to prevent the spread of infectious matter. Body-clothes, bedding, furniture, utensils, and even the walls and floors of the apartments of the sick,* may become so impregnated with morbid effluvia, in confined spaces, as to infect a large proportion of those who may come into immediate contact with them. All such articles and surfaces, therefore, should be carefully and plentifully washed.

A free *ventilation* in the chambers, and throughout the houses, of the affluent, is easily obtained. In the dwellings of the tradesman and shopkeeper, this is more difficult; and in

* Dr. LIND, Dr. JACKSON, and Dr. HAYGARTH, have very judiciously and strongly insisted on the importance of cleansing every article of household furniture, with which patients, ill of fever, have been in any close communication.

the dark, confined, and crowded habitations of the poor, an adequate ventilation is commonly impracticable. Wherever patients in fever lie, or have recently lain, a thorough perfusion of air must be effected, at all risque, and at any primary cost. No contingencies are so expensive as sickness, nor is any hazard of catarrh or rheumatism, (if ventilation really incur such hazard,) to be compared with the danger of typhous infection. Whether atmospheric air have the power of holding this infectious matter in chemical solution, as Dr. HAYGARTH supposes; or whether the miasms be of a gaseous or other minute and transparent form, diffused in the ambient air, has not hitherto been determined. But no truth is better established, by long and various experience, than this important fact, that a free perfusion of the common air throughout the chambers of the sick, in contagious fever, so dilutes the contaminated atmosphere, as to disqualify it for propagating the disease.* The precise degree of this dilution is unascertained; and

* “ At St. Thomas’s Hospital (says Sir GILBERT BLANE)
 “ where fever patients are indiscriminately mixed with
 “ others, but where the wards are kept as sweet as the apart-
 “ ments of a private house, there was no instance, during the
 “ last ten years of my attendance, of any medical gentleman,
 “ patient, or nurse, having caught a fever. This was not
 “ the case before proper means of cleanliness and ventilation

would be of little import were it ascertainable. The principle is clear and distinct; and the inference is indisputable, that every room or building, which incloses contagious fevers,

“ were adopted.” See Dr. CLARK’s “Collection of Papers,” &c. part 2d, p. 45.—During my own attendance at St. Bartholomew’s Hospital, into which patients in fever are indiscriminately admitted, I did not observe a single instance of the communication of infection. These facts, however, do not contravene the superior eligibility of appropriating particular wards to the reception of contagious fevers exclusively. But they may serve to disabuse the public of unreasonable fears and prejudices concerning the influence of contagion. Medical and clerical visitors of the sick, who are conscientious in the discharge of their duties, are seldom unduly apprehensive of infection. But magistrates and other lay visitors, inspectors, and guardians, of charitable institutions, work-houses, gaols, &c. are sometimes deterred, by vague and groundless fears, from the full performance of their duties. To such persons it cannot be too strongly or too frequently stated, that *wherever* they would themselves incur danger by visiting the sick in fever, *there* must be such a neglect of cleanliness and ventilation as *grievously* to injure the patients so situated. “Since my return from Turkey” (says Mr. HOWARD) I have frequently been asked what precautions I use to preserve myself from infection; “I here again answer, that, next to the free goodness and mercy of the *Author* of my being, *temperance and cleanliness* are my chief preservatives. Trusting in Divine Providence, and believing myself in the way of my *duty*, I visit the most infectious Hospitals and noxious cells; and while thus employed, *I fear no evil.*” Windows and doors are easily thrown open; and mops, with other washing apparatus, as easily put into use; so that there can be *no excuse* for neglecting *visitorial duty* at Hospitals, Penitentiaries, Work-houses, or Gaols.

should be provided with the means of ventilation *on all sides*.

The dose of typhous miasms that is requisite to produce fever, appears to vary so greatly under different circumstances, as to elude any definite calculation. It appears to vary, 1st, according to the state or degree of fever in the subject which emits the miasms; 2dly, according to the degree of their concentration; and, 3dly, according to the bodily and mental condition of the recipient. It varies also in another material and even paradoxical respect, viz. according to the length of time, or the degree, in which a person has been habituated to an infectious atmosphere. This, which is termed the *seasoning*, greatly influences the constitutional susceptibility of receiving or cherishing the poison; as is familiarly shewn in the immunity experienced by nurses and other attendants on Fever Hospitals. As I presume, therefore, that, in these several and conjoint particulars, scarcely three cases in any given hundred, taken experimentally, can be circumstanced precisely alike; so I infer that in order to approximate to just conclusions in this matter, many thousand cases must be faithfully compared. Happily, however, neither the prevention or the cure of fever hangs upon such curious investigations.

It is nevertheless of importance here to notice the opinion entertained by most Physicians since the time of Dr. LIND, that contagious matter with which clothes, bedding, &c. may be imbued, is in a more active or concentrated state, than as it issues from the breath of the patient. Mere ventilation being insufficient to correct this infectious quality, recourse must be had to washing. In some instances stoving has been tried as a substitute, in others, fumigation with the vapours of burning sulphur. But I have no hesitation in preferring the process of washing, as most eligible and secure.

Various fumigations have been proposed for disinfecting such chambers as are out of the reach of free ventilation. I believe the nitric acid, as it arises in vapours from decomposing nitre with oil of vitriol, is on the whole the best. But the removal of patients out of such close chambers is incomparably more desirable.

Allied to the uncertainty of contracting febrile infection, is the uncertain term in which the matter or the mischief may lie dormant in the infected body, before it reproduce the disease from which it emanated. I have more than once known a very strong dose of the poison (inhaled in a close room of pauper patients) so to operate upon the nose, the palate, the stomach, and probably also the mental apprehen-

sions, of a healthy individual, that, within twenty-four hours, he has fallen into lassitude, rigor, and confirmed fever, of the worst kind. Examples of the same immediate formation of fever have been recorded by different credible observers. On the whole, however, such instances are very rare. From ten days to three weeks appears to be the most common term of latent infection; and this period may be extended, uncertainly, for the space of several weeks; and in some cases it has been supposed to extend even to three months.

But all these calculations are more or less embarrassed with another important consideration, which remains to be noticed, namely, the spontaneous production of fever, independently of specific contagion.* I do not mean here to discuss nosological terms. But it will now be denied by few, that the prevalent

* The following observations of Dr. JACKSON, merit a serious attention:—"Pure air, and active employment of the limbs or powers of motion, are principles given by the Author of Nature to preserve the health of the animal system; for whenever the human body becomes deprived of these essentials, its health languishes, and its vigour decays; nay, the actions which support life are then not only languid, but they become diseased, or fall into unnatural movements; in consequence of which, the ordinary secretions are so changed, that, though the actual existence of fever be not apparent, something noxious seems to escape from the system, which, to a certain extent from

fever of this country (by whatever denomination it is marked) is largely produced, wherever many or all of the following circumstances concur, viz. unwholesome and deficient food; air vitiated by respiration and morbid exhalations; want or excess of labour; agitation or despondency of mind; impaired digestion; exposure to vicissitudes of weather; and ungenial seasons. Some rigid theorists may contend that these are only *predisposing* circumstances; and that, inasmuch as they do not invariably produce fever, they cannot be termed logically *causes* of fever. On the same grounds precisely it might be argued, that contagion is not a

“ its source, affects the health of others. In this manner,
 “ it has often been observed, that persons from jails, work-
 “ houses, and other places of artificial confinement, though not
 “ sick at the time, and what is still more remarkable, though
 “ not observed at any period to have laboured under formal
 “ disease, carry in themselves, or in their clothes, causes
 “ which occasion fever in its most formidable aspect, to those
 “ who approach near to them. This gradually changed
 “ secretion is sometimes found among large bodies of men,
 “ whose atmosphere proves certainly noxious to the irritable
 “ habits of full health, but affects in a smaller, if in any, degree
 “ those situated similarly with themselves. It is further to
 “ be observed, that the cause thus generated speedily pro-
 “ duces a fever in a healthy man; and that the fever so pro-
 “ duced is accompanied with such alterations in the secre-
 “ tions of the system, as to generate a cause, occasioning
 “ similar disease through an endless variety of subjects.”—
Outline of the History and Cure of Fever, p. 110.

cause of fever, because thousands are exposed to it without contracting the disease. There are, indeed, those who deny the influence of contagion; and the same incredulity seems to have led others to deny the spontaneous origin of typhous fever.*

But to return to the rules of preventive discipline. As contagion is to be counteracted by separation, cleanliness, and ventilation; so, also, the two latter are among the most decisive preventives of spontaneous fever. Not only should the houses and materials of the poor be cleansed, but *habits of cleanliness* should, as far as possible, be recommended and enforced. Not only should the apartments of the sick be freely ventilated, but a steady and wholesome perflation should be *maintained* in all the dwellings of the poor, wherever they may be

* Dr. BARKER, in his "Report of the Cork-Street Fever Hospital, Dublin, for the year 1817," is at considerable pains to demonstrate that the "Epidemic Fever of these countries has *originated* on the Continent of Europe, and has been *produced* by war." It is presumed that, by "war," the intelligent writer means those circumstances of cold, wet, fatigue, privations, vitiated atmosphere, &c. to which troops are continually exposed in the vicissitudes of war. But as these circumstances may and do occur at home, so the analogy has long since been observed between camp, hospital, jail, and malignant or typhous fever, wherever it may happen to be generated, whether by contagion or otherwise.—See Dr. BARKER's *Report*, p. 77.

situated. It was proposed by Dr. FERRIAR to subject all the lodging-houses of the poor in Manchester to license, so as to place them at once under the inspection and control of the magistracy. This hint has no where, I believe, been followed into practice. Yet to me it appears sufficiently important to merit the attention of the Legislature. As such lodging-houses are the receptacles, not only of the poorest and most squalid individuals, but of vagrants also, who both originate and propagate fevers in their travels from town, to town there can be no question that the public safety would justify the imposition of a license, at least as equitably as in the case of a tavern, or a tea shop.

Under such *surveillance*, every doubt or difficulty respecting the window-tax, as it interferes with the health and safety of the public, might be determined; rules might be laid down for the structure and accommodation of pauper buildings; the number of lodgers in a given space might be limited, under a penalty; and notifications of disease made imperative upon every keeper of such houses. Pawnbroker's ware-rooms, and slop-shops for second-hand clothes, should come within a similar superintendence.

It would devolve upon the local police to establish fountains, to open free sewers, to

widen streets, to remove nuisances, and to compel landlords, by certain penalties, to preserve at least all external demonstrations of cleanliness about their dwellings.

But the great *desideratum* consists not in devising, but in executing, arrangements of the kind here proposed. Nothing short of an organized association of well-informed medical and other gentlemen, emanating from a central society in London, and co-operating throughout the country, can meet the exigencies of an epidemic distemper, like that which is ravaging the kingdom of Ireland. The expedient of providing and multiplying Fever Hospitals may be desirable or indispensable as an auxiliary measure. Separation is one essential part of the scheme of preventive discipline. But a more radical object is personal enquiry into the origin, the causes, and the local seats of the contagious disorder; and the enforcement of cleanliness, ventilation, and such other remedies as special circumstances may require. For these purposes, in the year 1796, a season of extraordinary epidemic fever, a Provincial Board of Health was formed in Manchester. Its successful operations are well known to the profession and the public; and after an interval of quiescence, it is to be hoped, that

the Institution will revive with zeal and perseverance.*

The design, then, I would venture to recommend, is a CENTRAL BOARD OF HEALTH to be established in the Metropolis, corresponding with PROVINCIAL BOARDS of a similar structure, in all populous parts of the kingdom. By this arrangement, energy, concert, and effective operation, would be most advantageously secured. Such Boards, in the country, might consist of the physicians belonging to hospitals and dispensaries; the magistrates; and the parochial clergy, of the respective districts. Monthly reports being made by them to the central board in London, the government and the public would be precisely informed of the progress of the Epidemic, and of the vigilance and success of its suppressors. The junior part of the medical community, having more leisure for such undertakings, would be encouraged in their hazardous labours, by the opportunity of demonstrating to their great patron—the Public, the results of their industry and skill.

In London, a Board might be selected from the *Physicians* of Hospitals and Dispensaries,

* It is stated in the "Report" for 1818, that "the number of fever cases this year greatly exceeds the aggregate of the *two* preceding years; and the *mortality* greater than that of the *four* preceding years."

(who are most extensively acquainted with the epidemic as it prevails amongst the poor,) some city magistrates, and members of Parliament, conversant with charitable institutions. By such a body, medical Inspectors might be appointed to survey, in order, the districts of the town, according to the demarcation of the divisional police; each office of the police being instructed to furnish information and aid to the inspecting commissioners. Wherever contagious fever is ascertained to prevail, these commissioners should report to the Board, distinctly, the circumstances, local or general, which they conceive to have occasioned the production and spread of the distemper; they should report, also, the structure, ventilation, cleanliness, sewers, supply of water, and population of each street, house, or cluster of habitations, implicated in the fever. The Inspectors might also be advantageously empowered to visit all buildings, where manufactures of any kind are carried on; also prisons and hospitals; to ascertain the number of persons confined together in a given space; the number of hours they are required to work; the intervals allowed for meals, recreation, and sleep; also the general condition of apprentices, in respect to the care taken of their health, clothing, and salutary comforts.

Although the PUBLIC HEALTH is a subject which has not sufficiently engaged the attention of the legislature, or even of professional men in these countries, it has long been digested into a system on the Continent. In Germany, it has acquired the name of State Medicine, and has been divided into two branches—Forensic Medicine, and Medical Police. The latter of these departments, (which must in every country be allowed to form a most important part of general police,) requires, for its due conduct, the establishment of a Board of Health. It is by such a Board, constituted on the plan above recommended, that, in the emergency of importing foreign pestilence, as well as during the alarm of indigenous fever, the public mind may be tranquillized and enlightened; the expenditure of public money restrained, by confining it to its proper objects; and charitable individuals disabused of the errors by which their beneficence is wasted.

The contagious property of the plague was not discovered earlier than the fifteenth century. The horrors of that disease induced the Venetian Government, in the year 1478, to appoint officers of health for the protection of the public; and this appointment may be considered as the origin of medical police. These officers soon discovered the necessity of

preventing all communication between the healthy and the diseased; hence arose lazarettos and quarantines. And these institutions, which were the first-fruits of medical police, have banished the plague from the greater part of Europe. The medical police of Malta, under the direction of a Board of Health, kept the garrison absolutely free from the plague which lately ravaged that island. Only seven soldiers died of the pestilence; while of the inhabitants, who were not under medical police, there perished 3348.*

Twenty years ago, a zealous and benevolent physician in Chester demonstrated that small-pox might be extinguished, by means which were successfully practised for some time in that city. Had there then existed a National Board of Health, co-operating with provincial branches, it is scarcely to be doubted that small-pox would have been eradicated from these kingdoms, though the efficacy of vaccination had never been discovered.

The same intelligent Physician has pronounced very sanguine expectations, that a similar plan, adopted in reference to typhus, would banish that pestilence also from the empire. Happily, indeed, for the safety of man-

* See Inspector's Report to the Army Medical Board, in London.

kind, medical science has ascertained the general nature of contagious fevers, which are at all times, more or less, prevalent in large towns. And such an improved state of knowledge promises to be a powerful instrument in the hands of a Board of Health, for restraining, and perhaps eradicating, malignant epidemical diseases.

Besides the actual mortality occasioned by contagious fevers, the loss of time during sickness and convalescence, the impaired vigour and eventual decline, of many who have survived the disease, render it, in a national and moral point of view, imperative upon every humane Government to devise the best means of controlling so great a scourge. Health, among the lower orders of a community, is the source of industry, economy, and order. The improvement of morals is a direct consequence of the improvement of public health. Disease and debility among the labouring poor lead to despondency, and thence too commonly to habits of ebriety; whilst indigence, beggary, and crime, complete the process of ruin.*

The establishment of bills of mortality, the ascertainment of the comparative salubrity of

* The latter paragraphs are chiefly drawn from the Statement laid before the Earl of WHITWORTH and Mr. PEEL, when in office in Ireland, in August 1816, and were prepared for that purpose by my friend Dr. CHEYNE and myself.

seasons, soils, modes of life, and the diseases severally incident to age, sex, rank, and habits of mental and bodily employment, would obviously emanate from a Board of Health constructed on the plan here proposed. All knowledge of the physical and civil history of man has its important uses; and medical statistics claim, in this respect, a preeminence which they have not hitherto attained in our country.

I cannot better conclude the foregoing observations on preventive discipline or medical police, than by citing the concise but comprehensive opinions of a very able advocate for preventive medicine, Sir GILBERT BLANE, bart. M. D. &c. “The remote causes (says “he) of all predominant disorders may be referred to three general heads—the vitiated “exhalations and secretions of the living body, “the noxious exhalations of the earth, and “depraved habits of life. The first includes “the plague, the specific contagions, typhus, “dysentery, leprosy, and siphilitic disease; “the second consists of intermittent and remittent fevers; the third comprehends palsy “and other nervous diseases, gout, dropsy, “scurvy, and rickets.

“It is enough to know practically that all “the three remote causes, namely, contagion, “noxious exhalations of the soil, and depraved

“ habits of life, are by their nature very much
 “ subject to human controul. This affords great
 “ encouragement in our endeavours to combat
 “ them. The counteraction of typhus, by
 “ means of cleanliness and ventilation ; of the
 “ small-pox, by vaccination in our times : and
 “ of agues in the country, by the draining of
 “ marshes, and in towns, by the construction
 “ of sewers, and the cleansing of the streets, in
 “ the seventeenth and eighteenth centuries,
 “ are undeniable proofs of the power of human
 “ art in preventing and extinguishing diseases.
 “ The counteraction of the third class of causes
 “ consists in resisting the propensities to sen-
 “ suality, indolence, and effeminacy, by good
 “ moral habits of self command.”*

It is hoped and presumed that the Imperial
 Parliament will resume the Inquiries which it
 instituted in the last Session, respecting the
 causes and prevention of the Epidemic Fever
 now prevailing in the country.

* See “ Observations on the Comparative Prevalence,
 “ Mortality, and Treatment of different Diseases.” *Medico-
 Chirurgical Transactions*, vol. iv. pp. 99, 100.

SECTION II.

*Of the principal external Relations of Fever,
or the modifying Influence of Season, Age,
Sex, and Civil Condition of the Persons
affected by it.*

EPIDEMIC Fevers vary so considerably in their predominant as well as their occasional features, even in the same climate, and among the same people, as to require vigilant and discriminative observation. Our earliest and best writers on Epidemics were aware of the importance of this discrimination; and, by confining themselves to the task of recording faithfully the Fevers of particular seasons, their writings have preserved a practical value, which is altogether wanting to many systematic treatises. In Germany the natural history of epidemics has never been neglected; and in England renewed attention has of late

been bestowed upon it by some very able Pathologists.

The communication of concise and digested results of Hospital experience is a benefit which the public has a right to expect from every institution of that kind, which is supported by its bounty. The value of such Reports is threefold; first, as they ascertain the fidelity and skill of the medical and other officers of the charity; secondly, as they serve to instruct practitioners whose opportunities of experience are less extensive; and lastly, as they supply the most substantial contributions to the enlargement of science. For, the materials of just Pathology can be drawn only from large masses of observation assembled and arranged in the order of their subjects; and the most durable improvements in practice are to be looked for from the amplest magazines of experience.

