An enquiry into the pathology, causes, and treatment of puerperal fever / by G. Moore.

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AN ENQUIRY

INTO

THE PATHOLOGY, CAUSES,

AND

TREATMENT

OF

PUERPERAL FEVER:

BEING AN ESSAY FOR WHICH THE FOTHERGILLIAN GOLD MEDAL WAS CONFERRED ON THE AUTHOR, BY THE MEDICAL SOCIETY OF LONDON, IN MARCH 1835.

BY

G. MOORE, F.R.C.S. & F.R.M.C.S.

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1836.

TO

WILLIAM KINGDON, Esq.

SURGEON.

My dear Sir,

In addressing this volume to you, I desire to secure for it the sanction of your name, and at the same time to render a humble tribute to your professional and personal merits.

As the President of the Medical Society of London, you obtained the esteem of all its members; and I cannot better evince my respect for them, than by dedicating the effort, made for their approval, to him who presented the reward, and by his kindness greatly enhanced its value.

Assured that the integrity of your character preserves you superior to the influence alike of detraction and of eulogy,

I have the honour to remain,

My dear Sir,

Your faithful friend and servant,

Geo. Moore.

PREFACE.

The following work was undertaken, not so much from the hope of becoming a successful candidate for the honour awarded, as from a conviction that such an enquiry could not but be advantageous to myself in a practical point of view; since I felt that those whose directions in the detail of obstetric and general practice are most valued, afforded no satisfactory guidance in the treatment of puerperal fever. It is true, that many essays on this subject are extant, several of which are deservedly held in high estimation, especially as records of important facts. The most valuable information is, however, so frequently concealed by being mixed with elaborate speculation, as to be in danger of burial among the dusty lumber of medical literature, and thus, without considerable research, to be for ever lost to all the purposes of accumulative experience. No slight benefit, therefore, is conferred on the profession by occasional attempts to revive and review what might otherwise have fallen into

oblivion, since we may thus be enabled to compare and correct more novel and fashionable theories, by bringing them into juxtaposition with those that are old and obsolete. Without such exertions we are likely to become more remarkable for dogmatism than for science, and to be characterized as bigots rather than philosophers. The hazard of such a catastrophe must indeed be great, since we find that some writers on this subject, who have manifested much erudition and sagacity, have nevertheless been so self-complacent in their hypotheses, and so enthusiastic in their defence, as utterly to disregard the experience and common sense of others, except as they might happen to sustain their favourite prejudices. Others, again, being too diffident of themselves to advance new theories, have despaired, amidst abundant contradictions, of arriving at any just conclusion; simply because they have failed to take the only legitimate advantage of the testimony offered, that of endeavouring to ascertain the truth by comparison of the evidence.

An adjustment of facts can scarcely be deemed a worthless labour, more especially as

those to whom the results of investigation are most valuable, rarely possess either leisure or patience enough to toil through a multitude of books, which, after all, afford but uncertain intelligence, unless their statements are cautiously compared. A persuasion of the importance of thus treating the subject, led to the production of this work, and the foregoing observations are intended as an apology for presenting it to the public, although I certainly should not have been sufficiently confident of its usefulness, had not the adjudicators of the Fothergillian medal deemed it worthy of so honourable a reward. Yet, not to arrogate to myself the flattering notion, that the desired task has been satisfactorily accomplished, I rest content with the hope, that the best endeavours which opportunity allowed me to make, may facilitate farther enquiry, by removing a few impediments from the pathway of other students.

To detail a few cases, and to speculate concerning the nature and relations of the malady according to my own limited experience of it, sustained as it might have been, by opinions culled with a stealthy hand, and graced by the

additional authority of influential names, would have rendered the work more imposing in appearance, and less difficult of execution; but I preferred a plan far more satisfactory to myself, in as much as I hope it will be found more useful to the reader.

As I have sought for information from every source open to me, and have examined the opinions of others rather than obtruded my own, there cannot be much originality in the following pages, except that of arrangement and combination. Whenever I could, I have acknowledged my obligation.

The subject has been considered as far as possible in the spirit of the motto—

"Vere scire est per causas scire:"

but doubtless the links in the chain of causation are sometimes too fine to be detected, or to be tangibly traced in their connections; so that concerning puerperal, as concerning other fevers, we must say—

"Quæ tantum accenderit ignem,
Causa latet."

Should the critic be disposed to look on the composition of this essay with severity, let him consider that a scrupulous regard to style would but ill accord with the object in view, and that the multifarious engagements of professional life, are too precarious and desultory to admit of studied niceties of diction.

Although the work is published with the authority of the Medical Society of London, it is hardly necessary to say that the author alone is responsible for errors. It should also be stated, that several paragraphs have been added during the process of printing, for the purpose of introducing notices concerning puerperal fever, which have been published since the essay was first composed.

GEO. MOORE.

Denmark Hill,
Camberwell.

CONTENTS.

PRELIMINARY REMARKS.

The pathology, causes, and treatment of puerperal fever, have claimed investigation from the earliest ages of medicine. The importance of the theme is proved by the multiplicity of works which have been exclusively devoted to its elucidation; and the difficulties which accompany the consideration of it, are evident, from the discordances and doubts, which still rest upon the labours of those who have endeavoured to remove them.

Each division of this subject would furnish abundant matter for much more than a common dissertation. It may, however, be productive of advantage, to condense, and compare the observations of the experienced, and the opinions of the practical, so that whatever is essential to the disease, shall be presented to our scrutiny, divested of extraneous matter, and undisguised by the partial prejudices of

theorists. Although many recent works have been published, which throw much light on the subject, yet they are so far from being perfectly satisfactory, that, upon comparison with those of former writers, they lose, in some respects, much of their seeming importance. While, therefore, we endeavour to take advantage of whatever information modern science may supply, it would be well to refer to the opinions of earlier authors, whose acumen seems, in many instances, to have been more than equivalent to the vaunted auxiliaries of modern times; so far, at least, as relates to logical inference from a knowledge of sensible facts.

It is therefore proposed, in this dissertation, to take a brief, but comprehensive, survey of the various opinions advanced by those who have closely observed the phenomena of this affection; to embrace such opportunities as may be presented, of endeavouring to detect the sources of deception, existing in the nature of the malady; to reconcile, as far as may be, those contrarieties and contradictions, which abound in the statements of writers on this subject; and to make deductions from the pre-

mises thus afforded. The facts adduced, will enable us to surmount some of those impediments, which necessarily occur in the pathway of investigation, when it is restricted to the limits of a partial observation; and we shall be enabled to judge for ourselves, not merely from what we have seen, nor even according to the evidence of any solitary witness, but according to the united testimony of many.

The advantages of comparison and induction, will thus be realised: from facts we shall proceed to theory, and from theory to practice; being careful to preserve, as far as possible, that natural continuity of connexion between them, without which, the relation of cause to consequence, can never be perceived. The important points in the history and pathology of the disease will be regarded as introductory to the main objects of consideration, namely, the remote and exciting causes, and the therapeutic agents, which an acquaintance with those causes may suggest, or the utility of which, experience may have determined.

Every disease incident to the puerperal con-

dition, demands the careful consideration of the physician, since our dearest interests are involved in its consequences; but no puerperal affection presents itself with more urgent appeal, for whatever assistance science can afford, than that which forms the subject of the present essay; for no other has been equally destructive, and scarcely any appears with an aspect more terrible, or in a form more undefined. Its frequent occurrence in child-bearing seems to have obtained for it, the especial designation of "puerperal fever;"— a term, however, of very questionable propriety—as it may, with equal fitness, be applied to every febrile affection attendant on parturition; unless, indeed, this alone be considered idiopathic, and the only real fever occurring under such circumstances. Whether or not it be "excessively absurd," to speak of this fever as rising independently of inflammation—as some modern teachers, in imitation of French pathologists, have affirmed—yet remains a question of difficult discussion: for many discerning practitioners are still ready to contend for its specific and idiopathic nature. However this intricate question may hereafter be decided, it

appears certain, that its present name, (which by common consent was adopted in lack of a better,) began to be definitely applied about the year 1716. The first who employed it was Dr. Edward Strother, in his "Criticon Febrium."* An appropriate appellation had long been wanted, (and perhaps still is,) by which to embody the idea of those symptoms, which have for ages been accurately described, and recognized under a great variety of names,—as uterine fever, fever from suppressed lochia, puerperal epiploitis, epidemic disease of lying-in-women, low child-bed fever, and more recently petitoneal fever, puerperal peritonitis, puerperal metritis, metroperitonitis, &c. This variety of designation, has doubtlessly operated very much to the prejudice and hindrance of those whose duty it was to make diligent inquiry into the history, origin, and treatment of this fearful malady.

An examination of this disease, in its course and consequences, as described in the numerous

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* P. 212, Criticon Febrium, 1718, 2nd edition.—He thus describes puerperal fever :—"The common symptoms of a fever forerun :—They have pains in the abdomen, hypogastria, and loins. I suspect it to be inflammatory, mostly. 'Tis from the *lochia* suppressed."

works of those who have most frequently witnessed it, will enable us to discover that neither of the above appellations can be strictly applicable to it. To regard puerperal fever as necessarily presenting symptoms or characteristics, in perfect accordance with such designations, would be to confound it with affections of far different character. Unless we are prepared to discard the word fever, as at present understood, simply because it serves rather to intimate the existence of certain symptoms, than to convey a view of its origin and seat; unless we can invent some more expressive nominative, which will signify all we mean by fever, with whatever else may belong to this affection, there can be no advantage in dismissing it. It is the term under which this malady has been described and recognized for more than a century, and there can be no more reason for discontinuing its use, in obedience to the mandate of modern theorists, than for its not being adopted from veneration of ancient prejudice. If we are not to apply the word fever to this disease, lest we overlook its inflammatory intercurrent connexions, we must forget its derivation and synonymes, and be regardless of

the fact demonstrated by morbid anatomy, that all pyrexial disorders, are either antecedents, concomitants, or consequences of phlegmasiæ. The reasonable fear is, that satisfying ourselves with too expressive a name, we should neglect to ascertain the nature of the disease, from a notion, that in a word we possess all the knowledge required for detecting and treating it.

A localizing designation will not only be often incorrect, as indicative of pathognomic symptoms, but will also increase the difficulties of the student, in his endeavours to recognise those varieties of puerperal fever, which many writers have described. Indeed, varieties in this disease cannot be consistently acknowledged, by those who would name it according to its operation, in a certain locality or organization, for every accidental difference in the seat of morbid action, would, according to them, entitle the disorder to a new appellation, although the symptoms in all other respects were in each case the same; so that metritis, peritonitis, &c., are really too exclusive to be applied to puerperal fever, or any of its varieties. Notwithstanding these observations, it must be granted, that the present name may be productive of confusion

and error, to those especially who form a diagnosis according to that habit of hurry which characterizes the superficial, and evinces a disposition quite incompatible with professional research.

This fever seems not to have attracted much attention until lying-in hospitals became general, on the Continent, and in England ; but as in these institutions its virulence and fatality soon became apparent, the profession was roused to a consideration of its character and causes, so that, since opportunities of observing it on an extensive scale have occurred, much has been written on the subject.

The symptomatology of one or more of its varieties has, however, been described by Hippocrates, Avicenna, Raynalde, Platerus, Sennertus, Riverius, Willis, Sylvius, Mauriceau, Strother, De la Motte, Sydenham, Boerhaave, Hoffman, Burton, Smellie, Tissot, Van Swieten, Astruc, Cooper, Denman, Hunter, Johnson, Millar, Manning, Kirkland, Hulme, Leake, and more recently, by a multitude of familiar or forgotten writers, some of whom we shall soon have occasion to quote.

The various opinions which these authors have formed of its nature, may be reduced to the following:—1. That it is a febrile disease *sui generis*, and peculiar to puerperal women. 2. That it is peritonitis, accompanied with putrid, bilious, or typhus fever. 3. That it is simple inflammation of the peritoneum and abdominal viscera. 4. That it is an inflammation of the uterus, and its appendages. 5. That it is peritonitis in the puerperal state. 6. That it is acute metritis or metroperitonitis. 7. That it is adynamic fever with ataxic inflammation. All agree that it may occur either sporadically, or as an epidemic, and many contend that it is also contagious.

That it is a disease *sui generis*, induced by a peculiar combination of causes, appears to be the prevalent opinion among the best authorities, although it has not unfrequently been confounded with more tractable diseases, even by practitioners of deserved celebrity. Its pathology, cause, and treatment, are still subjects of dispute; and public teachers of obstetricy are still contradictory and uncertain, concerning many of its phenomena and indications. The-

ories unnumbered have been broached, and practices as erroneous as the baseless hypotheses upon which they were founded, have been promulgated, adopted, proved, and forsaken. And while some sanguine writers confidently assert their amazing success, their readers, gathering disappointment and despair from the record of their cases, are ready to conclude, that all treatment is almost equally unavailing, whenever the disease assumes a character of malignancy.

Here, indeed, "Death grins horrible a ghastly smile," in terrible derision over medicine; and the dissector, in his bold scrutiny, discovers only that the disease, in its brief duration, has produced a marvellous destruction. In hospitals its ravages are truly frightful. In two years, (1819-1820)* out of 4924 persons delivered in the Maternité, at Paris, 1177 were attacked by puerperal disease, of whom, about one half died. Of the cases given by English writers, the results are two-fifths dead; and Dr. Lee

* It was at the *same period* epidemic and almost equally fatal in Vienna, Dublin, Glasgow, &c., &c. In 1829, in Paris, it was extremely fatal, while at the same time it was prevalent in London, and Dublin.

gives one hundred cases, exemplifying his most successful practice, under which, notwithstanding, forty died. These results, however, are much more favourable than those furnished by earlier records of the malady, for it appears that not one recovered from the epidemic that prevailed at Paris in 1746; and in that of London, about the same period, not more than one in thirty-two was cured. In the lying-in ward at Edinburgh, also, all who were attacked by it during the epidemic season, died. That distinguished and extraordinary physician Dr. William Hunter, ascribed the death of two-thirds of those women who died in child-bed, to puerperal fever. Others have declared, that they dreaded it equally with the plague itself. Eminent teachers of midwifery, in London and elsewhere, whose experience of puerperal disease has been extensive, have, nevertheless, been staggered at the fatality, and perplexed in the treatment, of this affection. "Such was the mortality attending it, in the practice of three successive professors of midwifery in a celebrated northern university, that the first pronounced it to be incurable, the second declared that we were not only ignorant of the

nature of the disease, but equally so of any remedy calculated to afford relief, and the third was so satisfied of the justness of the observations of his predecessors, that when cases of the disease were related to have been cured, he could not allow them to have been examples of puerperal fever."*

These facts are sufficiently appalling to disconcert the student, who, "tremblingly alive" to the demands of his anxious duty, sets about procuring the best appliances for the amelioration and removal of this disease. Finding the discrepancies of those to whom he is accustomed to look for authority and positive direction, how great must be his confusion, when, being required to act with promptitude, he is unable, amid the many discordances, to decide on the course to be adopted. This must inevitably be the case, unless, entering on his toilsome task unprejudiced by partial or dictatorial tutelage, he apply himself to its examination, assisted by such light as anatomy, physiology, and chemistry, abundantly furnish. Yet, in order fully to avail ourselves of their assistance,

* Dr. Campbell.

a more minute and extended observation of the phenomena of the disease is required, than its existing records contain.

So discordant are the statements of those who have written on the nature of puerperal fever, that, the more deeply their works are studied, the more is the student convinced that its pathology still requires investigation; not that any new facts are requisite for the elucidation of the subject—those already known being sufficient for the purpose, if, instead of viewing them in connexion with any particular theory, they be regarded in relation to each other. For, unfortunately, pathologists seem very frequently to have examined this disease rather with the desire of eliciting evidence to countenance their pre-conceived opinions, than for the purpose of tracing effects to their causes. We shall, therefore, discard all partiality for theories, while we patiently endeavour to reconcile the statements of all parties, so far as they testify to the essential character of this affection.

The first point on which there is any thing

like a general agreement, is, that this disease has appeared both in a sporadic and an epidemic form; and that its violence has generally been in proportion to its prevalence, more especially when occurring in crowded hospitals, as in that of the Hôtel Dieu, where its virulence first attracted general attention. Several distinguished writers have maintained that it is also contagious; and indeed some have ventured to assert, that it is propagated in no other way than by contagion*. But this is a question which belongs to the consideration of its causes, and must therefore be deferred.

During the continuance of the epidemic, its severity considerably varies; the cases occurring at the commencement, and towards the termination of its prevalence, being usually of a much milder character than those which arise in its intermediate period. In this respect it resembles most other epidemics; and, indeed, such a circumstance must naturally be expected if its violence in individual cases be, as is stated, in proportion to the number attacked.

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* Dr. Young, Edinburgh.

Some inscrutable influence seems also to modify the character of each particular epidemic incursion of puerperal fever, as certain symptoms which at one time predominate, are at another comparatively slight, or, it may be, are altogether wanting. Thus the epidemic of 1746*, was characterized by the suppression of the lochia; whereas, in that of 1774†, the lochial discharge deviated little or nothing from its natural condition. Hemorrhages occurred in the epidemic of 1764, and the uterus was not found to be dry, hard and tumefied, as in that of 1746, yet the disease was equally fatal in each instance.

The variations in the symptoms have been supposed to depend principally upon the organs or tissues most acted upon by the morbific influence, which all writers allow, tends to establish inflammation either in the substance, the appendages, the veins and absorbents of the uterus, or in the peritoneum, the pleura‡, the

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* Acad. des Sciences, l'an 1746, mem. p. 160.

† Tenon. ‡ Drs. Collins and Waller.

pericardium, or perhaps in all of these at once.* The local affection which always accompanies, though it does not originate puerperal fever, it is feared, has occasioned even skilful practitioners, in their haste, to confound it with other diseases. Instances are recorded in which enteritis, simple hysteritis, peritonitis, irritable uterus, colica, and even common irritation of the bowels from scybala, have been so mistaken. As the possibility of such dangerous errors still remains, the definitions and peculiarities of this formidable malady can scarcely be too minutely detailed. We should, therefore, scrupulously determine what are its essential characteristics, by diligently searching the descriptions given by those who have really witnessed the extent of its malignity, as evinced during life, by its symptoms; and, after death, by the structural changes it has effected.

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* Dr. J. Clark, p. 137.

DEFINITIONS AND PATHOGNOMIC SYMPTOMS

OF

PUERPERAL FEVER.

The next enquiry should be to ascertain whether the term puerperal fever, has been employed by different pathologists to designate the same complaint.

It is perhaps impossible strictly to define a disease of so mixed a nature, since its exact limitations are lost to our scrutiny, in those shades of character, which belong equally to this affection and to others of the same class; yet the definitions which a long succession of writers have given of disease under this title, though certainly incomplete, differ, notwithstanding, so inconsiderably from each other, that we must conclude, that the malady which the majority of them witnessed, was in all essential points the same. Strother, Burton, Millar, and Wallace Johnson, state that its distinguishing

marks are pains in the hypogastric region, abdomen, and loins, with fever. J. Hunter calls it inflammation of the peritoneum, and asserts that the febrile symptoms are owing to the injury of some particular part; an opinion in which Kirkland, Campbell, Mackintosh, and others coincide. Dr. Lowder noted all the pathognomic symptoms enumerated by those respectable writers by whom he was preceded, and found that they all agreed in the following characteristics: — Fever, intense pain in the head,* and internal pain of the abdomen.† Drs.

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* "Cephalgia in some epidemics, has been a constant symptom, and Lowder, with others, placed it among the pathognomic symptoms; but cases have occurred within my own observation, in which no head-aches at all have been experienced; or at all events where the attack has been so slight, that it could not deserve attention as a characteristic symptom."—Dr. Blundell.

"Dr. Campbell says, "The shivering fit is very soon succeeded by an annoying pain in the forehead and eyeballs; in other cases this sensation precedes the cold fit. Whether it precedes or follows the rigour, it soon becomes distressing to the patient. To those who have experienced what the yellow fever is, I know of nothing that conveys a better idea of the head-ache attending puerperal fever: like it, this pain of the head steals on very insidiously. Afterwards, as the patient advances towards conva-

† Lowder's MS Lectures.

J. Clarke, Gordon, Campbell, Mackintosh, and Douglas, adopt nearly the same definition. Dr. Gordon, however, considered that the abdominal symptoms arose from peritonitis, of an erysipelatous character. Dr. Denman merely mentions swelling and tenderness of the abdomen, as the pathognomic symptoms.* Dr. Hulme points out acute pain and great soreness in the lower part of the abdomen, attended with fever, and commonly a pain in the forehead soon after delivery. Hey calls it fever accompanied with pain, having no complete intermission, and extreme soreness of the abdomen. Dr. Hamilton affirms that it is a putrid disease, a fever *sui generis* ; but admits that acute pain in the abdomen is a primary symptom. Walsh also looked on it as synochus or typhus, complicated with more or less peritonitis. Dr. Armstrong represents it as a general disturbance of the functions, attended by an increase of animal heat, an acceleration of the pulse, and symptoms (more or less evident),

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lescence, the pain gradually leaves the forehead and eyes to take possession of the temples, where it often continues for some days to torment the patient, even after all the acute symptoms have been subdued. It was rather aggravated than relieved by bleeding."—P. 27, Dr. Campbell's Treatise.

* Essay, p. 10.

of abdominal inflammation. Dr. Young names it dystocia febrilis, resembling typhus. Dr. Hull considered it simple peritonitis, differing only according to the previous condition of the patients, whom he divides into three classes, the robust, the feeble, and the intermediate. Dr. Good defines it synochus, accompanied with an inflammatory tenderness of the belly, mostly occurring on the third day after delivery. Dr. Burne considers it ataxic peritonitis with adynamic fever. Dr. Gooch declares that its essential symptoms are pain and tenderness over the abdomen, and a rapid pulse. Dr. Blundell* enumerates chills and heats, abdominal pain, frequency of pulse, and also (though as circumstances of minor importance) vomiting, purgings, head-ache, mental dejection, &c. Dr. Lee, who is nearly the last writer upon the subject, considers that the various constitutional effects arise from inflammation, of which he enumerates four varieties,—great tenderness of the hypogastrium, with pyrexia, characterizes the first†; in the second, which is nearly similar to the first, the morbid sensibility is

* Lectures, 1834. † Researches on Pathology, &c. 20.

found upon pressure, to exist chiefly in the lateral parts of the hypogastrium*; the third is known by pain of the hypogastrium, diminished or suppressed lochial discharge, and rigours, with a rapid but feeble pulse†; and the fourth, or uterine phlebitis, is manifested by acute pain in the uterine region, severe rigour, accelerated pulse, cephalalgia and general uneasiness‡.

Dr. Lee, to whom we are most indebted for a knowledge of the structural changes occurring in this disease, appears to have derived the idea of these divisions from the various discoveries made on dissection; and he has very nearly followed the opinions expressed by certain recent French authorities, to which we shall refer when treating more at large of the nosological distinctions which should appertain to this affection. But even he allows that there is no essential difference§ between these varieties of uterine inflammation; and in all the instances which were presented to his observa-

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* Researches on Pathology, &c. p. 28.
† Ibid. p. 40. ‡ Ibid. p. 48.
§ Dr. Lee on Puerperal Fever, p. 19.

tion, he had no difficulty in recognising the fever associated with these inflammations as that which has acquired the name of puerperal, and therefore his objections to the name appears unnecessary, especially as he fails to supply another, more indicative of its general character.

Pyrexia, abdominal sensibility and rapid pulse are the only characteristic symptoms on which all writers have agreed, from which circumstance it is evident that diseases of various degrees of violence and malignity, may have been included under the same general designation. Those, however, who have most carefully marked its variations, have also conceded that the malady is essentially one, and therefore, although "it should be remembered that puerperal fever is a generic term, which in reality designates only a prominent symptom of disease," yet, it cannot be granted that the author* of these words is correct, when he adds, that, "in ordinary usage it embraces complaints, which have little or no connexion either in their nature, their seat, or their treatment."

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* Dr. Conquest. Outlines.

Disregarding, however, for the present, the varieties in effect, which morbid anatomy discloses, we ascertain that all those pathognomic definitions which really express any thing practically important, perfectly coincide. We shall not, therefore, be surprised if such particular symptoms as are not essential, but which appertain only to its trivial concomitants, are by one deemed worthy of note, and by another are altogether disregarded.

Yet, that nothing of real importance in the conditions of this disease may be overlooked, and that each particular related by the various observers, may be fairly considered, as concise a statement of its general symptoms as the subject will allow becomes necessary.

THE HIPPOCRATIC DESCRIPTION.

The description given by Hippocrates, may very properly precede the more minute semeiology. He applies no particular name to the disease, but assumes that suppressed lochia originate the symptoms which he so accurately delineates. With respect to his opinion con-

cerning the cause, it may be remarked, that it is not unusual in medical writings, to find the earliest consequence of a disorder represented as the cause. The state of physiology in the days of Hippocrates, affords a ready apology for him, which indeed he scarcely requires; but, though the precision of modern science deprives more recent observers of all claim to excuse for such erroneous conclusions, there are those who still maintain the same inverted assumption. The following translation is taken from Dr. Hulme, for the original is somewhat obscure, and he has given apparently very satisfactory reasons for the interpretation which he has adopted.

"Si verò ei purgatio (puerperii) non provenit, proximum est ut febris cum horrore oriatur; et ut ventur tumidus fiat. Sin autem eam attigeris, totum corpus dolorem sentit, et præcipuè si quis ventrem attigerit; interdum etiam ardor ventriculi, dolorque lumborum urget. Et cibi fastidium, et vigilia, et corporis compunctio, adest. Post hæc, vel quinto, vel septimo die, alvus turbatur, et quæ excernuntur nigra sunt, et interdum perquam mali odoris; et urina eam

asini repræsentat. Quæ si incidunt, melius illi esse videtur; curâque habitâ maturè ad sanitatem pervenit. Sin minus autem, periculum erit, ne ei profluvium alvi vehemens superveniret, et purgamenta puerperii supprimerentur. Pulsus arteriarum imbecilli sunt, interdum verò etiam celeres; modò valentes, modò exigui. Hæc in principiis morbi patitur, et sic se habet; interposito autem temporis spatio, cavæ partes faciei rubescunt. Ubi ea fieri apparent, leves cibi dandi sunt; et, si aliquid superat, medicamentum catharticum sorbendum est; si quidem biliosa [ægra] fuerit, quod bilem purget; sin autem pituitosa, quod pituitam. Deinde locis muliebribus fomenta, quæ ex odoribus fiunt admovenda sunt; et quæ emolliunt quotidie superimponenda. Si verò purgatio puerperii mulieris quasi ad caput, thoracemque, et pulmones, cum impetu fertur (id enim evenit) sæpe statim moriuntur, si illic detineatur."

The following summary will be found to contain the amount of modern observation, which, in many particulars, remarkably accords with the Hippocratic description.

A SUMMARY OF GENERAL SYMPTOMS, WITHOUT REGARD TO VARIETY IN THE DISEASE.

Puerperal fever, when epidemic, most frequently commences within forty-eight hours after parturition.* Its commencement is generally earlier in hospital patients than in those attended in private practice. The earliest indication of its approach is usually a rapid pulse: a rigor more or less severe commonly supervenes. The chilliness, however, bears no proportion to the severity of succeeding symptoms. Indeed, it is sometimes so slight that the shivering is scarcely perceived. Out of one hundred cases given by Dr. Lee, forty-eight had decided rigors. Of Dr. Collins' eighty-eight cases, only thirty-three commenced in this manner. The patient and her attendant often consider it as nothing more than the sensation which precedes the lacteal secretion. Sometimes the cold

* Of 88 cases in Dr. Collins' Hospital Practice (Dublin), 1 occurred before delivery; 1 in 6 hours; 1 in 9; 1 in 10; 3 in 12; 1 in 13; 1 in 15; 1 in 17; 1 in 18; 1 in 20; 1 in 21; and 2 in 30 hours from delivery:—32 were attacked on the first day; 29 on the second; 8 on the third; 2 on the fourth; and 1 on the eighth day.

fit lasts nearly an hour, and is so intense as to shake the body like an ague*. The beginning of the disease, however, is not always so early; Denman and others have observed, that it sometimes occurs, much later than is commonly suspected, and he quotes an instance given by Hippocrates, in which it was delayed till the fourteenth day after delivery. Instances have also been stated, in which it appears to have commenced prior to parturition†. The chilliness is usually succeeded by obtuse pain over the orbit; the eyes become dim; the pulse vibrates rapidly, and rises suddenly from 90 to, perhaps, 150; at the commencement of pain it is rarely lower than 120,‡ and, though small, hard and incompressible;§ the countenance, at first, perhaps, flushed, soon becomes pallid, shrunken, sallow, livid, and ghastly; the lips and eyelids are blanched, and strongly expressive of mental oppression, anxiety, or terror; the temper is either exceed-

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* Dr. Leake, p. 43.

† "This disease may be sometimes anticipated, during pregnancy, by an uncommon degree of fever and uterine pains."—Dr. Denman on Puerperal Fever, edit. 2, p. 4.

‡ Dr. Blundell. § Dr. Gooch.

ingly irritable, or listless and timid, the mind being usually possessed with undefined apprehension. The appearance of the countenance plainly expresses the nature of the disease to an experienced eye. The instinctive position of the patient, lying as she does constantly on her back, with the legs drawn up, sufficiently evinces the seat of her distress. The pain generally originates about the uterine region, towards the left side.*

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* The situation of the pain in the commencement of the disease, has been variously described by authors. Forster says the pain extends through the epigastric or umbilical regions; but generally most at the pit of the stomach. The chief seats of pain, according to Hulme, are the iliac regions, the region of the os pubis, or across the pit of the stomach, and striking downwards to the ribs, on each side, and to the spine. In Dr. Gordon's cases, the pain was generally seated in the hypogastric region: but, in three-fourths of them, the principal seat of the pain was the right side, towards the origin of the colon. Dr. Campbell states that, in all his cases, there was pain in the hypogastrium, darting into one or both groins. In various stages of the disease, the pain is experienced, more or less, in different parts of the abdomen; and there appears to be occasional metastasis of the morbid action, from one portion of the peritoneum to another. When the disease is fully developed, the epigastric region seems invariably to suffer, as Burserius observes: "Die secunda a febris ingressu, ægrota queritur de dolore vehementi circa epigastrium, qui ad costas spurias, atque umbilicum protenditur."

The character of the pain affords a very accurate indication of the nature of the disease, in most instances. In the earlier stage, previous to the developement of actual inflammation, when the vessels and nerves are in a state of increased excitement, the pain is not constant, but rather intermittent, or at least remittent, and may be relieved by pressure, gradually applied. The os uteri, on examination, is not more sensible than usual.* Severe spasmodic pain sometimes extends from the back and hips to the thighs, and also to the bladder and pubes. In some instances, the bowels are at first constipated; but, when that is the case, about the second or third day they usually become relaxed, with dejections like brownish-yellow paint, but sometimes dark, fetid, and frothy, such as are found in bilious and putrid diseases. In many cases, diarrhœa and sickness are present from the commencement. It is remarkable that the only relief usually experienced is after an evacuation; and, in consequence of diarrhœa, a delusive calm sometimes occurs, though the pulse is not percep-

* Dr. Burns.

tibly improved. Dr. Foster thinks there is a deceptive remission at the end of twenty-four hours, and also on the third day. Several other practitioners have also observed this circumstance; and Dr. Campbell states that, in several of his cases, it was very remarkable. The urine is commonly dark from the first, has a brown sediment, is passed frequently, and with much pain. The lochia are generally suppressed, diminished, or changed into an extremely fetid discharge.* Their reappearance is not always critical. Lactation ceases, the mammæ are flaccid, and in a few hours a peculiar depression seems to paralyse the affection of the mother, who no longer manifests any solicitude for her infant. Cephalalgia, vertigo, restlessness, languor, nausea, and bilious vomitings, rapidly succeed each other. Drs. Denman and Leake concur in the remark, that the first attack of

* Dr. Leake, however, states that, in all his cases, the lochia continued unaltered, both as to quantity and quality. It was generally observed, in the epidemic of 1742, that the lochia flowed more profusely than usual, which led to the assumption that the uterus was less affected; yet dissection proved that metritis existed to a great extent.

this fever, in many respects, resembles cholera; being often accompanied with violent pain, sickness, and burning heat in the stomach and bowels. Dr. Collins, of Dublin, also states that patients labouring under this disease, as it occurs in hospital practice, frequently exhibit the appearance and symptoms of cholera.

It must not, however, be unnoticed that, in many instances, there is no head-ache in any stage of the disease; nor, in the beginning, either sickness or vomiting.* There is sometimes a degree of exaltation of sense, with other intimations of hysteric excitation. The patient suffers much from thirst, and refuses all sustenance but acids and cold water.* Towards the termination, aphthæ uniformly appear in the throat, and extend down the œsophagus, and over all the inside of the mouth :† probably the bowels, also, partake of this aphthous state, when diarrhœa occurs; and the larynx and adjacent parts, in case of cough, which is a frequent symptom. The tongue is commonly

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* Dr. Denman. † Dr. Burns.

moist, white, and soft; but sometimes it is punctulated, and sometimes hard to the touch.* A red line occasionally appears in the middle, with a whiteness on each side; in which case the red part is usually dry, and the white moist. Before death, it becomes dry and rough, and is coated with brown or yellow sordes, as are also the teeth. There are alternations of delirium, and of dozing, or of unrefreshing sleep.† There is occasionally a partial metastasis of the inflammatory action from the abdomen to the chest, in which case the patient usually ceases to complain of abdominal distress, and refers to her thorax only as the seat of agony. Several observers have also remarked a metastasis in the form of erysipelas, to various parts of the surface, by which the more violent symptoms are often relieved. The abdomen generally swells to a great size, sometimes exceeding that of the full period of gestation. The breathing becomes short and quick in proportion to the rapidity of the pulse, the inspirations being, when the pulse

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* Dr. Denman. † Dr. Ashwell.

rises above 150, about fifty to a minute*. Perhaps the quick breathing is occasioned by the dread of taking a full inspiration on account of the extreme pain of the abdomen, rather than from any impediment arising from the state of the circulation and the tympanitic distension, although it may be stated as a general fact, that whenever the heart's action is accelerated, there is a correspondent frequency of respiration. Redness of the abdomen is mentioned by Tissot, but has not been noted by other observers. The skin is seldom very hot to the touch, or to the sensation of the patient, although the thermometer indicates a high temperature in parts not exposed to the air, which may be accounted for by evaporation from uncovered parts, and by the state of the

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* In a memoir by M. Donne, on the relation between the pulse, the respiration, and animal heat, the following results, from a great many experiments, show the diseases in which the pulse is most rapid, the respirations most frequent, and the heat most elevated.

	Pulse.	Temperature.	Respirations.
Hyperthophy of the heart	150	39½	34
Puerperal fever	168	40	48
Phthisis	140	39	62
Typhus fever	136	40	50

The same relation was observed in eleven cases of puerperal fevers.

skin, which is generally rather clammy and relaxed. The breath gives out a faint cadaverous smell, and when the febrile symptoms are at their height, it is often exceedingly sour and offensive. When death approaches, there are, as in cases of fatal enteritis or peritonitis, frequent singultus, and a continual vomiting of green or black matter, which is sometimes extremely fetid. Occasionally there is a sudden transition from agony to ease; this is a fatal sign. The mouth and throat become sloughy, the stools are passed involuntarily, hiccup perhaps comes on for the first time with low delirium and stupor, but not unfrequently the patient, perfectly conscious, perceives and welcomes the approach of death; while her heart, sinking more and more, and fluttering still more tremulously, intermits its pulsations for a moment, and then with a faint struggle, beats and ceases for ever.

On a close inspection of this condensed and accumulated evidence, we shall discover that the summary of symptoms belonging to this formidable disease, contains all the essentials of synochus. Debility of corporeal and mental

faculties, increased animal heat, disordered secreting functions, accelerated circulation, and excessive thirst. These constitute a perfect definition of fever, according to the best authorities, and the only peculiarity in this affection, appears to be the super-addition of abdominal pain.

The action of the heart and arteries, is greatly influenced from the earliest period of the disease; and that this is not the effect of inflammation, appears from the circumstance, that no other indication of disorder can be detected at the commencement of the attack. This great frequency of the pulse, without any apparent reason, has frequently led to the discovery of the disease, sometime before the patient has complained*. It may often be arrested while in this embryo state, without recourse to any very bold measures. The condition of the pulse, therefore, demands the especial observance of the practitioner, more particularly when this malady is epidemic.

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* John Clarke, p. 127, Dr. Campbell, p. 34. Leake, p. 40.

THE ORDER OF SYMPTOMS.

Extreme languor, excessive mental disquietude, and nervous irritability, almost invariably precede the appearance of more formidable symptoms, and are always accompanied with accelerated pulse. Headache comes on gradually, and is at first confined to the forehead and eyeballs; nausea commonly attends the headache. When rigor supervenes, the cephalalgia is soon greatly aggravated, and seems to affect the whole head. The occiput is sometimes most affected.* Chilliness more or less ensues, and is speedily succeeded by intense pyrexia, which is in a very short time relieved sometimes by vomiting, sometimes by diarrhæa, and most frequently by profuse perspirations, especially about the trunk. Abdominal thoracic or pelvic pain is next in the order of symptoms, and soon becomes the most urgent. Indeed, the practitioner may suppose that the

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* Dolor capitis, non modo frontis, sed etiam occipitis.—Bang. Prax. Med.

disease is ushered in by this pain, unless he has had the opportunity of carefully watching the patient from the period of delivery. The cephalalgia is generally diminished, as other uneasiness increases. Soreness, rather than pain, is often complained of at first; but by pressure it may be aggravated into agony. The pain, in the beginning, is limited to a small locality, but quickly diffuses itself over all the organs in its neighbourhood; and as it spreads in extent, it also increases in degree. The vomiting and diarrhæa, with distressing flatulence, generally follow the aggravation of pain, and often appear to alternate with each other, until the sufferer's vital power sinks under the accumulated disorder.

VARIETIES AS DEDUCED FROM SYMPTOMS.

From all the particulars already stated, it is obviously difficult to ascertain with precision, what is essential to the constitutional condition called puerperal fever, the only points which all agree in considering characteristic of this peculiar malady being exquisite abdominal

sensibility and pyrexia; but these we know to be of themselves insufficient to constitute its distinctive portraiture, since these symptoms are quite as expressive of other abdominal inflammations. We can only suppose that this deficiency in definition, arises from the circumstance, that until lately no varieties had been recognized, either in the disorder itself, or in the seat of its operation.

Such distinctions as have reference only to degrees of violence in diseased action, or to constitutional differences of different patients must be nearly nugatory; for therapeutics cannot be rationally directed, unless they are made to operate upon those organizations which influence the state, if they do not actually determine the action of functional disorder. The symptoms may, perhaps, be best studied physiologically, and classified according to the functions which are implicated, and the structures with which they are connected. On this principle several varieties of puerperal fever may evidently be ascertained, and are, in fact, so arranged by some recent investigators, who have detected various morbid changes in struc-

ture, which were associated, as they believe, with diverse symptoms during life.

It is true, that in our estimate of the varieties of this disease, the remote or exciting causes should not be omitted. We cannot hope to prevail against the cause of any morbid action, except through the function and organism in which we perceive that action; the state of these therefore, if they could be correctly ascertained, would constitute a decisive rule of treatment. The specific character of the disorder does not, however, seem to depend solely on the nature of the structure primarily involved. Indeed, many varieties of disorganization, whether concomitant with this disease or consequent upon it, are often discovered after death, although the prominent symptoms as indicated by the state of the pulse, and of the secretions during life, may have been in each instance very nearly identical. And again, the organization affected may be the same, and yet the symptoms be considerably dissimilar, at least in some stages of the disease. This latter fact may be accounted for by supposing differ-

ent degrees of *vis vitæ* in different individuals, or in the organs or tissues liable to attack.

Thus, as in the case of other fevers, one individual, who is robust and sanguineous, unexhausted by mental excitement or bodily fatigue, gets high inflammation in some more susceptible part of his body, or it may be simple synochus ; while another, of nervous or vitiated habit, falls at once into typhus. The disease, it is true, differs in the mode of its manifestation, but yet its specific character is the same. The incipient symptoms of the latter affection resemble the ultimate symptoms of the former, provided the disordered actions be permitted to proceed, in their natural course, to depress the powers existing in the one constitution to that state of debility in which the cause of the disease commenced its action in the other.

But, however the varieties may be accounted for, all practitioners acknowledge the advantages accruing from nosological arrangement. The first, and simplest division, was that in which cases were classified according to the

greater or less activity of the disease, or its resemblance to other affections; thus dividing it into acute and chronic, into inflammatory and typhoid.

These distinctions were very properly adopted before morbid anatomy had led to the discovery of such as were better, and is attended with less inconvenience than some others to which certain pathologists have given a preference: their varieties, indeed, are often resolved by themselves into the former kinds, when they state the symptoms. Dr. Douglas*, of the Dublin Lying-in Hospital, was the first who gave a succinct and satisfactory account of the symptomatic varieties. He observes that "the present discrepancy of opinions, with regard to puerperal fever, whether it be inflammatory or putrid, or nervous disease, is attributable to a want of proper nosological distinctions of the disease generally known under the name of puerperal fever. There are three different species, viz.: synochial puerperal fever; gastro-bilious puerperal fever; epidemical, or conta-

* Dublin Hospital Reports, vol. ii. p. 145.

gious, puerperal fever. The first species is inflammatory, attended with fever. "Within the second distinction I include those cases wherein the disease does not so rapidly assume, or at least manifest, a decidedly inflammatory character; not, as in the former, commencing with a bounding incompressible pulse, but with a pulse frequent, hard, and contracted, as is usually observed in synochus, or the common epidemic fever; neither are the symptoms of abdominal inflammation so early evolved; yet such inflammation does exist, and progress, when not checked, although more slowly and more obscurely than in the former. The tongue is here loaded, as in common bilious fever, whilst, in the former, it is usually white, or cleanly florid, with sometimes a glazed appearance. That form of disease which I arrange under the third head is the really contagious, or epidemical fever; and although agreeing with the others in the great leading symptoms, inflammation, pain, tumefaction and tension of the abdomen; yet differing from them in many material characters. The sensorium seldom is here, in any degree disturbed; whereas in the others it is so frequently, and even sometimes is

excited to high delirium. The pulse here, is usually from the moment of attack soft, weak, and yielding, and in quickness often exeeeds 150; whereas in the first species it is full, bounding, and often incompressible; and in the second, small, hard, and contracted; and in both moderately quick. The eye, instead of being suffused with a reddish or yellow tint, as in the others, is here generally pellucid, with dilated pupil. The countenance, instead of being flushed, as in the others, is here pale and shrunk, with an indescribable expression of anxiety—an expression altogether so peculiar, that the disease could on many occasions, be pronounced or inferred from the countenance alone. The surface of the body, instead of being as in others, dry and of pyrexial high heat, is here usually soft and clammy, and of heat not above the natural temperature: and not only is the skin cool, with clammy exudation, but the muscles to the impression of the finger, feel soft and flaccid, as if deprived of their *vis vitæ* by the influence of the contagion. Indeed, there is such prostration of muscular strength, and depression of vital principle, from the very outset of the attack, that I must suppose the con-

tagion to act upon the human frame through the medium of the nervous system, in a manner analogous to that of the contagion of the plague."

The indications according to these divisions, are exceedingly simple, and would, indeed, be sufficient for all practical purposes, if the disease always assumed and retained either one or the other of these well marked characters; but, unhappily, that is not the case; a great nicety of discrimination being often inadequate to detect the line of demarcation, supposed to limit the varieties. They verge very closely on each other. The commencement of one blends with the termination of the other; and within a few hours a single case, frequently presents all the peculiar characteristics of nervous prostration, common epidemic fever, and synochus with inflammation, which Dr. Douglas has so well described.

Tonnelle, apparently in accordance with the divisions previously adopted by Désormeaux, enumerates three varieties. The inflammatory, the adynamic, and the ataxic; the symptoms of

which differ in no essential points, from those already given by Dr. Douglas. He endeavours, however, to associate them with certain lesions found on dissection, which will by and by demand our consideration.

M. Vigarous has five species—1st. Gastro-bilious, from accumulation of bile during pregnancy. 2nd. Putrid bilious, either the former neglected, or from the first great debility; small intermitting pulse, tumour of hypogastrium, with sharp pain and putrid symptoms. 3rd. Pituitous fever; vomiting of pituita, surface pale, pulse not so full or frequent as in preceding species, heat rarely increased, vertigo rather than cephalalgia, often miliary eruptions with the usual symptoms of abdominal pain, and flaccid mammæ. 4th. Phlogistic affection, or hysteritis, with great weight about the pelvis, tumefaction, pain, tension, suppressed secretions, sharp rapid pulse, acute fever, and the countenance not such as in the putrid disease. 5. Sporadic fever; proceeding from cold, passions of the mind, &c.

Gardien admits six species—1st. Puerperal

fever, with la fièvre angiotenique, or synocha; it is strictly inflammatory. 2nd. Complicated with la fièvre adenomeningée, or mucous fever; it is slow and insidious, the mouth slimy, the abdominal pain obtuse. 3rd. With meningo-gastric fever; marked by bilious symptoms, yellow skin, epigastric and violent abdominal pains, nausea, &c. 4th. With adynamic fever. 5th. With antaxic fever, nervous symptoms, singultus, convulsions, &c. 6th. With other local phlegmasiæ, as of the brain, lungs, &c.

It is manifest that M. Vigarous and Gardien, have succeeded in forming several of these numerous varieties, by mistaking the different stages at which they have observed their cases for varieties in the character of the disease, instead of successive developments of the same affection.

Madme. Boivin, and M. A. Duges reduced these varieties to two. 1st. The simple inflammatory form, or metro-peritonitis, with angiotenia, (increased vascular action). And 2nd. The typhoid form, in which are included all cases of softening of the uterus, of putrid matter in its interior, and of suppuration of the veins.

"In this second form the shivering fit will be often more severe and protracted, the delirium less high, though earlier and more constant. There will be smallness of the pulse, intense heat, and dryness of the skin, acute headache, oppression, extreme thirst, vomitings, afterwards vomitings of dark coloured matters, involuntary evacuations, cold perspirations, intermittent pulse, considerable dyspnœa, protracted sinkings, and loss of consciousness."

In Dr. Blundell's description, we first seem to have found other varieties, though, on closer investigation, they are discovered to be so very similar to the above, that to transcribe his description would be to repeat, with little deviation, those already quoted. He divides them, in his lectures, into the mild epidemic, the malignant epidemic, and the sporadic; thus making the varieties to consist of differences only in the extent of violence. In endeavouring to account for them, however, he expresses a plausible opinion which will very properly introduce us to the examination of the necrotomic pathology of this disease.

In the malignant form, he suspects that the epidemical disposition to peritonitis is strong, and that the diffusion of the inflammation is great, whence the difficulty of the cure, and the rapidity of the collapse. In the milder form of the disease, he conceives that the peritonitic propensities are weaker, and that the inflammation is of small extent; whence the strength gives way more slowly, and the peritonitis is more readily subdued. In the sporadic cases, the epidemic constitution is wanting altogether; and the surface of tenderness may, he believes, generally be covered with one or two hands; and this may, in a general way, explain to us why this attack is of small danger. He observes, that it is not, generally, so much the intensity, as the extent, of the inflammation which constitutes the risk; and that we may reasonably expect the milder symptoms, when the inflammation is confined to a few square inches; and the severer, when it is extended over two or three square feet.

THE DIAGNOSIS, &c.

WITHOUT the aid of Morbid Anatomy, pathologists would necessarily continue to theorise and speculate on the presumptive evidence of symptomatology alone—a mode of procedure far from satisfactory. Symptomatology, however, plainly indicates the existence of extensive structural derangement in puerperal fever; and no practitioner, who considers the disease with a due knowledge of physiology and anatomy, can fail to draw a diagnosis, concerning the condition of organization, very nearly similar to that which autopsy warrants. The extreme tenderness of the abdomen, especially in the hypogastric and pubic regions, the rapid respiration and hurried pulse, the lancinating pain, the vomiting and peculiar depression, denote both peritonitis and hysteritis. The tumefaction of the abdomen is either the result of tympanitis or effusion, or often, probably, of both. A closer examination will clearly prove that it is neither simple peritonitis nor hysteritis. In this disease, the pulse may be soft and un-

dulating, or tense and thrilling, and rising suddenly, perhaps, much above 150 in a minute, and very rarely indeed descending, or remaining, below 120. But in peritonitis, the pulse is small, hard, and incompressible; or full and bounding, averaging about 100 beats per minute. In this disease, again, the pain of the abdomen is generally preceded by rigors, intense cephalalgia, vertigo, or confusion; but in peritonitis there is clear-headedness, and no fever, until the acute abdominal pain accompanying the inflammation produces sympathetic disorder of all the functions. In puerperal fever, the tongue, at the commencement, is usually clean, but it soon becomes glassy, yellow, or brown. In peritonitis, it is generally dry or white. In the former there are frequent bilious vomiting and diarrhœa, affording intervals of short relief; but, in the latter, the alvine secretions are checked or suspended, and the pain steadily advances, unless subdued by remedial agency. The skin, also, in the one, is moist; and in the other, hot and dry. The urine is dark, diminished, and ammoniacal, depositing a brown sediment, and is voided often and with pain; but in peritonitis, although

scanty, it is often, in appearance, perfectly natural. In simple hysteritis, the symptoms are generally distinctive enough to be seldom mistaken for those of puerperal fever.

Autopsy proves, indeed, that the substance of the uterus is rarely involved in the inflammation connected with puerperal fever; but as hysteritis, occurring after parturition, presents some symptoms which, by the inexperienced, may be confounded with those of that malady; a brief enumeration of them may be appropriate in this place. Hysteritis, post partum, is ushered in by slight rigor and sickness. A dull pain is complained of in the region of the uterus, which recurring at intervals is generally confounded with afterpains. Pyrexia speedily follows, and the pulse rapidly rises to velocity, but in a day or two it subsides to about 100 in a minute. There is seldom cephalalgia, though there is frequently considerable mental confusion. Strangury occurs when the anterior of the uterus is affected. When the fundus uteri is inflamed, pressure above the pubes evinces the fact. There is pain in the loins and rectum, with tenesmus when the posterior part is dis-

eased; and if the lateral portions, or the ovaria are affected, the pain will dart to the inside of the thighs. The bowels act irregularly. In about a week the disease begins to diminish, and a natural cure is frequently effected, by spontaneous diaphoresis or diarrhœa. The inflammation, however, sometimes proceeds to a much greater extent, and by mismanagement may be allowed to spread to neighbouring parts, when of course all the symptoms become urgent. The patient's suffering then becomes constant, but still subject to occasional aggravation. The abdomen is flaccid and without tenderness, unless the inflammation extend to the peritoneum, which is a rare occurrence. The pulse is hurried, and rather hard. Vomiting and purging usually attend this affection, and sometimes continue with more or less severity for several days. In certain constitutions this disease proves fatal in a few days, but usually, after some time, the purulent matter is discharged through the vagina, bladder, or rectum. The early fever is such as generally accompanies phlegmon, but after suppuration, hectic sometimes comes on, which continues for several weeks, and may prove

fatal. The spleen is peculiarly liable to sympathy with the diseased uterus, and in those who have died of the more violent form of metritis, it has been found gorged with an intimate mixture of pus and grumous blood.* This circumstance, as well as some of the symptoms, indicates a considerable resemblance between this disease, and certain species of puerperal fever, especially that which Dr. Lee describes as uterine phlebitis.

In both affections the inflammation sometimes appears to be propagated to the veins proceeding toward the liver, &c. Sometimes the iliac veins take on the inflammatory action, in which case phlegmasia dolens is the result. A more minute examination of this condition, will be found in a succeeding section, on the varieties founded on post mortem inspection. These circumstances demand that the diagnosis should be based upon the strictest and most cautious investigation. The sources of disease rarely act distinctly; and their co-operation

* See a paper by Dr. Ley, in the medical transactions of the Royal College.—Vol. v., Art. xx.

must produce mixed consequences, which require close attention and mental energy, properly to appreciate them. The commencement of puerperal disease, is frequently marked by the occurrence of those changes which are naturally expected; such as after pains, and the febrile irritation excited during the establishment of the lacteal secretion. It would, therefore, always be prudent, strictly to regard the state of the pulse for several days after parturition, for whenever the quickness of the pulse, induced by the efforts and anxiety of labour, does not pass off soon after delivery, some considerable indisposition of the system is certainly denoted.

Autopsy confirms our inference, that puerperal fever is neither mere peritonitis, nor pure hysteritis; but an affection which may include within itself, not only these, but also other inflammatory conditions, as will be seen in the next section.