Through extensive districts in England, typhous fever is almost wholly unknown; and many eminent physicians in towns of some magnitude, have expressed so many doubts as to its genuine characters and contagious quality, as could arise only from the want of opportunities to observe the disease. To such of my brethren I may offer, without apology, the results of some years' experience in a large

Hospital appropriated to contagious fevers; and to the profession at large I may venture to propose some views of the pathology and treatment of fever, which, though according essentially with doctrines that are now gaining general assent, were forced upon my own mind by experience, in opposition to the prejudices of early education. Indeed, so imperfectly was I satisfied with the doctrines of fever, promulgated in the most popular works since the days of HOFFMAN and CULLEN, that I had recourse to WILLIS, SYDENHAM, and especially to GRANT, for support in some of the leading principles I had adopted. Accordingly in my Report of the Hardwicke Fever Hospital, during the years 1813, 1814, and 1815, I have appeared to be an advocate for the humoral rather than the nervous Pathology.

In exploring the wards of a Fever Hospital for some time, the attentive practitioner will discern two leading *classes* of phenomena. The *one* comprehends the specific modes or varieties of fever which present themselves in the several individuals, or in successive seasons. The *other* embraces the features of generic resemblance, common to the great mass of fevers at all seasons. When HIPPOCRATES boldly declared that “he esteemed it the greatest
“excellence in the art of physic, to discern

“ with precision the constitutions of the seasons, and the diseases which attend them,”* he certainly did not anticipate that mastery over the general principles of nosology which has given to the moderns so much insight into every particular disease through the evidence of its symptoms. SYDENHAM, a disciple of the ancient masters, frequently complained of the inadvertency of the physicians of his time to the influence of the seasons. Yet so little was he disposed to dogmatize upon this subject, or to imagine that he had discovered any invariable connection between the seasons and different modifications of fever, that he candidly acknowledged, in one of his latest writings, that he had failed in the attainment of this favourite object.

In the variable climate of this island, the succession of the Seasons is very indistinctly marked. In the equinoctial (the vernal and autumnal) periods, when the direction of the winds and the temperature of the atmosphere are continually varying, febrile diseases are more prevalent and more complicated than in the settled periods of summer and winter ; a fact which accords with the observation of HIPPOCRATES “ that in defined and settled

* HIPPOC. Epidem. lib. iii. sect. 3. Consult also his treatise “ de aere locis et aquis.”

“ seasons when the weather is temperate, the
 “ diseases that appear are of a good kind and
 “ easy solution; but in unsettled seasons, dis-
 “ eases of unsettled type and difficult solution.*

It is worthy of remark, that the first severe typhous epidemic, of which SYDENHAM gives a detailed account, (in his *Schedula Monitoria*) made its appearance in London, in February 1625, “ after a thaw on the subsidence of “ wintry cold.”† At first, SYDENHAM was misled by the appearance of cough and embarrassed respiration, to assimilate this fever with peripneumonia notha; but he afterwards retracted his conjecture, on observing that these symptoms were not essential to the disease, but disappeared with the progress of the summer, although the fever continued to prevail. It had, in fact, commenced in February 1624, and reviving in the same month in the following year spread itself all over Eng-

* HIPPOC. Epidem. lib. ii. sect. 1.

† It also deserves notice (as a circumstance corroborated by similar facts) that intermitting and remitting fevers had declined remarkably before the appearance of this epidemic. The last years of this declension were attended with severe winters, especially that of 1623—4, in which the cold was more intense, and continued longer than was remembered by any living person. For the Thames was so completely frozen as to bear the weight of carts and booths, with different kinds of merchandize, and vast crowds of people. See “ *Schedula Monitoria*.”

land, and was even more prevalent in other places than in London.

Both inflammatory and low fevers (as they are vulgarly distinguished) prevail in the Spring, and are alike characterized by catarrhal or peripneumonic symptoms. Whatever be the causes which generate or diffuse epidemic diseases, I have had much opportunity of observing that they spread with peculiar facility on the dawn of mild weather after the severity of winter.* That contagion operates with greater power or virulence at this season, is hardly to be inferred; but the chief predisponents to fever, both within and without the human system, may co-operate peculiarly at this time to encrease the certainty of disorder after exposure to infection.

* In "A Table shewing the number of Fevers admitted 'on the books of the Liverpool Dispensary' for a period of *sixteen* years (from 1780 to 1796) it appears that the month of March supplied the largest numbers, and that of August the smallest; in the total amount, being 4682 in the former, and 3431 in the latter. See CURRIE'S "Medical Reports." By the favour of an intelligent Physician in Liverpool, (Dr. BANNING) I have obtained a report of the monthly admissions to the Fever Hospital from January 1808 to November 1818. On calculating the total items of each month for the first eight years of this series, it appears that December affords the largest number, then January, then March, &c. The present epidemic began to shew itself on the Hospital books about March 1817; and since that period the largest number of admissions have been in November, December,

Vernal fevers are more generally sthenic, (or as the French writers perhaps better express it by another Greek term, angeiotonic,) than the fevers of other seasons. They commence pretty uniformly with head-ach, and shivering, followed by heat and oppressed respiration. Catarrhal, and sometimes pneumonic, symptoms prevail in the early stages, and if not duly restrained, accompany the entire progress of the distemper. That the mucous and bronchial tissue is the common seat of disorder in these cases, appears from the absence, or less equable presence, of acute and locally defined pain, from the visible condition of the fauces, and

and March; being double the numbers admitted in August, September, and October. The same disproportion is observable, in comparing the admissions in the month of August, with those of the month of December 1817, in the respective Hospitals of Dublin, Cork, Waterford, Edinburgh; viz. about twice the number of patients were admitted in the latter, compared with the former month. See Dr. BARKER's Report of the House of Recovery, Dublin, for 1818, p. 10. This intelligent writer more than once notices as a "well-established" fact, that "fever becomes more prevalent on the approach of summer;" yet, he considers "autumn as chiefly favouring the spreading of epidemic fevers." See pp. 11, 13, and 14. Through the favour of Dr. PRITCHARD, I have just obtained a Report of the south district of the Bristol Dispensary; by which it appears that the number of fever cases in January, February, and March, (1817 and 1818,) was more than double the amount of cases in August, September, and October, in the same years, viz. 72 in the latter, and 154 in the former.

from the easy resolution of the distress by expectoration. In truth, these fevers often commence with cough, and defluxion, in such a degree of freedom, as in pleurisy could belong only to convalescence.

In most cases of this kind which have fallen under my observation, the symptoms have denoted only congestion or subinflammation of the bronchial tissue. Yet in some instances, pleuritis has been apparent; and in others, (as dissection has demonstrated,) the parenchyma of the lungs, as well as the pleura, have been engaged; especially when the fever has become severe and protracted, before sufficient medical aid had been obtained.

The young and middle-aged are peculiarly prone to this vernal modification of fever. If persons who have passed the middle age are involved in it, they are generally such as have impaired constitutions, or diseased pulmonary organs. But the former cases being usually of a mild kind, the average term of the fever is short; seldom exceeding nine days, when timely measures have been employed; and sometimes terminating in seven or even five days. Although there are sometimes manifest remissions in this fever, I have not observed any cases of conversion to the true intermittent, as is noticed by SYDENHAM,

GRANT, and other early writers on the Synochus of London.

The Typhus of modern writers prevails also frequently in the spring. Many cases of this kind have occurred to me without distinction of age; parents and children labouring under the like disease at the same time. In truth, the complication of peripneumony with great cerebral oppression, which is at all times alarming, is more frequent in spring than at any other season of the year.

The Summer solstice produces no sudden change in the character of ordinary epidemics. Catarrhal symptoms continue, but pneumonic distress usually declines, as the warm weather becomes confirmed. Pain and heat of the stomach supervene, with tumor or soreness of the epigastrium. Dry retching, or vomiting of bile and mucus, when they occur, occasion much distress to the patient, who seems at this time to labour under peculiar feelings of irritation and despondency. More or less of delirium is commonly attendant. The bowels are usually constipated; the skin hot and dry; yet the pulse is feeble, and the angiotoxic character less prevalent than in the peripneumonic species.

“A Summer fever, (says Dr. GRANT,) if well treated from the beginning, is frequently

“ carried off in four days, and seldom exceeds
 “ nine; if ill treated, it easily becomes pete-
 “ chial, malignant, and often fatal in a few
 “ days; at other times very anomalous, aph-
 “ thous, and tedious.”* The symptoms of this
 fever are marked most clearly in persons of
 middle age, among whom it appears chiefly to
 prevail. Its duration depends much on the
 period at which the patient receives medical
 aid; yet the term of acute fever should not
 exceed nine days, unless it is complicated with
 tympany, singultus, insomnium, and other
 alarming symptoms.

M. PINEL justly condemns the vague deno-
 mination of *bilious* fever applied to this species,
 and proposes to substitute the more definite
 appellative, *fièvre meningo-gastrique*. “ Tout
 “ semble indiquer, que le siege principal des
 “ maladies de cet ordre est dans le conduit
 “ alimentaire, surtout l’estomac, et le duode-
 “ num, non moins que dans les organes secre-
 “ toires de la bile et du suc pancréatique.”†

The Autumnal§ modification of fever. (which
 generally extends itself into the winter,) par-
 takes of the character of the antecedent fever,

* GRANT’S Obs. on Fevers, vol. ii. p. 47.

† Nosographie Philos. tom. i. p. 90.

§ It appears from the accurate observations of Doctors
 WILLAN and BATEMAN, at the Carey-Street Dispensary

in derangement of the villous coat of the primæ viæ, and of the functions, if not the organic structure, of the liver. But the seat of peculiar congestion or sub-inflammation appears to be the inner surface of the large intestines. It has been asked, by what symptoms sub-acute enteritis is distinguished from a similar kind or degree of gastritis. I answer, that as these affections appear in epidemic fevers, the latter are characterized by much greater sickness and soreness of the stomach, by greater impatience and apprehension of mind, by earlier delirium, a more rapid loss of the animal forces, and finally by the evidence of dissection. The type of the enteritic species has appeared to me more irregular than any other; its invasion more obscure; its progress and duration less defined. It is often complicated, especially in the sequel, with mild dysentery. The subjects of the disease are frequently impaired and declining constitutions, in which the digestive organs have been long depraved; and under these circumstances, if the patient escape the first violence of febrile excitement, he incurs no less hazard from im-

in London, that autumn has usually produced the greatest number of cases of typhous fever. I observe the same circumstance in the latest reports I have procured from the Manchester Fever Hospital.

perfect crisis, relapses, hectic fever, and marasmus. Under the pressure of cerebral congestion, this fever is dangerous. But the young and robust usually experience the disease in a mild form. Women, if they are not dram-drinkers, bear it more favourably than men; and amongst these latter the danger is greater in proportion to their visceral infirmities. I have never happened to see this autumnal fever degenerate into the intermitting type.

The worst forms of typhous fever usually prevail at an advanced period of the Winter. Livid blotches, a dry tongue, dark and tenacious mucus on the gums, muttering, delirium, singultus, and lethargy, are common at this season. Peripneumonic disorder often attends at least the commencement of these cases; the lower viscera are also morbidly engaged. But the peculiar seat of sanguineous congestion appears to be the brain and its investing membranes.

All ages, except infancy, are liable to this fever; the duration of which, under the circumstances above described, seldom falls short of fourteen days, and often exceeds seventeen. It is needless to add, that it proves more frequently fatal than any other form of contagious fever. Danger is to be apprehended under all

circumstances of bodily constitution ; yet the fatal cases which I have had an opportunity of exploring by dissection, generally exhibited a turgid or inflamed condition of other organs, besides those of the cerebrum.

An opinion has sometimes been hazarded, that the severer form of typhus is extinguished by the heats of summer ; and this appears to have been the frequent experience of our armies and navy in warm climates. But the fact is otherwise, not only in the cities, but in the country parts, of our island. Examples of the worst kind of typhus have occurred to my observation throughout the summer, in such strict connexion with petechial fevers of milder type, as to afford decisive proof of their common origin and generic character ; modified, by accidents of bodily and mental predisposition, by the qualities of air and food, by the measure of labour and confinement, and, above all, by the early or late remedial treatment to which the patients have been subjected.

This sketch of the *cycle* of epidemic fevers, as they commonly appear throughout the Year, is obviously a mere outline ; which the documents before me might serve to amplify and illustrate, were I not anxious to be concise, on a subject which will recur to frequent notice in the sequel of these observations.

I would here, however, observe, that whilst the modifications of fever, just mentioned, usually attend the course of the seasons, yet they are by no means limited to the periods respectively assigned to them. On the contrary, intercurrent and sporadic cases of each kind appear indiscriminately in all seasons. The late extraordinary epidemic in Ireland has exemplified a considerable deviation from former experience, as will be found in the medical Reports from the several Fever Hospitals in that country, and especially in the very able and minute delineations of Dr. CHEYNE. In France, or at least in Paris, it would appear, from the best authorities, that typhous fever observes pretty uniform modifications according to the seasons. But in our ever-fluctuating climate, no dogmatic rule can be laid down, to predetermine either the precise mode or specific treatment of fevers, according to the solar periods.

Persons of every Age, beyond mere infancy, are liable to epidemic and contagious fever. Children have the disease for the most part in a mild and curable form ; they are liable to catarrhal and peripneumonic symptoms in cold or variable weather, and to disorder of the villous coat of the primæ viæ in the autumnal season. I have seen several hundred children,

below the age of twelve, covered with petechiæ; yet, where the constitution was tolerably sound, a fatal issue of the disease was very uncommon.

In the manufacturing towns of Great-Britain, where children are largely employed, and confined in ill-ventilated chambers for many hours together, typhous fever makes its appearance among them, even when it is not epidemic elsewhere. It is worthy of remark, that the same circumstances, viz. crowded dormitories, and day-rooms, which favour the generation of petechial fevers among poor children, favour the propagation of Scarlatina in the schools of the opulent. The dietary of the former establishments consists chiefly of farinaceous aliment; that of the latter consists largely of animal food. The lower classes, of all ages, are undoubtedly more subject to typhous fever, than the upper ranks, although the disease, when formed, is fatal in a much larger proportion among the rich than the poor.

Of the aggregate of patients for three years in the Hardwicke Fever Hospital, amounting to 6242, it appeared that 947 were admitted between the Ages of *five* and *ten*, and precisely the same number between the ages of *ten* and *fifteen*. These were the largest proportions; and the next in amount was 835, between the ages of *twenty-five* and *thirty*; then between

fifteen and twenty. Thirteen patients are specified between the ages of *seventy-five* and *eighty*;* and ten between the ages of *eighty* and *ninety*. Some circumstances peculiar to the Hardwicke Hospital, which need not here be explained, render these calculations unfit for the purpose of a general estimate of the proneness of different ages to contract typhus. As facts, however, they prove the liability of childhood, of maturity, and of old age, to undergo the disease. Youth and vigour are undoubtedly the best security for a favourable issue; broken strength and diseased organs, especially from intemperance, are the reverse. All ages are subject to the peripneumonic species of typhus; but persons in the decline of life are peculiarly subject to the enteritic species, which is apt to decline into the dysenteria mitis. Elderly patients are prone to the low state of muttering delirium; young children to heaviness and sleep. Though I have not made thermometrical experiments of the heat of the body in

* In the Report of the Cork-Street Fever Hospital, Dublin, 1818, p. 21, we are informed, that “persons
“ between the ages of ten and twelve years constituted the
“ largest number of the admitted; and the admissions according to the ages were in the proportion of the following
“ numbers, viz. 371 between 10 and 20 years of age; 318
“ between 20 and 30; 127 between 30 and 40; 91 below
“ 10; 60 between 40 and 50; 30 from 50 upwards.”

subjects of different ages, yet I believe it will be found to bear (*ceteris paribus*) something like a converse ratio to the increase of their years.

In most Fever Hospitals there is a preponderance of Female patients. In the Hardwicke Hospital, the proportion of admissions, on a large calculation, was *three* females to *two* men. It is possible, that women may be constitutionally more susceptible of epidemic fever than men; they may also be more generally predisposed to it, by their closer confinement to ill-ventilated houses; and it is certain, that they are more exposed to contagion by the domestic offices of attendance on the sick. In the chances of mortality, however, females appear to be more highly privileged than men. In the Hardwicke Hospital, notwithstanding the disparity in the admissions, just quoted, the deaths of male patients somewhat exceeded those of females, yielding a ratio of mortality somewhat higher than *three* to *two*.*

This fact is interesting in a two-fold view; as it seems to compensate the disproportion observed in the contingencies of sickness, and

* In the Cork-Street Fever Hospital very different ratios are reported, namely, in the period between January 5, 1817, and April 30, 1818, viz. 2883 males, 2849 females; the proportion of mortality, males 1 in 16, females 1 in 20. See Report, p. 22.

thus to vindicate the admirable equality of Providence; and further, as it points to certain causes of mortality from epidemic fever in general. It is obvious, that the lower classes of men are more exposed to violence and hardships, and more addicted to intemperance and excess of all kinds, than women of the same rank. After a certain period of life, their habits of body become more depraved, and their visceral organs more impaired or diseased. In broken subjects, febrile actions, from whatever cause they originate, fall upon the diseased organ with peculiar force, and not only augment but complicate the fever. Tubercles, scirrhi, chronically inflamed parts, assume new morbid conditions, which often terminate in abscess, or entire destruction of the organ. The victims of intemperance, through this certain though indirect channel, are numerous; and women who are addicted to the abuse of ardent spirits seem to perish under fever, even more certainly than men; they are more generally dram-drinkers throughout the day, and having less interruption or sanative relief from exercises of the body, they fall an easier prey to disease.

It is a general observation throughout Europe, that the lower classes of people are far more subject to typhous fever than the

upper orders. They are undoubtedly much more exposed to the influence of contagion ; but this, I suspect, is not even the chief cause of the disparity here alluded to. The affluent, who are well clothed, well fed, and lodged in airy habitations, escape the usual predispositions to low fever. Yet they are by no means exempt from typhus, even where no contagious source can be discovered, nor with any probability be supposed. They are also liable to the fever from specific infection ; and when once contracted, the issue is far more doubtful, and more frequently fatal, than with persons of the labouring community. Among the latter class, the proportion of mortality, in ordinary circumstances of medical care, does not exceed one in fifteen ; and in peculiarly auspicious circumstances, perhaps one in twenty-five ; whereas some eminent physicians have candidly declared, that, in the course of their private practice among the higher orders, one case in five has, on an average, proved fatal. Now this striking disparity, which has hardly been noticed,* much less made a subject of enquiry, by any writer on fever, deserves the most serious attention of the pathologist and the practitioner. I remember asking the opinion of

* Since this observation was made, in my " Report of the " Hardwicke Fever Hospital" for the years 1813, 1814,

an ingenious and experienced Physician respecting this remarkable inequality; to which he replied, that the lower orders bear all kinds of ill usage and morbid violence better than their superiors. The assertion is I think doubtful, if not unfounded; and were it true, it is not sufficient to satisfy the demands of the scientific enquirer. I shall not here anticipate the consideration of the general pathology of fever; but shall content myself with suggesting a few topics connected with this particular difficulty.