Dr. Campbell says, "to the younger part of the profession, I would offer a diagnosis of this disease, which for simplicity they cannot mis-

take, and for accuracy will stand the test of experience, by which alone we should be guided. When a practitioner, therefore, meets with a puerperal patient, labouring under *acute fixed pain in the lower part of the abdomen, aggravated on pressure: or a general soreness of the abdomen, rendered more acute by pressure; accompanied with frequent pulse; hurried inspiration, and much uneasiness on turning to either side in bed; he may rest assured that such a patient is afflicted with puerperal fever;*—and unless she is considered in this light, the conduct of the practitioner should undoubtedly be brought under the cognizance of legal investigation, for professional ignorance; since the *symptoms which I have now enumerated, must always be present in some degree.*" This strong passage needs no comment, but the history of Dr. Campbell's cases, as related by himself. He acknowledges, that there are various affections, however, with which it may really be confounded;* yet as appears from the above observation, he admits neither metritis nor peritonitis among the num-

* Dr. Campbell's Treatise, p. 248.

ber. So that either of these may, in his opinion, constitute puerperal fever. Since Dr. Campbell's history of the epidemic, which he witnessed in Edinburgh, has been deservedly lauded for its numerous and important facts, and by some persons, more especially, for the boldness of the practice which he recommended, it will not be deemed unsuitable to devote a small space in this section, to a consideration of those cases in which depletion has been found most beneficial. The diagnosis, above given, will furnish us with the general character of such cases. Whatever be the nature of the affection which produces pain in the abdomen, if that pain can be aggravated by pressure with the hand, it will for the same reason tend to restrain any movement of the patient, which requires the use of the abdominal muscles. Hurried respiration and frequent pulse, are the necessary consequences of continuance in such a state of restraint. Therefore, pain in the abdomen, increased by pressure, is the only diagnostic symptom, according to this author. But who has not seen hysteralgia, and other abdominal nueralgic affections, increased by pressure, especially when occurring in hysteric

females, with hurried pulse and respiration, which nevertheless, have demanded diffusible stimuli and opiates, for cure rather than depletion? And where is the woman who would not complain of uneasiness, on having the abdomen firmly compressed, within forty-eight hours after parturition?

Dr. Campbell has at some length recorded forty-eight cases, and on examining these, it does not appear that in the majority he waited for a rapid pulse and hurried respiration, before he resorted to the lancet; and that, no doubt, very wisely, for he was satisfied that acute inflammation existed in every instance. This, however, affords no proof that he treated puerperal fever in every case; for a rapid pulse, suddenly rising before the abdominal distress is complained of, has been incidentally mentioned by himself, and stated by most others, as characteristic of this affection. The following statements should be read in conjunction with his diagnosis.* "In general, abdominal pain is not complained of until after the appearance

* See Dr. Campbell's Treatise, pp. 26—29.

of other symptoms ; such as rigor, head-ache, intense heat, &c. In some cases the abdominal pain is so very trivial, that patients would not have complained of it, had it not been for the application and pressure of the practitioner's hand."

"From the very first, there is great derangement of the vascular system. In some cases everything goes on well for a day or two after parturition, then the pulse begins to increase in frequency, even before there are any other evidences of the disease, except headache. On other occasions I remarked, that there was increased vascular action from the time of delivery, and that it did not diminish in the least when the process was terminated, as usually happens." "The intestines were very generally constipated, and continued obstinately so in many cases."

It should be observed that the form of puerperal disease, which Dr. Campbell witnessed and described in his treatise, occurred in widely scattered cases, and through a period of nineteen months. He declares, that he possessed

at this time the most positive evidence, that infection was quite out of the question. It will be seen in a succeeding part of this enquiry, that during another epidemic he had sufficient reason to alter his opinion.* It will also appear that in the latter instance, his practice was less successful; and indeed, during the former, it seems to have failed, whenever nervous prostration and feeble quick pulse, were among the early symptoms.

Incontestible evidence had been adduced that puerperal fever assumed different aspects under different circumstances, and that those therapeutic measures which on one occasion proved advantageous, on another were plainly contra-indicated. Both by British and Foreign pathologists, the clearest descriptions of peculiarities in various epidemics had been given, and the ill success of the most diversified methods of treatment had been honestly related; but all this combined and consistent testimony weighed but as the dust in the balance, against Dr. Campbell's opinion concerning the constant

* See, under the head of Exciting Causes—Contagion.

nature of this disease; founded as it was, upon his individual experience of one epidemic.* He took upon himself to say, "that the peritonitis, or fever as it is called, of puerperal women, does in no instance differ more from common peritonitis, than the individual cases of either do amongst themselves." But even if that form of the disease which he witnessed, had been purely the result of local inflammation, he must have been greatly perplexed to account for the rapidly fatal termination of some of his cases, unless depletion hastened it; for he sometimes found a strange and unaccountable persistence of the disease, even after the high vascular excitement which he supposed constituted it, had been completely subdued.†

The observations contained in a recent critique on the works of another practitioner, whose treatment was equally decisive, and whose success was even more remarkable than Dr. Campbell's, will form an apt addition to these brief, and it is hoped, not impertinent animadversions.

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* Dr. Campbell's Treatise, p. 177. † See case xvii. &c.

"The error of coming to general conclusions from a small number of instances, and of laying down general rules on such a narrow foundation for all future time, was never more conspicuous than in Dr. Armstrong's work on Puerperal Fever; and it was combined with a vehement desire for distinction as a teacher, or rather as a dictator of medical opinions. As an account of a particular epidemic, the treatise would have been an admirable contribution to medical knowledge; it would have shewn that there are forms of that disorder, in which life could only be saved by bleeding, or by free purging, or the prompt combination of both measures. But this was too limited an office for a zealous and enthusiastic mind. The character of the epidemic, was pronounced to be the true and immutable character of puerperal fever; and all evidence to the contrary unceremoniously set aside."*

To Dr. Armstrong, however, belongs the merit of proving that febrile affections, whether puerperal or otherwise, are almost invari-

* British and Foreign Medical Review. Edited by Drs. Forbes and Conolly, No. 1, p. 39.

ably associated with local inflammation; and the success of the bold treatment which he adopted in such cases, is the more striking from contrast with that which prevailed when he promulgated his doctrines. There was no originality it is true in his management of puerperal fever, for Sennertus, Astruc, Hulme, Leake, Denman, Gordon, and others, had resorted to similar modes long before, and their works were extant; yet the profession must ever remain deeply indebted to him, and to those who acted on his suggestion, for demonstrating, in opposition to then prevailing prejudice, that one form at least of this terrible malady may, in a vast majority of instances, be subdued by such practice, as long experience had declared most beneficial in simple peritonitis.

USUAL APPEARANCES ON DISSECTION.

The first thing which usually presents itself, on examining the body of a patient, who has died of malignant puerperal fever, is a peculiar bright yellowness of the skin; petechiæ also,

sometimes appear on it. The abdomen is very tumid and tympanitic, if the disease have persisted some days. It is observable, that when death occurs rapidly, the abdomen often retains its warmth, more than thirty hours after death, and the blood is fluid. On dissection, a variable quantity of yellowish matter, and sometimes sanious serum, or sero-purulent fluid, is discovered, having albuminous flocculi diffused through it, and mixed with the inflated intestines, which float upon it.* When the patient is rapidly destroyed by the violence of the disease, the morbid changes bear no proportion to the severity of previous symptoms ; a dubious trace of inflammation, a little bloody serum, or a few feeble adhesions, are all that dissection under such circumstances displays. But when the disease has been slower in its progress, the results of inflammatory action are more evident ; the peritoneum is coated with a stratum or pellicle of coagulated lymph, or a substance somewhat analogous, but unctuous to the touch, and appearing as if separated from the serum by

* Dr. Gooch states, that in some cases, the swelling of the abdomen depends solely on the air in the intestines.

the imbibition of the latter, through the membranes. The interstices of the viscera are occupied by masses of this semifluid, which from its resemblance to soft cheese, the older pathologists thought to proceed from the translation of the milk into the abdominal cavity, where it separated into curds and whey.*

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* The effused fluid has been found by analysis perfectly to resemble that furnished by the inflamed pleura, depositing a copious whitish precipitate, which afforded albumen, and evincing alkaline reaction; but what the nature of the alkali is, has not been determined. Caseum has been suspected to exist in the flocculi, which generally abound in the abdominal serum of those cases. Ammonia scarcely acts on the substauce in question, and evaporation developes in it all the characters of albumen.—Dr. Thomas.

The distinguished M. Dupuytren, and M. Déserin, of Paris, subjected it to the usual tests, and they also ascertained that it consisted of albumen.—Gardien, p. 396.

Mr. Pearson, of London, also analysed the whey-like fluid, and found that it possessed all the qualities of the serum of the blood, or of the effusion in cases of dropsy. It is, however, more coagulable, and has a stronger fleshy odour than serum. Mr. Pearson thought he found some calcareous matter, and sulphuric acid in it, which he had not detected in the dropsical fluid.

Graffe, of Berlin, however, relates a case, wherein febrile excitement, suppression of milk, and effusion into the perito-

The convolutions of the intestines are sometimes slightly agglutinated together. The peritoneum is injected in pink or dark patches, both over the viscera and the abdominal parieties. The blood is commonly darker and more fluid than usual. Several writers have observed, that the omentum is remarkably affected. Drs. Leake and Hulme state, that in all the numerous cases in which they were allowed to examine, the omentum was suppurated, or gangrenous parts of it were found floating in the serum, and either quite destroyed or nearly so. Dr. Forster also notices the same appearances in two instances, in which he supposes that the omentum had adhered to the uterus, and been lacerated by the uterine contraction during labor. It has, indeed, been found adhering to the ovary, fundus uteri, abdominal parieties, and small intestines. The pleuræ, and even the pericardium, have frequently been loaded with

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neum, took place on the eighth day after parturition. Upon tapping, a few weeks afterwards, a quantity of fluid, having an acidulous smell, and resembling whey, was drawn off. On being boiled with diluted sulphuric acid, it furnished a substance resembling caseum.—Rev. Med., Jan. 1827.

a sero-purulent matter, like that effused into the peritoneum. Dr. Waller records two cases in which all the symptoms were those of malignant puerperal fever, although autopy proved the diseased action to have expended itself chiefly on the pleuræ.* The substance of the uterus has of course been closely examined by morbid anatomists, especially as the pain seems in most cases to have commenced either there or in its immediate vicinity. The older pathologists have described its appearances rather minutely, and according to them it is usually found somewhat enlarged, but not unnatural in its texture.† The lining and peritoneal

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* Lancet, October 5, 1833.

† The uterus, like other organs, presents a greater volume when inflamed, but from natural varieties in size, it will of course be difficult to decide whether its increase of volume is morbid or natural. The tumefaction may be considered unnatural, however, when it exceeds the size of the fœtal head within two days after delivery, or that of a large fist, from the third to the eighth day, when it should be about twice its usual diameter. In its healthy state it is of a pale rose colour, of a flattened form, tolerably firm, and particularly tenacious, but without hardness on pressure by the finger; hence a greyish, yellowish, bluish, or bright red colour, a very soft consistence, or, on

membranes are, however, commonly represented as softened or gangrenous. The former having putrid portions of placenta attached to it, and the latter being mottled with red and yellowish streaks, particularly in the direction of the ovaries. A livid appearance is sometimes found near the cervix and os uteri; but it is not considered morbid by Dr. Leake, who first observed it. It is, however, distinctly given as a remarkable evidence of previous inflammation in several cases which occurred in the Hôtel Dieu, 1830, related in the French Lancet.

It is worthy of remark, that gangrene is frequently described as the result of the disease in the more fatal epidemics that prevailed in the continental hospitals so frequently during the last century. In those instances, however, when from numerous recoveries of patients under their treatment, authors have been elate

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the contrary, a distinct hardness, with an increased and spheroidal form (a common result in epidemic puerperal fever), are proofs of a morbid, and most frequently, of an inflammatory condition.—Dr. Heming's translation of Madame Boivin et A. Dugès.

in their expressions of success, plentiful dissections have yet furnished them with opportunity to discover that the malady has not been so malignant, or at least that the morbid changes have not been so great, as formerly appeared; for gangrene is scarcely recognised by modern pathologists, as among the morbid appearances produced by puerperal fever, even in its worst forms.

Claims to important discovery in the anatomy of this disease, have been advanced within a few years by many individuals who have attempted to show that its malignity proceeds from phlebitis of the uterine veins, and the consequent deterioration of the blood, by a mixture of purulent matter. This condition having been suspected, a cautious scrutiny has since been given to the state of the uterine veins in puerperal fever, by most recent observers.

French and German practitioners have, within a few years, related a great number of cases, in which pus was detected in those veins, and lymphatics, more particularly the smaller ramifications, about the lateral portions of the uterus.

The ovarian veins also, and those about the cervix, were injected with pus. These circumstances were particularly noticed in the German epidemic of 1819. A work published by M. Tonnelle, affords very numerous examples of pus being deposited in the uterine and ovarian veins, but especially in those sinuses to which the placenta had been attached. The cases he gives amount to 238, and may be classified thus—

Simple inflammation of uterus and appendages . .	79
Inflammation of veins, and lymphatics of uterus, &c.	110
Inflammation and putrescence of uterus	49
	238

In this country, however, post mortem examinations, not excepting those conducted by our best anatomists, have generally failed to detect pus in those veins, although all other appearances and symptoms have been found the same as in the cases above stated.* The existence of uterine phlebitis and purulent

* Dr. Lee, Dr. Waller's statement in the Lancet, and others.

deposits in puerperal fever, is not, indeed, so recent a discovery as would appear from some late works on the subject.*

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* Externally, the uterus presents, in the puerperal state, an alteration arising solely from inflammation of its peritoneal covering. Ancient pathologists considered this as inflammation of the uterus; the modern have come to different conclusions; observing, 1st, That the peritoneum is often inflamed over the uterus, without the proper tissue of that viscus being affected; and 2nd, That inflammation of the peritoneum, constitutes, in almost every case, only a small portion of the extensive phlegmasia, to which the whole, or nearly the whole, of this serous membrane is liable. Thus Mauriceau, Delamotte, and the writers in the "Ancienne Académie des Sciences," upon the subject of puerperal fever, have declared that this latter disease never had its cause and source in the uterus; and Delaroche asserted, that the occurrence of metritis averaged no more in such cases than one in ten. Simple metritis is, in fact, very rare after delivery in comparison with peritonitis. In the course of two years at the Maternité, there were only 26 cases of real metritis, and 686 of peritonitis and metro-peritonitis. Nearly three-fourths of the inflammations of the lower parts of the abdomen, observed in the puerperal state, are metroperitonitis, if the existence of pus in the veins of the uterus be considered as a proof of metritis. This proportion would be very much less ($\frac{1}{9}$) if this peculiarity were looked on as a distant event. Vide Dr. Heming's translation of Madame Boivin et A. Dugès, 320.

Dr. John Clarke and Mr. Wilson, on examining the bodies of those who died from an epidemic puerperal fever in the Store-street Lying-in-Hospital, found the peritoneal coat and substance of the uterus inflamed, and its veins containing large quantities of pus.* Mr. Wilson found in one case that the vena cava ascendens was obliterated by inflammation, which apparently extended from the uterine veins.† Meckel, also, in the history of a case which he relates to Sasse, accurately describes the constitutional symptoms of uterine phlebitis, and points out the morbid changes in the veins.‡ Ribes also thought that the presence of sanious pus in the veins rendered puerperal uterine diseases so rapidly fatal.§ Burns, on inflammation of the uterus, says that pus is often contained in the ovaria, fallopian tubes, and sinuses of the uterus ; but he considers this affection essentially different from puerperal

* Practical Essays on pregnancy and labour, and on the inflammatory and febrile diseases of lying-in-women, 1793.

† Trans. Med. Soc. ch. 10, iii. 65.

‡ De Vasor. Sanguif. Inflam. Ouit. Jo. Ger. Sasse. Halle, 1797.

§ Memoires de la Société Med. d'Emulats. Tom. 8, p. 604.

fever, which he thinks is quite as frequently complicated with other abdominal inflammation as with that of the uterus.* Since the publication of those views, according to which the malignancy of certain varieties of puerperal fever, is ascribed to pus being mixed with the blood, several pathologists have re-examined the subject of uterine phlebitis, and among them are M. Dance, Dr. Lee, Dr. Arnott, Carmichael, and Velpeau. To the consideration of their opinions, as to the influence of uterine phlebitis, in the modification of puerperal fever, we shall have occasion to recur, when treating of its varieties and their causes. Dr. Gooch states that, in some of his cases, the disease had penetrated deeply into the uterus, the substance of which was sometimes infiltrated with pus, and sometimes contained small abscesses, of the size of a nut; the inner surface of the uterus, especially at the fundus, appearing black and ragged as if gangrenous. The cases also, which occurred with so dreadful a frequency, in Vienna, 1819, presented, on post

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* Principles of Midwifery, p. 524, London, 1820, p. 512, 1828.

mortem examination, purulent and gangrenous appearances. This gangrenous softening has, indeed, been frequently associated with the severer instances, in which uterine phlebitis had been detected; and is perhaps always produced by extremely violent metritis, which by causing the speedy obliteration of the veins by the deposition within them of lymph and purulent matter, must necessarily occasion mortification, from defective circulation, forming a species of gangrene, somewhat analogous to that which occurs from the application of ligature to an artery, when the anastomoses are insufficient to maintain the vitality of the part to which the impervious artery previously conveyed a supply of blood.*

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* Dr. Collins gives the following outlines of the morbid appearances in *thirty-seven* cases:—

"The abdomen being ostensibly the seat of the disease, the morbid appearances were principally found there; however, in *seven* we observed fluid effused into the thoracic cavities, similar in appearance to that met with in the abdomen. Effusion of fluid, although differing in character and quantity, was invariably found to have taken place. In *twelve* it seemed to be serum of a straw colour; in *eighteen* it was sero-purulent, something of the consistence of thick cream; and in *seven* it appeared

THE VARIETIES AS DEDUCED FROM MORBID CHANGES OF STRUCTURE.

The principal appearances which post mortem inspection detects, are such as demonstrate the result of excessive inflammation in those tissues which have been subjected to its disorganizing action. It will also be readily perceived that, the varieties existing in the effects of that action, are such as appertain

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bloody serum, with quite a glutinous feel when rubbed between the finger and thumb. *All* the cases but *one*, in which this latter description of fluid was found, occurred in January and February, 1829, and rapidly proved fatal. In these there was no lymph whatever formed; whereas in the other varieties, it was usually found deposited in large quantities, particularly in the vicinity of the uterus, but often over the entire surface of the intestines, and abdominal serous membrane. In some, where the effused fluid was scanty, the intestines were entirely glued together by lymph. In almost every body examined, the peritoneum exhibited great increase of vascularity, nor could we discover, in any instance, that the inflammation seemed to penetrate deeper than this membrane. The uterus in the great majority was quite natural in appearance; in some it was soft and flabby, and in a few, unhealthy matter was found in its sinuses."

rather to differences in the seat and degree, or extent, of the inflammatory process, than to diversities in the nature or mode of its operation. The period of the duration of that action also, modifies the appearances arising from it. A fierce and resistless inflammation, which affords the strongest evidences of its nature during the life of the subject, having speedily overpowered the vital functions, frequently leaves in the dead body merely the faintest traces of its power. So that even the degree of disorder is not to be inferred from autopsy alone, unless a considerable time shall have elapsed, between the commencement of the disease and the patient's death.

The serous membranes seem more especially to suffer, their liability to attack being so great, that whenever a vestige of inflammation is discovered, as occurring at the puerperal period in any part of the body, some portion of one or other of these membranes is also implicated. Most frequently, and indeed almost invariably, some part of the peritoneum is affected; occasionally the whole; but if in part, more especially either, or all, of those portions about the

fundus uteri, the omentum,* or the ovaries. The sero-purulent secretion is as abundant in the first case, as in simple peritonitis; but in either of the latter instances it is comparatively small. It is worthy of note, as affording a criterion, or distinctive mark by which to judge of the difference between mere peritonitis, and the affection called puerperal fever, that the former when destructive is never so partial, in the extent of inflammation, but usually involves the whole membrane; while the latter very often destroys life, though the inflammation be limited to but a small part of the peritoneum. It is observable, however, that the secretion from the inflamed peritoneum, in puerperal fever, usually differs in no perceptible particular, from that which is the result of peritonitis occurring in the male.†

In addition to these appearances of inflammation in the serous membranes, pathological anatomy has detected another occasional

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* Dr. Baillie states that the omentum is often as thick as the hand.

† Dr. Hodgkin.

consequence of the puerperal inflammation;—namely, purulent deposits in the uterine veins. Now, the existence of pus in such a situation, has been attributed to various causes, but that which most promptly and naturally suggests itself, is that it results from phlebitis, or at least, from inflammation of the lining membrane of those veins, in which it is discovered. But so frequently has it been found without those other evidences of inflammation, which may be deemed unequivocal, such as redness, thickening, and exudation of coagulable lymph, that some pathologists have felt it necessary to seek for other causes, by which to account for its presence in the veins; and as a substance of like appearance and properties has been observed in the absorbent vessels, and even in the thoracic duct itself, though evidently not inflamed, it has been inferred that as in the one case purulent matter was evidently absorbed, so might it also be in the other. Direct experiment demonstrates that the veins receive substances from the absorbents, and also that they themselves imbibe fluids resting in contact with them, more particularly when the mass of circulating fluid has been diminished by venesec-

tion. And as the effect of the mixture of pus with the blood would be the same, whether produced within the veins by phlebitis, or introduced from the peritoneum, or from an abscess, the majority of cases may be as satisfactorily explained by one supposition as by the other—if indeed, the mixture of pus with the blood is to be considered as the cause of any of the peculiarities of puerperal fever. But analogy leads us to conclude, that phlebitis is really the common cause of the purulent deposit; and concerning several well-marked instances of the kind, we may satisfy ourselves by examining the detail of those careful dissections made by Dr. Lee, in which the most evident consequences of that condition were discovered, as well in the state of the veins, as in the effects of that contamination of the blood, which is supposed to arise from purulent admixture. Yet it is remarkable that in every recorded instance in which pus has been found, either in the veins or in the absorbent vessels, there has also been a sero-purulent effusion into the peritoneum, or infiltration into the sub-peritoneal cellular tissue, or an ovarian inflammation or

suppuration has taken place.* Phlebitis, however, or any other local inflammation, cannot be considered the cause of that malignancy which puerperal fever evinces, since that character is exhibited with nearly equal precision when associated with either of the various conditions before mentioned, proving that structural derangement is but an accident of its course. It was, however, long ago suspected that the absorption of morbid matters from the peritoneal sac, tended to produce the putrid symptoms which prevailed towards the closing scene. Dr. Leake very explicitly states his conviction of the fact, and reasons rather elaborately to establish his opinion. If, indeed, occasional differences in the seat or consequences of that inflammatory action which accompanies the fever, be sufficient to constitute a distinct affection, it might with equal propriety, under certain circumstances, be denominated puerperal pleuritis, pneumonia, or epiploitis, as metro-peritonitis, &c.; for the pleura, the lungs, and the omentum sometimes manifest the pre-exist-

* See a number of instances in the "Journal Complément." p. 97.

ence of inflammation under the same general symptoms, as much as either the uterus, or that part of the peritoneum which covers it. That these different forms of disease may arise in the puerperal state, without begetting the exact symptoms of puerperal fever, is generally acknowledged, so that something more than the existence of either of those inflammations, seems necessary to constitute that malady. In what its peculiarity consists remains to be examined : but we must here observe, that if the accidents of that peculiar affection be considered, as some authors seem to think they should be, as distinct diseases, the difficulties that obstruct our pathway to their examination are quite insurmountable ; but if they be viewed, which for ages they have been, as mere complications of the same disorder, we at once return to perspicuous simplicity, and satisfactory arrangement. That great advantage will accrue from the classification of those varieties of structural change which autopsy has discovered, will readily be granted ; because independently of their interest in relation to physiology, they manifestly afford considerable aid to the investigation of the causes, as well as the course of that disease with which they are associated.

Madme. Boivin and M. Dugès, give the following summary of the conclusions deducible from their observations on puerperal metritis, which may fairly be considered to include all the important facts in connexion with this part of our subject.*

1st. Puerperal metritis is, generally, but metro-peritonitis.

2nd. In metro-peritonitis, certain parts of the uterus may be exclusively, or more particularly affected.

3rd. The exterior surface and cellular coat, when acutely attacked, give rise to peritonitis with infiltration, phlyctænæ, and abscesses extending to a greater or less distance.

4th. The tissue of the uterus, when more particularly invaded, may become softened, beset with circumscribed abscesses, and traversed with veins actually inflamed (phlebitis).

5th. The interior surface may present simple

* Dr. Heming's translation, p. 332.

inflammation, occasioning the formation of an albuminous or purulent exudation.

6th. This interior surface may be attacked with gangrenous inflammation, extending more or less deeply into the substance—(putrescence.)

7th. Lastly, in these different forms of metro-peritonitis, the pus exuded at the interior, at the exterior, or in the tissue of the organ, may be absorbed by the veins or the lymphatics, and conveyed to other parts of the circulation, not without imminent danger to the patient.

Dr. Lee describes the following as the principal varieties* of uterine inflammation, occurring in puerperal women.

1. Inflammation of the peritoneal covering of the uterus, and of the peritoneal sac.

2. Inflammation of the uterine appendages,—viz. ovaria, fallopian tubes, and broad ligaments.

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* The symptoms connected with these varieties, have been considered at p. 20.

3. Inflammation of the mucous, or muscular, or proper tissue of the uterus.

4. Inflammation and suppuration of the absorbent vessels, and veins of the uterine organs.

These varieties of uterine inflammation, like those which attack the respiratory organs, or the brain and its membranes, may take place in particular tissues, independently of each other, although most frequently neighbouring parts are simultaneously involved in the same attack. "That there is no essential difference between these varieties, is proved by the circumstance, that in the course of a few days, in the same ward of the British Lying-in Hospital, and in patients who were placed in contiguous beds, during the prevalence of the epidemic, when the disease appeared to be communicated from person to person, peritoneal inflammation, uterine phlebitis, and the other varieties enumerated, all occurred in their most characteristic forms." (Dr. Lee).

The most legitimate conclusion to be deduced from the fact that these varieties arise under

the same circumstances, would appear to be that the specific and essential malady, denominated puerperal fever, depends not for its origin or maintenance on the inflammation which in its progress may exert a disorganizing influence on those structures to which it happens to be directed. The fever and the inflammation probably result from a common cause, which acts directly on the vital functions associated with those organs affected, either by an impression produced immediately through the nervous system, by the propagation of morbid matter from without, or by the circulation of deteriorated blood.

The opinions of Dr. Lee concerning this disease are embodied in the following extracts ;*

"Of fifty-six cases which proved fatal, the bodies of forty-five were examined, and in all were found some morbid change, decidedly the effect of inflammation, either in the peritoneal coat of the uterus, or uterine appendages,—in the muscular tissue, in the veins, or in the ab-

* Dr. Lee's Researches, &c., p. 3.

sorbents of the uterus; accounting in a most satisfactory manner, for the constitutional disturbance observed during life. The peritoneum and uterine appendages were found inflamed in thirty-two cases; and in twenty-four there was uterine phlebitis; and in ten there was inflammation and softening of the muscular tissue of the uterus; and in four the absorbents were filled with pus. These observations are, therefore subversive of the general opinion now prevalent, that there is a specific, essential, or idiopathic fever, which attacks puerperal women, and which may arise independently of any local affection in the uterine organs, and even prove fatal without any perceptible change in the organization of their different textures. As the constitutional symptoms thus appear to derive their origin from a local cause, it would certainly be more philosophical, and more consistent with the principles of nosological arrangement, to banish entirely from medical nomenclature the terms, puerperal or child-bed fever, and to substitute that of uterine inflammation, or inflammation of the uterus and its appendages in puerperal women."

The obligations under which pathologists are laid by the researches of Dr. Lee, have been already acknowledged; but as he has manifestly adopted or produced a theory for himself, the validity of his opinions should be the more carefully examined, and his dictum the more cautiously received. He believes that the fever results from a local cause, and yet he considers that all these varieties are essentially the same disease. Now if the disease be essentially the same in all, why object to a generic designation being equally applied to all. He says they were cases of well-marked puerperal fever, so that whatever might have been his opinion of the structural changes peculiar to each, he found no difficulty in detecting a similarity in kind, as regards the symptoms. The fever must have developed itself in all these instances, before the local disorganization which he observed after death, in so many of them; or otherwise the symptoms would not have been so evident, as to enable him to recognise it as the same disease in all. Now if the structural changes were causes of the constitutional symptoms in all, how happened it that the fever was so suddenly arrested in several? Did the altered

structure so readily resume its normal condition, as that its healthy function could at once be performed ? Or might it not more rationally be supposed, that the disturbance of structure arose from the same cause as the fever, so that the local disorder and the general affection, if of brief duration, were simultaneously excited and simultaneously subdued. If any credit be due to our most eminent pathologists, it is a fact, that the incursion of this, like other fevers, may be so fierce and rapid, as to destroy life before any change of structure can be produced. This is consistent with all we know of inflammatory and febrile affections. It seems, moreover, to be a generally received opinion, that the four varieties of disease which Dr. Lee has described, are in reality but different stages of the same affection, or but the result of the same causes acting on different constitutions; for in robust constitutions, acute peritoneal inflammation will invariably be productive of plastic lymph; in the weaker, of purulent deposit; in the most debilitated, of sanious effusion; and so with regard to whatever structure the inflammation may attack. That all these varieties may exist in one individual, is shown by numberless dis-

sections, and even according to Dr. Lee's statement, this must have been the case in several of those instances which he has adduced. It should be observed that the bodies he examined were forty-five in number, and these were divided into four classes.

Of the first there were - -	32	instances.
Of the second - - - - -	24	
Of the third - - - - - -	10	
Of the fourth - - - - - -	4	
Making a total of	70	

So that some of these must have been mixed cases,—and therefore, they afford no valid argument for nominal varieties, nor render any reason for banishing puerperal fever from medical nomenclature, or for substituting uterine inflammation, or inflammation of the uterus and its appendages in puerperal women ; since these varieties in the seat of morbid action could not always be known by the symptoms, and must have existed rather as complications of the same disease, than as manifest varieties, requiring distinct designations.

If, indeed, the destructive febrile affections, which follow parturition, in all the various forms they assume; inflammatory, congestive, typhoid; depend on whether the serous, muscular, or venous tissue of the uterus, be affected —it will, of course, follow as a general inference that uterine inflammation is essentially their cause.* But this assumption, which is advanced as the result of extensive observation, by the author above quoted, is merely begging the question at issue, and signifies only that febrile affections accompany the various forms of uterine inflammation. That these forms of inflammation are the proximate causes of the various febrile affections, is most completely refuted by the detail of his own experience, as relates to the varieties occurring under similar circumstances. It would not indeed be more absurd to affirm, that a disease was the cause of its own existence, than to infer that, because a serous, mucous, or muscular tissue became disorganized during disordered action, therefore, the disordered action arose from the disorganized tissue. It is evident that the disordered action must precede the change of

* Med. Chir. Trans. vol. 25, part 2, p. 405. 1829.

structure; since we find that puerperal disease, exhibiting all the characteristic symptoms,*— a rapid pulse, with pain of abdomen and pyrexia, frequently occurs, which rapidly prove fatal, and yet not a vestige of inflammation is to be detected in any of those tissues. Yet doubtless, were the disease to continue some time before it proved fatal, the evidence of its action might always be detected in the tissues; for continued disorder invariably produces organic alterations.

Peculiar changes in the appearance of those tissues are necessary to warrant the conclusion that they have been inflamed, and the researches of all pathologists who have examined this subject, are sufficiently conclusive as to the existence of those changes in most instances, but surely rather as a consequence than as a cause. Andral, Luroth, Dance, Dungau, Tonnellé, Dupley, and others, confirm what have been represented as the post mortem appearances; but their inference extends only to the conviction, that the disease frequently kills by the production of

* See cases related by Dr. Gooch.

those changes. The various forms of febrile affection they also discovered to have been associated, indiscriminately, with either variety of morbid structure, and therefore, so definite a division as that above mentioned, cannot be consistent. The typhoid symptoms are certainly quite as frequently present without phlebitis as with it; and the nervous condition appears to be more implicated in the character of the fever, than the serous, muscular, or venous tissues.

But "Febris, si phenomena illius spectes, reliquis morbis est notior; si constitutionem et causam, omnium ignotissima."*

Before we proceed to farther particulars in the consideration of puerperal fever, it will aid us in comprehending the diversities which present themselves, if we endeavour to ascertain what may be the causes which constitute the peculiarities of this affection. "Proteo ipso mutabilior et fugacior." "Cui in plures jus est transire figuras."

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* Baglivi de praxi medica, cap. B. sect. 5.

A GLANCE AT THE VARIOUS THEORIES OF FEVER AND INFLAMMATION, WITH A VIEW OF THEIR RELATION TO THIS MALADY.

We have advanced far enough in the subject to perceive, that fever and inflammation are here at issue. Concerning these, the intelligence and ingenuity of medical theorists, have for centuries been in busy requisition ; and many a splendid mind has wasted its might, in vain endeavours to conform its beautiful theory into accordance with natural phenomena. A few discoveries have doubtlessly rewarded their learned labour, aud now and then a noble monument has been redeemed by science from oblivion, or brought forth like some rich antique from the rubbish and ruins of old Greece and Rome ; yet it does not appear that any one has quite succeeded in erecting such a superstructure, as, from its just proportions and utility, shall satisfy that taste which acknowledges observation and experiment, as alone constituting a sufficient basis for any really scientific erection.

It may not, however, be amiss to determine how far the theories, already proposed concerning fever and inflammation, will assist us to unravel the manifold intricacies of the disease under consideration; for if no accordance be discoverable between the theories admitted and the practice adopted, we must necessarily conclude that practitioners have hitherto proceeded in some strange empirical dereliction, utterly unworthy the name of science; which is the more to be regretted since no lucky success seems to have warranted the preference of one course rather than another.

Some assert that there are no true fevers except such as are idiopathic; others deny that idiopathic fever has any existence. One contends that fever results from inflammation only; another, that the increased vascular action accompanying inflammation is not fever,—so that, as far as the weight of authority is concerned, it is precisely *in equilibrio*.

Now, instead of deciding between these opposite opinions, it will be quite as safe, and probably more consistent, to make their united

weight contribute to the establishment of a specific point; for whichever theory we adopt, we shall after all be obliged to conclude, that whether inflammation produce fever, or not, is of little consequence, since the testimony of facts, assigns to both fever and inflammation a common origin.

According to J. Hunter, inflammation is to be deemed only a disturbed state of parts; and is not to be considered a disease, but only a salutary operation of nature. A similar opinion concerning fever is entertained by the Greek school. This eminent physiologist goes on to state, that inflammation is an increased action of the vessels, at first simply consisting in a distension beyond their natural size, and depending apparently on a diminution of their muscular power: this, as it seems to be something more than mere relaxation, he calls the act of dilatation. He was also "inclined to believe that fever and inflammation are very nearly allied, that is, that either is according to the constitution, which is not the case in specific diseases; excepting in their common modes

of action, which consist either in fever or inflammation."*

Dr. Hastings contends for an inequality in the distribution of the blood, and that some of the phenomena depend upon sympathy between the sanguiferous and nervous systems. Dr. W. Philip believes inflammation to consist in a preternatural distension, and consequent debility of the capillaries.

But further quotation of theoretical opinions concerning inflammation will be useless, since all that has been mooted upon the point under consideration, may be brought within the compass of a single sentence. Concerning the condition of the capillaries when inflamed, there are but two hypotheses. According to one, they are in a state of increased action; according to the other, they act with less force than the trunks from which they are derived. On comparing these hypotheses with those advanced to account for fever, we cannot fail to perceive their intimate relation to each other.

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* Hunter on Inflammation, p. 287. 8vo. 1828.

Concerning fever there are five hypotheses, which rank under the common divisions of the humoral pathology, and the nervous pathology ;* that of the Greek schools, founded on the doctrine of concoction and critical evacuation of morbific matter ; that of Boerhaave, founded on the doctrine of a peculiar viscosity or *lentor sanguinis* ; that of Stahl, Hoffman, and Cullen, founded on the doctrine of spasm on the extremities of the *solidum vivum* or living fibre ; that of Brown and Darwin, founded on the doctrine of accumulated and exhausted excitability, or sensorial power ; and that of Dr. Clutterbuck, M. Broussais, and Professor Marcus, by whom fever is identified with inflammation, or increased action in some particular part.

Hippocrates considers fever as an effort of nature, to expel something hurtful from the body. Galen supports the same opinion ; and from the age of Hippocrates, down to the time of Sydenham—a period of three thousand years—no other explanation of fever is to be found in medical writings.

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* Vide Dr. Good in loc.

Hoffman believed it to consist primarily in diminished energy of the nervous system. Cullen goes a little further, and argues that diminished energy of the brain brings on spasm of the extreme vessels, which is the real proximate cause of fever; he also says, that spasm of the extreme vessels, may be considered as the cause of inflammation. This theory differs from that of Boerhaave, only in the cause assigned for the obstruction. Dr. Brown's "excitability," is merely the "nervous energy" of Dr. Cullen, without the "*vis conservatrix et medicatrix naturæ.*" "Fever and inflammation of the brain,' says Dr. Clutterbuck, "are identical affections,* and inflammation is primarily and essentially a state of disordered action merely."† "Fever," says Broussais, "is always the result of irritation of the heart;‡ and excessive irritation is inflammation."§

There are two doctrines at present prevailing with regard to fever, which are directly opposed to each other. According to one it is a dis-

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* Inquiry, &c., p. 220.
† Ibid, p. 4.
‡ Proposit, 112.
§ Ibid, 99.

ease affecting the entire system, consisting of debility from loss of cerebral energy, which of course speedily involves the function of every organ. According to the other, it is a disease, the primary seat of which, is invariably in some one organ; either the brain or the alimentary canal; and its nature is essentially inflammation.

Now there is no need that we should examine the respective merits of these several hypotheses; but regarding them in connexion with each other, receive each of them as corroborative of the opinion, that fever and inflammation result from the same causes. They convey a general consent that both arise from disordered action; and this, apart from the existence of influence purely mechanical, can only be effected through the operation of the nervous system, which being primarily affected, induces that state which has been so accurately described as constituting fever, by Dr. Fordyce. He says "it is a disease which affects the whole system; the head, the trunk, and the extremities; the circulation, absorption, the skin, fibres, muscles, membranes — in fact it affects the

body and mind; and is therefore a disease of the whole system, in the fullest sense of the word. It does not, however, affect the various parts equally; but, on the contrary, sometimes one part is more affected than the other." The humoralist and solidist are equally wrong, since both solids and fluids are equally diseased.

The events which invariably concur in fever, then, are certain deviations from the healthy state, in the nervous and sensorial functions: in the circulating function, and in the functions of secretion and excretion. A deviation in either one or two of these circles of action, will not present the phenomena of fever; there must be a deviation in the three circles before fever can exist.*

The only difference which can be traced between fever and inflammation, is, according to Dr. S. Smith, the difference in the order in which these circles of action are affected. "And though in the present state of our knowledge, we are not justified in considering fever

* See, Dr. S. Smith on Fever, p. 49.—1830.

and inflammation to be the same, yet the close, perhaps the constant, connection between them, is a fact of the utmost importance to be known, and requires to be incessantly before the view of the practitioner."*

However pathologists may differ in their opinions, concerning the primary cause of fever or inflammation, we have sufficient evidence to demonstrate, that under favorable circumstances they reciprocally produce each other. That is, the peculiar nervous impression which primarily excites fever, whether it be from a specific virus or not, will naturally, in the train of its consequences, induce local inflammatory disorder. Indeed, " the second event in the morbid series, constituting fever, is inflammation." And again, local inflammation, by whatever cause it is excited, will, by its disturbing influence, if sufficiently extensive, so act upon the nervous system, as to engender all the symptoms of fever. In both instances the impression is energetic in proportion to the violence of the disturbing causes : and in both instances, to

* See Dr. S. Smith on Fever, p. 49.—1830.

withdraw the cause is to effect the first step toward a removal of the consequences. The specific affection of the nervous system, may exist for a time without the specific affection of the vascular system, and *vice versa*; yet if we may draw a conclusion from the innumerable post mortem examinations of such cases, a combination of the two affections appears to have invariably resulted from the pre-existence of either. But the fever arising from inflammation, is in its commencement totally different from that fever, which precedes the production of local inflammation, unless indeed it be in the brain, as asserted by Dr. Clutterbuck; nor does it become adynamic until the assimilating functions are so much disordered, as to prevent the formation of healthy blood. When, however, a local injury of any kind, has been sufficiently violent and lasting to induce such changes, it would require a more than ordinary discernment, to detect a difference between a fever so produced, and a fever purely idiopathic, provided the local affection be left out of sight.

The predisposition to local disorder, existing in individuals exposed to the exciting causes of

fever, will necessarily modify the manifestation of that fever, whether it be of a specific or of a general character. If, for instance, a person be affected by fever, who is habitually subject to cerebral and nervous excitement, as the majority of the English are, the disease will exhibit symptoms distinctly referable to the brain, and dissection will detect in such cases those appearances which favour the theory of Clutterbuck. But in those whose gastric organs are disordered, from the nature of their ingesta, and from their general mode of living, as among the French—the evidences of diseased action will commonly be evinced by the state of the alimentary canal, and the doctrine of Broussais will receive support from the facts of morbid anatomy in such cases. And thus, with regard to whatever local predisposition may prevail at the period of attack, in those who are subjected to the influence of febrile excitement. This tendency to complication is exhibited in all the varieties of fever; and according to the state of the body, or of particular organs at the time of its operation, the disease will assume either bilious, nervous, gastric, or other peculiarity; the general affection being accompanied

throughout its course by particular disorder of those structures which may be most susceptible of morbid impression. Hence the violence of diseased action will generally be proportioned to the complication, since additional causes of disturbance will thus conjointly come into operation. Puerperal fever affords the best illustration of the truth of these inferences.

In cases of mixed fever, such as are recorded by Dr. S. Smith, the symptoms are usually most urgent and rapid, and the prostration is most speedily complete. Delirium comes on the third or fourth night, with muscular tremor and frequently with erysipelas. At an early period the respiration is hurried, the skin sallow, the cheek purple; and, in short, the patient soon presents an assemblage of the worst symptoms of typhoid or adynamic fever. A case of this kind, occurring in the male or in the unimpregnated female, cannot be distinguished, either during life or after death, from puerperal fever, excepting from the accidental concomitants, dependent on changes affected by parturition. The abdomen, as the fever advances, in both instances becomes swollen, tense, and tympani-

tic ; the excretions are of similar character, and the patient assumes the same position and appearance.

These facts prove that the severest forms of fever, are those in which the inflammation of certain organs is most readily established, because there is the double action of the primary disturbance of the nervous system, combined with the destructive processes in parts essential to life, as well as the deterioration of the circulating fluids, arising from these united causes. If the term puerperal fever be objected to, simply because it is in most instances attended by inflammation, for the same reason the term fever should be discarded altogether, for a careful examination of the numerous dissections of cases of fever, on record, will satisfactorily demonstrate that fatal fever, of every kind, is almost invariably connected with inflammatory changes of structure. Most instances furnish proof of inflammation having existed in various parts of the body at the same time, and of having produced various results in different organs. There are certainly exceptions from this rule on a large scale, in such fevers, as

by the rapidity of their action, destroy life before structural alterations can be effected. Probably the intensity of nervous disorder is so great in these cases, that the inflammatory action is scarcely commenced, much less matured. Such instances are often presented in the history of yellow fever. The organs which in most other cases exhibit the effects of inflammation, are in these cases congested. It has been well asked—"are the terms debility, and adynamia, appropriate expressions to designate even this condition?" But probably all pathologists will allow, that debility cannot be an active producing cause of disease; and those who ascribe effects to debility, must be supposed to mean, only, that there are such changes in the nervous supply, and consequent power of the organization concerned, as render it incapable of maintaining a free circulation, or of removing the blood accumulated in the vessels. This remora greatly facilitates morbid alterations in the constitution of the fluids, and consequently of the tissues on which they act. A congested condition of the blood vessels, evidently forms, in many cases, the first stage of puerperal fever, as several observers have

asserted. Indeed, all the circumstances of the parturient female, favour the production of this state, and although it may occasionally yield with readiness to the exhibition of opiates, and such applications as soothe the nervous system and relieve local disorder; yet its consequences must generally require very active treatment. The vital energy of parts under such circumstances, must either continue to sink until it becomes extinct, or the source of innervation being re-invigorated, the parts congested must renew their office, under the disadvantage of a burthen which cannot be removed without excessive activity. Hence we find that when the system, either through intense anxiety, or from extreme bodily distress, receives a severe shock, the powers of life are sometimes rapidly exhausted, as in those cases so frequently described by obstetricians. And if by medicinal aid, or the rallying effort of nature, re-action be established, the oppression is attempted to be thrown off at once by some violent evacuation; or fever, more or less decided, is gradually developed.

To decide upon the respective merits of hypotheses, is therefore needless, inasmuch as they

may be all reduced to one general proposition: namely, that whatever powerfully disturbs the function of the nervous system, engenders both inflammation and fever; and that these differ in extent and violence, according to the direction or seat of the disturbing influence, as well as in proportion to the degree of that influence, and of the opposition to its action, existing in the living economy. We proceed, therefore, to examine how far the history of puerperal fever sustains this opinion, and to draw our inferences concerning its *modus operandi,* and appropriate treatment, according to the evidence afforded by its pathology, as already detailed in symptoms and morbid appearances, as well as that which may be elicited by an examination into its etiology.

CAUSES AND CONCOMITANTS

Having examined the pathognomic and general symptoms, as well as the morbid appearances of puerperal fever, with its relation to common fever and inflammation, the next subject for in-

vestigation embraces whatever may be supposed to operate in the production of those specific peculiarities, and more anomalous modifications, which have been already stated as belonging to it. The relation of individual cases, occurring under private inspection, would be unattended with any advantage, since they would not present any peculiarity, nor be in any way auxiliary to the clearer development of the conditions under which the malady originates. It is certain that the *primum mobile*, the spring and source of this affection, is just as completely concealed in the tangled intricacies of living chemistry at the present period, as in the mysticisms of spiritual, humoral, or mechanical pathology of the olden day. Nor shall we venture back into the darkness of metaphysical surmise, to guess about the inscrutable and primal origin of disorder, but content ourselves to search most carefully, with what light we can obtain, for those exciting causes, which may be reasonably traced by their palpable consequences. Just opinions and theories can be deduced from facts alone—from the knowledge of natural and necessary operation, in the living economy of structure and of function. Disre-

garding such restriction, Philosophy losing her stole, degenerates into Conceit; and Folly with her cap and bells, usurps the seat of Science.

It has been already proved by sensible demonstration, that fever and inflammation result from disordered action, either partial or universal. Such disorder exists to a great extent in puerperal fever, and the question now to be determined is, what are the proximate causes of its occurrence?

The earliest opinion on the subject, is that of Hippocrates, who attributes all the symptoms of puerperal fever to suppression of the lochia. This view is more or less distinctly adopted and maintained by many succeeding writers.* Much disturbance of the circulation

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* Avicennæ A. D. 1000, Canon Medicinæ. Venet. 1608, Tom. i. lib. 3, fen. 21, tract. 2. cap. 33.

Raynalde, 1560, B. ii. cap. vi.

Sennertus de febribus et morbis acutis puerperarum, 1656, tom. iii. part ii. sect. vii. cap. xi.

Lazarus Riverius, 1640, De suppressione lochiorum.

Lucitanus de Inflammatione Uteri. Chap. xiii. p. 495.

Willis, 1682, cap. xvi. de puerperarum febribus.

must result from the incompleteness, or arrest of those changes which naturally occur after parturition. The system, during gestation, is subjected to influences which alter the condition of the blood, and thereby, perhaps, modify all the secretions of the body. The blood, during pregnancy, presents several of those phenomena, which usually accompany plethora and early inflammation. The saliva is commonly increased, or it becomes more viscid. The perspiration is of stronger odour, and of more acid reaction. The urine more saline, and towards the term of gestation, it has, by analysis, been found to contain traces of caseum. All these alterations are either subservient to the fœtal development, or preparatory to the production

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Franciscus de la Boe, Sylvii, 1674, lib, iii., cap. viii. De lochiorum Vitiis,

Mauriceau, Paris, 1721. Tom. i. liv. iii. cap. viii.

Sedenham, 1726. Opera universa, p. 421. Leyd. Bat.

Boerhaave, 1737. Morbi puerperii. Aphor. 1739.

Strother, 1718. Criticon febrium, c. ix., p. 212.

De la Motte, Paris, 1722. Liv. v., ch. vi.

Van Sweiten, 1764. On Boerhaave, tom i. §1329.

Astruc, 1765. Traité des maladies des femmes, tom. v. liv. iii. ch. xiv. § 3.

of the infant's nourishment. But to qualify the blood for the latter purpose, and to re-establish the balance of the circulation after the expulsion of the fœtus, a large secretion, consisting principally of serum, takes place from the uterus. Should this process of depuration be by any means suspended, or prevented —the excess of fibrin and albumen, existing in the blood, must be speedily removed by some other channel, or a strong predisposition to inflammatory action will be the consequence; so that on the co-operation of other causes, metritis or peritonitis might readily be induced. That the suppression of the lochia may therefore have considerable influence in producing and modifying the result of these inflammations is very evident.* But to affirm that the suspension of a healthy process is the cause of a disease, is to assert that a disease is its own cause. That which produces the suppression of the lochia, in fact originates whatever disorder may follow, the kind and nature of which

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* Vide Dr. Copland's Dict. Med. on the morbid changes of the blood. § 121. Also Medicinæ Theoreticæ, Jacobii Gregorii, cap. xxi. § DCCCXXXVI.

must be determined by the concurrence of other circumstantial causes.

Dr. Hamilton mentions the peculiarly fœtid discharge from the uterus, as quite characteristic of the disease, and indeed appears to attribute its virulence to the imbibition or absorption of this self-generated poison. Dr. Blicke,* following up this assumption, attempts to account for all the symptoms by supposing that the acrid and putrid fluid, secreted by the lining membrane of the uterus, is absorbed by the open-mouthed uterine vessels, but he does not explain how the membrane took upon itself to elaborate this fluid, nor how the vessels succeed in absorbing it. Moreover, important facts seem to have been overlooked; for it is proved by experience on the largest scale in lying-in hospitals, that there is no necessary connection between puerperal fever and varieties in the condition of the lochial discharge.† Yet that some varieties of the disease may be induced as Dr. Copland suggests, by the presence

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* Lancet, p. 306, 1830. † M. A. Dugès, p. 337.

of irritating fluids in a state of decomposition in the uterus is very probable, especially that of uterine phlebitis, when the uterus itself has sustained injury.

We also find fever after parturition ascribed to difficult labour,* to inflammation of the uterus,† to accumulation of noxious humours set in motion by labour,‡ to violent mental emotion, stimulants and obstructed perspiration ;§ to miasmata, admission of cold air to the body and into the uterus, to hurried circulation,

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* Of 114 cases in the Dublin Lying-in Hospital in 1819 and 1820, 68 were first labours, but they were not remarkable. —Dr. Collins.

† Felicis Plateri Praxis Medica, tom. ii. cap. xii. 1686. Hoffman, tom. iv. part, i. sect. ii. cap. x. Halle Magdeburgh, 1734. Burton, London, 1751, part iv. of Essay on Midwifery. Smellie.—Tissot.—Kirkland, p. 58.—-Denman.—Broussais, prop. 313, &c. &c.

‡ Sennerti opera, tom. iii. part ii. De febribus, &c. puerperarum, 656. Celsus, lib. ii. chap. vi. says " Mulier quoque gravida acuto morbo facile consumitur."

§ T. Cooper, London, 1766. Part iii. sect. iii. Comp. of Midwifery. Dr. Leake, v. 2, p. 43.

suppression of lacteal secretion, diarrhæa,* liability to putrid contagion from the changes in the humours during pregnancy;† hasty separation of placenta; binding the abdomen too tight;‡ sedentary employment; stimulating or spare diet; fashionable dissipation; retained portions of placenta; floodings from noncontraction, according to one;§ from violence but not from noncontraction, according to another;‖ to inflammation of the intestines and omentum, from the pressure of the gravid uterus against them;¶ to atmospheric distemperament, to internal erysipelas, metritis, uterine phlebitis, and to contagion of a specific kind. It will be seen that some of the symptoms of the malady are mistaken for causes. These assigned causes belong to two classes—the remote and the proximate, which may farther be considered as predisposing, or

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* R.W. Johnson, London, 1769, New System of Midwifery. Part iv. chap. vii.

† J. Millar, 1770. Observations of prevailing diseases. P. iii. chap. ii.

‡ H. Manning, London, 1771. Treatise on female disease. Chap. xx.

§ Mr. Hey. ‖ Armstrong. P. 48.

¶ Dr. Hulme. P. 147.

exciting. All effects produced by any of these causes must evidently be modified by the previous state of the vital functions. Different degrees of action result from the same cause in different individuals, and in the same individual under different conditions of the system. The co-operation of several causes fail at one time to induce any manifest consequences, though at another a single cause evinces considerable influence, and frequently no mischief ensues from exposure to various exciting causes, until some determining cause has opportunity of exerting its influence by aiding those which preceded it.