1. The artificial habits of the higher orders render them prone to severer congestive and inflammatory affections, than the lower classes.
2. All the cerebral functions, so peculiarly implicated in fever, are in the former much more susceptible of excitement and disorder.
3. The intelligent sensorium, through which so much energy is distributed or misplaced in the system, is in the poor man, when laid on his sick bed, a dormant faculty; but in the richer man, under the same circumstances, is the busiest instrument imaginable, of hopes and fears, provisions and anxieties, recollections and anticipations. To the needy labourer, it is no very painful contrast to quit

1815, Dr. BARKER has adverted to the same facts, and nearly in similar terms confirmed the accuracy of my remarks. See his "Report" for the year 1817.

his work in order to lie on a comfortable bed, in a clean and cheerful apartment of an hospital; but to the man who is immersed in civil or domestic cares, struggling for fame or fortune, weaving complicated plans for the future, or striving to disengage himself from present misfortunes, the visitation of contagious fever is not likely to bring repose or even submission. Accordingly, in such cases, I have seen, from the very outset, restlessness, jactitation, incoherent expressions of anxiety and apprehension, early delirium, rapid decline of strength, and alarming lethargy, before the ninth day of the disorder.

Besides the general causes here enumerated, which *modify* the character of fever, there are others which operate individually with considerable force; these are, temperament, constitution, idiosyncrasies, and more especially morbid habits, local or general. The influence of these causes I have already had occasion to notice, in these pages, and in my former "Report."* Dr. CHEYNE, in his later Report of the Fever in Dublin, declares, "I am persuaded, that the chief irregularities which we observed during the present epidemic, were owing to the diathesis of the individuals in whom they occurred." p. 21.

* Consult JACKSON'S "Outline, &c. of Fever."

SECTION III.

Nosological Terms, and Distinctions, of Fever.

MUCH confusion and even apparent contradiction, in medical writings on Fever, have arisen from the various or uncertain acceptance of the Nosological terms used by different authors. The term Synochus, for example, is of extremely indefinite import. Dr. CULLEN has defined it “*morbus contagiosus, febris ex synochâ et typho composita; initio synocha, progressu et versus finem typhus.*” But it will readily be granted, that nosology is neither advanced nor ascertained, by constituting a *genus* from two other assumed *genera*; by defining a contagious fever, for example, as compounded of two other generical fevers, the one contagious, the other unctagious. The existence of synocha, as a fever

strictly idiopathic may be doubted; but a hybrid, of the kind here supposed, appears to me to be still less agreeable to fact or analogy.

Synocha and synochus have derivatively the same meaning, differing only in their masculine and feminine terminations. GALEN arbitrarily employed the former to designate imperfect, and the latter perfect, continuity. LINNÆUS and SAUVAGES followed him in this distinction; but CULLEN, declining it, fell into an error of a different kind. Yet his perspicuous and candid mind led him to criticise his own arrangement in the following terms: “the limits between the synochus and the typhus will be with difficulty assigned; and I am disposed to believe, that the synochus arises from the same causes as the typhus, and is therefore only a variety of it.” “(First Lines,” §. LXIX.) And in his “Synopsis Nosologiæ” he has the following passage: “inter typhum et synochum limites accuratos ponere non possum; et an reverâ pro diversis generibus habenda, dubito.”

The term Typhus, as a generic appellation of the family of fevers here referred to, appears to me wholly unobjectionable. It is sufficiently comprehensive in its original import; and long use, both by British and foreign writers, has notoriously appropriated it to the



class of epidemic and contagious fevers now under consideration.*

In my Report of the Hardwicke FeverHospital for the years 1813, 1814, and 1815, I arranged my cases under the heads Typhus, Synochus, and Febricula. For these I would substitute, on maturer consideration, the parallel terms, Typhus gravior, Typhus mitior, and Typhus mitissimus. Thus, the same generic term will be preserved, in three several species or grades of the same generic disease.

Those who are most familiar with the aspect of epidemic fevers on a large scale, will be least disposed to separate them into distinct genera. The resemblance, or rather the identity of typhus mitior, and synochus, is scarcely less palpable, than the similar relation of kind, between typhus mitior, and typhus gravior. Each of these species commences with some congestive or inflammatory diathesis; each may decline with stupor, sub-delirium, and

* “The typhus of Dr. CULLEN; the contagious fever of Dr. LIND; the febris inirritativa of Dr. DARWIN. In popular language it is generally called the nervous or low fever; and, where particular symptoms appear, the putrid fever. It is usually produced in situations where there is a want of cleanliness, and more especially of ventilation; and when produced, it is propagated by contagion. This is the common fever of England.”—CURRIE’S Medical Reports, vol. i. p. 15.

death ; and the appearances on dissection complete the analogy. They occur, besides, indiscriminately in the same season, the same district, and the same family. Among six persons affected with fever in the same habitation, it is more than probable that a specimen of each form will be exhibited. Neither do the mildest nor the severest species propagate merely their own forms, but rather seem to generate each other promiscuously, without any known rule. In truth, the commencement and early stages of each have so many common features of resemblance, as often to elude the discrimination of very experienced observers. At a mature period, indeed, they are very distinguishable; yet under no circumstances have they appeared to me to lose their common generic character. Of these facts the extensive Fever Hospital, to which I was lately attached, yielded ample illustration; and a further circumstance may be adduced in corroboration of their truth, viz. that the gradation or degeneracy, from the mildest to the severest type, was found to depend considerably, if not principally, upon the delay or neglect of remedial treatment.

A question, foreign to the morbid character of fever, but connected with its natural history, has been made a ground of dissent from noso-

logical arrangements of the kind here proposed. Some recent and highly respectable writers have endeavoured to shew, that typhus cannot be produced by any cause, or combination of causes, except its own specific contagion; and, therefore, that it is propagated, *only* by successive reproduction of contagious matter in subjects labouring under that *specific* fever. Now it being undeniable, that a certain portion only of the typhous and petechial fevers which occur in hospital or private practice, can by evidence or probability be imputed to contagion, it is manifest that the doctrine here proposed demands a very limited definition of typhus. Yet no *morbid character* has been assigned, by which typhus, of contagious origin, may be distinguished from similar fever, of spontaneous generation. Whereas contagion, which is strictly an adjunct, and not a part of the morbid catenation of symptoms of typhus, cannot, with scientific consistency, be admitted as a basis of nosological classification. It happens, besides, to be the very matter in dispute; so that until the previous question be determined, it cannot be assumed as a ground of diagnosis.

I have already observed, that the natural history of epidemic fevers is involved in much obscurity. The circumstances which favour their origin, which promote yet control their

diffusion, and which eventually govern their decline, are very imperfectly known. Endemic fevers obey, pretty uniformly, the course of the seasons; but epidemics are only partially and uncertainly affected by those vicissitudes. The principle of contagious propagation, which is ascertained to operate with activity and a certain precision in the more defined species, operates probably in some degree in all. I say in some degree; for it is manifest, that contagious influence is modified or graduated by causes, many of which are beyond our discernment; since fevers that indisputably propagate their kind, as small-pox, scarlet fever, measles, typhus, plague, &c. have their periods of prevalence or declension, independently of the interference of human art.

It would be foreign to my purpose to enter, here, on a critical examination of the controversies respecting contagion. Many of the points at issue are, doubtless, of very difficult solution; and much pains have been taken to ascertain what are termed the laws of contagion. The degree of intercourse between the sick and the well, that is requisite for infection,*

* "In an Hospital, in a ward in which there are patients ill of this fever, provided it be well ventilated, the patients with other complaints in the same ward are seldom infected. It would therefore appear, that there is no

the degree of approximation to the breath of the patient, or to articles of clothing, &c. variously imbued with miasms, the degree of ventilation or dilution of the tainted atmosphere, the degree of predisposition in the subject presented for infection, are all matters that elude definite calculation.* If fatal experience has demonstrated, on the one hand, that typhous fever spreads rapidly in close, crowded, and uncleanly habitations; a better experience has also long shewn, that patients in the same

“ great power of infection in the body alone, provided the
 “ air be not confined. The effects of the poison upon the
 “ constitution are lessened by habit, like what happens in
 “ other poisonous substances, as opium and ardent spirits.
 “ It is owing to this power of habit, that nurses in the foul
 “ and crowded wards of Hospitals often escape the fever;
 “ and it must be imputed to the same cause, that those living
 “ in the poisonous air have the fever come on slowly, and
 “ with less violence and danger than such as are exposed to
 “ the poison accidentally.” “ This poison, so insidious in its
 “ attack, and so formidable in its progress, is in all cases, as
 “ far as I have seen, easily overcome and dissipated; for
 “ nothing more is necessary than ventilation, by which it is
 “ diffused and rendered harmless.”—“ *Observations, &c. by*
 “ *Dr. HUNTER,*” *vol. iii. Transact. Coll. Phys. A. D. 1785.*

* “ The sphere of action of the cause of contagious fever
 “ (says Dr. JACKSON) is not extensive, but the extent to
 “ which it is capable of being diffused from its source, cannot
 “ be precisely known; perhaps it is not uniformly the same
 “ in all cases, probably depending upon original degrees of
 “ force, as on a variety of adventitious causes. It is con-
 “ densed, or rendered more powerful, by states of the air con-

fever may be received indiscriminately into the wards of well-ventilated hospitals, with little risque of propagating the disease; and I have already cited the practical instructions of various medical writers, in reference to separation, cleanliness, and ventilation, as the chief antidotes to contagion.

In large towns, the common prevalence of typhous fever may render it difficult to deny the agency of so subtle a principle as that of contagion, in almost any case that may occur. Yet, on the other hand, sporadic cases do unquestionably appear, both in town and country, under such insulated circumstances as to preclude all proof or presumption of their contagious origin. The present epidemic in Ireland, for example, like that which pervaded England in the years 1796 and 1797, commenced, so far as I have been able to learn, simultaneously in parts of the island most remote from each other. There was no suspicion

“nected with cold and moisture; it is dissipated and weakened by the opposite. It is not extinguished by intense degrees of cold; but if adhering to the walls of apartments, or lodged upon clothes, it requires heat and moisture before it assumes a state of activity. It is more powerful in its condensed than in its recent and diffused state; and consequently more noxious as deposited on clothes and bedding, than as directly proceeding from the living body.”—*Outline of the History and Cure of Fever*, pp. 111, 112. Edit. 1798.

that the epidemic was imported, still less that it arrived at all parts of the coast at the same time. The march of contagion may certainly be geometrical; but no such measured stadia were observed in the first course of the epidemic. In some of the meaner parts of Dublin, there is always a focus of contagion, from which certain fluctuating radiations are observable; but it is only in epidemic seasons that they exceed a pretty circumscribed limit. In the late period of dearth, despondency, and sickness, when the food of the lower Irish was not only deficient in quantity, but bad in quality, almost to an unexampled degree; when the seasons for some time had been remarkably ungenial; and the want of healthful and lucrative employment was more or less felt by the whole labouring community, the fever appeared as a shock at each extremity of the country. The same causes that kindled the fever, continued to extend the mischief; to which was superadded the prolific principle of contagion.

Here, then, arises an important question. Do the cases of fever, which have apparently a spontaneous origin, differ in their symptoms or nosological character from other concurrent cases which are referable to contagion? I am aware that much pains have been taken to dis-

embarrass the science of physic of this crucial question, by various hypothetical arrangements. But truth demands a more rigid adherence to experimental knowledge; and a candid enquirer might entertain doubts, whether any modern writers have invalidated the testimony of remote authors, concerning the equivocal generation of typhous fevers. For my own part, I freely acknowledge that no recent authorities have cancelled my assent to the opinions of WILLIS, HUXHAM, GRANT, and PRINGLE; opinions which were formed by those faithful observers of nature, without any bias or suspicion of controversy.* Our best modern writers, indeed, maintain the same doctrine; and in France it is almost exclusively current. “Le fièvre typhode (say MM. FOURNIER and VAIDY) est peut-être de toutes les maladies susceptibles de se repandre par contagion, la seule dont l’origine spontanée soit bien connue.” “Le typhus n’est point une maladie *sui generis*; mais la fièvre adynamique et ataxique avec affection catarrhale; à quoi il convient d’ajouter les variations qu’elle reçoit du mode épidémique.” Dict. des Sciences Médicales, tom. xv. p. 450. xii. 487.

* Consult also Dr. JACKSON’S “Outline of the History and Cure of Fever,” pp. 110, 111.

Having made it my business to enquire into the origin of most of the cases of fever, which came under my charge in the Hardwicke Hospital for some years, I found the results to point less frequently and precisely to a contagious source than I should have anticipated. The information of the patients and their friends, it is true, was often indistinct; and when positive, was not always to be relied upon. But the scale of enquiry being considerable, the general conclusions from it may be entitled to attention. First, it appeared that the several modifications of typhus already specified, indifferently claimed or disclaimed a contagious origin; and when several members of a family (the origin of whose fevers might be presumed to be the same) were successively brought to the Hospital, a specimen of *each* of these kinds very frequently appeared among them.* Secondly, no peculiarity of symptom or sequel

* Since the first publication of these statements, in my Report, I am happy to see a confirmation of their accuracy, in the following testimonies, of two intelligent Physicians. "Specimens of mild fever (says Dr. CHEYNE) occurred even among those who came from houses which afforded us instances of the disease in its worst form; the disease, however, was fatal, in a large proportion, among such as came from houses which we supposed were infected, and in these persons relapses were very frequent. On the other hand, in many who denied having had any communication with patients in fever, the disease was

distinguished the fevers which could be traced to contagion, from those which could not be so referred. Yet, when whole families were visited with fever, at the same time, I commonly found the worst specimens of disease in one or more of them. Thirdly, on observing the cases of fever, which seemed to arise spontaneously in the Workhouse adjacent to the Hospital, it appeared that contagion was as readily communicated from them, as from an infected pauper newly received into the house.

“ attended with severe symptoms, and ran the usual course.
 “ In a word, the fevers which we supposed to arise from
 “ contagion, and those which seemed to originate in intem-
 “ perance, cold, fatigue, &c. in which we could discover no
 “ trace of contagion, were so shaded into each other, that it
 “ was impossible by their symptoms to demonstrate any
 “ difference between them.”—*Dublin Hospital Reports, &c.*
 vol. ii. p. —. 1818.

“ In last October (says Dr. BARKER) minute enquiry
 “ was made from 90 patients, then in the Cork-Street Fever
 “ Hospital, taken without selection, to determine (by the
 “ previous illness in the families from which they had been
 “ removed, or by their previous communication with any
 “ person labouring under fever) how far the disease was
 “ attributable to contagion; when it appeared, that in 14
 “ instances only could infection be discovered; but in the
 “ remaining 76 it was not found that such intercourse with
 “ fever patients had taken place, as to render it likely that
 “ their illness had originated from immediate communica-
 “ tion with the sick.”—*Report of Cork-Street Hospital, 1818.*
 p. 17.

This brief digression, on the subject of Contagion, will be excused by those who are aware of the importance of the questions at issue, in relation not only to science, but to the common safety of mankind. For if it be inculcated as useless, to take precautions against the contagion of any fevers but those which have individually a contagious origin, there is no computing the mischief or mortality that might ensue, in ordinary as well as epidemic seasons. It is deeply to be regretted, that such matters should still appear to be involved in the shadow of a doubt.

Dr. ARMSTRONG, in his very able treatise on "Typhus Fever," has distinguished the disease into three kinds, which he has termed Simple, Congestive, and Inflammatory. His view of the congestive state or stage of typhus is full and luminous ; as I shall presently have occasion to notice, in adverting to that part of the pathology of fever. But in reference to the classification of fevers by their distinctive characters or grades of disorder, I apprehend that Dr. ARMSTRONG's order of Congestive typhus would comprise too much or too little for purposes of nosology. Each species of the fever has, according to my experience, its congestive stage and symptoms, whether compli-

cated with inflammation or otherwise. Some rare cases now and then occur, in which the pressure of venous congestion, more especially in the cerebrum, appears to extinguish life at an early period of the disease, and before the developement of its proper type. But these I should consider, rather, as exceptions to the general rule, than as grounds for classic distinction.—The division of typhous fevers into Simple and Inflammatory is less liable to objection. Yet a person unaccustomed to the disease, and acquainted only with this nominal distinction, would be not a little disconcerted to find a sthenic pulse in the simple, and an asthenic pulse in the inflammatory, fever. In my judgment, all typhous fevers partake more or less of the inflammatory diathesis.

The division proposed by Dr. BATEMAN, in his succinct but masterly “Account of the “Contagious Fevers of this country,” viz. Simple typhus, and Complicated typhus, is adapted to practical uses; though defective, I think, in scientific precision.

Substantially, indeed, the arrangements both of Dr. BATEMAN and Dr. ARMSTRONG correspond with my own. It has been our common object to dispose a family of fevers, which have hitherto boasted of more than twenty names,

under the simplest generic denomination, and the most obvious specifical divisions. The *genus*, then, may be denominated *TYPHUS*; the *species*, *gravior*, *mitior*, *mitissimus*, or *febricula*; and the *individual* may be characterized, in each species, by the organ more peculiarly engaged with congestion or inflammation, as cephalic, pulmonic, enteric, &c.

I need scarcely add, in behalf of the technical arrangements here proposed, that the distinctive epithets, *mild* and *severe*, characterising the species of typhus, are in the most familiar and universal use; whereas the term *inflammatory* is doubtfully appropriated, except in degree, to any species; and the term *complicated* is so indefinite as to present no certain limits of distinction.

SECTION IV.

Morbid Characters, and Indications, of Typhus.

THE leading features of Epidemic and Contagious Fevers are, rapid prostration of strength, with sanguineous determination to the head or other principal organ, attended with frequent pulse, increased heat, partial or general, and disordered secretions. The strong analogy, prevailing amongst all fevers of this description, indicates a community of generic character. They differ from fevers arising from simple local inflammation, in many important particulars; but in none more remarkably than the sudden failure of mental and voluntary power, the tendency to perform a certain cycle of morbid changes in definite periods, and the power of propagating their kind in healthy subjects by contagion.

Typhous Fever commences variously, according to the particular and reigning mode of the disease, and the circumstances, bodily and mental, of the individual engaged in it. The worst fevers are usually marked by the most sudden invasion. Head-ache, vomiting, prostration of forces, and even syncope, will unexpectedly attack the strongest subjects. A rigor, more or less general, succeeds; and after some hours, a stage of heat, restlessness, and increased pain. Frequently it happens in typhus gravior, (but more uniformly in the milder species,) that several days of languor, oppression, and chilliness, precede the distinct exacerbation here noticed. Wandering pains in the back and limbs, costiveness, anorexia, pains in the eyes and forehead, undefined anxiety, and fluctuating mind, are also common antecedents of the fever.

No writer has better described the symptoms and pathology of the first or congestive stage of typhus, than Dr. ARMSTRONG; and the scientific reader is referred to his "Practical Illustrations" for a full detail of this most important subject. In what follows, I shall adhere to my own experience, and to the views which it has suggested, under the auxiliary guidance of our best writers.