Reasoning from the facts within our knowledge, we will therefore examine the operation of these causes, and endeavour to determine how far all or any of them may be capable of producing those effects which are commonly understood to constitute the disease of which we treat, viz. inordinate action of the arterial system inducing adynamia, and that kind of general disorder called fever, with a tendency to the establishment of destructive inflammation in the peritoneum and parts about

the uterus, soon after parturition. Now there are three classes of agents that act on the human body, and these three are included in the causes enumerated above, namely those which are mental, those which are chemical, and those which are mechanical. Their operation is gradual or rapid in proportion to the force with which they are applied, or to the resistance to be overcome. They influence the actions of the living economy through the medium of the cerebral and nervous systems. But, since the present limits of science will not permit us to determine the mode of their peculiar operation on the nerves, we must confine our observations to the evident consequences of their action. We should, moreover, regard the nervous system in its totality, as consisting of a combination of mutually dependent functions, or we cannot understand a single sympathy which exists between them. Thus in order to investigate the probable operation of mental emotions, on any particular structure, it will be necessary to observe the connexion of that structure with those functions which are implicated in the exercise of the passions, and their seat of sensorial excita-

tion. The generative apparatus, and its adjuvants, for instance, very obviously depend, in a great degree, for their state of activity, on the conditional excitement of the cerebellum; so that disease in the latter, frequently produces disorder in the former, and conversely, the former influences the latter. That there is an incomprehensible "spirit of animation,"* residing in the nerves, in the brain, and in every living tissue, which causes the contraction of vascular, and more distinctly, of muscular fibres, all the experience of life affirms; and that its equable and proper distribution is essential to the perfect health of every part, is demonstrated by every day occurrences. What this resident influence is, we need not now enquire, our purpose being to determine the causes of its disturbance; since it is clearly proved that a continuance of such disturbance, invariably induces disease and disorganization. Increased local action, as from a blister or from a mechanical irritant, by pressure or friction, is the result of interruption to the regular operation of the pervading influence. Every kind of agent acts on

* Dr. Darwin.

it according to its specific character, by producing peculiar effects ; but no agents excite disturbance more promptly, or more generally, than the passions. Extreme fear affords a remarkable instance. The blood, suddenly withdrawn from the capillaries, leaves the countenance covered with a livid pallor, the brain and large arteries are distended, the eyes start, the muscles are rigid, or convulsed, the heart intermits its pulsations ; syncope, cold sweat, and perhaps sudden death, ensue from the predominance of terror. Other passions may be slower but they are quite as certain in their operation, and their effects will be modified by the degree and kind, of their combination. An ideal and undefined apprehension of some approaching evil, or a doubtful calculation of probabilities of escape from the endurance of some existing inconvenience, constitutes that perturbed state called anxiety, which, if continued, would manifestly produce excessive disorder of bodily, as well as mental function. By it, the bile is increased, the perspiration lessened, the urine becomes pale and inodorous, nearly without urea, and not yielding ammoniacal smell on being kept, the capilary circulation is diminished,

and hence, chilliness is a common concomitant. That it predisposes to a ready reception of injurious impressions, from external morbific influences, such as malaria, is frequently exemplified by our personal experience; and on a large scale by the dispirited retreat of armies, among whom inflammatory and intermittent diseases very extensively occur.

Thus, we may readily grant, that mental perturbation and wretchedness facilitate the incursion of almost all diseases,* although such conditions can never be supposed to confer a specific character on any. Perhaps such mental causes, when associated with hysteric predispositions, would more readily induce uterine disorder, which might even amount to inflammation. A predisposition to this particular malady

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* Dr. Campbell states, that he had the most satisfactory proofs of the influence of mental agitation, in producing or aggravating the disease: for of eight women, who had been delivered of natural children, and were afterwards seized with the disorder, only two out of this number recovered. P. 210, Dr. Campbell's Treatise. Thus, it appears, that six out of sixteen deaths, were of women under miserable circumstances. This fact, also proves, that Dr. Campbell's treatment was not remarkably successful in bad cases.

may also be found in tendencies to previous disease of those organs more especially implicated in puerperal fever. It is not improbable that during the prevalence of epidemics, or in distemperaments of the atmosphere, or in the miserably destitute, a chronic peritonitis may be produced, such as sometimes arises from permanent grief; in which the abdominal derangement is most manifestly consequent on the mental disorder. We find abundant evidence of painful abdominal affections, recorded as existing long before parturition, in many of those who suffered from puerperal fever.* In such instances, it is not improbable that adhesions may take place, between the uterus and some part of the intestines or omentum. Indeed, in dissecting the bodies of women who have borne children, such adhesions, between the uterus and omentum are frequently discovered. Now, if the process which caused those adhesions had been as it often might be, extensive enough, to occasion adhesion between other parts also, it would happen that the contraction of the uterus

* Vide Denman, Hulme, Leake, Hey, Armstrong, Gordon, Forster, and Campbell.

during labour, would dissever them, and the necessary consequence must be, just such a state of disorganization of the omentum, &c., as Drs. Leake, Hulme, and Forster have described.

The experience of those accustomed to operate on the uterus, for removal of its structural diseases, especially in hospitals, proves also that mechanical injury may excite the condition predisposing to uterine inflammation, which, under fostering circumstances exhibits many characteristics of puerperal fever. Formerly, when M. Lisfranc was less considerate in his operation, for extirpation of the cervix uteri, the death of the patient from metro-peritonitis was no infrequent occurrence; and what is most worthy of our remark, there was a strict resemblance in post mortem appearances between such cases, and those presented in many instances of puerperal fever. The fatality from this cause, induced M. Lisfranc to investigated the subject more particularly, and he found that the means which had been adopted to arrest the hæmorrhage, such as a plug, &c., either by directly irritating the parts, or by restraining a salutary discharge of blood, had occasioned inflammation; for, since he has omitted com-

pression, and permitted the blood to flow freely, the recoveries have been much more rapid and numerous. Yet that violence, even when fever is prevalent, should induce puerperal fever, is very improbable, since M. Lisfranc lost but six cases out of 106 on which he operated, in a certain period.*

Peritonitis and metritis have been severally assigned as causes of puerperal fever, but that something more than mere inflammation of the peritoneum, or of the uterus, is requisite to constitute the essential character of this disease, appears from the fact, that these inflammations, occurring under ordinary circumstances, are entirely devoid of those striking features which belong to this epidemic. Besides, it has never been known that these local inflammations have become so decidedly prevalent at certain periods, as to be denominated epidemic. Nor has their occurrence, among other than parturient women, at the same time that puerperal fever prevailed, been ever remarked; which would doubtless have been the case, if they were induced by the same

* Vide Lancet, Oct. 11, 1834.

causes; for we find that these inflammations readily arise under other circumstances, and therefore we need not suppose that parturient efforts are required to excite them. It may, therefore, be concluded, as by Dr. Burns,* that "if no mistake be committed, in looking on hysteritis or peritonitis, as puerperal fever, the lancet ought to be more uniformly beneficial." Or with Dr. Gooch,† although he calls the disease peritoneal fever, it is safe to affirm that all the signs of this malady may be present, independently of acute inflammation of the peritoneum, or any other part, and that these symptoms may depend on a state which venesection does not relieve, and which, if this remedy be carried as far as it requires to be carried in peritonitis, would terminate fatally. "Peritonitis is much more frequent than puerperal fever."

The occasional existence of uterine phlebitis, has also been deemed a sufficient cause to account for at least a variety of puerperal fever. Phlebitis was first described by Mr. John Hunter, in a paper, read before a Society for the

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* Principles of Midwifery, p. 526.

† On some of the Diseases of Women, &c. p. 75.

Improvement of Medical and Chirurgical Knowledge, in 1784; and Dr. J. Clarke was the first to notice uterine phlebitis.* After him it was observed by Wilson and others; but not until about 1828, were the typhoid symptoms of puerperal fever, traced to connection with uterine phlebitis. M. Dance† then published three papers on phlebitis, and pointed out the consequences of this disease. About the same time, also, Dr. Arnott, and Dr. Lee, contributed to the Medico-chirurgical Transactions several very valuable papers on the supposed secondary effects of phlebitis. Dr. Arnott's elaborate disquisition, in the 15th vol. of those transactions, first directed the attention of British pathologists to the facts in connection with fatal venous inflammation. Several continental writers had previously observed them, and the apparent effects of phlebitis had been strikingly described by Paletta, in 1787.‡ M. Bouillard, in 1825, attributed the typhoid symptoms of phlebitis to the mixture of pus with the

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* Practical Essays on Pregnancy and Labour, &c. 1793.

† Archives générales.

‡ Exercitationes Pathologicæ, cap. iii. Observ.

blood, and referred to the experiments of Baglivi, Majendie, and Gaspard, as having produced apparently analagous results from the injection of putrid matter into the system.* M. Velpeau, in 1826, very elaborately considered the same subject, in his "Recherches et Observations sur l'Altération du Sang."

The researches of these authors, more especially those of Dr. Arnott, prove that phlebitis does not destroy life by the extension of inflammation to the heart, as was suggested by J. Hunter; but whether, when it is fatal, it be so by purulent deterioration of the blood, producing malignant phlegmasiæ, or whether the occurrence of phlebitis itself depend on a previous constitutional condition tending to promote such disorder, has not been very satisfactorily established. Phlebitis does not invariably produce the secondary effects ascribed to it, and it sometimes occurs very extensively, as in phlegmasia dolens, without proving fatal, or evinc-

* Recherches Cliniques pour servir à l'Histoire de la Phlébite.—Revue Médicale, 1825.

† Revue Médicale. 1826.

ing any of those dire symptoms which manifest puerperal fever, although pathological anatomy seems to have traced crural phlebitis also, to an origin in inflammation of the uterine veins. This circumstance, sustained as it is by a variety of other facts, seems to require that we should look for somewhat beyond the production of simple phlebitis, in order to account for any kind of puerperal fever. That there is a condition of the whole system predisposing to venous inflammation, appears probable, and that this state of system tends also to aid the development of all those symptoms which have been associated with that inflammation. In puerperal fever, as in typhus, cholera, and other epidemic or contagious diseases, which seem properly to belong to the class neuroses, there is, besides that of inflammatory action, another element, unknown, but which has an essential influence upon the intercurrent phlegmasiæ arising in their course, and which may yield at one point, only to appear at another.*

The view now taken receives corroborative evidence from the history of phlebitis, but per-

* Vide M. Blanche's Memoir on Pertussis. Rev. Med. 1834.

haps especially from those cases of destructive inflammation of the eye, and integuments, occurring in the puerperal state, which were observed by Dr. Marshall Hall and Mr. Higginbottom, and drawn up by Dr. Farre, and inserted in the Medico-Chirurgical Transactions.* It is remarkable that in each of the six cases, the *left* eye was affected. Is not the left side originally inferior in power? In puerperal fever the left region of the abdomen is usually first complained of.† In those cases many of the symptoms of puerperal fever were present, as shiverings and heats, sickness, tumid abdomen, rapid pulse (150), and total prostration. In one of them, in which venesection was practised, the punctured vein took on the inflammatory action. This circumstance has also frequently happened in puerperal fever, proving a ready disposition to inflammation in the venous tissue, and perhaps, while the system is under the influence of the febrile affection, in all the serous membranes, which indeed, under all circumstances, appear very liable to become inflamed. A peculiar virus seems to prevail throughout

* P. 189, vol. xiii. part 1. 1835. † Dr. Burns.

the system, and operates most speedily on those parts most excited or most debilitated. This virus seems of a specific nature, and may be capable of producing contagion. Its probable influence is well exemplified by an experiment conducted by Mr. Leuret. He injected some blood from a living horse infected with gangrenous boils, (*pustule maligne*) directly into the veins of a mare five months with foal. She died five days afterwards. The heart, lungs, and intestinal canal, were studded with dark ecchymoses, the uterus was gangrenous, and the blood was dissolved and dark-coloured.

In this case, a peculiar inflammation was produced by deterioration of the blood: not by the addition of pus, but by the introduction of infected blood. It was indeed a direct mode of inoculation, by which disease was so propagated as to produce its specific effects in the most rapid manner. A gangrenous affection of the same character would no doubt have resulted from the cutaneous absorption of matter from the *pustule maligne*, but pure pus may be absorbed, as from psoas abscess, in immense quantities, without exhibiting any such malig-

nity ; and we know not why pus, generated in the veins of the uterus, should produce consequences so widely different from those which occur from its introduction to them by the absorbents, unless we conclude, that a peculiar condition of the system, induced by some virus acting on the nerves, predisposes to uterine phlebitis and renders it malignant.

" In the number of the '*Archives Générales*' for March 1835, M. Duplay communicated some instructive cases of metro-peritonitis, in which, on dissection, the lymphatic vessels of the uterus, and of the adjacent parts, were found filled with purulent matter. In all the cases, there was a sero-purulent effusion in the abdominal cavity, and in most of them, the substance of the uterus had undergone a considerable *ramollissement* and purulent infiltration. In more than one half of the cases, pus was found in the branches of the uterine veins ; and in two the thoracic duct itself was observed to contain a puriform serosity. The following description of the appearances which the diseased uterine lymphatics exhibited, is interesting. On the interior surface of the womb, as

well as immediately underneath its outer peritoneal covering, we observed numerous gray-coloured lines, alternately contracted and dilated, extending in various directions, and communicating apparently with each other. The size of these vessels varied from that of a needle to that of a crow-quill."

"Here and there they were dilated into cavities or cysts, large enough to hold a pea. These cavities might be supposed to be small abscesses; but an attentive examination of several cases has satisfied M. Duplay, that they are in truth dilated portions of lymphatics, the walls of these being found to be strictly continuous with the walls of the sacs. The diseased lymphatics were usually most readily discovered on the sides of the uterus, where the broad ligaments were attached, and also around its cervix. Sometimes they might be traced along the trunks of the uterine and ovarian veins, anastomasing with other lymphatics proceeding from the overies and fallopian tubes, until they reached the lumbar glands. These glands exhibited various morbid appearances—sometimes they were merely swollen, and redder than na-

tural ; at other times they were much softened and infiltrated with purulent deposit. We have already mentioned that pus was found occasionally, even in the thoracic duct; but this is of very rare occurrence. M. Valpeau has recorded one such case, and M. Tonnellé states that he has met with two. The internal surface of the lymphatics, which contain pus, did not exhibit any pseudo-membranes, or any other traces of diseased change, in M. Duplay's dissections."

" In some cases, it is less difficult than may be imagined by some, to ascertain the state of the uterine lymphatics, as they become greatly enlarged during pregnancy, so as even to equal the size of many of the veins. We have already alluded to the morbid changes of the structure of the uterus itself, which were usually found whenever its lymphatics contained purulent matter. The ovaries, too, and the fallopian tubes, were frequently completely softened in structure, and converted into a " putrilage," which broke down between the fingers."

" M. Duplay has never found abscesses in the joints, nor in the liver, lungs and distant viscera,

when the lymphatics only, and not the veins at the same time, were diseased."—*Archives Générales,* quoted in Med. Chirurg. Review, Jan. 1836.

This enquiry might well be deemed incomplete without a further investigation of the opinions which have been expressed concerning phlebitis and purulent deposits.

Mr. Lawrence in a lecture on inflammation of the veins, observes that "the considerable febrile disturbance of the system which exists in the *early period* of the affection, leads us in many cases to infer that general bleeding would be of service, and, accordingly many patients have been bled freely from the arm in cases of phlebitis. The febrile disturbance is generally lessened by such bleeding; but although the symptoms are lessened for a time, I think we do not in general find that any corresponding influence is produced in putting a stop to the affection." From this statement and from the general history of phlebitis, it plainly appears that suppurative inflammation of the veins is an accident most apt to occur in a body labouring

under a specific febrile affection, and therefore the means usually resorted to for the cure of phlebitis fail to arrest it; for although the local inflammation and febrile excitement may thereby be diminished, the specific affection is still inclined to pursue its peculiar course. In every case of phlebitis which the writer has witnessed, a state of system previously prevailed akin to the commencement of synochus in an irritable subject. This state is frequently accompanied with slight pleuritic and peritoneal uneasiness, especially in females.

That veins may, however, from accidental injury, take on inflammatory action like any other parts, is certain; but such inflammation is unattended by untoward symptoms unless the general system be otherwise disordered, as is shown in numerous instances mentioned by Mr. Guthrie.

This experienced and skilful surgeon describes two kinds of phlebitis—the adhesive or healthy, and the irritative or unhealthy; embracing of course all the different shades between them. The first kind is usually cured: the latter is almost invariably fatal. "When a person is about to suffer from unhealthy inflammation of the

veins, the pulse quickens, and continues above 90, usually from 100 to 130, until his dissolution. There are frequent attacks of vomiting, for the most part of a bilious character, accompanied with the common symptoms of fever. The tongue is white; the patient is sleepless, restless and anxious. After the first few days there is usually a well marked rigor, and this may be followed by others; but the exacerbations and remissions of fever are evident; the skin becomes tinged of a yellowish hue, and is often covered with perspiration; the bowels are very irregular, the pulse becomes weaker and more irritable, and increases in frequency as the disease goes on. The patient gradually sinks, or the febrile symptoms subside, with the exception of the frequency of pulse, which also may even be diminished; he rallies a little, and the appetite returns, but whilst he says he is better, and will get well, the daily, nay, hourly deterioration of the appearance is well marked, and a slight accession of fever soon closes the scene."

The striking resemblance between this disease and certain forms of puerperal fever, cannot fail to be observed. The fatal termination

of such cases as before stated, has been attributed to one of two causes, either to the extension of inflammatory affection towards the heart, or to the deterioration of the blood. The first opinion is now very generally considered invalid, the propriety of the latter remains to be further examined. If it can be shown that the circulation of pus is insufficient to account for the event, neither of these opinions can be tenable, and death, in case of phlebitis must be referred to the specific affection with which the venous inflammation happens to be connected. When a vein is wounded in a healthy person, a slight inflammation takes place, and a reparative process is at once set up by the exudation of plastic lymph from the wounded surface, which becoming organized effectually repairs the lesion; but venous inflammation in an irritable or unhealthy subject, is apt to produce pus, which being incapable of organization, allows the wound to remain open. The suppurative process does not ensue, unless the vital condition of the part is so far impaired, as to be incapable of producing healthy lymph. Thus it happens, that in certain states of disease, the serous or mucous membranes

throw out a seropurulent or mucopurulent effusion, while in other states a coagulable lymph is secreted. The latter may be considered the healthy result of inflammation, as it evinces the existence of much vital power, and tends to repair the injury sustained. Under the influence of this *vis medicatrix*, local injury manifests no disposition to extend, but when a general disorder prevails, this influence is deficient in every part of the body, and every partial lesion tends to involve the whole structure. This is the case in suppurative phlebitis and erysipelas.

It does not appear, however, that pus is always secreted from the lining membrane of the vein, but that it sometimes results from a change effected in the constitution of the blood itself. It has been shown by Sir Charles Bell, that a vital influence exerted by the vessels over the contained blood, is essential to circulation, for without such influence to modify the attraction existing between the vessels and their contents, the fluids would be arrested in their progress. Now, any disorder which would divert or impede the operation of

this vital influence must necessarily cause a suspension or interruption of the sanguineous current constituting the state called congestion, which has been proved to be that condition which favours the conversion of blood into purulent matter; for Kaltenbrunner and Gerdoin have established by microscopical observations, that the globules of blood are actually converted into pus, not only when the blood is contained in the diseased capillaries, but also when effused into the surrounding tissues. Coagulation appears to be essential to the transformation, and probably it is never perfectly effected without inflammatory disturbance in the neighbouring organization, but these conditions seem to be immediately consequent on great congestion, unless the vital power of the part has been suddenly and for ever exhausted.

The numerous cases in which purulent formations have simultaneously occurred in various organizations, seem to indicate that the system labours under disease which modifies and deteriorates the operation of living chemistry on the general mass of circulating fluid, especially in those organs which, from their texture and office, are

most liable to venous congestion, such as the spleen, the liver, the lungs, or any part in which inflammation may have commenced. Sydenham relates an instance in which the blood drawn from a young convalescent resembled pus. A whitish appearance of venous blood has frequently been observed in cases of pulmonary inflammation. M. Boisseau saw a fine young girl who was attacked by pain in the side in consequence of chill, and whose blood was dirty grey. After bleeding she suffered no more, although the skin continued yellow for some months.

M. Andral has frequently found a curdy friable matter, of a dirty grey colour, occupying the vessels instead of blood, and resembling the semi-concrete pus of chronic abscesses, or the sanies of malignant ulcers, or brainlike matter mixed with blood. Similar instances are also related by Bichat, Beclard, and Velpeau. In these cases morbid and purulent formations have been discovered in some part of the soft solids of the body. A very remarkable case is related in the *Archives Générales,*

by M. Duplay, *chef de clinique* of La Pitié.* The patient was a female, aged twenty-seven, who, previous to death presented appearances of phthisis; but all that could be detected in the dead body, on the closest inspection, was a purulent deterioration of the blood in all the principal veins and arteries. Indeed, it appeared that the circulating fluid had been converted entirely into pus, and no evidence of inflammation sufficient to account for its production, could in any part be discovered. So general a diffusion of pus through the vessels, seems enough of itself to subvert the opinion that the slight mixture of pus with the blood, arising from its production in an inflamed vein, is sufficient to induce any form of puerperal fever. The existence of phlebitis, or purulent formation, either in the veins or in the loose tissues, may be only an accidental coincidence with this as with other fevers.

The chemical constitution of pure pus, as determined by the researches of Raspail and

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* A full report of this case may be seen in the Med. Chirurg. Review. p. 501, 1835.

others, warrants the conclusion that the greater part of the blood may be converted into pus. The detection of pus in the centre of those fibrinous deposits sometimes found in the heart and large arteries, also proves that pus results from an alteration in the chemical relation of the sanguine constituents. As pus is but a form of one of the chief ingredients of healthy blood, there can be no reason to suppose that its absorption acts like a poison on the general mass. Nor can the arrest of its globules in the minute vessels give rise to fatal consequences, since their form and size are changed according to the menstruum in which they are held. Indeed absorbed pus circulates only in a state of solution; and therefore it is incorrect to suppose that it is transported from one surface to another by actual metastasis. We have no positive reason to believe, that pus produced by phlebitis is ever carried into the circulation. The blood does not continue to flow through an inflamed vein, and the secretion of pus is accompanied by fibrinous deposits, which prevent its passage. Besides, the quantity so produced is very inconsiderable, as appears in cases of phlebitis after venesection, when the

wound remains open, and allows exit to whatever secretion may be produced in the vein. Moreover, in these cases pus has never been detected in the blood.

A remarkable difference exists between what has been usually called uterine phlebitis and simple inflammation of a wounded vein. The affection in the latter case is limited to the injured vein, or at most it extends only to the trunk of which it is a branch, and the common effects of inflammation as pseudo-membrane, thickening and discoloration are present; but in that disease called uterine phlebitis, purulent formation occurs in all the collateral veins about the affected portion of uterus. None of them have been distinctly traced into the surface from which the placenta had been detached, and they rarely contain other evidence of inflammation besides pus.

From all these circumstances it may reasonably be inferred that other causes than the occurrence of simple phlebitis and the circulation of pus, have been active in producing death

when purulent deposits have been detected in the veins and absorbents of puerperal women.

This subject demands a more elaborate investigation than is consistent with the object of this work, but probably enough has been stated to show that phlebitis and mixture of pus with the blood, may often arise from that morbid condition of the nervous system of which they have generally been deemed the cause. A superabundance of fibrine exists in phlegmasia, especially in puerperal patients. As when the liver or the kidney is incapable of performing its proper function, deposits of bile or of urinous fluid occur in various parts of the body, may not pus in like manner sometimes become a vicarious production, when the system fails to be relieved of its superabundant fibrine by the common outlets of excretion?

THE CONNEXION OF PUERPERAL FEVER WITH ERYSIPELAS.

That puerperal fever has a decidedly inflammatory character, whatever be its cause, is now undisputed; and that phlebitis frequently

attends it, is also undoubted. Phlebitis* of the capillary veins is a common concomitant, and perhaps the cause of certain erysipelatous inflammations: and it is a curious fact, that before this circumstance was discovered, several observers had affirmed that the inflammation of puerperal fever was most analagous to that of external erysipelas in an aggravated and extreme degree, because the symptoms which ushered it in, and the fever which accompanied it, were, in most instances, very similar. Some recent writers have proceeded into an elaborate defence of the opinion, that these diseases have a common origin. But, though they have treated it as if it were their own discovery, it is far from being new. For Peuteau,† in 1750, denominated the disease an epidemic erysipelas of the peritoneum; and Drs. Home and Young of Edinburgh, and Dr. Lowder who lectured in London, maintained

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* Rayer says that in several cases of erysipelas which he dissected, he found no trace of inflammation in these vessels. Treatise on Cutaneous Diseases, § 89.

† Quoted by Dr. Denman. He recommended camphor as of extraordinary use in the treatment of this disease.

the same opinion. Dr. Abercrombie has also adopted the same view, and he founds his arguments in favour of their identity principally on the circumstance that both result in the effusion of a serous fluid. That these affections are nearly allied to each other has also been very plausibly argued by Dr. Whiting, in the discussions at the Medical Society of London. Their mutual resemblance and connexion are also taught in his lectures. He reasons on the similarity of symptoms and the ill success of remedies, asserting that, like erysipelas, it is contagious, and cannot be arrested. These views are further corroborated by the experience of Dr. Waller. Dr. Lee, and several other accoucheurs of reputation, decidedly affirm, however, that in most cases it may be completely cut short at the commencement, by appropriate treatment. But in what that treatment should consist, unhappily has not been explicitly stated. Pinel, Bayle, Gase, Laennec, and others, to whom we owe much of our knowledge of peritonitis, have not observed any resemblance between it and erysipelas, nor indeed are the symptoms of simple peritonitis in the least degree assimilated to those of ery-

sipelas; but, were the local affection of the latter, when violent, and that of malignant puerperal fever left out of view, the symptoms of the one could scarcely be distinguished from those of the other. The opinion which regards them as similar, is certainly much supported by certain facts connected with their common prevalence, as observed by Dr. Gordon, Mr. Hey, Dr. Armstrong, and others. The following occurrences, related by Dr. Lee, also afford evidence to the same effect.

In the autumn of 1829, when the puerperal epidemic broke out in the British Lying-in Hospital, two children died of erysipelas. Another fatal case happened soon after these, and on examining the peritoneum, it was found extensively inflamed, and covered with a copious sero-purulent effusion. Another was attacked, whose mother died four days previously of uterine phlebitis and metroperitonitis. Three other cases are related as occurring under similar circumstances, but it is subjoined that cases of infantile erysipelas repeatedly occurred, when there were no cases of puerperal fever in the hospital.

As far as observation has extended, these affections appear also to have been induced under similar atmospheric conditions. Experience has proved the influence of humid and chilling air in the production of erysipelas, so that on board ship and in hospitals its former prevalence has been completely prevented by avoiding the use of water in cleaning the decks and floors, and by employing dry sand instead, taking care at the same time to promote a proper ventilation and warmth. May not the endeavour to preserve cleanliness in the wards of lying-in hospitals, where it is most requisite, be suspected of favouring the occurrence of puerperal fever? It may well be suggested, that damp and cold should be especially avoided in those situations; for the puerperal epidemic fever has been generally observed to prevail most alarmingly during such states of the atmosphere.

Erysipelas has been most frequently associated with those forms of puerperal disease which have evinced the existence of phlebitis, and when the infant has become the subject of erysipelas during the mother's illness in almost

every instance that illness has been proved to be connected with uterine phlebitis.*

Professor Osiander, Meckel, Dr. Lee, and others, have mentioned several such instances. The erysipelas which occurs in infants under such circumstances has been repeatedly observed by M. Buschet, to be connected with phlebitis of the umbilical vein and its branches, and Dr. Lee concurs with him in considering this form of disease the sole cause of death in many such cases. Thus it appears, that Dr. Lee recognises the intimacy between infantile erysipelas and phlebitis, though he seems to deny that any relation exists between erysipelas and uterine phlebitis, even while he allows that the symptoms and the result are similar in both diseases. The numerous facts concerning them, however, accord well with that theory which refers the origin of certain forms of erysipelas to venous inflammation.

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* Dr. Campbell states, that in one instance only had he seen uterine phlebitis, though for several years his attention was particularly directed to that point. In this case, the uterus had sustained injury. Four days after the woman's decease, the infant died of erysipelas and abdominal inflammation.

Sir Anthony Carlisle* thinks that erysipelatous inflammation frequently attacks the continuous serous membranes of internal cavities, and may often be assigned as the cause of unexpected failure in the treatment of peritoneal and pleuritic inflammations, when they are wholly entrusted to sanguineous depletion.

He believes erysipelas is a humoral and constitutional disease, occasioned by crudities, and that the dominant error in the morbid fluids is acid, which he infers from having examined the serosity first effused in erysipelatous vesications, and always having found it to contain a free acid. If, therefore, a total reliance is placed on drugs, without directing the diet, little success will attend such limited endeavours at a cure, whatever may be the seat of the disease. This however may be too narrow a view of the subject, since the tendency of erysipelas to run a certain course, whatever be the nature of the diet or treatment, remains altogether unaccounted for by Sir Anthony.

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* Condensed from a letter in the Medical Gazette, March, 1828.

Is puerperal fever contagious?—However remarkable may be the resemblance, and intimate the connection between erysipelatous inflammation, and that of puerperal fever, and however similar the exciting causes, there is yet reason to believe that they partake of very different natures. Another feature of similarity between these diseases, is found, however, in the circumstance of their infectious or contagious character, being equally disputed. The facts bearing on the contagious nature of puerperal fever, are numerous and forcible. Those writers who have espoused the opinion that this fever is simply the effect of local inflammation, are of course opposed to the notion of its being contagious; but, if the facts recorded cannot be invalidated, their opposition must prove futile. It has been affirmed that all the medical obstetricians to lying-in-hospitals have ascribed contagious powers to this fever;* but M. Tonnellé asserts, that in the Maternité, women who were newly delivered there, had each a separate apartment, and yet, were attacked; whilst in the sick wards of the hospital, no instance of

* Dr. Ryan.

the propagation of puerperal fever ever occurred. M. Dugès also opposes the doctrine of contagion, with evidence no less strong. Among English writers whose experience has qualified them to pronounce an opinion, there are very few, indeed, who have not been fully convinced of its contagious nature, or at least have been unable to dispel the suspicion that it is often communicable.

Professor Hamilton affirms that it is produced by an infection *sui generis,* and that he is quite positive this affection is of so concentrated a nature, that it may be communicated through the medium of a third person.

Dr. Campbell, in his treatise, published in 1822, very earnestly contends that it is not infectious, and thinks he treats those who entertain a contrary opinion with great indulgence, when he attributes it to prejudice. In a letter to Dr. Lee, published in the Medical Gazette, Dec. 1831, Dr. Campbell, however, states, that he has strong reasons to believe that it may be readily communicated by one, who has been engaged in the dissection of subjects destroyed

by this disease. He says, " In October, 1821, I assisted at the dissection of a woman, who died of the disease, after an abortion of the early months; the pelvic viscera, with the external coats, were removed, and I carried them in my pocket to the class-room. The same evening, without changing my clothes, I attended the delivery of a poor woman in the Canongate; she died: next morning, I went, in the same clothes, to assist some of my pupils, who were engaged with a woman in Bridewell, whom I delivered with the forceps; she died: and of many others who were seized with the disease within a few weeks, three others shared the same fate in succession. Dr. James Orr, a discerning and judicious practitioner, who is now established at Belfast, assisted me at the time. In June, 1823, I assisted some of my pupils at the dissection of an unmarried female, who died of the disease at Carron-mills, after delivery with forceps. For want of accommodation I was unable to wash my hands with that care which I ought to have done; on arrival home, finding, that two patients required assistance; I went to them without further ablution of my hands, or changing my clothes, and both of them were seized with the disease,

aud died:" These facts are of great value, and when viewed in conjunction with others about to be related, afford almost a demonstration that contagion is properly regarded as an exciting cause of this malady.

It is not uncommon for the greater number of cases in a neighbourhood, to occur in the practice of one gentleman, who has neither been more busy, nor less skilful than other practitioners of the vicinity. Dr. Gordon, of Aberdeen, states, that the disease attacked such women only as were attended by a physician, or nurse, who had previously attended those affected with the disease. He further observes, that he had abundant proofs, that every person who had been with a patient in puerperal fever, became charged with an atmosphere of contagion which infected every pregnant woman who happened to come within its sphere.* Mr. Hey, however, states that he has known instances of free communication without any bad consequences.† Dr. J. Clarke says, "it is hardly

* A treatise on Epidemic Puerperal Fever, by Dr. Gordon, London, 1795, p. 64.

† A Treatise, &c. by W. Hey, jun., London, 1815, p. 198.

possible to prove that it is not infectious ; but it has arisen as far as we can judge as an original disease."

Dr. Copland states that some years ago, malignant puerperal fever, proceeding from a contaminated state of the air, in the wards of a crowded and ill-ventilated lying-in-hospital, had attacked nearly all the patients. The cat kept in the house, died at that time, soon after having had kittens, with all the characteristic symptoms of that malady. It has, however, been frequently observed, that epizootic disease of similar character has been epidemic, especially among cows, during the prevalence of puerperal fever. This fact seems to prove the influence of an epidemic constitution of the air.*

It is self-evident that it must have originated, in the first instance at least, independently of contagion ; yet that infectious miasmata are produced by it, which may be conveyed by the

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* Chalin de Vinario, de Peste Liber, pura latinitate donatus, a J. Dale—Champio, Lugd. 1552, asserts boldly and truly that all epidemic diseases may become contagious, and all fevers epidemic. See Dr. Copland, Dict. pt. 3, p. 781.

intervention of substances between a diseased body and another predisposed to receive it, is rendered extremely probable by the circumstances already mentioned, and by a great variety of other interesting facts.

Dr. Gooch relates that a practitioner opened the body of a woman who had died of puerperal fever, and continued to wear the same clothes. A lady, whom he delivered a few days afterwards, was attacked by a similar disease, and died. Two more of his lying-in-patients in rapid succession met with the same fate. Struck by the thought that he might have carried the contagion in his clothes, he instantly changed them, and met with no more cases of the kind. A woman in the country, who was employed as a washerwoman and nurse, washed the linen of one who had died of puerperal fever. The next lying-in patient she nursed died of the same disease; a third nursed by her met with the same fate; and the neighbourhood becoming alarmed, ceased to employ her. The disease has occurred in some wards of an hospital, which, after ventilation, cleansing, and painting, became as healthy as those into which

it had not entered. Dr. Lee details several similar instances. At Sunderland, forty out of fifty-three cases occurred in the practice of one surgeon and his assistant.* Mr. Robertson of Manchester, has published the following statement.†

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* Dr. Armstrong.

† Med. Gazette, No. 214. 1831. The following statement specifies the dates of delivery, and the number who took the fever.

	Deliveries.	No. who have had the fever.
1830, Dec. 4	one	one
5	one	
6	two	one
7	four	one
18	three	two
22	one	
23	one	one
24	one	one
25	two	two
26	two	
28	one	one
30	two	one
31	one	
Jan. 1	four	two
2	two	one
3	two	two
	Thirty	Sixteen

Mr. Robertson adds, that within his knowledge a practitioner

From 3rd December, 1830, to the 4th January, 1831, a midwife attended thirty patients for a public charity, sixteen of whom were attacked with puerperal fever, and they all died. In the same month three hundred and eighty women were delivered by midwives for the institution, but none of them suffered from it in the slightest degree: in no instance did he meet with uterine phlebitis. The usual appearances were traces of peritonitis, sometimes severe, but generally slight; also pleuritis with serous effusion into the peritoneum and pleuræ; and softening and disorganization of the ovaries. Dr. Waller thinks it not unlikely that it is communicated only by those persons who have occasion to touch the pudenda of the patient.

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introduced the catheter in the case of a poor woman labouring under puerperal fever, late in the evening, and in the course of the same night he had to attend a lady in her confinement a little way in the country. This lady had the fever on the second day. In another instance a surgeon was called to attend a labour while in the act of inspecting the body of one who had died of this disease; within forty-eight hours from delivery the woman exhibited decided symptoms of the fever.

PREDISPOSING CAUSES.

All the causes of debility may be regarded as remote, or predisposing causes of puerperal fever, whatever may be the opinion which we entertain of its intrinsic nature. Contagion, or any other exciting cause of disorder, finds a ready inlet and scope for action, when that regulating energy, which promotes the healthful discharge of the various functions, is by any means diminished. The daily experience of medical practioners affords instances exemplifying the truth of this statement. How often are the debilitated subjects of a lingering convalescence attacked by erysipelas? How often does severe rheumatism, acute peritonitis, pleuritis, or pericarditis, supervene in patients who expose themselves to new exciting causes, after they have been reduced almost to death by depletion and disease? Indeed, it would appear that whatever greatly disturbs the equilibrium of that indwelling and regulating influence, called nervous, is sufficient to produce that condition of structure known as inflammation. Hence it is easy to account for the frequency

and complication of inflammatory diseases, and it is no longer surprising that one physician should deem that state to be atony which another denominates hyperemia. The irritability of the capillary arteries being lessened or suppressed, increased action may, for a while, ensue, as the arteries affected, not aiding to advance the blood, would cause those in the neighbourhood to act with more force, as experiment proves, and so both relaxation and increased action will result from partial diminution of irritability. Indeed, the life of the arteries and veins seems to be lessened or deteriorated by inflammation, the natural effect of which, as Sir C. Bell proves in his essay,* is to check the progress of the blood by attracting it to the sides of the vessels. If inflammation be the characteristic of puerperal fever, it might very reasonably be attributed to any of the multifarious causes already enumerated, provided their operation were favoured by concurrent circumstances. But these causes may all be regarded as facilitating the action of some specific and peculiar influence, alone capable of

* On the forces which circulate the blood.

producing this formidable malady. Yet, it would appear absurd to conclude, that puerperal women were the especial victims of a plague, propagated by themselves for their own destruction. It would undoubtedly be most consonant with reasonable analogy, to suppose them more liable, from their condition, to the influence of those causes of specific disease which may be prevalent about them at the period of their parturition. Hence, also, its epidemic character might be explained. If it depend on atmospherical distemperament, or any other cause inducing frequency of cerebral, nervous, and vascular disturbance, which appears to be the most consistent opinion, the proper method of determining its correctness will be to ascertain what other diseases have been prevalent at the same time.

Many writers on this disease have omitted all mention of such considerations, and others have affirmed that they did not know that any particular disease prevailed with it. They have, however, disregarded statistics, and the records of public medical institutions in their neighbourhoods, their assertions consequently re-

main unsustained by evidence. Indeed, it is not necessary to look for the prevalence of any particular disease—those of a febrile and inflammatory character being sufficient for the purpose, since their prevalence would prove the prevalence of causes which might either excite this malady, or promote its development.

If medical writers had considered how much exactness their public duty demanded of them, in the examination of causes and contingencies, and in their relation of cases with attendant circumstances, much of the uncertainty at present appertaining to etiology would have been obviated. This exactness is especially desirable in the description of epidemic and contagious diseases, since, without it, medical statistics must be exceedingly defective, and the investigator can rarely have the opportunity of comparing facts, and of judging how far particular cases of disease may have been influenced by causes in general operation at the period of their occurrence.

ATMOSPHERIC INFLUENCE.

It is well known that the appearance of some affections is manifestly fostered by certain states of the weather. When it is cold and moist,* rheumatism, nervous affections, influenza, intermittent and adynamic fevers, erysipelas, dropsies, and congestions, prevail, especially in low, ill ventilated, and marshy places.

Hippocrates observes, that a mild rainy winter, succeeded by northerly winds in spring, is dangerous to pregnant women. In accordance with this observation, Dr. Leake says, in the winter months, when child-bed fever began, the weather was remarkably mild and moist; and

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* "The positive electricity being rapidly carried off by induction from the body, a salutary stimulus, and one which experiments have shewn to be productive of increased activity to all the animal functions, may be supposed to be lost; but when the air is dry, the transmit of electricity from the surface of the earth and from the body is impeded. This fluid accumulating until a moister state of the air diminishes its quantity, and changes the relation subsisting between the electrical condition of the frame and that of the atmosphere." Dr. Copland's Dict.

this was in the spring succeeded by cold and bleak winds, when the fever became evidently epidemic, and exceedingly fatal."*

When the disease was so prevalent and deadly at the Hôtel Dieu, in January and February, 1746, the weather was extremely moist, as appears from the following observation in the Histoire de l'Académie des Sciences.† "Au mois de Fevrier, cette maladie n'était pas si meurtrière; ce mois a été moins humide et plus froid que ne l'avait été le mois de Janvier.."‡ Dr. Campbell's first case occurred in March, when the weather was extremely damp and chilling. During the dry months the disease subsided, but when the cold weather set in, the malady returned with still greater violence.

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* Vol. ii. p. 9, of his Practical Observations.

† Vol. ii. p. 236.

‡ The influence of temperature and moisture on the nervous system can scarcely be better shown than in the action of a stream of cold and damp air, producing paralysis, numerous cases of which are on record. It may be seen by reference to the bills of mortality and records of public hospitals, that inflammation and fever are most prevalent and most destructive during the cold and wet months.

Dr. Armstrong also describes the weather during the prevalence of the epidemic which he witnessed, as being very wet and variable, passing with sudden transitions from cold to mild.* Such also was the state of the weather at Leeds when the disease occurred there most violently. Mr. Hey says that the preceding winter had been remarkable for great falls of snow, which had occasioned unusual floods, and when the disease first appeared--November, and, during three months of its continuance, there were thick mists, snow, and a good deal of rain.† This account agrees also with Dr. Clarke's observations.‡ It seems indeed to be a disease peculiar to cold, damp, and variable climates.

The diseases which have prevailed at the same time with puerperal fever, are such as most readily occur, under those conditions of the atmosphere which have been described in the foregoing section.

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* Vide Treatise, p. 212. † Hey's Treatise, p. 19.

‡ Vide his Practical Essays, p. 114.

Dr. Gordon, of Aberdeen, remarks that, " with it, and at the same time, epidemic erysipelas began, progressed with equal pace, arrived at its acme, and terminated together." He also says, that a very frequent crisis of the disease was an external erysipelas. Mr. Hey remarks, that infectious fevers were common at the time, and he does not recollect ever having seen such malignant cases of erysipelas as then. Dr. Clarke also observes, that those inflammatory diseases which occurred were principally erysipelatous. Dr. Armstrong states, that in 1813, (the year of its greatest prevalence throughout England) low fever, typhus, and acute* rheumatism, also prevailed to an uncommon degree.† The facts related in reference to the supposed similarity between erysipelas and puerperal fever, may also be referred to as affording proof that these affections occur under the same states of atmosphere.

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* Acute rheumatism sometimes terminates in peritonitis, of which see a remarkable case recorded in the Dublin Hospital Reports. Vol. ii. p. 321, by Mr. E. M'Dowell.

† See Dr. Armstrong's Treatise, p. 217.

Mr. Ceely* makes the following observations on a number of cases related by him as having occurred under his own care at Aylesbury.

"This epidemic and contagious puerperal disease appeared early in October, 1831, during the prevalence of an epidemic and contagious erysipelas. The erysipelas appeared in a mild, a phlegmonoid, and a low typhoid form, with the usual characteristic and pathognomic symptoms. The parts affected with the erysipelatous inflammation were generally the tonsils, uvula, and fauces; but such was the erysipelatous tendency, that wounds of all kinds, contusions, simple abrasions and common attritions of the cuticle, seemed to ensure to an individual exposed to the epidemic or contagious cause, an attack of one or other of the three forms. A common catarrhal exposure, at this period, was sure to lead to erysipelas of the fauces, &c., and the occurrence of one such case in a house, in a very short time led to a communication of the disease, in its several

* Lancet, March 7th, 1835.

varieties, to most of the nurses and attendants. The contagiousness was as palpable to us as that of the small-pox."

Dr. Collins* states that this disease has become epidemic in the Dublin Lying-in Hospital, on several occasions when typhus fever prevailed in the city, and at other periods when erysipelas was frequent. On one occasion it commenced in the following striking manner. A patient was admitted at a late hour into one of the wards, labouring under a bad form of typhus fever with petechia. She was removed to another apartment next morning and shortly died. The two females who occupied the beds adjoining that on which she first lay, were attacked with puerperal fever and died. On another occasion a patient having typhus was admitted into a ward which contained four beds, and the three women occupying the other beds had puerperal fever, of which two died. In 1826 and 1827, when puerperal fever was

* See his practical observations on puerperal fever, in his Treatise on Midwifery. Dublin, 1835.

very fatal in Dublin, typhus fever also frequently appeared.

What has already been advanced being sustained by ample authority, might be deemed sufficient to vindicate the opinion before expressed, namely, that from their condition puerperal women are peculiarly liable to the influence of such causes of disease as prevail about them at the period of their parturition, especially to those of erysipelas and typhus which are frequently superinduced by damp and foul air, combined with sudden transitions from warmth to cold. These causes, however, do not produce their specific effects, as in other instances; but, being controlled in their operation by the predisposing causes previously acting on the puerperal patient, they excite such disorder as evinces their united influence: so that puerperal fever may be greatly diversified in degree, yet will it always present a mixed character, partaking not only of the nature of those predisposing causes, existing at the period of parturition, in the constitution and temperament of the patient, but also of the nature of

those exciting causes to which, at that period, she may be exposed. For the justification of this conclusion, more elaborate argument might readily be drawn from the premises afforded by facts before adduced; but the limits of this essay allow not such enlargement. Yet, if more extensive observation be required, it will be found in the records of public medical institutions, and in the bills of mortality. But as these records are, in general, too badly kept to secure for them much confidence, and as the exhibition of their corroborative testimony would considerably extend this already lengthened enquiry; we shall now proceed to consider the predisposing influence of gestation, and the parturient process, after which we shall take a cursory view of the state of the blood in puerperal fever, when we shall be better able to draw a prognosis, and be prepared to enter on the investigation of our ultimate and most important subjects, namely, the means of prevention and of cure.

After the preceding matter had been sent to press, the writer read a report by Dr. F. Bartsch, of the Secondary Midwifery Institution at Vien-

na,* in which it appears, that from October 15, 1833, to the end of December, 1834, 2,218 women were received, of which number 511 became diseased, and 158 died. Puerperal fever attacked 175, of whom only 66 were cured. It is important to remark, that puerperal fever is distinguished in this report from peritonitis, and metritis.

It is also observable that several febrile and inflammatory affections prevailed at the same time in this institution, for of 511 diseased, 310 had fever, exclusive of 91 cases of metritis, and 18 of peritonitis. These facts strongly corroborate the propriety of the foregoing observations concerning the influence of prevalent disease in the production and modification of puerperal fever. The following extracts present a summary of the facts connected with causes predisposing to this disease, as it occurred in the above mentioned hospital.

"The cases of puerperal fever occurred seldom under the form of puerperal peritonitis; but generally, as in inflammation of the uterine

* Lancet, April 16, 1836.

veins, giving rise to the production of pus in these vessels, and the general symptoms accompanying its absorption. As to the *causes* under which uterine phlebitis was developed, we find it occurring most frequently —

1st. In women who approached the critical age of life, especially if they were primiparous.

2nd. In women affected with varicose tumours of the thigh and external genital organs.

3rd. In females who, during pregnancy, were submitted to the influence of depressing passions, fear of exposure, jealousy, sorrow, &c.

4th. In individuals who, from the symptoms they presented, had frequently employed abortive remedies.

5th. From mechanical injury of the uterus during pregnancy, especially if it were followed by abortion.

6th. In females subject to chronic diseases, as cough, difficult menstruation, hemorrhoids,

fluor albus, chronic diarrhœa, and constitutional syphilis.

7th. After flooding during or after delivery, especially from placenta previa; after difficult labours; after obstetrical operations, especially those requiring the introduction of the hand into the uterus.

8th. Finally, the greater number of cases occurred in the months of February, March, April, and May, in females who, the year before, had been attacked by the gripe."

THE EFFECTS PRODUCED IN THE SYSTEM BY GESTATION AND PARTURITION.

Presuming that the foregoing portions of this inquiry have satisfactorily ascertained that the peculiarities of this affection depend as much on the condition of the body at the period of parturition, as on any specific cause of morbid action received from without, we may now proceed with advantage to examine the state of the

system at that period, and the causes of that state.

The most important change occurring in consequence of impregnation is that of the blood. The causes of that change must be sought for in the functional and mechanical alterations effected in the uterus, and in the consequent consent of other organs. From puberty to old age, no part of the female system exercises more controul over the entire fabric than the uterus. The brain and nervous function especially sympathize with it, and the part that usually appears to suffer first from its new action in pregnancy is the stomach. This influence is most felt in the earlier periods of gestation, and is almost always preceded by dulness and confusion of mind. These effects are most apparent in sanguine and excitable females.

Those of robust constitution often suffer from heavy cephalalgia and other consequences of cerebral hyperemia. Those of delicate habit and feeble circulation, frequently become more vigorous and cheerful. These circumstances

would suffice to prove that the heart's activity is increased by direct sympathy with the uterus, and a close investigation of the subject will establish the fact by additional evidence. Many of the constitutional derangements dependent on pregnancy, may be readily traced to this cause, but some consequences may be noticed which arise principally from the mechanical interruption to visceral functions, by the pressure of the gravid uterus, generally aggravated by the abuse of stays. Among these the most considerable are derangements of the alvine canal. These are of two kinds. In some instances the intestines become irritated, and the peristaltic action is morbidly increased, when troublesome diarrhœa supervenes. In other instances the larger intestines are rendered torpid, and accumulations of scybala distend the colon.

These effects speedily become active causes of general disorder, and if neglected, may induce such organic changes in those parts which are most exposed to their influence, as will greatly interfere with parturition, and predispose to fever and inflammation.

The most remarkable mechanical change produced by pregnancy, of course occurs in the uterus itself. As it gradually increases, blood-vessels and muscular fibres, which in the unimpregnated uterus are almost invisible, begin to be developed, and at the full period, the quantity of blood circulating through it, for the supply of the fœtus and its own nourishment, is immense. The gravid uterus may be properly viewed in the relation of a large tumour, in some respects foreign to the body which produces it, for as a morbid growth is furnished with blood, which on its return must be arterialized by the pulmonary system of the patient, so the uterus and fœtus receive and return blood which must undergo vital changes in the system of the parent. As in the one case, the heart and blood-vessels are universally influenced, so also in the other. The arteries proceeding to the tumour are augmented in proportion to the demand of its growth, and the arteries which give branches to the uterus, are also enlarged in a corresponding manner. The phenomena of the blood in both instances present very striking resemblances, especially if the morbid growth be not malignant. The

alteration thus produced in the balance and distribution of the circulating fluid excites the heart to irregular action according to the position and employment of the patient. The large accession of venous blood to the mother's vascular system, from a body devoid of excretion, requires that her own excretory organs should often be excited to inordinate activity, for the removal of those unappropriated substances, which, having subserved their purpose in the fœtus, act as a stimulus to those functions of the mother, which effect their conveyance from her body.

Thus, we find that the salivary glands, the kidneys, the skin, the lungs, the mucus surfaces, and most frequently the bowels, become remarkably affected during gestation. The secretions from these organs are such as the causes before enumerated would naturally tend to modify and induce. This condition of the blood is usually attended by nervous irritability. Females under such circumstances will be readily affected by any causes that tend to increase irritation, and accordingly it has been observed that pregnant and puerperal women are very

liable to epidemic diseases. This liability was remarked by many during the prevalence of malignant cholera, and historians have asserted that women in child-bed have mostly died during seasons of plague.

Were it not that creative wisdom had devised most admirable provisions against the ill consequences of pressure, by the construction of the parts concerned, and in the gradual processes of gestation, the health of the female must always have suffered, but nothing can be conceived better calculated to resist injury from those causes to which they may be exposed, or better adapted to fulfil their respective offices, than the organs more immediately implicated in pregnancy. The uterus being filled but not distended with a yielding fluid, most effectually preserves the fœtus from inconvenience, and at the same time presents a soft fluctuating cushion to the moveable intestines, which moreover contain shifting liquids and elastic gases. Their mutual pressure is thus reduced to the smallest possible degree by mutual mobility, so that the surfaces opposed are constantly varying, and those ill effects which we know to

result from continued pressure even on the firmest organization, is, in a great measure, prevented from acting on the delicate tissue of the peritoneum, uterus, and intestines. Yet, from various accidents, instances occasionally offer themselves in which the evil of pressure is evident; as when from habit or disease the pregnant female is induced to continue long in one position, or, as in certain visceral disorders, the parts become agglutinated and unyielding.

The European and unnatural fashion of maintaining the body in a constrained and erect posture during the greater part of the day, has also a very prejudicial tendency in the pregnant female, the effects of which are evinced by the pressure of the uterus on the brim of the pelvis, producing distension of the veins in the lower extremities, and uneasiness about the pubes and loins. In the best formed and most favoured woman there is a very nice and exact adaptation of means to the required end, which barely suffices to preserve her from disease; and if she deviate by necessity or inclination from consistent nature, she suffers a corresponding aggravation of the danger and sorrow

in which she is doomed to bring forth her offspring.