The severest forms of typhus do not usually appear in young subjects. In middle-aged persons, the most formidable cases I have seen have been those which were neglected during the first eight days of the distemper; or which, occurring in broken constitutions, involved some material disorganization.—Fevers which have been preceded by great bodily fatigue, or mental anxiety, begin in an irregular and alarming manner; with watchfulness, somnambulism, or delirium; or with alternate excitement and extreme depression. Some of these cases wear, at the commencement, an hysterical, others a maniacal aspect; and in their progress they observe the *atactic* character of the French nosographers. But the “*fièvre typhode ataxique*” seldom appears among the lowest order of day-labourers. It rather shews itself among struggling or decayed tradesmen, servants, and artizans; and is frequently met with in all the upper ranks. It is remarked by the intelligent authors of the article *fièvre* in the “*Dictionnaire des Sciences Medicales*,” that in an army, composed of veteran troops, the “*typhus ataxique*” is most common to the officers, and the “*typhus adynamique*” to the soldiers. Yet, it seems, that raw troops on foreign service, with the solitudes of new duties, and of separation

from their families and country, are also apt to experience the atactic kind of fever. This distinction of typhus has hardly been noticed even by our best writers.* Yet it may be proved, by various evidence, that mental anxiety, great disturbance or depression of the animal spirits, give to fevers, through the sensorium, a peculiar character, which is always attended with danger. In referring this peculiarity to the sensorium, it is far from my intention to suggest or revive any neurological hypothesis. It is sufficient, that the practitioner be carefully reminded of such important characteristic features of disease as indicate appropriate treatment, both in the way of prevention and cure.

The stage of excitement, in typhus gravior, is seldom so strongly marked as in the milder species. The temperature of the body is less augmented, the pulse less full and firm, and the animal forces altogether feebler. Yet these are by no means to be accounted evidences of slighter inflammatory action. This is demonstrated by dissection, as well as by symptoms

* Dr. CURRIE has described, with the usual felicity of his pen, a sort of atactic fever, which is sometimes met with in young and middle-aged persons of the better ranks, and which "cannot (he thinks) be referred with advantage to any of the genera of Dr. CULLEN."—*Medical Reports*, &c. vol. i. p. 45.

in the living subject. The cerebral functions are pre-eminently impaired and disordered; and the stage of excitement which sometimes simulates true phrenitis, hardly ever fails to shew sub-acute characters of that disorder; viz. severe pains in the head, impatience of light, the vessels of the conjunctiva injected with blood, delirium, restlessness, insomnium. These symptoms commonly mark typhus gravior, whether it be attended with thoracic or abdominal disorder, according to the prevailing epidemic constitution. Subsultus tendinum, and petechiæ, are by many writers appropriated to typhus gravior; I have seen them so often in mild cases, that have terminated on the ninth day, as to satisfy me that they are not signs of malignity. The worst symptoms of typhus are pervigilium, anxious respiration, tympany, singultus, and coma. The most favourable, in all cases, are sleep, a moist tongue, and solvent bowels.

The indications of the *pulse*, in typhus gravior, are more uncertain and fallacious than in the milder species. Indeed, in my judgment, they merit less distinctive reliance in any species or stage of the fever than is usually conceded to them. Extreme frequency, fluctuation, and compressibility, may result from the presence of acrid secretions and tough mucus

in the stomach; the effusion of morbidly concocted bile; or the accumulation of indigested aliment, or vitiated humours, in the intestinal canal. An erect posture of the body, for a few minutes, may induce the same character of the pulse; restlessness, pervigilium, the pressure of too much heat, or noise in the patient's room, may produce similar effects. The tendency to vascular excitement, besides, is extremely variable in different subjects; and in disease, the expressions of it by the pulse may be as various. Many cases of typhus have occurred to me, in which the pulse did not exceed ninety strokes in a minute, at any period when I have made the examination. In several instances the pulse preserved nearly its healthy standard; and in three cases, of which I have clinical notes, it fell below forty-five from the first week of the fever, until the crisis or convalescence was established. “ In
 “ low fevers (says HEBERDEN) the pulse will
 “ often continue below 100 or even 90; and
 “ yet the distemper be attended with want of
 “ sleep, deliriousness, restlessness, a parched
 “ tongue, and end in death, without any co-
 “ matous or lethargic appearances. A good
 “ pulse, (which I have known in comatous
 “ fevers,) with deliriousness, rapid loss of appe-
 “ tite, &c. would afford very little hope;

“and a bad one, without any of these, might
“be harmless.”

It is not intended by these remarks to disparage, much less to supersede, a careful observation of the pulse in typhous fevers; but as too great reliance on it has diverted the attention of Physicians from other morbid symptoms, and has undoubtedly given rise to great errors both of pathology and practice, it is of importance to ascertain its real claims to confidence and guidance. At the commencement of typhus gravior, the pulse often exceeds 130 strokes in the minute, with far less indication of danger than if the same excess be observed in a later stage. In truth, the state of congestion, and the state of collapse, which resemble each other, both in vascular and sensorial appearances, deserve a fuller comparison than has yet been made of their common character. The worst kind of pulse, in typhus, is that in which its undulating character is lost, so that the artery gives the impression of uniform dilatation; which is often attended with a certain rigidity of the fibrous tunic, yielding a sensation of wiriness. This occurs at the latter end of fevers, or when the surface and extremities of the body are cold, from defective energy of the arterial system. A warm diaphoresis resolves this rigidity, and

restores the undulating character of the pulse.

Of the appearances of the *tongue*, in typhus, the following seem to deserve distinct notice. First, it may be moist and thinly coated with white mucus, as in the phlegmasiæ; in which case the pulse is usually strong, the temperature of the body high, and some viscus engaged in inflammatory action. Secondly, the tongue is sometimes covered thickly with yellowish mucus, and the skin tinged more or less with a similar kind of hue; the epigastrium is at the same time tumid, and the liver disordered by congestion. Thirdly, a brown dry streak in the middle part of the tongue is an attendant on intestinal torpor, and defective secretion throughout the canal. Fourthly, a tremulous tongue betrays debility, with sensorial disturbance. Fifthly, a dark, dry, and shrunk tongue, with difficulty protruded beyond the teeth, indicates a vitiated condition, not only of the mucous surfaces, but of every secreting organ connected with the primæ viæ. I have not been able to ascertain that it indicates any peculiar change in the condition of the blood. Though I have seldom practised venæsection under this symptom, yet I have often observed beneficial effects from a spontaneous epistaxis. A general diaphoresis tends

to the like relief. Sixthly, the tongue has sometimes a highly florid hue, with a glazed surface, or at other times rough, with eminent papillæ, or denuded of its mucous covering, having a raw appearance. This latter obtains chiefly when the fever has become hectic, from suppurating surfaces or ulceration, as when dysentery is formed. Seventhly, the tongue becomes swelled, and partially shining, in the advanced stage of typhus. The middle of the organ, on its upper surface, is occupied by a dark, rough streak ; but the edges and inferior part are puffed out and flaccid. I am at a loss to account for this latter circumstance, or to specify any indication of this state of the tongue, different from that just noticed in the fifth variety of its morbid appearances.

It is justly observed by Dr. WM. FORDYCE, that “ the different appearances of the tongue
 “ in fevers ascertain the state of the disease,
 “ its nature, and the proper mode of treating
 “ it, better than the pulse itself.” In truth, the information afforded by that organ, to an experienced practitioner, is at once so various and accurate, as to claim his primary attention and reliance.

It may be proper here to remark, that dark, dry, and encrusted lips, with gums coated with sordid mucus of the same hue, are appearances

so common in typhus gravior, even in the most prosperous cases, that I do not consider them as denoting any *peculiar* danger.

Of *Petechial Eruptions* there are several kinds. Some are of a pale colour, diffused in patches, indistinctly circumscribed, and often confluent. They are scattered principally on the breast and shoulders, and resemble the morbillous eruption, except in the elevation of the cuticle, and eventual desquamation. This kind I have seen as early as the second day of the fever; and so far as I have observed, its first appearance is not often later than the fifth day. The eruption declines at irregular periods; but a cool and purgative treatment often banishes it in forty-eight hours. Another kind of petechiæ, are the crimson or violet puncta, resembling flea-bites; of minute but circumscribed form, and distinct from each other. I do not remember to have observed these ecchymoses earlier than the third day of the fever; and when they occur thus early, (as in patients who have been confined to a close and heated atmosphere, and whose bowels are constipated,) they may disappear rapidly in the cool wards and antiphlogistic discipline of an hospital, although the fever itself may observe a protracted period. These purple stigmata are of very frequent

occurrence, and are seen on almost every part of the skin; though I have never detected them on the face, the palms of the hands, or the soles of the feet. Their hue grows paler as they become gradually evanescent. The large purple blotch and vibices are very rarely seen in cases that have been timely put under proper discipline. They mark, doubtless, a formidable, though by no means hopeless, state of disease. None of these petechial appearances present distinct elevation of the cuticle. But, besides these, a papillous or miliary eruption often occurs, and becomes diffused over the breast and trunk. Its colour is scarcely discernible from that of the skin, so that the eye does not always detect the efflorescence; but on exploring with the hand, a rough sandy surface is perceptible.

These several kinds of eruption may occur simultaneously in the same case; indeed, the last mentioned seldom appears alone in typhus. The morbillous kind, when it precedes the stigmata, declines as the latter multiply. What specific circumstances determine their respective appearances, I am unable to conjecture. It is justly observed by PRINGLE, that "they are never critical;" they are cherished and multiplied by foul air, external heat, and internal constipation; and they are

commonly dissipated or restrained by an opposite treatment. Nevertheless, petechial spots, and even irregular blotches, sometimes appear under the coolest regimen, and are then always an adverse omen. It may be here noticed, that I have witnessed an epidemic febricula attended with petechiæ on the second or third day;* yet, with the ordinary symptoms of fever, so slightly formed, as to require neither medicine nor confinement to the chamber, except in two instances; and all recovered within ten days from their attack respectively. In truth, the appearance of petechiæ, with or without fever, is hitherto unexplained. The common theory of inflammation throws as little light on these phenomena as the obscure doctrine of putrescence. The ecchymosis itself seems to proceed from a disturbed balance of the venous and arterious systems; from a laxity of the cutaneous capillary arteries, and defective absorbent power in the capillary veins.†

Of the *proper secretion of the skin*, Dr. HUXHAM has well remarked, that “if it proves

* See “Dublin Hospital Reports,” &c. vol. i. p. 213.

† BURSERIUS, in his *Institutes*, (see his learned chapter on this subject,) distinguishes petechiæ into four kinds, viz. primary, secondary, critical, and symptomatic. In this division he is followed by several Continental writers. I freely confess my inability to follow an arrangement, which

“ moderate, and equally diffused over the
 “ whole body, such as we call a breathing
 “ sweat ; if it come on about that *state* of the
 “ disease, and the pulse grows more open, soft,
 “ and calm, a little before and during its
 “ continuance, it is always salutary ; but if
 “ very profuse, cold, clammy, or partial, about
 “ the head and breast only, we have much
 “ more reason to fear than to hope from it.
 “ If profuse sweats break forth at the begin-
 “ ning, they are generally pernicious.”—
 “ Essay on Fevers,” p. 115.

The *delirium* of typhus has various characters. In the worst species, it sometimes begins with treacherous symptoms of phrenitis, simulating first a mild sort of insanity, then breaking forth into acute phrenzy. If this be not soon restrained, the consequent exhaustion brings the patient into great peril.* Patients are sometimes brought to Hospitals under the accords so little with the tenor of my observations. I apprehend that it is a relic of the obscurer humoral doctrines.

* I know not any writer who has better described the access of this sort of delirium than Dr. GRANT. “ When a
 “ fever tends toward the head, (he says,) first there is a sense
 “ of confusion and weight in the head, with flying or shoot-
 “ ing pains ; then the pain becomes gradally more constant,
 “ and at last continual ; after which it soon becomes into-
 “ lerable, and then delirium is at hand. As soon as the
 “ delirium comes on, the pain subsides, or at least the patient
 “ does not complain of, or seem to feel any ; but replies in

supposition of typhous fever, when their true disease is the "delirium tremens," of habitual and extravagant intemperance.

Sometimes delirium commences on the second day, but much more frequently on the fifth or seventh day, and not uncommonly on the ninth day of the fever. If the delirium be chiefly at night, if it be of a tranquil kind, not expressive of anxiety, and intermixed with sleep, it is a sign of little import in the prognosis. If, on the other hand, it be attended with pervigilium, jactitation, and frequent agitation of the spirits, it is an adverse omen. If it be of the low muttering kind, while the patient lies supine and apparently insensible to the objects around him, as well as to his own condition, that also is an unfavourable sign. In general it may be remarked, that delirium with the eyes open is materially worse than with those organs closed; and that errors of vision, and especially blindness, are amongst the worst symptoms of fever.

The *temperature* of the body in typhus varies much according to the date of the fever, "an hurried manner, when asked how he does, that he is "very well; according to the observation of a French Physician, 'Quand le malade repond, je me porte bien, un "seul mot suffit, il n'est pas plus à lui.' In all these "cases the patient attempts to get out of bed, to sit up, or "even to walk about from one room into another.

the stage of exacerbation or remission, and the specific character of the disease. In typhus gravior, with cephalic congestion, the temperature of the body seldom rises considerably above the healthy standard. It is greater at the commencement than in the decline of fever; which is especially remarkable in the extremities compared with the trunk. In many of the worst cases of fever that I have seen, the thermometer, placed under the tongue or axilla, never rose higher than 100 of FAHRENHEIT. In typhus mitior, of the angeio-tonic kind (synochus), the mercury frequently rises to 105°, and sometimes to 106°; but rarely exceeds this measure.* A high temperature, however, is by no means an adverse sign; but is rather an indication of activity in the vital powers.

The *duration* of typhus gravior seldom, if ever, falls short of fourteen days, and not unfrequently exceeds seventeen, unless a fatal termination intervene.

The *crisis* is commonly marked with distinctness; and, if I mistake not, the term of

* Of 250 cases of the epidemic in Ireland in 1817, in which Dr. CHEYNE ascertained the temperature of the body, the thermometer rose to 100° in 59 cases, and 104° in 67. It is remarkable that in 12 cases the mercury rose to 106°; and in precisely the same number of cases it did not exceed 98°. In one instance it amounted to 109°.

convalescence is lengthened or shortened, in proportion as the crisis is fully or obscurely formed. The most favourable crisis that I have noticed, is that which is unattended by any remarkable excretion, but seems to consist in deep sleep, with a soft skin, and a gradual subsidence of the pulse. This sleep is sometimes protracted for the space of forty or fifty hours, with brief intervals. It is very distinguishable from comatous slumber. If the patient can be awakened from it, without shewing signs of confusion or perturbation ; if a general, though slight, diaphoresis prevail ; and if the secretions improve in appearance ; a favourable change is established. But this is not the most frequent crisis. Rigor, followed gradually by sweating, is common to all the species of typhus ; critical dejections are less common. Often the crisis is a scene of struggle, the issue of which is for several hours doubtful. A rigor commences obscurely, perhaps on the eighth or thirteenth day ; it is followed by some delirium, and much restlessness ; the patient's breathing becomes hurried, his countenance anxious, his pulse small and not easily numbered ; he moans frequently, and refers to pains in his back and limbs, which sometimes appear to agonize him. The struggle frequently increases for some hours,

and then subsides in relief, or in a state of great insensibility, coma, and at last death. It deserves remark, that the critical efforts, whatever be their character, are usually at their acme in that period of the night, when the invasions of gout, asthma, epilepsy, and some others, commonly take place. Hæmorrhagy from the nose, occurring previous to a crisis, is almost always a favourable sign; yet I do not remember to have seen epistaxis avail as a proper crisis of itself. A spontaneous diarrhœa is equivocal, unless the bowels have been previously constipated. A vesicular, papulous, or pustular eruption, about the angles of the mouth, sometimes attends, or rather follows, crisis in catarrhal fevers. I have seen them also in spirit-drinkers, when the fever has not been catarrhal. If they suddenly decline or become livid, the prognosis is alarming. General sweats, with temperate skin, and free urine, are good signs; but it has appeared to me immaterial, whether an albuminous or furfuraceous deposit occur in the latter evacuation; or whether the urine simply resume its healthy aspect.

There is a remarkable analogy between the *perturbatio critica* of fevers of type, and the critical change of phlegmonous fever by suppuration. Dr. GRANT refers both to a com-

mon principle of coction;* a doctrine derived remotely from the ancients, and deserving of more attention, than some recent theories which have been supposed to supersede it. Undoubtedly, the critical struggle, when it occurs in typhous fevers, is commonly the precursor to that readjustment of vascular action and secretion, which determine just health. Yet, as I have just observed, the tranquil crisis of sleep, with moderate but gentle diaphoresis, has appeared to me a more favourable antecedent of these salutary changes. This apparent incongruity, however, may in some degree be explained by the tenor of my practice in fever being directed throughout, to the control, relief, and adjustment of the secretory organs; so that critical evacuation, which has been more uniformly experienced by other practitioners, may have been thus frequently anticipated or prevented.

* “The certain sign of torpid matter after coction (says GRANT) is that sensation which we distinguish by the name of a chilly fit; after this the pulse will rise and the heat increase; nothing ought to be attempted but dilution, which Nature generally points out by an increase of thirst. This state frequently lasts a considerable time, but gives no cause for fear; some evacuation will certainly follow; and that evacuation, whether it be sweat, urine, stools, or eruption, will infallibly prove in some measure critical.”
—GRANT on *Fever*, vol. i. p. 208.

After all, it would be difficult to define the intrinsic and proper nature of crisis. Rigors, pains, purging, sweating, sleep, may occur repeatedly, nay almost daily, throughout a fever; and yet, on the ninth or fourteenth day, for example, decided amendment may be observed in some near connection of time with one or other of these circumstances; hence, the crisis, turn, or resolution of the disorder, comes to be particularly referred to the opportune phenomenon, whatever it may be, of that juncture.

With regard to the *critical days*, my experience coincides with the facts observed by HIPPOCRATES; which have been repeated, with due qualifications, by almost every writer on fever since his time.

The period of *convalescence* in typhus gravior is uncertain, depending on the age and vigour of the patient, the organs affected in the disease, and the degree of injury they have sustained. As a perfect crisis is seldom developed, when any of the vital organs is deeply diseased; so also convalescence is slowly and precariously effected under such circumstances. Some morbid *sequelæ* occasionally supervene the most careful remedial treatment; as œdema of the lower limbs, anasarca, dysenteria mitis, rheumatic pains, cutaneous eruptions,

and phthisis.—When hydropic affections occur in feeble subjects, after protracted fever, they prove obstinate only in conjunction with a morbid or disorganized state of some important viscus.—A mild species of dysentery sometimes proves troublesome, but very seldom fatal; if suddenly checked, I have more than once observed it turn to ascites with inflammatory symptoms. In such cases, the serous membrane falls into an irritation, vicarious with the antecedent condition of the mucous tissue.—The pains which I have termed rheumatic (for want of a more precise denomination) seldom survive the fever longer than a week; yet I have known them continue to harass the patient for many months, with progressive emaciation.—The cutaneous eruptions that occur in the sequel of fevers, are of the papulous and pustular kind; and the most troublesome, in an Hospital, are those which happen to patients previously infected with itch; in whom the disease is apt to assume the aggravated form of scabies purulenta. Phlegmons on the nates, the dorsum, and the axilla, now and then occur in the course of convalescence; especially where perfect crisis has not taken place.