A necessary inconvenience attending gravidity, is an occasional deficiency of space for the viscera, from flatulence and other causes of distension, which, impeding the descent of blood through the aorta and its inferior branches, will force a greater current to the brain and lungs, and thereby excite disorders of those important organs, unless carefully guarded against.

The arrest of blood in the large veins must be productive of such alterations in its condition as would influence the general mass of that fluid, for we find on experiment that blood at rest speedily undergoes changes which unfit it for healthy circulation. It is undeniable that the accommodation of parts, which takes place on the ascent of the gravid uterus into the abdomen, and its enlargement in that situation, may be attended by changes which greatly modify the operation of disease, if the female be exposed to its exciting cause.

From certain appearances on the dissection of women who have died soon after child-birth, some practitioners have inferred that the alterations consequent on gestation and parturition have been the main causes of puerperal fever. It was shown in another department of our subject, that each of those alterations has in turn been deemed the proximate cause of this disease by different writers.

It will be our business now very briefly to examine the nature of those changes. Dr. Hulme was firmly persuaded that epiploitis arising from compression is the common cause of puerperal fever, and he has entered into an elaborate defence of this opinion by quoting the authority of several celebrated authors who have described certain conditions of the omentum, which they attributed to pressure during gestation. It is certain that the omentum often assumes an unnatural structure in women who have borne children, and it is sometimes converted into a kind of schirrous tumour. It is also frequently found attached by adhesion to the fundus uteri, which must have been the result of inflammatory action.

That the greater portion of the peritoneum frequently becomes congested under similar circumstances, is manifest, and that slow changes are produced in its general fabric during gestation, is very probable; for those enlargements of the nerves* and bloodvessels distributed on it, which several authors have observed, cannot be accounted for without supposing such gradual changes to take place.

The parturient efforts are attended by febrile excitement, which frequently continues some time after the birth of the child, and even after the lacteal secretion is fully established. The symptoms of forcible injection of blood into the brain, and also that general plethora of the vascular system produced by pressure on the aorta, subside very gradually, unless the expulsion of the fœtus be accompanied by considerable hemorrhage. Even when sudden exhaustion and inanition follow the quick abstraction of pressure, the consequent reaction is the more inclined to exceed the boundary of health from the previous habit of the system.

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* Dr. Campbell mentions in several cases the remarkable enlargement of those nerves.

That abdominal uneasiness which frequently follows parturition, and which probably results from the parturient efforts, has been considered by some practitioners but a milder form of puerperal peritonitis. In cold and damp weather, when rheumatic and neuralgic diseases are prevalent, this affection is most frequently observed, more particularly among the lower orders of London. It assumes a remittent character more or less distinct according to its violence, and any adventitious stimulus has often seemed suddenly to convert it into an acute disease, which depletion fails to arrest. Under such circumstances, there appears to be no means of distinguishing this affection from puerperal fever, except, perhaps, by the early velocity of the pulse and the rapid succession of symptoms in the latter disease. Several instances of this disorder occurred in London during the winter of 1835-36.

The uterus, after the separation of the placenta, has been compared by M. Cruveilhier to an extensive wound, and in consequence of this condition it may reasonably be supposed liable to every sort of accident to which a wounded

surface so situated can be exposed. When the female has been subjected to the violence of removing the fœtus by manual interference, Celsus, after directing the proper position, says :—" Reliqua curatio talis esse debet, qualis in inflammationibus, et in his vulneribus, quæ in nervosis locis sunt, adhibetur." That erysipelatous inflammation, phlebitis, and disease similar to hospital gangrene, may thus be readily induced, appears a very probable conjecture, and we have reason to believe that the natural irritability of the organ may be morbidly increased under such circumstances even to the development of inflammation, without requiring the intervention of extraneous agency.*

THE STATE OF THE BLOOD IN PUERPERAL FEVER.

Deviations from the healthy standard in the appearance and constituents of the blood, afford the best criteria by which to judge of the condition of the vital energy, and of the tissues

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* Ex vulva quoque feminis vehemens malum nascitur; proximèque ab stomacho, vel afficitur hæc, vel corpus afficit. Celsus, lib. iv. cap. xx. § 1, Targ.

under morbid influences. Yet the phenomena of the blood in puerperal fever have been most unaccountably disregarded by many of those who have treated of the disease. Dr. Hulme merely says that in those cases in which he had opportunity of observing the disease, the blood was generally sizy, with a quantity of yellow serum; but he does not remember to have seen it in a dissolved state, which however may have been in consequence of his careful avoidance of the lancet, except in the early stages of the malady.

Others, however, who have ventured on venesection as long as there appeared any arterial excitement to subdue, have not observed any peculiarity in the appearance of this fluid, which would serve to distinguish it from blood drawn from patients labouring under any other disease in which acute inflammation was present. Dr. Gordon, indeed, states expressly, that it was exactly similar to that of patients in pleurisy and rheumatism. Mr. Hey also says that it was invariably covered with a thick coat of size, and the crassamentum was remarkably

firm. Dr. Campbell thinks the appearance of the blood in this disease is pretty uniform, exhibiting a firm buffy coat. In the first drawn blood, he farther states, the coagulum was large and tenacious, but in every succeeding detraction it became smaller and smaller, but still it continued firm, while the quantity of serum, which was of a greenish colour, increased in proportion as the crassamentum diminished.

The sizy state of this fluid is a fact of comparatively little value, since it does not even indicate the existence of inflammation, the same appearance being presented in that of plethoric persons, and of those who frequently resort to blood-letting, J. Hunter, indeed, affirms that in pregnant women it is always sizy.* It was determined by the experiments of Dr. Davy, that there is no constant relation between the inflammatory or sizy layer on the crassamentum and the proportion of fibrin which the blood contains. From the experiments of Hewson, it also appears that the freedom with which the circulation is maintained, greatly influences the coagu-

* Treatise on the Blood. London, 1812, Vol. ii. p. 69.

lation of the blood, and consequently the formation of the buffy coat.

In the latter stages of the disease, the blood frequently presents the same phenomena as in other adynamic and malignant fevers. From the indisposition to coagulate both during life and after death, being always greater in proportion to the adynamia, it has been argued that the vitality of the blood is diminished in the latter stages, and worst forms of this disease. The rapid circulation which is so invariable a symptom of malignant puerperal fever, is alone sufficient to account for certain changes in the blood, since it has been satisfactorily shown that such excitement and acceleration of the heart's action speedily exhaust the vital power. Deficiency of nervous influence must tend to deteriorate this fluid, since it is proved to be so manifestly dependent on the proper activity of the nervous system, for its distribution and vitality.

The writer has seen a black precipitate in the blood of a person labouring under the adynamic form of this disease. Such a deposit is

often found in typhus and in the last stage of infectious erysipelas and phlebitis. Another similarity between the blood in this affection, and other diseases of typhoid and malignant character, is the peculiarly offensive odour occasionally arising from it.*

Mr. Hewson mentions, that a woman was bled in a fever, which occurred soon after delivery, and that the blood did not coagulate on exposure, but appeared like a mixture of red globules and serum only. The globules subsided in the form of a powder. The blood did not coagulate till at the heat of 160.

While the heart acts vigorously, all analogy would induce us to expect that condition of blood which the above-mentioned authors have described. It should, however, be observed, that there are three different states of vital action in which the blood assumes very different appearances. These states are well illustrated in common fever. First, there is the depression which attends the commencement

* Dr. Copland also testifies to this fact, p. 184, Med. Dict.

of fever, then the reaction or excitement, and thirdly, the state of exhaustion. In the first, the blood drawn exhibits appearances similar to that taken in case of congestion with debility. It is very dark, and flows slowly from the vein, and generally coagulates rapidly, the coagulum being dark, large and soft, sinking low in the serum, of which the quantity is small in proportion to the clot. In the second state it is brighter, and flows freely, coagulating slowly and firmly with a fibrinous crust. In the third state it is uncommonly dark and attenuated, with a loose coagulum lying at the bottom of the vessel.

THE PROGNOSIS.

Having investigated the diagnostic phenomena of this disease and its varieties, both in the functions during life, and in the organic changes detected after death; and having observed the probable causes of morbid influence, and the conditions which favour its operation in the parturient female, we shall experience little difficulty in what remains to be considered.

Such a dire combination of symptoms as belong to full formed puerperal fever, in either of its varieties, cannot but be imminently dangerous; it is therefore highly requisite that the practitioner should be exceedingly guarded in his prognosis, especially as dissolution is not infrequently preceded by an appearance of improvement. By nothing is the reputation of a medical man more effectually destroyed, than by incautious prognosis; nor is natural anxiety ever more powerfully evinced than by relatives and friends under the interesting circumstances of the puerperal patient. We are distinctly called on to decide for hope or for resignation, for life or for death. "We should declare what we feel to be morally right, and be above the mummery and mystery of selfish cunning."

Of course the previous state of the sufferer's health, both of body and mind, greatly modifies the influence and progress of the malady.

The nervous system, in all febrile or inflammatory affections, is always powerfully assailed; and where it has been disordered by mental perturbation or by bodily fatigue, will be pre-

disposed to a ready reception of additional injury, and be quickly prostrated before the invasion of disease. Unhappily both these circumstances exist to a considerable extent in the puerperal condition ; the period of gestation being commonly a time of great nervous excitement, and the act of parturition being necessarily productive of fatigue and apprehension. During the periods of the epidemic prevalence of this disease, we accordingly find that the delicate, the forsaken, the unmarried, and the unhappy generally, whatever cause may have originated their unhappiness, were most liable to be attacked, as well as the most likely to be destroyed.

Those of course are soonest attacked by an epidemic, in whom these predispositions are found to exist; and in consequence of their early subjection to attack, their recovery is also less probable than it would otherwise have been.

The disease, when occurring in hospitals, has in the majority of instances proved fatal. Indeed all writers agree that unless the disease is

very actively treated within twenty-four hours from its commencement, the probability is, that the patient will become its victim, whether it occur in public or in private practice.

Dr. Gordon and Mr. Hey state that the disease which they witnessed was not peculiar to any situation, constitution, or temperament; the strong and the weak, the robust and the delicate, those who had easy and those who had difficult labours, being all equally affected; and yet the former says that it prevailed principally among the lower classes—to which however his cases seem to have been confined; and the latter that at the commencement of its appearance it has chiefly affected females of the higher ranks of life. During the most violent epidemic incursions of this disease in Dublin, the higher classes have been almost entirely exempt from its operation, but in London they have frequently been attacked.

However authors may differ as regards the subjects of this disease, on one point their opinions are unanimous: it is that wherever the malady has been fully developed, all remedial

efforts, whatever the constitution of the patient, have been found equally unavailing. Scarcely any fever, except perhaps the plague, kills so certainly or so rapidly.* In Hospitals the majority die within five days from the commencement of the attack.

It is remarkable that Dr. Gordon asserts that the prognosis must be for the most part unfavourable, and that Puerperal Fever is only inferior to the plague in fatality, and yet he states that only one in ten afflicted by it died in his practice.

This statement appears to contain an unwilling acknowledgment that he encountered only the more manageable varieties of the disease.

The same may be said of those cases which occurred in the practice of Dr. Campbell, who declares that he found it as easily curable when early detected, and treated on antiphlogistic principles, as any other disease at one time considered irremediable. These statements are

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* Dr. John Clarke.

however at variance with the experience of nearly all other practitioners, even when they have treated the disease with equal boldness.

The prognosis must wholly depend upon the state of the respiration, pulse, stomach, and skin. When the respirations are feeble and short, as when their number is fifty to a minute; when a circumscribed crimson colour appears on the cheek; when the pulse is extremely weak, and rises above a hundred and fifty; when there are frequent vomitings of a coffee-coloured fluid, or of vitiated bile; an increase of abdominal pain and distension, a dry rough tongue, repeated shiverings, involuntary stools, delirium, and an universally cold and damp skin; or when, after a remission, the disease returns with as much violence as at first,* the case may be pronounced desperate. Cold extremities, clammy perspiration on the brow and breast, involuntary motions, a fluttering pulse, collapsed features, dilated pupil, and a cessation of pain, are the immediate harbingers of death. From a comparison of upwards of

* Dr. Gordon, p. 86.

one hundred and fifty cases, it appears that the critical periods, whether salutary or otherwise, are about the beginning of the third, and towards the termination of the fourth day.

When the patient can turn herself and lie on her side, and her respiration is easy and deep; when there is a metastasis of the disease in the form of erysipelas on the extremities, or of abscess in any part of the body; when the urine is of a yellowish colour, and is turbid with a thick sediment tinged with purple or red;* when the pulse becomes less frequent and ceases to vary; when the stomach retains food and medicine; when the stools are copious, and the tension and pain of the belly abate; when the skin is covered with a warm perspiration, and the tongue becomes clear and moist; and especially when there is an abundant lochial discharge, or a fresh secretion of milk —the symptoms are such as to authorize an expectation of the patient's recovery.

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* Dr. Hulme's Treatise, p. 34.

MEANS OF PREVENTION.

A KNOWLEDGE of the circumstances which foster this malignant affection is necessary, in order to direct the adoption of prophylactic and preventive measures. The whole history of the malady, as already shown, clearly indicates that its more virulent development is remarkably promoted by certain localities, and atmospheric conditions, under which some other malignant diseases are also equally encouraged.

Dr. Joseph Clarke states that it was generally observed that the patients recovered more slowly than usual from the effects of parturition, previous to puerperal fever becoming epidemic in the hospital. This fact is also confirmed by the experience of Dr. Collins, and other accoucheurs attached to extensive midwifery institutions.

Thus it appears that some unknown influence is sometimes gradually acting on the constitution of parturient females in certain situations,

long before specific disease has opportunity to develope itself. This predisposing influence must be either endemic, that is, existing only in a certain locality; or it must be epidemic, that is, depending on causes which are widely diffused, and not peculiar to any situation. To account for the facts already stated concerning puerperal fever, it is required that both kinds of influence should be supposed at the same time in operation. The endemic influence must be in activity in as far as the malady appears most fatally in hospitals and damp ill-ventilated situations. The epidemic influence must also be present, since, whenever it evinces endemic malignity, there is also a general tendency to the disease. The endemic influence is either a concentration of that which is epidemic, or the one possesses the power of aiding and aggravating the action of the other. If, therefore, it can be shown that the local influence may be prevented from producing its morbific effect, it will appear that the more general influence may also be counteracted and overcome.

The influence of atmospheric condition has

already been exhibited, and puerperal fever has generally been found to prevail during cold damp, and variable weather, when other inflammatory diseases are also prevalent. The epidemic character of this disease may therefore be accounted for. Its greater prevalence and severity in certain situations, must depend on local circumstances, which act as auxiliaries to the operation of epidemic causes, and tend to convert an epidemic into a contagious affection.

As the malady results from the united action of predisposing and exciting causes, it of course follows, that if either can be rendered incapable of determining the action of the other, the specific disorder cannot be developed. That such interference can be effected, numerous facts will testify.

In the crowded wards of ill-ventilated hospitals, where the miasmata of numerous inmates reeked together in the common air, and every circumstance conspired to depress the vital energies of those exposed to disease, puerperal fever first evinced its pestilential power. Thus

its awful fatality attracted attention in the Hôtel Dieu, where the crowds were greatest, and the air was foulest. There gangrene in all its deadly forms most prevailed; there comfort was unknown; and about the foundations and beneath the arches of that fatal pest-house, loitered the impure Seine, whose vapours defied the sanative powers of the breeze, detained, as they were, among the lofty buildings which overhang the river.

The experience of M. Caillard in the lying-in-wards of the Hôtel Dieu, from January to May, 1831, seems fully to prove that changes of temperature and humidity have great influence over the disease; for, in consequence of his determination that his patients should enjoy a wholesome atmosphere, he made great changes in their hygienic treatment, the result of which was, that instead of a mortality of one in seven, it soon became only one in seventy-seven.

During the prevalence of an epidemic puerperal fever, in the Dublin lying-in-hospital, the wards underwent a complete cleansing, and

soon became remarkably healthy. Every symptom of fever subsided as the patients were received into clean wards. Since the year 1829, when the disease prevailed fiercely in this hospital, a very effectual system of ventilation, fumigation, and cleaning, has been adopted, in consequence of which the mortality among the patients has so greatly diminished, that of 10,785, only 58 have died, which is nearly in the proportion of one in one hundred and eighty-six.*

Thus it appears, when ventilation is well secured, when damp is cautiously avoided, and when the wards of the hospital are less densely populated, the pest abates, and its victims become comparatively few. Into the cottage of the peasant, puerperal fever scarcely enters; and even, when under disadvantageous circumstances, as from proximity to stagnant water, or from the squalidness of the inmates, the disease does gain access, its character is softened into mildness. And even when occurring among the dense and immoral population of

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* See Dr. Collins' Practical Midwifery, pp. 386-390.

large cities, its features are gentle compared with the aspect it presents in ill managed hospitals. The late Dr. Joseph Clarke informed Dr. Collins, of Dublin, that in the course of forty-five years' most extensive private practice, he lost but four patients from this disease.

These facts suggest, in the first place, the propriety of discountenancing the unnatural lying-in-hospitals, and of providing the poor with necessary charitable aid at home, or in private dwellings, so that they may not generate disease and contaminate each other,* by being cheaply crowded together. And in the second place they shew the importance of pre-

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* "The most prominent fact afforded by medical statistics, next to the diminished mortality of infancy, is the beneficial change which has supervened within the last one hundred years, the fate of lying-in-women.

"In 1750, at the British lying-in-hospital of London, one woman died out of 42 admitted. In 1780, only one died out of 60. And, finally, the improvement became so great in the ten years, between 1789 and 1798, that only one case was fatal out of 288.

"Tennou assures us that the mortality of lying-in-women at the Hôtel Dieu, (where they were formerly received) was so high as 1 in 15, at the very same time that in the British

paring pregnant women for the violent changes which their systems must undergo in parturition and lactation, by a proper attention to the alimentary canal, not only in the use of aperients, but also of alteratives, and a suitable diet; so that by previous good health they may be qualified to endure the coming danger with more vigour, and as far as possible, be secured from the influence of exciting causes, and be enabled to overcome the operation of those causes which are predisposing. Purgations and gentle compression of the abdomen, may also be suggested.* In addition to these, dry

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lying-in-hospital, it was only 1 in 60; and the still-born were 1 in 13 at the former, when only 1 in 25 at the latter.

"The mortality of the lying-in-hospital at Paris was in 1822, 1 in 30; but at the City of London lying-in-hospital, the deaths in 1826, were only 1 in 70; and at the Dublin lying-in-hospital, the average deaths of 57 years, have been only 1 in 93.

"The deaths at the lying-in-hospital of Stockholm were, in 1822, nearly the same as at Paris, 1 in 29.

"At Berlin, an improvement has taken place in this respect. From 1796 to 1806, one woman died out of 32 admitted into the Charité; but in the ensuing ten years, only 1 in 45."—*From a Lecture delivered at the College of Physicians by Dr. Bisset Hawkins.*

* Dr. Blundell.

and temperate air, avoidance of all possible contagion, and mental serenity may be enumerated among the pre-requisites of prevention.

From all the facts which have been enumerated concerning the progress and connections of puerperal fever, there is hardly reason to doubt that, like typhus, it may be elaborated in the system of the patient, and that, under certain circumstances, she may become surrounded by an atmosphere of contagion, which may be removed by cleanliness and ventilation, nearly as fast as it is generated, and thus its deleterious influence, both on the patient and her attendants, be very much diminished.

It does not appear that the disinfecting and purifying vapour of chlorine, and other acids, has ever been tried in this disease: the fœtor in lying-in-hospitals is at times almost intolerable, from which, arising as it evidently does from the decomposition of animal matter, the experiments of Majendie would lead us to expect deleterious effects. Chlorine would counteract the poison in this, as in other instances.

Ventilation, cleanliness and isolation of the sick, prevent the extension of the disease.* Dr. Waller's suggestion, as to the probability of the infection being conveyed by contact with the genitals, is worthy of attention ;† as it accounts for the successive occurrence of the disease in a short time in the practice of one individual.

The only prophylactics, are such as allay nervous irritability, and for this purpose nothing seems better than small doses of Dover's powder, frequently repeated with mild aperients. Dover's powder with calomel, has long been successfully employed in the Richmond hospital, Dublin, for the prevention of erysipelas.‡

Mr. Ceely of Aylesbury, informs us that the prevalence of contagious erysipelas with puerperal fever, induced him to administer to the patient, whose circumstances seemed to justify the expectation of an attack, from five to ten

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* See Dr. Campbell's treatise on epidemic puerperal fever, at Edinburgh, 1821-2, Edin. 1822.

† Dr. Waller's report on Midwifery, Medical and Physical Journal.

‡ Mr. Dowell, in Dublin Journal.

grains of calomel with a large dose of opium every fourth hour, so as gently to affect the gums by the third day after delivery. Although the duration of the general epidemic on the occasion alluded to, was nearly three months after he had adopted this plan, not a single case of puerperal disease of any importance occurred during that period.

This combination promises equal advantage in other affections which originate like puerperal fever from violent disturbance of the nervous system.

Dr. Good states, that by its promoting a critical and general diaphoresis, he has observed more benefit from the free use of this medicine, than from any other. He especially recommends it as the likeliest method to arrest the effects of poison imbibed from the bite of a rattlesnake, thus affording the strongest evidence of its power. To this medicine Dr. Gooch, with several other authors, also attributes great excellence in the treatment of incipient puerperal fever.*

* "Puerperal fevers are shelves the poor females are often staved upon. They are generally inflammatory, from the in-

As uterine hemorrhage, like other causes of debility, seems to predispose to puerperal fever, venesection cannot be considered as a preventive, unless inflammatory diathesis or manifest plethora exist, which itself becomes a powerful

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flammation of the uterus, which arises from the suppression of the lochia. Custom has prevailed, among the ignorant or obstinate midwives, to allow the laborants chickens, and such flesh-diet as they pretend cannot prejudice them; to rise out of bed three days after labour, and to take some turns across the chamber; from whence I have seen the lochia stopt or lessened, and thence have arose deliria, or dangerous fevers; and yet it is easy to prevent these, if the ladies can be awed. It is common for hard labours to produce them, as I have often known. If we are called in immediately after the mistake, it may be prevented, by administering tincture of castor, or spirits of hartshorn in rue-water, &c.; and giving them their diet warm, and so disposing them to sweat. But when the fever is begun, if they be plethorick, and the fever of the warmer species, bleed in the arm, and then in the foot: and after this, throw in emollient clysters, to dilate (by the manner of a fotus) the orifices of the glands of the uterus, whence the lochia will flow afresh. Alexipharmacks (with the cautions above named) must be given, and the diet should be cooling or refreshing. If inflammatory symptoms come on, such as pleurisies, angina's, peripneumonies, &c., they are to be treated accordingly—that is by plentiful bleeding, &c."

"If the lochia are past: bleeding and purgatives (if indicated) may safely enough be made use of, as I have often experienced."—*Dr. Edward Strother's Criticon Febrium.*

cause of debility by oppressing the general functions of the nervous system, a state which moderate depletion is often found admirably to relieve.

It is known to all obstetricians that the lochial and vaginal discharges, sometimes become highly offensive from their retention, under circumstances that greatly encourage putrefaction, and it is reasonable to conclude, that the presence of such irritating matters in the vagina, must often be sufficient to excite much disorder. Some have even asserted that uterine phlebitis* is frequently to be traced to this cause; but whether or not this be correct, it is evident, from our experience, that great feverishness and pain may arise from it, which may be completely relieved by plentiful injection of warm water into the vagina. The position of the puerperal patient, and the caution sometimes enjoined as to her rising from recumbency, promote this offensive accumulation, and therefore it is advisable that the woman be desired to kneel to empty the bladder, and thus the

* Dr. Rigby's Midwifery Hospital Reports.

lochia and coagula may be more readily expelled.

CURATIVE MEANS.

Morbid anatomy discloses but little concerning puerperal fever, by which the physician can be guided in the employment of therapeutic measures. The varieties which it presents, as far as regards all practical purposes, are much better ascertained by symptomatology, than by dissection. In fact it would be almost impossible to determine what particular affection of tissue is associated with particular symptoms, since every variety of structural alteration may exist together in the same case. Yet, necrotomy is of great value, as auxiliary to the consideration of this disease, as it sufficiently accounts for the failure of remedy, and proves that unless the destructive activity of morbid processes be speedily arrested, the lesions of structure produced are often such, as neither the restorative powers of nature can repair, nor those of medicine reach.

The disease has been divided into varieties almost as numerous as its successive symptoms would allow, but we have good authority to conclude that all the varieties may be safely reduced to three—these are, inflammatory, synorhoid, and adynamic.

If all the circumstances already enumerated, be viewed in their proper relation to each other, it will appear, that whether the disease shall be deemed inflammatory, synochoid, or adynamic, will depend not so much on the nature of the structure most implicated, as on the constitutional state of the patient at the period of attack. The synochoid and adynamic varieties, although of course more speedily and more extensively evincing alteration in the condition of the blood, and also in the fluids secreted from it, than in the stage of simple inflammation, are nevertheless as intimately associated with structural disorder, as that which is called inflammatory. Metritis, peritonitis, and uterine phlebitis, are certainly as often connected with one form of fever as the other, but undoubtedly the rapidity with which sanguineous deterioration and consequent adynamia

take place, will greatly depend on the nature, extent, and importance of the structure primarily involved. Hence it would appear that it may best be treated, at its commencement at least, as simple synochial fever, with the understanding that if it be not arrested in its first stage, the condition of the body is such, that some organic change must inevitably follow, which no art can controul. Even if we were obliged to conclude, which we are not, that it invariably has its source in specific contagion, yet the malady must be encountered according to the mode of its manifestation, and not simply according to the notion we may entertain concerning its exciting cause, although of course that notion will somewhat influence our procedure, but merely in as far as to remove a consequence first requires the removal of the cause. The disease, however, is the same, by whatever cause produced, and the withdrawal of the cause is not sufficient to effect a cure, for the continued action of the originating impulse, is not by any means necessary to effect the establishment and development of disorder, since the system having acquired a morbid momentum is disposed to proceed morbidly, according

to its own laws, and not according to any specific influence derived from the determining impulse. Our remedies must act on the medium through which the morbid influence itself acts, that is, the nervous system considered as a whole.

The practical varieties are therefore to be viewed as merely presenting different manifestations of the patient's condition of system at the period of attack. They are marked by certain symptoms which, from their prominence, claim the chief attention, and must, of course, be met according to their several indications; but, both symptoms and morbid appearances, evince the direct tendency of the disorder, to the rapid establishment of violent and extensive inflammation, particularly in the uterus, its veins and appendages, and in the peritoneum, or in any part which may then be subjected to violence.