Slight relapses arise from errors or excess of diet; and especially from the use of animal

food prematurely. But more serious and untractable relapses follow imperfect crisis, especially in circumstances of visceral disease. In the latter cases I have observed that the pulse never loses its preternatural frequency, the skin remains torpid, the complexion sallow, the stomach irritable, and the bowels either costive or morbidly relaxed. The treatment of such cases falls under their respective classes of chronical disorder.

I have superintended numerous *dissections* of patients who have died in typhous fever. The examination has been almost invariably made within twenty-four hours after death. In typhus gravior, attended with low muttering delirium, and coma, the brain usually exhibited evidence both of venous and arterious congestion. These were not less observed in cases that had run a short course, than in those which were more protracted. On removing the upper part of the cranium, blood was frequently effused. The vessels of the pia mater and plexus choroides were often turgid, and portions of the serous membrane opaque. A glairy fluid, sometimes tinged with blood, was interposed between this membrane and the arachnoid tunic. Globules of air appeared often in great abundance in the vessels of the pia mater, which were easily rup-

tured in their small branches. More or less of limpid fluid was found in the ventricles; yet seldom in any considerable volume. The substance of the brain was in some cases firmer, in others softer, than the common standard. On dividing its substance, numerous bloody points usually presented themselves on the surface of the separated parts. No case of abscess of the brain (as described by PRINGLE and others) occurred to my observation.

The phenomena here specified are in strict correspondence with the symptoms of typhus gravior, especially towards its decline; and elucidate the common termination of the disease in the manner of coma. In many fatal cases of petechial fever, however, the brain exhibits very slight evidence of sanguineous congestion. But these cases are not distinguished in their progress by acute cerebral affections.

In almost every case that comes under dissection, whether of mild or malignant typhus, one or other of the following organs is found engaged with disease; namely, the lungs, the pleura, the liver, the peritonæum, the mucous and villous texture of the intestinal canal.

The morbid appearances of the lungs, in such cases as have antecedently shewn symp-

toms of pulmonic inflammation, resemble those which are observed after peripneumonia notha, viz. sanguineous congestion of one or more entire lobes, with mucous and purulent engorgement of the bronchiæ, a florid hue of the pleura of one or both cavities, with serous effusion, coagula, and membranous adhæSIONS. Sometimes the lungs are found studded with abscesses, or tubercles in various stages of advancement to suppuration.

The liver is found diseased, especially among paupers broken by habits of intoxication. That organ is sometimes found shrunk in its dimensions, hard, or knotted; sometimes preternaturally enlarged, soft, and rotten in its texture; gorged with blood, and grumous rather than bilious secretion. Sometimes its investing membrane is inflamed, with adhesions to the neighbouring parts. The gall bladder is in some cases distended with green or black bile; in others it is found empty.

The peritonœum, in cases of antecedent tympany, exhibits a diffused blush of preternatural redness. The intestinal portion of it, in some enteritic cases, is marked with circumscribed patches, of a livid hue, accompanied with adhesions more or less extensive throughout the viscera. The abdominal sac, under these circumstances, always contains some serous fluid,

from the quantity of a pint to that of two or three quarts, with filmy coagula. The inner coat of the intestinal canal is found variously diseased, from the mucous tissue of the fauces to the opposite alvine extremity. Portions of florid congestion, or livid patches, are not unfrequently discovered. Sometimes the membrane is invested with tenacious mucus; in other instances it is preternaturally denuded of it. When dysenteric symptoms have prevailed, the surface of the membrane is partially or generally florid, with sero-puriform secretion, and scattered spots of darker hue, with separation of texture. Ulcerations, however, are seldom observed, except in cases of confirmed dysentery.

These morbid appearances, though they belong to typhus gravior, are by no means peculiar to that species of the fever. It is not necessary, nor perhaps possible, to draw a very definite line of distinction between typhus gravior and typhus mitior; or, on the other hand, between typhus mitior and typhus mitissimus. These distinctions, in truth, express grades rather than kinds of disease. And although typhus gravior is always marked by cerebral congestion, and typhus mitissimus is not marked by any visceral inflammation; yet the shades of convergency, between congestion

subacute and acute inflammation, are so nicely blended, as to be frequently undefinable, either in the living or the dead subject. Having already attempted to exhibit the leading characters of typhus, under the denomination of the worst species, it will be unnecessary to employ many pages in representing, substantially, the like symptoms in a milder form. A few characteristic circumstances may be noticed.

TYPHUS MITIOR; TYPHUS MITISSIMUS.

These denominations comprise the typhus mitior and synochus of CULLEN, and the febricula, the simple or ephemeral fever, of other writers. In these milder species, it never happens that the fever makes so sudden an invasion, with alarming failure of the animal forces, as in the severer kinds. The "terrentia morbi" are generally of some days duration; and not uncommonly may be referred back to the course of one or two weeks. An altered countenance, impaired appetite, disturbed sleep, costive and irregular bowels, are common antecedents of this species of fever. The heat of the body, and the volume and strength of the pulse, are also greater in the former than in the latter. In both species the tongue is coated with vitiated mucus; but in the milder forms, though a

brown streak be observed along its centre, the organ never assumes a dark, arid, and shrunk appearance, which obtains in typhus gravior. The bowels may be more costive, but the secretions are less extensively depraved. Some delirium at night is common; but the remissions are considerable; and the external organs of sense are much less generally disordered or obtused than in the severer species. To these distinctions it may be added, that coma, pervigilium, tympanitis, and singultus, belong to typhus gravior.

Typhus mitior and mitissimus are diseases of all seasons. The great bulk of fevers admitted to Houses of Recovery and Fever Hospitals are of these kinds. In many instances, and especially in young subjects, the disease consists only of two or three diurnal exacerbations. In such cases there is usually pain in the head, with an aching or weariness of the limbs, and rapid circulation of blood. If catarrhal symptoms be combined with this slight fever, its duration is usually prolonged to seven days.

Typhus mitior always manifests excitement or congestion of some important organ, determined by the epidemic constitution of the season, or the organic predisposition of the individual. The first access of the disorder is

often obscurely marked, so as to be mistaken for simple indigestion or catarrh. But the pains of the head are more throbbing, the stomach is more entirely disordered, the heat of the skin and the incipient rigors are more urgent; and, above all, the lassitude is more immediately oppressive, than in any species of catarrh, except that which has borrowed the name of Influenza, and which at certain intervals has been epidemic in these islands.

The milder, like the severer, typhous fevers, are distinguished from fevers symptomatic of local inflammation, by a more sudden or rapid prostration of the animal powers; by the absence or less equable presence of acute pain in the organs labouring with congestion; and by the general tendency of the disease to perform a cycle of complicated changes in a definite period. They are strongly contrasted, also, in the countenance of the patient, which in acute inflammation is expressive chiefly of pain, or of fortitude, or of impatience; but in typhous fevers it has a relaxed dejected aspect, the eye glazed, the complexion muddy, and the features expressive of embarrassment and despondency. M. PINEL is of opinion, that those individuals who are prone to inflammatory disorders, are indisposed to epidemical fever. But this is less certain, than a fact in apparent

contradiction to it, viz. that the young, the middle-aged, and the robust, are chiefly prone to the milder kinds of typhus. In such subjects, the disease commences with much general vascular activity, which gives it the angeio-tonic character of the French nosographers. In the first access, or sometimes in the first few days, of the disorder, it is difficult to determine if any organ be more especially engaged than another. Some peculiar inflammatory or sub-inflammatory appearances then develop themselves. During the winter and spring, the thoracic organs are chiefly implicated; in the summer and autumn, the abdominal viscera. Of these organs respectively, the mucous surfaces appear to be, in general, the parts first affected with congestion, which, if not soon relieved, extends to the adjacent structure, now and then involving the serous membranes also in acute inflammation.

When typhus mitior terminates favourably, it seldom exceeds nine days in its duration; and when medical advice is early resorted to, the fever is often extinguished in seven. It is much seldomer fatal than typhus gravior.

The morbid appearances on dissection, in this species of fever, resemble in kind so strongly those which have been already recited under the head of typhus gravior, that it were

superfluous to recapitulate the particulars. It may be sufficient here to remark ; first, with respect to the brain, I have examined many cases in which no deviation occurred from the due or ordinary condition of that viscus. In others there was more or less evidence of sanguineous repletion, though inferior in degree to that observed in the worst species ; so that I have frequently been satisfied, that the fatality of the case could not, with any apparent probability, be referred to cerebral disorder : secondly, the liver, though it frequently presented diseased appearances, yet seldom exhibited such approach to disorganization, as in the severer species ; thirdly, the villous coat of the stomach and intestines afforded, under different circumstances, many varieties and grades of inflammatory appearance ; and lastly, the lungs and pleura which were very commonly the seat of febrile congestion, betrayed the usual evidences of acute or subacute inflammation of those highly vascular organs.

Three cases of sudden death (in above three thousand) occurred to me in the Hardwicke Hospital, in subjects who were just recovering from mild fever. I could not learn that they had ever been afflicted with epilepsy. Two of them were young persons, the other middle-

aged, and each of apparently sound constitution, and free from fever at the time of their respective deaths. I did not witness their fatal convulsions; but the nurse reported to me, that two of them died in violent struggles, which lasted about ten minutes; the other had a fainting fit on going to bed, and after reviving so as to leave no further solicitude about him, he was found dead in his bed, at an early hour in the morning. On a careful dissection, neither the brain, nor any other organ, shewed the probable cause of these sudden deaths; and there was no ground to impute them to error or excess of diet.

Lunatics and ideots, of whom I have seen frequent examples in fever, appear to me to undergo the disease, without any peculiar or aggravated symptom. They are not more delirious than other patients, though more noisy and intractable. As soon as they become convalescent, they are extremely troublesome, by their clamorous importunity for food. It is well known, that HOFFMAN, pursuing a hint of GALEN, proposed that lunatics should be infected with fever, as a probable means of curing their insanity; yet amongst many cases, in which this has occurred spontaneously, or at least without design, I have not had the good

fortune to meet with one, in which typhous fever brought any permanent relief to the mental derangement.

With respect to the *prognosis* in typhus mitior, it may be observed in general terms, that the more nearly the fever approaches to typhus gravior, the greater the danger of its issue. The symptoms of cerebral disorder take the lead in importance; restless delirium and watchfulness, on the one hand, or supine lethargy, on the other, are adverse circumstances. Great frequency of pulse and respiration, under the antiphlogistic treatment, are unfavourable. Remarkable alteration of countenance, manner, and voice; depraved vision; torpid skin, and cold extremities, are also unpropitious. The occurrence of petechiæ in an early stage of the disorder is of no particular moment; but their first appearance, at an advanced stage, (under cool and purgative discipline,) undoubtedly proclaims danger.

The countenance and posture of the patient, his manner of respiration, and the appearance of his tongue, give various and authentic information to the experienced practitioner. When the patient lies at ease on his side, and especially if he be observed to relieve himself by spontaneous changes of position, after the

fever is much advanced, the augury is favourable; on the contrary, when he continues to lie supine and extended, or with his knees perpendicularly raised, his eyes half closed, and his lips muttering inaudibly, the prognostic is adverse.

SECTION V.

Considerations relating to the Pathology of Typhous Fever.

THE Science of Disease is hardly yet sufficiently advanced to compass the pathology of fever. Much collective light has been thrown upon it by the humoral theories of the older writers; the vascular spasm of HOFFMAN; the doctrine of morbid associations by DARWIN; of local inflammation by PLOUCQUET; and of morbid temperature by CURRIE. That the labours, of these and of other distinguished men, have furnished many solid and some highly wrought materials for the structure of febrile pathology, cannot be questioned; nor will the physician, who is at all versed in the difficulties of the task, refuse the tribute of his admiration to each of these scientific

artists. Yet to select, assemble, and give cohesion to the valuable parts of their several fabrics; to supply radical deficiencies; and render the whole consistent and symmetrical, may demand still higher powers of scientific genius.

What has hitherto retarded the advancement of this work, has been, not so much a propensity to generalize, which belongs to all philosophic minds, as an eagerness to abandon old doctrines, whenever new ones have been projected, and to rely too exclusively upon each, for a solution of all the various phenomena of fever. Thus the humoral pathologists slighted the Hippocratic doctrine concerning morbid temperature; and, in turn, the humoral theory, though pregnant with the most important doctrines of the economy of secretion, was rejected for neurological hypotheses of debility and spasm. Organic disease was thus in a great measure overlooked; until the doctrines of morbid heat, of local congestion or inflammation, again brought this important feature into notice. But there is now danger, lest, in discarding the cycles and the epicycles of fever, delineated by CULLEN or DARWIN, the doctrines of morbid catenation, or associate actions of disease, will be at the same time fatally overlooked.

The French nosographers, who have not been slow to cultivate the morbid anatomy of fever, or to employ their information to illustrate the pathology of this class of diseases, have concurred with our own writers in acknowledging its various desiderata. M. PINEL justly enquires, “ mais peut-on rendre raison
 “ de leurs phénomènes, et en retrouver le
 “ mécanisme dans la structure et la disposition des principales parties qui paroissent en
 “ être le siège, ou dans la nature des fonctions organiques de ces parties dans l’état de santé?
 “ Quelle connexion ont les causes occasionnelles, physiques ou morales, avec cette
 “ augmentation d’irritabilité febrile dans l’estomac ou le duodenum, ou dans les conduits
 “ ou réservoirs biliaires ou pancréatiques?
 “ Les humeurs secrétées, jouent-elles dans ces
 “ maladies un rôle primitif ou secondaire? ”*

In another place, M. PINEL gives the ample praise which is due to PLENCIZ, RÆDERER, and WAGLER,† for their minute attention, not merely to the physical changes attendant on fevers, but to all the incidental circumstances, external and internal, which are connected with the disease.

* Nosographie Philos. tome i. pp. 89, 94.

† Jos. PLENCIZ, *Acta et Observata Medica*. WAGLER, *Tractatus de Morbo Mucoso*, Goetting. 1783.

It must be candidly acknowledged, that the light of morbid anatomy has discovered fewer points in the essential pathology of fever, than might have been hoped, from the collective observations even of the last century. But whoever will be at pains to compare the substantial doctrines entertained by SYDENHAM, (who had little, if any, recourse to morbid dissection,) with the opinions which have been inculcated by successive writers on fever to the present times, will be satisfied of the truth of this observation. The technical language of SYDENHAM is undoubtedly objectionable, and chemical analogies are too frequently and forcibly introduced into his reasonings. But in essential points, his indications and remedies correspond with the best doctrines and practice of the present day.

From whatever cause, or combination of causes, typhous fever originates in the body, the sensorial and circulating systems are primarily disturbed. The failure of mental and bodily power, with obtuse or depraved senses, are so invariably attended with disturbed balance of the sanguiferous and secerning systems, that an intimate connection must somewhere subsist between these morbid phenomena. All the incipient symptoms of typhus denote enfeebled energy of the heart and arteries,

with its usual attendant—venous congestion. Whether this venous congestion, in the sinuses of the brain, and throughout the cerebral structure, be the cause, or remotely the effect, of sensorial oppression ; whether, also, it occasion the pain so commonly felt in the occiput and the spine, the sickness of the stomach, and the torpor of the bowels, may not be strictly demonstrable. The facts, however, are prominent, and more or less strongly associated. The pale, leaden, or venous hue, which attends the incipient stage of fever, the oppression of the præcordia, the sighing or yawning to afford relief to the pulmonary circulation, the laboured or obscure movements of the heart, the torpor of the arterial capillaries, whether of the skin or the mucous surface of internal cavities, demonstrate the disturbed balance of the arterial and venal systems. In some parts of the body, as the spleen, the liver, and the brain, where a peculiar provision is made for venous plethora, this condition seems to obtain, not merely at the onset, but, more or less, throughout the course of typhous fever. No parts, indeed, appear to be exempt from it, at the commencement of the fever ; and where the diurnal or advanced stages of arterial excitement are feebly developed, venous plethora, local or general, prevails to the

last. Most commonly, however, the incipient congestion of the veins is followed by inordinate actions of the heart and the vessels depending upon it. Hence an inflammatory diathesis supervenes, marked by phenomena very different from those just described; viz. a full and florid surface, shining eyes, pains in the forehead, throbbing pulse, hurried respiration, and increased heat and sensibility. After a while, these symptoms decline, as their precursors; whether the diurnal or the entire cycle of the fever be regarded. Yet, as I have just observed of the venous plethora, so also of the arterial excitement, a perfect or equal subsidence does not take place in all the parts or organs of the body. Some viscus or tissue retains the inflammatory condition excited by the fever, when other parts are freely disengaged. The mucous membrane of the bronchi very commonly falls into this condition; which, as in peripneumonia notha, is accompanied with venous congestion throughout the substance of the lungs. The like coincidence of venal and arterial repletion is often observed in the villous coat of the primæ viæ, the several textures of the brain, and the serous tissue in many parts of the body.

We are much indebted to Drs. JACKSON and ARMSTRONG, for elucidating the cha-

acters of venous congestion in fevers. The subject had been obscurely noticed by HUXHAM, and distinctly, though with brevity, by CLARK; but Dr. ARMSTRONG has, unquestionably, the merit of pursuing the subject more carefully, as well as more extensively, than any of his predecessors.

The opinions which I have formed on this subject were derived from observations in practice and dissection on a considerable scale, before the last-mentioned author had published his instructive treatises on fever. Of the points of resemblance, therefore, as well as the points of difference, in our opinions, I was ignorant, when my "Report of the Hardwicke Fever Hospital, for the years 1813, 14, and 15," was prepared for publication.

The present ingenious Professor of Anatomy in the University of Dublin has stated it* "as the result of his experience, that the morbid appearances (on dissection) in typhous fever, are not those of common visceral inflammation." He thus defines those which he apprehends (in my opinion, justly) to belong to the former. "First, fulness or distension of the vessels of the brain, especially the veins, some water effused on the

* See Medical Report of the Fever Hospital, Cork-Street, Dublin, 1818.

“ surface and into the cavities of the brain.
 “ Secondly, the same species of congestion in
 “ the lungs, and different degrees of effusion
 “ in the cavities of the pericardium and pleura.
 “ Thirdly, venous congestion in the liver,
 “ spleen, or alimentary canal; sometimes a
 “ blood-shot appearance or spots of extrava-
 “ sation in the mucous coat, more particularly
 “ the stomach and first coils of the intestines;
 “ in some rare instances, a more general pulpy
 “ or swollen and discoloured state of the mucous
 “ coat of the alimentary canal.” These pos-
 thumous appearances in typhous subjects I
 have frequently witnessed; and can therefore
 testify the accuracy of my friend Dr MACART-
 NEY's description. In what follows, I must
 acknowledge that my experience is somewhat
 at variance with his. The bodies which I have
 seen dissected have been carried in a shell,
 from the beds on which they have lain, to an
 adjacent house of reception, previous to inter-
 ment; and my examinations were pretty uni-
 formly made *within twenty-four hours* after the
 patient's death. Now, under these circum-
 stances, I have carefully observed the follow-
 ing “ morbid appearances,” which the Pro-
 fessor justly ascribes to “ real and pure
 “ inflammation,” viz. first, in the head; the
 minute branches of the arteries appear more

numerous than usual, from carrying florid red blood; a turbid or whey-like effusion, with sero-purulent secretion on the surface of the membranes; the arachnoid coat partially thickened and opaque. Secondly, (as in pleuritis, and pericarditis,) there is a manifest repletion of the arteries, and a wheyish looking fluid, pus or lymph, thrown out. Thirdly, the same may be observed of the villous coat of the intestines, and, occasionally, of parts of the peritonæum. I am not prepared to state that the membranes which fall into inflammation in typhus become more or less dense, than those which have been the seat of common phlegmasia; but this diagnosis, pointed out by Dr. MACARTNEY, seems deserving of further investigation.

That genuine acute inflammation does not always, or perhaps even in the majority of cases, attend typhus, (as it has appeared epidemically in these islands,) may, I think, be fairly maintained. Yet, in most of the worst cases, and, by consequence, in most of those which come under posthumous examination, there are unequivocal evidences of genuine inflammation, accompanied with those appearances of venous congestion, which frequently distinguish these diseases from the proper phlegmasiæ.

In confirmation of these opinions, I am happy to quote a concise and satisfactory com-

munication from a medical friend, of great experience and discernment. “ When the
 “ brain (says he) has been much affected in
 “ the course of fever, distension of the vessels,
 “ and effusion of serum, are generally found
 “ after death ; the minute branches of the
 “ arteries are often injected with fluid red
 “ blood, the arachnoid membrane thickened
 “ and opaque ; and, in some few instances, the
 “ effusion on the surface of the brain is turbid ;
 “ extravasation of blood has occurred in some
 “ cases, and in one instance pus and lymph
 “ were found in the ventricles of the brain.—
 “ In the thoracic cavity, congestion and
 “ serous effusion are often found ; but still
 “ oftener, layers of coagulated lymph on the
 “ serous membranes, sero-purulent effusion
 “ into the cavity of the chest, a complete in-
 “ jection of the minute arteries of the bron-
 “ chial membrane, or effusions of blood, lymph,
 “ and serum, into the substance of the lungs.
 “ In this cavity (the writer adds) I have within
 “ the last eighteen months seen as unequivocal
 “ marks of inflammation, in cases of fever,
 “ apparently originating in contagion, cer-
 “ tainly derived from infected dwellings, as
 “ ever I did after pneumonia.—In the abdo-
 “ men, congestion sometimes occurs. But in
 “ fever complicated with dysentery, the mu-

“cus membrane is found much inflamed; this
 “inflammation, when the disease is protracted,
 “frequently degenerates into extensive ul-
 “ceration.”*

Though the task were easy, I shall not attempt to multiply authorities, or to adduce the sanction of great names, in support of the position I have here maintained, viz. that arterious as well as venous repletion, actual inflammation as well as congestion, occur in typhous fever, in such a proportion of cases, and in such uniformity of local affection, (according to the *mode* of the prevailing epidemic,) as demonstrate the idiopathic character of those appearances. This position, in truth, I have learned to consider one of the cardinal points in the pathology of fever; and in proportion as it has been steadily regarded, or incautiously slighted, practitioners have advanced or re-

* Similar facts are recorded by the French physicians, who have cultivated the anatomy of fever; “On remarque
 “souvent des traces manifestes d’inflammation dans le
 “cerveau et sur les meninges.—Des collections de pus s’ob-
 “servent sur la membrane arachnoïde.—M. LARREY a re-
 “marqué une couche blanchâtre, de substance albumineuse
 “sur la surface du cerveau.—Le poumon est parfois en-
 “flammé dans une portion de son parenchyme.—On voit
 “souvent des traces d’inflammation sur le péritoine, et
 “même sur la membrane muqueuse des intestines; et l’on
 “en trouve aussi quelquefois sur le foie.”—*Dict. des
 Sciences Méd.* tome xv. p. 449.

ceded from a true knowledge of the theory and treatment of fever.

As in phlegmasia there are considerable gradations between slight catarrh, acute bronchitis, and pleurisy ; so also in typhus, there is one state of simple congestion ; another of sub-inflammation, which terminates by simple resolution ; and a third of acute inflammation, which ends in effusion, adhesions, or gangrene. To those who have had large experience of the present epidemic, I would propose three queries ; first, whether a certain proportion of the cases under their treatment have not shewn unequivocal symptoms of inflammation ? Secondly, whether of such cases the most formidable and fatal have not generally been those which have betrayed the greatest degree of inflammation ? And thirdly, whether dissection has not confirmed the evidence of the living symptoms, even where it has not explained the causes of death ?

To the disturbed balance of the sanguineous system in typhus is probably to be referred the torpor, or disordered actions, of various secreting organs. There is a point, not only of excitement, but of simple congestion, at which these organs, whether glandular or membranous, withhold their respective secretions. This is remarkably exemplified in the

hot fit of a common catarrh, when the schneiderian membrane and adjacent texture become dry and tumid, so as to obstruct the passage of the nose; it is exemplified, also, in the commencement both of congestive asthma and acute bronchitis. In typhus, the secretions of the primæ viæ, and of the skin, are more peculiarly disordered. Dr. ALEXANDER appears to have been the first person who distinctly ascertained the sweating point, in relation to the skin. His doctrine, which is simple, was improved by Dr. GRANT, and extended to all other secretory organs in the body. Not merely excess or deficiency of heat, but the like extremes of repletion, of nervous sensibility or excitement, may be shewn to disturb the process of natural secretion. Hence the kidneys, the liver, the stomach, the fauces, &c. yield their respective fluids in undue quantity and vitiated quality. Anorexia, diarrhœa, or constipation, are the attendant symptoms.

The resolution of this congestive or inflammatory condition, which disturbs the balance of secretion, is often spontaneously effected, though by a tedious and doubtful process. And here the older physicians committed their great error, in waiting upon the supposed intentions of nature, and expecting, by an ideal

process of coction, the elimination of obstructed and vitiated secretions. Whereas, if the physiological views I have here endeavoured to unfold, be agreeable to the truth of nature, it will be manifest, that no part of the morbid catenation of fever requires more vigilant or discriminating interference, on the part of the physician, than the disordered functions of secretion.

Morbid heat is another phenomenon of fever, which demands the attention of the pathologist. Dr. CURRIE has justly pointed out, in many exemplifications of fever, the connection between morbid heat and the acceleration of the pulse, and of respiration; and, on the other hand, the reciprocal influence of these functions in sustaining inordinate temperature. In reference, therefore, to the economy of the circulating system, how important is the consideration of morbid heat! Yet, in the worst description of typhus, this heat seldom uniformly or steadily exceeds much the standard of health. Perhaps, generally speaking, when the brain and its membranes are the chief seat of congestion, the temperature of the body is less elevated than when the bronchi are excited, and certainly less than when the primæ viæ are chiefly implicated, in the febrile irritation. Typhus mitior, synochus, and ephemeral fever,

furnish the most frequent instances of increased heat, both of the internal and external parts of the body; they furnish, also, the most striking illustrations of the benefits of cold affusion, and tepid ablution.*

* As the subject of *morbid heat* appears to me to engage less notice than it deserves, both in the treatment and the pathology of fever, I beg leave to transcribe the following passage from Dr. CURRIE's 'Medical Reports.'—"It was a position of the celebrated BOERHAAVE, that the morbid heat in fever, being a symptom only, might therefore be disregarded. But can we suppose that a heat, six or seven degrees greater than that of the blood in health, however generated, will not have the most important effects on the system; and if it stand in relation of effect to the preceding symptoms, will it not operate as a cause on those which succeed? Doubtless this morbid heat re-acts upon the vascular system; irritates the spasm of the extreme vessels, and prolonging the increased action of the heart and arteries, establishes a morbid association, which carries on this increased action, after the spasm has relaxed, and the heat itself subsided. If a person be confined in a hot room, or in a hot bath, till his heat rises three or four degrees above the natural standard, his pulse will be found of feverish rapidity; wandering pains will soon be felt over the body; languor, lassitude, and at length great debility, will take place, with most of the symptoms of regular fever. It is evident that these symptoms cannot be expected to go off, till the inordinate heat is removed; and if the person remain some time in the heated medium, he will find that the inordinate action of the heart and arteries continues after leaving it, and even after his own heat has subsided to its natural standard. This depends on a principle peculiar to life, to which the name of habit or association has been given, and which extends its influence to all the vital phenomena, whether intellectual or corporeal.

But the generation of febrile heat, and its spontaneous increase and decrease, are hitherto very imperfectly explained. Under apparently similar circumstances of respiration and circulation, the temperature of the body is found to vary considerably. This, indeed, is observable in health, in the ordinary course of every one's experience. But the remarkable power of resisting a cold atmosphere, or submersion in cold water, by a spontaneous evolution of caloric in the body, whilst the pulse and breathing are considerably repressed, points to an economy of vitality, with which, as yet, we are little acquainted. Dr. CURRIE conjectured that this power might reside in "the stomach or the diaphragm, or both.* The experiments of Mr. BRODIE have demonstrated, that "the temperature of warm-blooded "animals is considerably under the influence

"In fever this morbid heat does not arise from the surrounding medium, but from certain motions in the system itself. But however generated, a heat five or six degrees above the natural standard must be a powerful agent; and it cannot be expected that the diseased actions should subside under so strong a stimulus. The rapidity of the circulation, and the labour of respiration, are consequences of a heat of this degree, from whatever cause arising, and must continue till the heat be reduced."—See *Medical Reports*, pp. 243, 248, 249.

* *Medical Reports*, vol. i. p. 220.

“ of the nervous system.” “ We have evidence,
 “ (says that ingenious physiologist,) that when
 “ the brain ceases to exercise its functions,
 “ although those of the heart and lungs con-
 “ tinue to be performed, the animal loses the
 “ powers of generating heat. It would, how-
 “ ever, be absurd to argue from this fact, that
 “ the chemical changes of the blood in the
 “ lungs are in no way necessary to the pro-
 “ duction of heat ; since we know of no in-
 “ stance in which it continues to take place
 “ after respiration has ceased.” In reference
 to febrile diseases, Mr. BRODIE has remarked,
 that “ the most copious secretions in the whole
 “ body are those of the insensible perspiration
 “ from the skin, and of the watery vapour
 “ from the mouth and fauces ; and the effect
 “ of these must be to lower, rather than raise,
 “ the animal temperature. Under other cir-
 “ cumstances, also, the diminution of the
 “ secretions is not observed to be attended
 “ with a diminution of heat. On the con-
 “ trary, in the hot fit of a fever, when the
 “ scanty dark-coloured urine, dry skin, and
 “ parched mouth, indicate that scarcely any
 “ secretions are taking place, the tempera-
 “ ture of the body is raised above the natural
 “ standard ; to which it falls, when the consti-
 “ tution returns to its natural state, and the

“ secretions are restored.”* Dr. CURRIE had, indeed, before suggested, that “ the principal office of the insensible perspiration might be to regulate the animal heat ;” and that, in the process of cutaneous secretion, “ there is not a separation merely, but a new combination,” which, by its greater capacity for caloric, may abstract that matter from the circulating fluids, and then discharge it from the system.

Without affirming or controverting the hypothetical part of these opinions, it is manifest that, in the doctrine of fever, much consideration is due to what I have already largely insisted upon—the disturbed balance or economy of the discerning organs. In what manner, or degree, the disorder of these organs affects the animal heat, and what counteracting causes may cancel their influence, remain to be discovered. But the morbid heat, which commonly accompanies their engorgement, and the cooling effects of all just evacuations, determine at once the truth and the value of this doctrine in the pathology of fever.

From a series of thermometrical experiments, instituted by Dr. CHEYNE, it appears, “ that when excess of temperature took place, the circulation was generally, but not always,

* Philos. Transact. 1811. p. 56.

“ proportionally quickened; that respiration
 “ was even less affected, during the existence
 “ of excess of temperature, than the circula-
 “ tion; that in forty patients in whom the
 “ temperature exceeded 104° , there was
 “ only one death; and that in the majority of
 “ fatal cases in 250 examples the tempera-
 “ ture did not exceed 100° . It was not un-
 “ common (adds this intelligent observer) to
 “ find the thermometer gradually rising from
 “ 98° , or 99° to 102° , or 103° , or even higher,
 “ while the severity of the disease was abating;
 “ and on the other hand, we frequently ob-
 “ served the temperature declining, while the
 “ patient was getting worse.”

The state of universal venous congestion, so
 well described by Dr. ARMSTRONG, is seldom
 attended with a high temperature. On the
 contrary, the extremities are often cold, and
 the surface and breath of the patient cool also.
 In the latter end of severe fevers, the same
 circumstances are observable.* Not so, how-
 ever, when the stage of excitement, (whether
 in the diurnal or entire period of the distemper)
 is fully developed; and these are the cases,

* “ The heat towards the latter stages (says Dr. CURRIE)
 “ will sometimes be found as low as the natural standard,
 “ sometimes lower, and the capillaries of the skin be completely
 “ relaxed; while the inordinate action of the heart and arte-

unquestionably, in which the remedial agents, hitherto discovered, have the greatest efficacy. Blood-letting, purging, cold affusion, produce decisive benefit; and the measure of this benefit is generally proportionate to their influence in reducing the excess of morbid heat. By a converse rule, the administration of wine and other cordials, is adapted to raise and sustain the decay of power, which is indicated by a declining temperature.

The function of respiration should by no means be overlooked in any stage of typhous fever. At the commencement, the patient's breathing is frequent, scanty, oppressed, and suspirious. The smaller, as well as the greater, course of circulation labours under a disturbed balance of its arterial and venal systems. From the heart to the capillary arteries which are concerned in the process of secretion, a chain of evidences demonstrates the oppressed functions or enfeebled energy of those important organs. Although the capacity of the bronchial cells does not appear to be diminished, as in the paroxysm of asthma, yet

“ries continues; being carried on, as it seems to me, by the
 “morbid association produced in the course of the disease,
 “which retains its influence in this, as in other cases, after
 “the cause that produced it ceases to operate.”—*Medical Reports*, vol. i. p. 239.

frequent voluntary efforts are required to fill them with air so as to answer the proper ends of respiration; at the same time that the tortuous vessels diffused on the crypts are elongated, so as to facilitate the transmission of their contents.

In the stage of febrile excitement, the breathing is more frequent, and less anxious; still it is scanty and embarrassed. In health, the number of respirations performed in a minute is usually about 14, or one-fifth of the number of pulsations of the heart in the same period. In fever of the typhous kind, the average of inspirations performed in a minute may be fixed at nearly double that amount. Of 171 cases of the peripneumonic species, subjected to experiment by Dr. CHEYNE, 40, respired *thirty-two* times, 27, *twenty-eight* times, 12, *forty* times, and 1, *sixty* times in a minute. Of 101 cases of the gastric or enteric species, 20 were found to perform *twenty* respirations, 12, *twenty-four*, 12, *thirty-two*, and 11, *twenty-eight*, in the minute; being the largest proportions affixed to any numbers on his scale, from *fourteen* to *fifty*.* The reader is referred to Dr. CHEYNE's comparative *tables* of pulse,

* See his second "Report of the Hardwicke Hospital," page 56.

respiration, and temperature, in his last clinical "Report."

In this Section it has been simply my design to cite, or to suggest, such facts and physiological considerations on the subject before us, as appear to deserve the chief attention of the pathologist, and to point, with the least ambiguity, to a legitimate doctrine of fever.

SECTION VI.

Curative Treatment of Typhous Fever.

ALTHOUGH the art of physic affords various means, by which patients may be conducted with safety through the different stages of typhus; and though examples are not wanting, of persons who have survived such fevers, under an entire neglect of remedial treatment; yet whoever will be at the pains to ascertain the issue, as it appears in the registries of mortality,* or in the diseased and irreparably broken constitutions which abound

* It has appeared from bills of mortality, that in places where typhous fever has been suffered to commit its ravages with little or no control from medical treatment, one-fourth, and even one-third, of those afflicted by it have died: whereas, the registers of different Fever Hospitals shew that, under due remedial management, one-tenth, and sometimes one-twentieth only, of the cases terminate fatally. Happily for

in large towns, where fever chiefly prevails, will be satisfied, that, besides the preservation of life, there are other essential points of contrast between the various curative methods proposed by discordant authorities. In truth, that sceptical indifference which slights the comparative pretensions of dissimilar modes of treatment, even on the ground of their correspondence in some leading features, will be found to arise from want of experience or want of discrimination. Its origin may be traced to those confused notions of fever, which represent it as wearing always nearly the same aspect, and therefore, requiring in every case, a sort of average plan of discipline, rather than demanding recurrence to certain definite principles, to determine the modes of treatment appropriate to each variety of the disease. Had this latter canon of medical science been more

these islands, the treatment of epidemic fevers was early ascertained by SYDENHAM. In the following age it received some improvements, blended, however, with corruptions, which have long retarded its maturity, and which a stricter analysis, and a more careful study of the early writers, will most effectually abolish.—On referring lately to Dr. FALCONER's very ingenious paper on the "Morbus Cardiacus," Mem. Med. Soc. vol. vi. I found the following observation: "Still, however, I must think that the method of cure laid down by the old writers is more full and explicit, and upon the whole preferable, to any that I have seen in the latest publications." P. 85. 1786.

carefully observed, physicians would have been seldomer betrayed, either into the scepticism just alluded to, or into the opposite extreme of an eager solicitude to exalt particular remedies into the reputation of universal or indiscriminate efficacy.

From what has been said, [in the foregoing parts of this treatise, of the diversified and ever varying modifications of epidemic fever, it will be apparent that no precise rules of *curative treatment* can be laid down, otherwise than in reference to the particular *modes* of the disease. A detail of Cases is incompatible with my present design ; nor does it appear to me, on the whole, the most instructive method of conveying to the public those results of experience, on a large scale, which should rather exhibit the principles and conclusions of a well-furnished medical judgment.

The first point to be attended to, for the cure of typhous fever and the prevention of contagion, is a plentiful supply of *cool and fresh air*. “ No cordial (says HEBERDEN) is “ so reviving as fresh air.” It is one of the most powerful auxiliaries in tempering morbid heat, allaying irritation, banishing petechiæ, and promoting sleep, and moderate diaphoresis. The wards of every hospital should be fitted for constant and equal ventilation ; and those

who have practised in such Hospitals, will concur with me in asserting, that the access of cool and pure air, to patients who have been removed from crowded and noisome habitations, is one of the most decisive instruments of their cure. Familiar as we now are with this powerful and antient remedy, we must not forget our obligations to those who revived its use, and especially to Dr. LETTSOM, who pursued and improved upon the precepts of SYDENHAM,* which had been strangely neglected by his successors. The beneficial influence of the cool and ventilating treatment, and its operation in modifying the general aspect and indications of typhus, are peculiarly well stated and explained by Dr. BATEMAN.†

The next point to be regarded is suitable *evacuation*; and, primarily, that of *blood-letting*; a remedy which has been viewed with so much exaggerated apprehension on the one hand, and such undue or indiscriminate partiality on the

* SYDENHAM, though himself an original interpreter of nature, condescended to learn from the wisdom of antiquity. ARETÆUS advised, that patients in fever should be in a cool chamber, that "the breezes might blow upon him, and recal his almost departing spirit to life." Similar injunctions are given by CELSUS and by CÆLIUS AURELIANUS.

† See Edin. Med. and Surg. Journal, No. xxxiii. p. 121; and "Succinct Account of Contagious Fever," &c. p. 135, et seq.

other,* as to justify a few special remarks in this place. Many valuable instructions on this head have been scattered by contending authorities through the pages of modern publications on fever; yet no where, perhaps, has the subject been more justly treated, or more happily illustrated, than by SYDENHAM, and his commentator Dr. GRANT. With some abatement for the hypothetical terms, and what I conceive to be the errors, of their humoral pathology, the precepts of the former, and the rationale adduced by the latter, (respecting blood letting in fever,) appear to me among the soundest documents of practice, which the records of medicine afford. Had these physicians lived in the present day of improved physiology, it is more than probable that they would have modified their occult theory of *coction*, by the more intelligible doctrines of organic secretion.

Of all evacuant remedies, blood-letting is, undoubtedly, the most powerful; as it most directly affects the circulating system and the vital powers. But it is by no means the only active and efficacious instrument of this kind; and I desire to consider it here in conjunction with other evacuant remedies, not as rivalling

* These differences of opinion are on the whole fairly stated and balanced by Dr. BEDDOES, in his "Researches on Fever."

each other in claims of universal benefit, but in reference to their severally appropriate uses. I need not here repeat, that in every case of typhous fever, the balance of the vascular economy is considerably disturbed; that the secretions are vitiated or suspended; that partial congestion or local inflammation obstructs the due exercise of one or several of the more important organs; as the skin, the mucous tissue of the *primæ viæ*, the brain, the liver, and the lungs, are more or less engaged with congestion, and deranged in their functions, respectively, according to the constitution of the patient, or the reigning epidemic of the season;—and that, to relieve these oppressed viscera and restore the lost balance of their functions, evacuations, of various kinds are the chief remedies; under which title may be comprehended the invaluable remedy of cold affusion, whose salutary operation is crowned by diaphoresis and solution of the bowels.

In those forms of typhus, (occurring especially in the winter and spring,) in which the pulmonary organs are manifestly inflamed, as is shewn by obstructed breathing, fixed pain in the side, and other features of peripneumonia, blood-letting may be employed at any period; even in those extreme circumstances which are

marked by a bloated and livid countenance, with cold extremities, when euthanasia seems the only remaining benefit to be obtained. In such cases I have sometimes prolonged life by this and auxiliary means ; and, in a few instances, I believe saved it. But the safest and best period for venesection is, undoubtedly, at the commencement* of the disease. When,

* I cannot forbear citing the following passage from a writer, whose merits have been screened by the mists of some popular theories, now nearly dispersed ; but whose sagacious judgment appears to me to have anticipated the pathological principles on which the treatment of fever by blood-letting will ultimately be regulated. “ In the days of SYDENHAM (I abridge from Dr. GRANT) there was a difference of opinion with regard to the proper time for bleeding in fevers, attended with turgid matters in the bowels, and where this evacuation was indicated. SYDENHAM had learned, from experience, that a seasonable bleeding promoted all the secretions and excretions ; that the skin became more moist, the urine more coloured, and that both emetics and cathartics acted with greater ease and effect. The fact is true, and I take the rationale to be as follows :—There is a certain degree of heat and (vascular) motion, which constitutes perfect health in any animal. All the common operations of life make some deviation from this standard. But while the deviation does not continue long on either side, all the natural functions are performed well enough for the common purposes of life ; and the secretions and excretions proceed as usual, and consequently are insensible, such as the regular constant secretion of saliva, urine, bile, perspiration, &c. But if, by any accident, this quantity of heat and motion is increased or diminished beyond a certain degree, and there continued beyond a certain time, a disagreeable sensation

in the early stage, respiration is obstructed by pain ; when cough is suppressed, and mucous secretion suspended ; the patient may be bled to the amount of ten, twelve, or fourteen ounces. Neither delirium nor petechiæ should hinder the repetition of this remedy on the following day, if decisive relief has not been

“ is felt, and some or other of the natural functions are dis-
 “ turbed, or perhaps destroyed ; at the same time the secre-
 “ tions and excretions become irregular ; some are too much
 “ promoted, while others are retarded or stopt. Thus there
 “ is a degree of heat which promotes insensible perspiration
 “ to the degree of sweating, and may be called the sweating
 “ point, under which, a sweating cannot be produced ; but
 “ what is more surprising, if the heat be pushed far beyond
 “ the sweating point, the skin will become harsh and dry, and
 “ we never can recal even the natural perspiration, till the
 “ heat be reduced below the point that first produced the
 “ sweat.—The same is true of every gland in the body.—In
 “ the beginning of all fevers, there is some degree of spasm,
 “ which tempted HOFFMAN to define a fever ‘ spasmus
 “ ‘ universalis.’ A seasonable bleeding acts as an antispas-
 “ modic in many such cases. I have seen, in some fevers, a
 “ vomiting and purging come on spontaneously, immediately
 “ after bleeding, that has cleared the whole *primæ viæ* criti-
 “ cally. I therefore, from reason and constant experience,
 “ recommend this observation of SYDENHAM, that during
 “ the putrid diathesis, when much evacuation is required,
 “ in people full of blood, let more or less blood be taken,
 “ according to the strength and circumstances of the patient,
 “ in the first place ; and then proceed to other evacuations.
 “ Now, if this be proper in the season of the putrid diathesis,
 “ surely it must be absolutely necessary during the inflam-
 “ matory one.” —See GRANT’S ‘ *Observations on Fever,*’ &c.
 vol. i. pp. 186, 7, 8, foot note.

afforded to the pain and dyspnœa ; other remedies being at the same time used to obtain auxiliary evacuation of the skin, the bronchiæ, and the bowels. In young and robust subjects a second and a third bleeding are often required, to subdue manifest inflammation of the lungs ; which seems to commence in the mucous tissue, and, if not timely relieved, extends to the pleura, becoming more obstinate and dangerous in the sequel.—In most cases, however, a single well-timed blood-letting, to the amount above-mentioned, suffices to allay pain and restore easy respiration, especially in the catarrhal species of fever, which quickly resolves itself by expectoration. Mucous secretion being duly formed, I have seldom used the lancet in petechial or typhoid fevers ; having found the application of leeches, followed by blisters to the breast or side affected, more effectual, and less hazardous.

Although it be a good general maxim to bleed, rather than refrain from it, in questionable cases of acute fever ; and although the pulmonic organs demand peculiarly prompt and decisive measures of relief, when actually inflamed ; yet a vast number of typhous cases occur, in which pulmonic inflammation is simulated (if I may use such a phrase) ; when hurried circulation, with great debility, are the

true causes of scanty and oppressed respiration. These, I apprehend, are the fevers with high temperature, in which Dr. CURRIE practised the cold affusion with so much success, as led him to form expectations somewhat too sanguine of its efficacy in the several varieties of peripneumonic typhus. In doubtful cases I have examined the manner in which the patient respire; whether by depressing the diaphragm alone, or by elevating the chest conjointly; and whether, by a slow exertion, he can inflate the organ fully without pain or cough. In bronchial and pleuritic inflammation, the former is observed; in pseudo-peripneumony, although the elevation of the thorax and abdomen be inconsiderable, yet the movement is simultaneous. I readily admit that congestion may obtain in the latter case, and that venesection may often afford relief; but the tenor of my practice has instructed me that blood-letting is not necessary; and that purgatives, with cold or tepid ablution, so employed as to produce gentle diaphoresis, tend to resolve the fever without catarrhal sequel.

In typhus gravior, the brain appears to be always engaged with congestion, and sometimes with acute inflammatory action. For the relief of this organ I formerly seldom employed venesection. But later experience, sup-

ported by the testimony of others, has convinced me that it is oftener available than I apprehended. Still, however, the debility attending the cephalic form of typhus is greater than that of the pneumonic species, and the benefit derived from general bleeding has appeared to me considerably more precarious. In this fever the observation of PRINGLE is verified, “that if the patient be once or twice
 “largely blooded on the first symptoms, he
 “will be apt to pass over the second stage, and
 “from a condition little removed from health,
 “his pulse may sink, and he may become
 “delirious.” Leeches may be applied freely to the temples, or behind the ears; or the temporal artery may be opened in urgent or long neglected cases. But much of my reliance is placed on assiduously sponging the shaved scalp with cold vinegar, or moistening it with æther; and fomenting the patient’s legs at the same time, for several successive hours. After free catharsis, and other depletion, blisters should be applied to the nucha and between the scapulæ.

Sometimes, though rarely, symptoms occur resembling true phrenitis; acute darting pains through the head, unremitting vigilant delirium, or delirium ferox with intolerance of light and wiry pulse. In these cases I have several

times ventured on a large blood-letting; but have always found a rapid prostration of strength, with extreme depression and almost extinction of the pulse to follow, whilst the delirium remained unsubdued: so that I cannot but deem such a measure decidedly pernicious. In the phrenzy attending an acute paroxysm of mania, I have had similar experience, and have long since relinquished the practice of large bleedings, in that disease.

In the typhous epidemic of summer, with disordered condition of the lower viscera, a high temperature of the body, and unobstructed respiration, I have generally found that cold affusion, or ablution, followed by purgatives, have superseded the use of the lancet. Sometimes, however, pain of the stomach, with much soreness on pressure, and frequent retching or vomiting, demand blood-letting, especially in the first stages of the fever. Even a feeble thready pulse should not deter the practitioner, in acute cases, from taking away twelve or fourteen ounces of blood; which is usually as much as the patient will bear to lose without deliquium. In these cases, as in enteritis, there is obstipation of the bowels, which it is vain to hope to subdue, without first allaying inflammatory irritation. Drastic purgatives are seldom borne by the stomach,

and tend rather to aggravate the mischief, when prematurely employed. In the summer epidemics which have fallen under my observation, these severe cases were uncommon, especially among Hospital patients.*

I have before remarked, that, as the autumnal season advances, the intestinal canal, rather than the stomach, becomes the seat of febrile irritation; and in these cases, *mutatis mutandis*, a similar rule of practice is to be observed, in the milder and severer cases respectively. In both varieties of fever, the mucous tissue appears to be the primary seat of congestion or inflammation. Yet the bowels yield more readily in cases of enteric than of gastric irritation. The dysenteric fever of SYDENHAM, the *fièvre muqueuse* of the French writers, and the bilious fever of our popular authors, is seldom attended with acute or fixed pain in the bowels, or any alarming degree of constipation. When such symptoms occur, the lancet is undoubtedly a sheet anchor. As an auxiliary to visceral depletion, it is useful when the liver is decidedly tumid and tender. But as these symptoms have presented themselves in but a small proportion of the cases that

* Dr. CHEYNE has given a valuable "Report" of an epidemic fever, attended with much gastric inflammation, in the "Dublin Hospital Reports," &c. vol. i. art. 1.

have fallen within my observation, I have much seldomer had recourse to venesection, than many other practitioners whose judgment and skill entitle them to deference. I would by no means depreciate the efficacy of this remedy in such hands; especially when the auxiliaries on which I lay much stress, are not, or cannot be, brought into use. In some cases of dysenteric sequelæ, I have regretted that I had not used the lancet, perhaps at all; for though such sequels are undoubtedly incident to cases that have been treated with frequent venesection; yet on reviewing my cases, and comparing the practice I then adopted, with my present judgment and experience, I have reason to believe that I erred formerly on the side of caution in this respect.

The pulse, except in extreme cases, affords little definite guidance in this part of the practice of fever; for whilst positive evidences of strength and frequency of pulsation, may sometimes indicate the propriety of bleeding, yet an opposite condition of the pulse (which happens also in several acute inflammations) has very little negative weight against other clearer indications. Neither does the appearance of the blood, however carefully it be drawn from the veins, afford more certain guidance to the practitioner. "Though the

“ blood in this fever (says SYDENHAM) generally
 “ resembles pleuritic blood; yet it does not well
 “ bear repeated bleeding, unless a difficulty of
 “ breathing, and violent pain in coughing, and
 “ other symptoms of this kind, shew the great
 “ tendency of this disease to peripneumonia
 “ notha.” In truth, I consider the practice of
 SYDENHAM, PRINGLE, and GRANT, and of
 those later physicians who substantially ac-
 cord with them, (not as plagiaries, but as
 experimental witnesses to the truth,) to be
 most clearly founded in the legitimate patho-
 logy of fever.

The efficacy of a single blood-letting in
 cutting short the disease, at its commencement,
 has been asserted by some practitioners who
 use the lancet in every case of fever indis-
 criminate. Of this I have had but little
 experience; yet from the efficacy of a purge,
 a vomit, or cold ablution, in extinguishing
 some incipient efforts at fever, I have little
 doubt, that a moderate bleeding with its usual
 accompaniment, a dose of purgative medicine,
 would have similar effects in the like cases.

The afternoon or evening appears to be the
 most favourable time for bleeding patients in
 fever, as it is usually the period of diurnal ex-
 acerbation. This rule, however, is not in-
 tended to restrain the use of the lancet or of

leeches at any other period of the day, when they are manifestly required. But it may be an useful caution to observe, that the remissions of the morning do not always furnish a safe guide for the practice of the evening; and further, that strongly marked exacerbations occur more frequently in the first than in the second or third week of fever.

The admirable practice of *cold affusion* and *ablution*, recommended by Dr. CURRIE and Dr. JACKSON, with irresistible evidence, was largely practised in the wards of the Hardwicke Fever Hospital, which were for some years under my charge. The younger patients, who were generally free from visceral disease, and who were admitted to the Hospital within the first three or four days of the fever, were treated with cold *affusion*, which, aided by a few doses of purgative medicine, effected a rapid and almost invariable cure. As these patients (from about the age of 7 to 15) were easily carried from their beds, I had them placed in a large tub, just without the door of the ward, and five or six gallons of cold water poured over their naked heads and bodies. They were then immediately wiped dry, restored to bed, and a dose of aperient medicine being given them, they were left to rest. By the thermometer I found that the heat of their

bodies was generally reduced six or eight degrees, by this process; and refreshment, tranquillity, sleep, and general diaphoresis, followed. "The reduction of heat," when excessive, says Dr. Beddoes, "is the point of most consequence in continued fevers; the full accomplishment of which purpose nearly involves the prevention of local inflammation." It is important to add, that this reduction of temperature, whether by cool air or ablution, or both together, tends remarkably to promote a solution of the bowels.

The wisdom and safety of the general rules laid down by Dr. CURRIE for the application of the foregoing remedy have been fully confirmed by my experience; nor have I any thing material to add or abate from them. That my late ingenious and much respected friend was somewhat too sanguine in his reliance upon this remedy, so as to divert his attention from some other means of superior efficacy in the advanced stages or worst description of fever, must not be concealed from those who are laudably desirous of benefiting by his writings. Hitherto there has not been discovered any *universal remedy* for typhus; but there are unquestionably *fixed principles* for its treatment, founded in observation, experiment, and legitimate induction.

Patients, in proportion to their youth, have appeared to me to shew less remission of febrile symptoms, especially of morbid heat, in the forenoon. Consequently, I have used the cold affusion more freely with young subjects, at all hours of the day; repeating it three or four times in twenty-four hours; “when no
“sense of chilliness was present, when the
“heat of the surface was steadily above what
“is natural, and when there was no general
“or profuse perspiration.” I can also attest the efficacy of this remedy in sometimes cutting short initiatory fever; and were I to speak from the course of my own observation, I should determine it to be one of the most powerful instruments for this end.

In full-grown subjects, the difficulties attending the process of removing them from their beds, against their will, of stripping them naked, of constraining them to sit in bathing-tubs, and finally drying them and restoring them to bed, has forced me reluctantly to forego this practice with adults. But in such cases I use freely *the cold* or *tepid ablution*, at all times when the condition of the skin requires or admits it. Vinegar, or vinegar and water, is applied with a sponge to the head, trunk, and extremities; nor least to the palms of the hands, and the soles of the feet. This remedy

is undoubtedly inferior in power and decisiveness of effect, yet as an auxiliary, in reducing morbid heat, in resolving congestion of the lower viscera, promoting rest, and cutaneous secretion, it is invaluable.

The epidemics of warm weather bear and require more assiduous ablution than those of the winter and spring seasons. In the catarrhal fever, when the bronchial defluxion is considerable, the sudden application of cold to the trunk is apt to occasion disturbance of the breathing, with convulsive cough. In those cases of peripneumonic fever, also, which require a free use of the lancet, cold affusion must be cautiously ventured on; and I have almost always confined myself to tepid ablution with a sponge. Yet, excepting such cases of marked inflammation or copious defluxion, the common kind of vernal fevers, with pulmonic oppression and slight cough, are relieved and shortened, without any hazard, by the affusion of cold water.—In typhus, with predominant cerebral affection, the central parts of the body are seldom much above the natural temperature, in cool apartments, where the patient's clothing is light, and his bowels solvent. But the head in such cases requires diligent ablution with cold or iced vinegar.—On the other hand, the gastric or mucous fever, which is

attended with excessive heat, thirst, and restlessness, requires a general application of this refrigerant process, and is often more visibly relieved by it than by any other remedy. Let it be observed, however, that in some cases of the autumnal fever, attended with a spontaneous flux, or mucous and bloody discharges, the patient's sensibility to cold, especially when applied to the integuments of the belly, is too great to admit even of tepid ablution. Indeed, this morbid sensibility to cold is at all times to be regarded as a counter-indicant to its application, whatever be the actual temperature of the patient.

In every case, and in every stage of typhus, I have employed either *active purgatives* or *mild aperients*. When a patient was admitted to my wards in the Hardwicke Hospital, he was immediately put to bed, and two of the purgative pills in common use were administered to him. A dose of cathartic mixture was given to him four hours afterwards, and a supply of whey ad libitum. By thus premising alvine evacuation, without loss of time, (unless peculiar circumstances prevented it,) the cases came under my review in a less ambiguous and complicated aspect; so that I was better able to determine the character of any local dis-

tress, of which the patient might complain in his head, chest, or abdomen.

The Hospital purgative pill consisted of a combination of aloes, scammony, ipecacuan, and calomel, of each one grain. The usual dose was two of these pills, which excited vomiting when crapula or redundant bile was present, but in general proved purgative only. When the patient's stomach was irritable, or his bowels easily moved, one pill was given at suitable intervals, or a solution of Epsom salts in spear-mint water, acidulated with vitriolic acid. In every case I aimed at obtaining *moderate* alvine evacuation twice or thrice daily.

I am far from recommending the practice of purging severely at the commencement of fevers. Some of the worst cases that I have witnessed have been those of young medical students, who, in the eagerness to evacuate their bowels, have brought on hypercatharsis on the second or third day of their fever, with very alarming consequences. The lower viscera, so far from being relieved of their congestion, are thus excited to more serious derangement, and removed still further beyond the control of medicine.

Much has been said of late concerning the use and abuse of calomel. I do not consider

it in any sense a specific in fever. Yet I have used it in large and small doses, and not unfrequently to the extent of exciting the salivary glands, and inflaming the mouth. From this latter affection, when brought on in the early or acuter stage of fever, I do not remember to have ever witnessed decisively beneficial effects, and I have certainly seen it aggravate the distress of the patient. A free use of the lancet might render such practice more available; but my own experience, and a comparison of it with that of others, has satisfied me that neither of these expedients is *generally* required. In the dysenteric form of fever, I have used calomel in combination with ipecacuan, or antimony, and opium, and especially in imperfect crises and lingering convalescence. In all the species of typhus gravior, I have used, besides the purgative pill above-mentioned, a bolus consisting of five grains of calomel and a drachm of electuary of senna. To this bolus I resort in every case of congestion of the lower viscera, or where the tongue is loaded with yellowish mucus, or when it exhibits a dark and shrunk appearance. So long as the stools are unctuous or pitchy, of a black or greenish hue, and either preternaturally fœtid, or unusually inodorous, I allow no remission of suitable

catharsis ; to which circumstance I ascribe chiefly the infrequent occurrence, to my observation, of that alarming symptom, a tympanitic distension of the abdomen.—Whenever this manifests itself, the inner surface of the intestinal canal should be briskly acted upon by resinous purgatives, administered at each extremity. I have used with advantage, also, the essential oil of turpentine; a drachm of which, triturated with white sugar, and an ounce of spear-mint water slowly added, forms a suitable, and by no means nauseous, draught; whilst from three to six drachms, blended with the common enema, may be injected per anum. But where peritonitis is distinctly apprehended, leeches should be applied to the abdomen, followed by a large blistering plaister.

The obvious uses of purgatives are to reduce the mass of circulating fluids, to unload the turgid secretory organs, and discharge the vitiated contents of the alimentary canal. But besides these uses, I am persuaded that important service is rendered, by stimulating the mucous membrane of the viscera, and thus diverting congestion from the serous tissue, whether it be of the peritonœum, the pleura, or the pia mater. This opinion might be illustrated by citing the efficacy of cathartics in ascites, hydrothorax, hydrocephalus, the sym-

pathetic irritations of dentition, and the fever of maniacal paroxysms.*—Dr. GRANT lays it down as a canon in the treatment of fevers, that “purging is always necessary, and an “open body throughout the whole ailment.” Under the general system of a cool and antiphlogistic treatment, this depletion is obtained, and usually preserved, by very moderate doses of medicine. But the excretions should at all times be inspected, in order that both the quantity and the quality of this medicine may be duly prescribed. The old and popular custom in England, of taking purges in the spring and fall of the year, to prevent fevers, might be cited to confirm the importance of this particular depletion.

Of the use of *diaphoretic drugs* in the acute stages of typhus, I can give but little favour-

* Dr. REID, in an ingenious essay on “Tetanus and Hydrophobia,” (Dublin, 1817,) endeavours to explain the intimate and reciprocal connection of those parts of the living frame which belong to the *cerebral* system, and those which are supplied with nervous energy by the *ganglionic* system; adding the following, amongst other conclusions from his premises; “hence (says he) derangements in the functions of the latter so frequently excite diseases in the former, “and *vice versa*. There is, however, a very material advantage derived from this circumstance, in the treatment of the “cerebral system; as we are enabled to relieve diseases of “that class, by acting with medicine on the ganglionic “viscera.” p. 21.

able testimony. When the bowels are confined, the biliary system gorged, and the temperature of the body inordinately high, it is difficult to obtain perspiration at any expense of officinal sudorifics; nor is it, when so obtained, critical or even salutary. It is truly observed by PRINGLE, that "critical sweats" are rarely profuse, but gentle, continued, and "equally diffused over the body; sometimes" (he adds) the disease will terminate by an "almost imperceptible moisture of the skin." SYDENHAM wisely directs, in reference to perspiration, that "the patient should have no more nor thicker clothes laid on him, than he usually has when in health; and that no heating medicines should be given to him." May I further cite a remarkable fact mentioned by HIPPOCRATES, in the second book of his "Epidemics," (Sect. I.) viz. that "in the violent heats of summer, fevers appeared without any sweat; but if a shower of the lightest kind occurred, perspiration broke out in the beginning." The truth is, that a just cutaneous secretion is to be elicited in typhous fevers, by means widely different from those which in the materia medica are entitled diaphoretics. Not that these medicines always do harm, but that they are commonly superfluous when they are not injurious, and serve besides

to divert the practitioner from the more efficient resources of his art.

On a full trial of antimonials in the several stages of typhus, it has appeared to me, that they are serviceable in the first period, only when they prove emetic or purgative; and that in small doses they excite superfluous nausea, restlessness, and anxiety; aggravating the distress of the præcordia, without any contingent benefit. I have seen even profuse sweating obtained by antimonials, whilst the skin remained pungently warm, the fauces dry, and thirst and restlessness unabated. Such sweats neither mitigate the disease, nor hasten the crisis. The older authorities proscribe diaphoretics before the eleventh day of the fever; and in this opinion I concur so far as officinal drugs are concerned. In general it will be found that bleeding, purging, and ablution, render them altogether unnecessary in the acute stages. But in those varieties of fever which are protracted by imperfect crisis, when the tongue remains coated, and the skin, though temperate, is dry and torpid, antimony may be employed, in small doses, to great advantage. I have usually combined with it calomel or opium, or both together; and have found them highly serviceable in improving the condition of the secretory organs, and amending the

discharges of the liver, the mucous surfaces, and the skin. In the dysenteric mode of fever, (as I have already observed) these remedies, under due restrictions are an invaluable resource.

With regard to *vomits*, I have only to observe that, when given on the first or second day of fever, and followed by catharsis, they sometimes cut short the ephemeral kind, and serve to mitigate others, in which gastric irritation is not already too predominant. At any other period of the disease, when crapula and urgent nausea are present, a draught of warm water or chamomile-tea will advantageously relieve the stomach of its contents. But the exhibition of emetics has formed no part of my stated or ordinary practice in the cure of fevers. Now and then, during convalescence, a slight accession of fever, threatening a relapse, is cut short by an emetic. I should also observe, in reference to my own practice, that as ipecacuan is combined with the purgative pill, which I ordinarily employ, this has served, when foul matters were in the stomach, to obviate more formal evacuation.

Cold water, as a drink, is peculiarly grateful in typhous fevers, and should be given under the restrictions pointed out by Dr. CURRIE. The measure of its consumption I have left rather to the discretion of the patient than to

the periodical exhibition of certain quantities, as recommended by CÆLIUS AURELIANUS, and revived a few years ago, in a general order from the Army Medical Board. Cold or iced water is always drunk eagerly when the fauces are hot and dry, and a copious draught will often operate like a charm in quenching intestinal ardour, and exciting cutaneous and visceral discharge.

Of the use of *mineral acids* in typhous fever I have had little experience. In the acute stages they are superseded by far more important and decisive remedies. They ill accord, moreover, with a free administration of calomel, on which much of my reliance is placed in almost all the worst forms of fever. After crisis I have seldom found it necessary to prescribe much medicine; but among the most familiar means of keeping the bowels solvent has been a solution of sulphate of magnesia in spear-mint water, acidulated with vitriolic acid.

The administration of *cinchona* in typhous fevers appears to me to require much discrimination. Whenever pulmonic or hepatic congestion prevails; when the tongue is furred, or dry and shrunk; when the skin is parched, the bowels confined, and the urine scanty, the bark in any form proves decidedly injurious. As the opposite conditions come to be formed,

the remedy may be more safely used; but I have so frequently observed, that a dry tongue with restlessness, has followed its exhibition, under apparently favourable circumstances, that I have long ceased to employ it as a general remedy for fever. As an antipetechial remedy, it seems to be useless or hurtful, in some instances aggravating that peculiar symptom; nor have I discovered that, in any form or preparation, it has obviated the secretion of grumous sordes on the gums and lips. I am doubtful if it checks the tendency to gangrene of the nose, or extremities of the feet, or contributes to remove livid blotches; though I have very commonly given it in conjunction with wine, under such circumstances. During convalescence, however, the decoction of bark with elixir of vitriol, or tartrate of antimony, or kali, (as recommended by HUXHAM,) to be mixed with lemon juice, and drank in effervescence, may often be advantageously prescribed.

Gangrenous extremities have been extremely rare in my experience. In some cases they have been threatened by defective circulation through the lungs or heart. But, in general, I believe they are produced by the transition from excessive morbid heat of the surface and extreme parts, in the early stages of fever, to

coldness and torpor in the advanced period. By warm fomentations in the latter circumstances, and by cold or tepid ablution in the former, these vicissitudes are obviated; and there appears to me no ground for the conjecture, that the gangrene incident to typhus results from a putrid state of the circulating fluids.

Of all *cordials*, officinal or dietetic, wine has appeared to me, beyond comparison, the most grateful to the patient, and the most salutary in its effects. The lighter and purer wines are generally to be preferred, as Claret, Sauterne, Hock, &c. But Port wine, with proper dilution, answers all ordinary purposes. With respect to the administration of this remedy, (both as to the fit, opportunity, and measure,) the indications have not always appeared to me clear and certain; and experience has gradually instructed me to be more circumspect and sparing in its use, than is usually recommended by practitioners. In general, under the circumstances which indicate cold affusion, viz. morbid heat, a dry skin, loaded bowels, head-ache, &c. wine is pernicious; and in proportion as the opposite of these conditions is established, it may be administered with safety or advantage. The pulse in this, as in several other matters of indication, is a doubtful guide,

so that, if taken alone, its testimony is precarious. Yet in reference to the *effects* of cordial remedies, it affords some useful information; for if the pulse become more frequent and fluctuating under the use of wine, it may be inferred, that this valuable remedy has been either unduly or unseasonably administered. If, on the contrary, the pulse become more regular, soft, and slow, within a certain limit, the salutary operation of the cordial may be presumed.

One of the least equivocal criteria of just circulation is the temperature of the surface and extremities of the body. During the first week of fever, these parts are, for the most part, pungently hot and dry. As the disorder advances, the extremities become cool and torpid, while the trunk preserves its morbid heat; and a cold clammy moisture often bedews the limbs, when the surface of the abdomen is dry and rigid. It is under these latter circumstances, that wine proves peculiarly beneficial, when just evacuations have been premised.

Those who regard typhus in the aspect of debility or putrescence, place their chief reliance on wine in the advanced stages of fever. This, in Hospital practice, where patients are often presented for the first time on the tenth

or twelfth day of fever, without previous evacuant discipline, leads to very dangerous errors. Even the indiscriminate use of the lancet is less hazardous. In peripneumonic typhus, wine cannot safely be exhibited at any period, until the local congestion is relieved, the bowels rendered solvent, and the skin moist. The same may be observed of the enteric variety of fever. A technical adherence therefore, to the maxim of giving wine from the tenth or eleventh day, may be productive of much mischief. From the commencement to the close of fever, a due regard must be had, in each case, to the disturbed balance of the vascular economy, to the condition of the principal secerning organs, and to local congestion or inflammation. If a fever be duly treated from its commencement, wine may be given, as the patient falls into a supine posture, with muttering and subsultus. The limit of its exhibition must be determined by its effect, in producing moderate and equal warmth with superficial moisture, in allaying delirium and jactitation, and in promoting tranquil sleep and easy respiration. The lower classes neither bear, nor require, so much wine as the higher orders.

The little experience I have had of opium, as a *cordial* or specific remedy in fever, has given me no encouragement to extend its ap-

plication; and I believe it may be dismissed from the ordinary routine of practice, with as little detriment as the Brunonian doctrine, from which it gained its ephemeral reputation. When the belly is costive, the temperature high, and the skin parched, the effects of opium, like those of wine, are decidedly pernicious. On the other hand, when the bowels and skin are solvent, and the body temperate, it seldom happens that any narcotic is required to procure rest or sleep. As a cordial, its effects are less beneficial, and far more equivocal, than those of wine.

Yet, there is one variety of fever, termed by the French writers “ataxique,” in which pervigilium and jaëtitation are leading features, with little obstruction in the secretions of the skin or primæ viæ, where the influence of opium, in small doses, is eminently beneficial. Whenever much solicitude, disappointment, or harassment of mind and body, has preceded the attack of fever, these characters are likely to prevail. The lowest or labouring classes of society, who are little addicted to “looking before or after,” and whose sufferings are rather animal than mental, seldom fall into this atactic kind of fever. But small tradesmen, and the better sort of servants and artizans, who are more or less engaged in schemes

for raising their condition in life, are liable to these symptoms. Among the higher ranks of society they frequently predominate, and constitute, in my opinion, the most alarming symptoms of danger. In all such cases, opium, under judicious management, is an invaluable resource. Evacuations having been duly premised, and the antiphlogistic method established, a draught of the camphor mixture, with ten fifteen or twenty drops of laudanum, is often advantageously administered, once or twice in twenty-four hours.

The smaller the dose that will serve to procure rest, the less equivocal is the benefit likely to result from it. No error is more common, than to undervalue the influence of small opiates, both in febrile and chronical disorders. But I beg leave here distinctly to recommend an opposite rule of practice. Five drops of laudanum added to a saline draught, and repeated every six hours, has often produced more tranquillizing effects in fever, than four times the quantity given with the same intention; and when slight doses fail in their efficacy, it is usually owing to some local congestion, which has not been sufficiently relieved by leeches or aperients. Theoretical objections have been urged against the use of opium in cases where the head is engaged; yet such

notions are contradicted by facts, not only in the case of typhus, but of hydrocephalus internus; as appears from the practice of Dr. DOBSON, and my father the late Dr. PERCEVAL, of Manchester, and of Drs. BROOKE, and CHEYNE, and other later authorities. Let me add that I consider the due management of opiates, both as to the occasion and the measure of their exhibition, to require peculiar discernment or long experience. Regarding sleep, properly so called, as the most favourable issue of typhus, and observing it to be a common crisis in the fevers of the poor, and rare among the higher classes of society, I have been led to pay attention to this subject, and to form the practical conclusions just stated.

The efficacy of *blistering* in typhus remains to be noticed. Like wine and opium, this remedy is seldom admissible, until decisive evacuations have been obtained. Then, a blistering plaster at the nucha conspires most favourably with cold ablution, to relieve pain and tension of the head. In the few cases in which I have directed blisters to the scalp itself, I have found them less efficacious than when applied to the adjacent parts; and they are objectionable, also, from their interference with refrigerant applications to the head. A large vesicatory between the shoulders affords great relief after

blood-letting, in peripneumonic fever. It yields much relief, also, in cases of oppressed breathing, where inflammation is not suspected. In the more advanced stages, low delirium, supineness, and stupor are indications for the use of blisters, in which I have seldom been disappointed of at least temporary benefit. The restlessness and pervigilium of the atactic fever are sometimes, though far less certainly, calmed through the same means. In some instances they have appeared to succeed better, when applied to the thighs; but this also is precarious. It deserves to be remarked, that a blister, applied on the eve of a critical day, has often appeared to determine a favourable change, under unpromising circumstances. "Blisters, (says FOTHERGILL,) by keeping up the languid circulation, when the pulse rather grows feeble, and the strength declines, are a noble remedy. A prudent succession of them often does wonders." HEBERDEN commends blistering between the scapulæ, as "an almost certain remedy" in this class of fevers.

I am unwilling to expatiate longer on the use of remedies, which are more or less familiarly known to all experienced physicians. Out of these powerful resources of art, the intelligent practitioner will select and combine

those which are most appropriate for each case, that may occur to his care ; keeping steadily in view, the particular relief of the organ or organs which are chiefly engaged, as well as the collateral circumstances of the disease. The aid which these remedies mutually give to each other should also be carefully regarded. It would seem, by the facts related of the success attending the exclusive and indiscriminate use of each of them, that they are even capable of performing vicarious offices of relief for each other. But if such methods of practice be thus successful in many cases, how much more general and decisive must be the benefits of a discriminate selection and prudent combination ?

I shall conclude this part of my subject with citing some of the *twelve rules*, laid down by Dr. GRANT, as comprehending his view of the chief indications of fever.

“ I. Where bleeding is necessary, it ought
“ to be the first evacuation ; after which, the
“ others are more safe and effectual.

“ II. Many people require a vomit, because
“ morbid matter is turgid in the stomach.

“ III. Purging is always necessary, and an
“ open body throughout the whole ailment.

“ IV. When there is an obstinate head-ache
“ in this species of fever, bleeding relieves
“ more than blistering or camphor ; blood

“ may be taken by cupping, if the pulse
 “ be small.

“ V. The drink is to be cold, and the clysters warm.

“ VI. Moderate spontaneous sweats during
 “ the night are serviceable towards the end,
 “ if the fever have been well treated from the
 “ beginning ; and not otherwise.”

The *diet* of patients in fever should be carefully and strictly regulated. During the acute stages, or before crisis, the aliment should be fluid, and of the simplest kind, as barley-water, whey, tea, gruel, chicken or mutton water ; afterwards, flummery, sago, arrow-root, and the lighter broths. Meat should not be allowed for some days or a week after crisis. Old and tender mutton, either roasted or broiled, is preferable to any other kind of animal food. Chicken, pheasant, or partridge, are unobjectionable. Broiled beef and veal are to be avoided ; also salted and stewed meats, pastry, and the more solid species of fish.

As relapses occur more frequently from errors in diet than from any other single cause, much circumspection must be used in this particular. All mixtures of food are to be studiously avoided ; and the “ *nimia diligentia*” of friends or attendants in the supply of nutriment is to be steadily controled. The appetite of

a convalescent from fever, generally, if not always, exceeds his power of digestion ; but as the latter is the instrument of nutrition, the food must be accommodated to its slender and slowly repaired capacity.

With respect to the *clothing* of convalescents, warmth is always to be consulted. After long confinement to bed, and frequent perspirations, the skin is extremely sensible to cold, and even loses its natural power of secretion, if not encouraged, for some time, by external warmth. A just circulation, besides, is best maintained by preserving the due temperature of the surface and extremities.

The *air* of the patient's chamber should be freely ventilated twice or thrice daily ; and wherever it is practicable, he should quit his bed-chamber for a contiguous room in the day time. The temperature of both apartments should be of grateful warmth.

In the summer season, or whenever the weather is mild, the patient should take the air as soon as his strength will permit. In slow recoveries I have seen more benefit from *gestation* than from any other remedial means ; and I have long been persuaded, that too much caution is usually practised in this particular. Of gestation, as a remedy in the acute stages of fever, I can say little from experience, beyond

the common observation of its benefit to the poor, who are removed from close, heated, and foul habitations. Our armies abroad have had similar experience, of the benefit of a march, in withdrawing feverpatients from their Hospitals, and exposing them freely to the air during the day, and with slender protection at night.

I shall here conclude my practical observations on the Treatment, Pathology, and Prevention of Typhous Fevers. Brevity and perspicuity have been my aim; and truth, so far as I have been able to distinguish it, in its proper character, has been my guide. My experience in Fever may entitle me to some attention; my opinions are derived from no particular school of doctrine; but have been inculcated on my own mind by observation, comparison, and experiment. So far only as they are agreeable to Nature, will they become of any permanent use. “*Opinionum commenta delet dies, naturæ judicia confirmat.*”

FINIS.