Here the advantage of correct theory, concerning inflammation, would be experienced. But as the theory of its cause involves a problem not yet resolved, we must be guided by

general experience in its treatment. The principal object is to resist the incursion of this inflammation by the most vigorous measures at its very commencement. This is best accomplished by abstraction of blood, either by venesection, by cupping, or by leeches. Venesection is most frequently adopted.*

BLEEDING.

In attempting to remove inflammation by depletion, it is highly necessary to regard the character of the fever with which it is associated. The fever, which evidently springs from inflammatory diathesis, is usually connected with plethora, and is readily cured by whatever

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* Bleeding, in puerperal fever, is advocated by the following practitioners:—Dr. Denman (in his old age), Dr. Leak, Dr. Gordon (boldly), Dr. Butler, Dr. Kirkland, (if lochia be little), Dr. Hulls (the robust only), Dr. Armstrong (boldly), Mr. Hey (boldly), M. Vigarous (in some varieties), Dr. Gardien, (in some varieties), Dr. Campbell, Dr. Mackintosh (boldly), Dr. Douglas (in 1st and 2nd varieties), Mr. S. Clark, Dr. Joseph Clarke, M. Duges, M. Tonnellé, Dr. Blundell, Dr. Conquest, Dr. Gooch, Dr. Ryan, Dr. Dewees, Dr. Lee, &c.

subdues the inflammation; but the fever which arises from simple sensorial disturbance, and precedes the production of local inflammation, of course, in no degree depends for its maintenance on that inflammation; but is, in fact, often aggravated by depletion, and indeed by the removal of the inflammation by any means. The local increase of action frequently produces a sanative change under which the nervous system, oppressed by fever, recovers itself. The presence of phlegmasia, with fever, favours the crisis; but if the system be much reduced, the fever becomes malignant, and the inflammation rapidly runs into gangrene.

The blood, in this fever, abounds with fibrinous and albuminous constituents, and the indication is therefore to dilute and attenuate. This object is best effected by venesection, succeeded by such medicines as experience proves to possess the power of diminishing the crassamentum, without lessening its due consistence.

In order to understand the value of bleeding, as a therapeutic measure, it would be well to

observe the effects of loss of blood in health. A mental vigour, general activity and cheerfulness, follow a moderate abstraction from a plethoric person. A great loss produces vertigo, sense of sinking, relaxation of muscular fibres, change in the colour of the flowing blood, syncope, eructations, nausea, sickness, cold, pale bedewed skin, feeble, slow and sometimes fluttering pulse; on reaction, fever with rapid pulse, (140) and sometimes delirium; diarrhœa, palpitation, nervousness and probable tendency to heart affections. This reaction, after depletion, is often mistaken for fresh accession of the disease which demanded bleeding, and the patient has often been destroyed by its repetition, under such circumstances.* Reaction is, in many instances, the most effectual means of subduing the original disease, and if the system be so far reduced, that no reaction can follow, to employ depletion would be to destroy the patient. Some practitioners have supposed, that bleeding arrests inflammation, by directly lessening the quantity of fluid in the debilitated and distended vessels, but this,

* Dr. Copland says he has frequently seen this.

although it may assist in relieving, will hardly account for the benefit derived, which seems to be proportioned to the effects on the nervous system, rather than to the quantity of blood lost.

The propriety of venesection in puerperal inflammation, seems also to depend on the state of the blood, which is of course mainly influenced by the secretions from it, so that the opinion of Dr. Kirkland, and other of the older pathologists, appears to be correct, that bleeding is most required when the lochia have been scanty. The reason of this is evident in the fact, that the lochial discharge removes from sanguiferous system, that superabundance of fibrin and albumen which experiment has proved to conduce to inflammation. By withdrawing blood under such circumstances, the absorption of the thinner fluids from the cavities is promoted.

If puerperal fever arise from the absorption of virus, putrid miasmata, or other poisonous matter, through any channel, it would seem, from the experiments of Majendie, that its im-

bibition and operation will be expedited by depletion. In some instances this fact may afford practitioners a useful caution. As the object of blood-letting, at least in some varieties of this disease, is not to diminish the power,* but to produce a new action of the nervous system, it would best be effected by bleeding from a large orifice while the patient sits erect, placing her in the recumbent position the moment the approach of syncope is apparent. A second bleeding is rarely admissible in puerperal fever. Leeches† have been employed in immense numbers, especially by the French, but generally with a result, which if at all beneficial, is certainly less so than venesection. The debility produced by the hæmorrhage from one or two hundred leech-bites, must often be so great as to preclude recovery. That desirable effect on the nervous system, which usually follows a small bleeding from a vein, can scarcely be

* Depletion sometimes produces morbid symptoms of depression and sinking in puerperal fever, owing to the state of the vital powers being insufficient to accommodate the vessels by their tonic or vital contraction to the reduced bulk of the blood.—*Dr. Copland, see p.* 177, *Part* 1*st of his Med. Dict.*

† Dr. Ryan advises their application to the labia and vagina.

induced by leeches without much greater waste of blood, yet they may be advantageously employed, under certain circumstances, which the judicious practioner will readily perceive. General bleeding was found very prejudicial in uterine phlebitis at Vienna, but leeches to the pudenda were beneficial.

Dr. Collins says, "of the 88 cases that occurred in the Dublin hospital, *thirty-two* recovered, *fifty-six* died. In *fifteen* only of the 88, did we deem it advisable to bleed generally; *seven* of the fifteen recovered. This is a favourable result. By referring to the cases, it may be seen leeches were freely used conjointly, and often with more decided benefit. In this form of the attack, the practitioner is encouraged in his efforts by the *strength* of his patient, whereas in the opposite, she is little more than *shadow*. When I was assistant physician in 1823, puerperal fever raged to an alarming extent. The master of the hospital at the commencement of the attack, was a strong advocate for the free removal of blood *generally;* with his approbation, it was resorted to with great frequency, and in the promptest manner. The effect on the patient,

and the mortality was such as to satisfy me fully of the inexpediency of adopting this line of treatment."

It is certain that those puerperal epidemics which have occurred since venesection has again been boldly practised in the outset of the disease, have less frequently proved fatal than previously was the case, but this apparent success may rather depend on the comparative mildness of the disease, or on some alteration in its character, or the condition of the parturient patient, than on the excellence of the remedy adopted, for it should not be forgotten that venesection had been fearlessly resorted to according to the advice of ancient physicians in the earlier and more fatal epidemics. This practice, however, was soon abandoned, in consequence of the ill-success attending its employment. That there is a considerable difference in the nature of these epidemics, their history seems to prove, and that the difference consists in various degrees of violence in the local inflammatory affections accompanying the fever, appears from the morbid changes discovered on dissection at different periods, and

during the prevalence of different epidemics. It is observable, that although Hippocrates employed venesection and leeching, he yet considered this disease mortal. That bleeding, in febrile affections, is not a modern innovation will also appear on consulting the works of Galen, and other ancient physicians, who did not hesitate to advise bleeding, *ad deliquium*, in such cases.

When the cases of puerperal fever are comparatively few, although still epidemic, or when they are declining in frequency, that is, when the cause of the disease is less active, they are such as venesection generally relieves, and often completely and quickly cures. The symptoms in such cases are great increase of heat, acute local pain, distinct hard pulse. Bleeding, however, is of little avail, when the muscles become flaccid, the skin clammy and relaxed, the pulse small and frequent. Pyrexial heat is rarely developed under the latter circumstances, since the vital energy is suppressed.

EMETICS.

M. Doulcet, having observed that in those patients in whom vomiting spontaneously occurred, the symptoms were apparently ameliorated, thought that by the early use of emetics, he should follow out the natural indication. Denman and others, have adopted modifications of the same treatment. That full vomiting is calculated to exert a powerful influence over the vascular and nervous systems, is fully proved by numerous instances. In suppurative inflammations, its effects are often very remarkable. Its power in exciting a rapid absorption, has been evinced, by the removal of the fluid of a large abscess in a few hours. Hernia humoralis, cynanche tonsillaris, purulent ophthalmia, &c., often yield to it, as to a charm.

Emetics, however, while they sometimes suddenly subdue local inflammation, augment the general action, and there are few so debilitated as not to be able to bear them; but nausea greatly depresses the vital powers, lowers the pulse, contracts the small vessels, occasions cold

perspirations and severe rigors.* Therefore, nausea has been frequently had recourse to in inflammations, with marked benefit; but if carried to a great extent, the reaction, according to the writer's experience, is just as violent and difficult to manage, as that which results from excessive depletion. It has also been employed in low fever, with much advantage, on the hypothesis of Dr. Cullen. It appears to be the natural cure of certain uterine excitements, as for instance, when, during pregnancy, the female is subjected to venereal orgasm. The uterus seems to be especially and peculiarly influenced by it. From these considerations, it would appear that the earlier stage of puerperal fever, might be judiciously treated, by inducing nausea for a short time previous to the exhibition of the emetic; for if the vital powers should be reduced too much by the former, all untoward effects would speedily be removed, and the system roused to increased energy by the latter. Different nauseants and emetics produce different effects, both on the stomach, and on the general system, and should be employed

* Dr. Good's Study of Medicine, vol. i. p. 181. 1829.

with discrimination, in reference to the particular object to be effected by their operation. Tartarized antimony is usually preferred,* but in some cases other substances, such a ipecacuanha, may perhaps with more propriety be selected. The former sometimes produces the most deadly languor and atony, succeeded by more irremedial mischief. The latter operates equally well on the skin; while it excites the stomach, promoting expectoration, and the peristaltic motion of the intestines, it lowers the pulse, but with less vital depression.

Doulcet used ipecacuanha in fifteen grain

* Dr. Denman thinks it may be reckoned among the unfavourable signs, if the tartar emetic given as prescribed by him produces no sensible effect; even without previous depletion, he states, that it will often be found of essential service; and in short, too much cannot well be said in its favour. The form he prescribed is the following:—"℞ Antim. Tart. gr. ij.; Chel. Cancror. pp. ℈ij. intimè misceantur." Dose from three to ten grains to be repeated, as circumstances may require. Emetics are recommended by the following:—Drs. Denman, Leak, Manning, Walsh; M. Doulcet, Mr. Whyte, Dr. John Clarke, (if little pain in the belly); Dr. Hull (in the feeble); M. Vigarous (in two varieties, the putrid bilious and pituitous); M. Gardien (in bilious kind with vomitings or purging).

doses, and, after its operation, a potion consisting of two ounces of oil of almonds, one ounce of syrup of marshmallows, and two grains of kermes mineral, to be exhibited daily, until the symptoms subside, which, it is said, they seldom failed to do soon. Several physicians in this country have also employed it with various results. Dr. Walsh said it was infallible; Dr. Denman, that it was eminently useful; Dr. Lowder, that it disappointed him; Dr. John Clarke, that it was injurious; and it soon fell into disuse. "Was it ever fairly tried in this country? that is, not after the disease had established itself for several hours;—but at the moment of attack, and with the potion of almond oil, syrup, and kermes mineral."*

PURGATIVES.

Purgative medicines have also been highly extolled, for their beneficial operation in this disease. The amelioration of pain, which follows each fœcal evacuation, encouraged the

* Dr. Gooch.

idea, that catharsis is indicated. Some authors have ventured to contend, that no other remedies are required. Richter says, that he saw numerous cases of this malady, and always treated them successfully, so that he has a right to offer his opinion, concerning its nature and treatment. His description of the symptoms and morbid appearances proves that he committed no error in his diagnosis. He mentions the debility, tumid abdomen, colic-like pain, and cephalalgia; asserts that it is commonly fatal in two days, and on dissection the viscera are found inflamed, suppurating, gangrenous: and yet the means for preventing the disease, or, if already began, for curing it, are timely evacuations by purgatives.* That early purgation is indeed an essential auxiliary in the treatment, is amply testified by those who have been most successful; but that it alone should be capable of arresting the progress of so fierce and rapid a disease is scarcely credible. We are ready to conclude, that Richter and others cured irri-

* Medicinische und Chirurgische Bemerkungen, von D. A. G. Richter, b. ii. s. 60.

tation of the bowels with purgation, but discovered the phenomena of puerperal fever only with the scalpel.

As constipation is generally present in the earliest stage of puerperal fever, ample depletion of the bowels, by active cathartics, is very early demanded. Many discerning practitioners have deemed an inactive state of the alimentary canal, the chief predisposing cause of puerperal disease, and have therefore prescribed the liberal exhibition of purgatives, not only as the readiest means of relieving the general system when disordered, but also as the best preventive of that condition. Dr. Gordon has been extremely lavish in his praises of purgation, both as preventive and curative. It was his practice to excite diarrhœa, and continue it through the whole course of the disease: for this purpose he exhibited calomel and jalap, as most certain and efficacious. But it appears somewhat inconsistent, that he also administered an opiate every night, "in order," as he states, "to give a respite to nature, and strength to the patient, to enable her to bear

the evacuations, which she must necessarily undergo the ensuing day."

"Cita mors venit, aut victoria lœta."

Those who have written on this subject, are nearly unanimous in their opinion concerning the importance of purging, but they differ widely as to the extent to which it should be carried, and the kind of cathartic which should be preferred. Dr. Armstrong employed scruple doses of calomel, "because," as he says, "*it is more certain and effectual in its operation,*" but he immediately after adds; "I have always endeavoured *to quicken its action,* by combining it with other purgatives." For this purpose he generally gave castor-oil.

Mr. Hey was reluctant to exhibit large doses; since some of the worst cases in his practice occurred after an excessive operation of the purgative. Dr. Dewees recommends croton oil as a valuable purgative in this disease. It should be made into pills, with dried soap in preference to bread, which crumbles when it becomes dry.

MERCURY.

The decided influence which some preparations of mercury so beneficially exert, over most of the forms of inflammation and fever, led very early to its employment in this affection. By many practitioners, its virtues have been as extravagantly lauded, as it has been lavishly exhibited. Ten, twenty, thirty, or even sixty, grains, have been given at a dose, and repeated at intervals of a few hours, as if it were some inert substance, and not an active poison. But such empirical temerity, having sacrificed its victims, has at length destroyed itself. This powerful and excellent medicine, is now more rationally employed, and cautious science is rewarded by many proofs of its efficacy, when allowed gradually to produce its proper effects. When guarded by opium, or Dover's powder, and administered in small doses at suitable intervals, it offers the best auxiliary to allay the general irritability which accompanies this fever. Unless, however, the inflammatory tendency be previously subdued,

its utility is at best but questionable,—unless when so exhibited, as to act briskly on the bowels. In this way, large doses, under skilful management, have certainly been prescribed with great advantage. Thus the writings of Hamilton, Gordon, and Vandenzande incontestibly prove, that, by means of calomel in large doses, many cases of the most severe kind have been saved.* Yet though mercury brings the system completely under its specific influence, it does not often possess any power to check the course of the disease. No British practitioner has ever confided in mercurialization as the chief or only cure, although so boldly recommended by M. Velpeau and M. Roux, especially when effected by means of mercurial friction; but that, in many instances, it is apparently very efficacious, may be inferred from the statements given by the above practitioners, and also, from the cases related by M. Tonnellé and M. Olivier,† as well as those more recently related by Dr. Collins, who says that to bring

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* Dr. Ryan, from M. Velpeau's Memoir.

† See his treatise on puerperal peritonitis, cured by mercurial frictions. Lancete Française, Mai 7th, 1829.

the system under the influence of mercury, in the low form of this fever, is extremely difficult and often impracticable; which, indeed, is found to be the case with every remedy, when the powers of life are much diminished. The beneficial result of this mode of treating erysipelas, also presents some sort of analogy, which, with the facts recorded concerning the influence of mercury on puerperal fever, seem to warrant and require a more extensive trial of its power.

M. Velpeau, in a memoir published in the *Revue Médicale,* first proposed mercurial frictions in puerperal fever. He ordered two drachms of mercurial ointment to be rubbed into the abdomen every two or three hours. Much depends on the regularity with which this is done. After two or three frictions, should the symptoms not be ameliorated, he directed the belly to be anointed with oil, and washed with soap and water, and the frictions recommenced. He carried the treatment on after salivation showed itself. He says it is evident that the mercury modifies the nature of the fluids, and consequently the state of the

inflamed surfaces. He thinks it would be useful to add, to the use of frictions, baths, calomel, and an elevated temperature; he also thinks, that the facts observed by him do not produce conviction, but may encourage practitioners to renew the trials.

Mr. Ceely, in the cases before referred to, found that nothing but the production of rapid and decided ptyalism afforded the slightest chance for the patient. Not less than twenty grains of calomel, and two, three, and occasionally four grains of opium, could be safely confided in; and even these doses, in many cases, if not commenced at the moment of attack, or sometimes even *by anticipation,* were inadequate to the desired effect.* This was in what he denominates the low typhoid form. In every case there existed erysipelas of the vulva.

The immense lavishment of calomel, however, as for instance, one, two, three, four, or five hundred grains in a day or two, is earnestly to

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* Lancet, March 7th, 1835.

be deprecated, especially as we know that the system is quite as easily affected by ordinary, and even minute doses, without the risk of such horrible consequences as have often been recorded.

"Should the bleeding not have settled the irritation of the stomach, and the bowels not have been freely opened, we may give grain doses of calomel every half hour or hour, with manifest advantage.

"The only thing against the use of calomel is its effects on the salivary glands; but this is by no means so constant or certain, as to enter into comparison with its advantages, which, in overcoming fevers of the high grade of puerperal fever, is superior to every remedy of the kind yet known."—Dr. Dewees.

OPIUM.

The majority of authors confidently advise opium, either after venesection or purgatives; but particularly in conjunction with calomel.

Opium, after depletion, may be exhibited in large doses without producing any ill consequences; but, rather by allaying the irritability of the vascular system, it diminishes the inflammatory diathesis. Great dependence may be placed on opium, combined with calomel, if exhibited after depletion, in such doses as to make a decided impression on the sensorial functions,* and speedily bring the constitution under the specific influence of mercury.†

ALKALIES.

The effusion of fibrine and plastic lymph in such large quantities in these cases, seems to result from the superabundance of these constituents in the blood, or at least it appears probable that their relative proportions are such in this disease, as to be incompatible with return to a healthy circulation without the use of means which may alter and attenuate the condition of the blood. The exhibition of alkaline salts

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* See Dr. Blundell's observations in his Lectures, p. 750.

† Dr. Conquest's Outlines.

has been shown to relieve the state of system under which the impregnated female labours, as well as that of all individuals in whom inflammatory diathesis evinces a like disposition to the formation of fibrine, as appears for instance in the buffy coat of the crassamentum. This appearance may be prevented or removed by the use of carbonate of soda or potash. By the latter, Mascagni produced wonderful effects in an epidemic pulmonary affection, which, in 1800, committed great ravages in some parts of Tuscany. His observations on the subject were published in a memoir, "Sull' uso del Carbonato di Potassa, per le renelle e peripneumonie," inserted in Vol. xi. Memorie della Società Italiana delle Scienze. Modena, 1804.

Guniot, Allen, and various other practitioners after them, have employed carbonate of potash in doses of ten or fifteen grains, frequently repeated, and as they state, with manifest benefit. M. Recamier recommends the following formula—

Solution of gum arabic, ʒviij.
Syrup of white poppies, ʒj.
Subcarbonate of potash, ʒj.

Two table spoonfuls to be taken every two hours, in infusion of marsh mallows.

FOMENTATION.

Fomentations have been almost universally employed, for the relief of the abdominal pain, and scarcely any improvement has been effected in their application since the days of Hippocrates. He directs "Deinde locis muliebribus fomenta, quæ ex odoribus fiunt admovenda sunt; et quæ emolliunt quotidie superimponenda."* Relief more speedily follows the application of flannels wrung out of hot water, over which oil of turpentine has been thrown. Injections of warm water into the vagina and uterus, have also been recommended, as highly efficacious, by Racolin, Dance, Fonnelle, and Dr. Lee. Hufeland applied cold poultices to the abdomen with considerable benefit. Dr. Ryan† suggests the use of cold applications to the groins, hypogastric region, vagina and uterus. The only objection which he perceives to the use of cold, would be the presence of the lochia; but this could not obtain, for the application of cold would cause farther contraction of the uterus, and so far from sup-

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* Hume's translation.

† Dr. Ryan's Manual of Midwifery, p. 331.

pressing the lochial discharge, would most probably increase it. Several foreign physicians have employed cold to the abdomen, and it is particularly recommended by Loeffler, but it has not hitherto been tried in this country.*

The use of cold water and acids, as common drink, would usually be very agreeable to the patient, and as adjuncts would also subserve the same antiphlogistic intention; and indeed, from their general effects on the blood, and their remarkable utility in most febrile and inflammatory affections, much advantage may reasonably be expected from their liberal employment, unless it can be proved that there is prevalence of acidity in the blood in this disease; were that the case, an abundant use of cold water would still promise advantage.

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* This was written previous to reading the cases recorded by Mr. Ceely, who states that cold applications were decidedly beneficial, and preferred by the patients. Dr. Dewees recommends that the abdomen be kept moist with spirit of turpentine, and evaporation encouraged. Dr. Dewees' excellent observations concerning this disease, could not be obtained by the writer until this sheet was in the press. There are, however, no important facts contained in them, which are not noted in this volume.

Vesications and derivatives have also obtained an extensive trial, but objections have been made that they rather increase the general irritation, without affording any proportionate amelioration of internal pain. A frequent error in the use of these means, is their being applied too near the seat of the disease. In abdominal and pelvic inflammations, the author has found the most decided advantage from their application to the inside of the thighs. A novel opinion, concerning their operation and employment, is that of Surgeon P. Cunningham,* who refers the cause and treatment of all diseases to galvanic action. Speaking of insulation by caustic, he says, electro-magnetism, the food of all diseases, passes through the pores of the skin; hence the conversion of the skin into a non-conductor, must have a powerful influence over disease. Blisters perform a double office, not only translating the internal galvanic disease to the surface, but, by their oxydating effects upon the skin, preventing the farther ingress of electro-magnetism to the disease.

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* On motions of the earth, &c., as explainable by electro-magnetism.

Of all the blisters, he represents the nitrate of silver as decidedly the best, because its action commences the moment it is applied. He never witnessed the slightest bad symptom produced by even the most extensive application of this very active remedy; and once he cauterised the whole of the abdomen, to arrest the progress of a violent attack of peritonitis, with complete success.

This escharotic is now in common use in erysipelas, and promises benefit in all inflammatory affections.

TURPENTINE.

Another remedy remains to be considered, concerning which the most contradictory statements have been given, and this is, the internal use of turpentine. Dr. Brennan, of Dublin, who first proposed it, has narrated several cases in a pamphlet on the subject, which appear to afford astonishing proof of its efficacy. A suspicion, however, concerning Dr. Brennan's accuracy of diagnosis, has been generally enter-

tained. This suspicion is, perhaps, encouraged by a remark in the above-mentioned pamphlet, in which it is stated that no woman has died of this complaint whose bowels have yielded to proper medicine.* Dr. Douglas, however, whose judgment cannot be suspected, has employed it just as confidently, and he asserts that he never yet ordered it to any patient who did not recover.† Dr. J. A. Johnson has published an account of six cases which terminated favourably, after the exhibition of half an ounce of turpentine, with the same quantity of castor oil, every hour, until the bowels were freely purged.‡ Dr. Payne, of Nottingham, states that he has always found it successful, and therefore he never used depletion.§ Dr. Dewees, the celebrated American obstetrician, has related cases favourable to its use, but with it he employed sinapisms, and mercurial inunction. The most remarkable of his cases was that in which the antiphlogistic plan had been previously pursued. When considered hopeless,

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* Page 9. † In a letter to Dr. Brennan.

‡ Philadelphia Medical Journal.

§ Edinburgh Med. and Surg. Journal, 1822, Vol. 18, p. 538.

thirty minims of the oil of turpentine were exhibited every hour, an ounce of mercurial ointment was rubbed on the abdomen every night, and an enema, containing one drachm of laudanum, thrown up. This practice was continued three days, and the patient recovered.*

Dr. Kinneir† also relates several instances in his own practice, and that of his friends, in which the exhibition of ol: terebinth: was attended with very great success. He employed moderate doses.

Dr. Campbell, in the Medical Gazette, mentions three cases in which enemata, each composed of a pint of warm gruel, and ℥ij. of ol: terebinth: almost instantaneously relieved the *tormina* and *tenesmus* under which the patients laboured, and were followed by copious bloody mucous dejections, and recovery.

Drs. Blundell, Waller, and others, relate instances of its remedial power. In two cases

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* American Journ. Med. Science, August, 1828.

† In the Med. and Phys. Journal, 1825.

of phlegmonous erysipelas after depletion, the author also has witnessed the most marked benefit from its external application, combined with its internal exhibition, in small and frequently repeated doses. Its useful effects may also be seen in certain kinds of ophthalmia.* Dr. Lee says, he has not ventured to prescribe it in many instances, because whereever this was done, renewal of the pain and the most distressing nausea and sickness have supervened.† Dr. Blundell, however, is convinced that it does no mischief, and a persuasion has been left on his mind, that it may relieve. He employed it in large doses. In one case, in which, after excessive depletion, it was used less copiously, a most unlooked for recovery took place.

In the Autumn of 1824, when puerperal fever was not so prevalent as it had previously been, he was requested by Mr. Edwards, of

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* See observations on the efficacy of turpentine in venereal, and other deep-seated inflammations of the eye, with remarks on the influence of that medicine on the system. Dublin, 1829. Also cases in the Med. and Surg. Journal.

† Dr. Lee, Cyclo. Med.

Queen-street, to see a woman who had a good deal of inflammatory tenderness and pain about the abdomen, her pulse was about one hundred and thirty, and the blood was somewhat buffed. She had laboured under the disease two days and a half, and the disease began four days after delivery. About sixty ounces of blood had been taken away. It was then thought proper to try the oil of turpentine, and in twenty-four hours, an ounce and half was given. Within the next twenty-four hours she took another ounce, and under this treatment the symptoms were unexpectedly subdued.

The following observations, inserted by Dr. Copland in his Medical Dictionary, under the treatment of erysipelas, are so applicable to our subject, as to demand a place. He says that "there is much misapprehension as to the operation of full doses of turpentine, given either by the mouth or in enemata; supposing that they increase vascular action in the brain. The reader will perceive, upon perusing the account (published in the London Medical and Physical Journal, for May and July, 1821,) of the experiments I performed;—1st, on myself; 2ndly,

on the lower animals; and 3rdly, in numerous cases of disease,—that this substance, given so as to act upon the bowels, either from the largeness of the dose, or by the aid of a purgative conjoined with it, is a powerful derivative from the brain, diminishes vascular action in serous membranes, and restores lost tone to the extreme capillaries, especially in exhaling surfaces. The extensive experience I have since had of this medicine, has confirmed these inferences, but has shown that it may be injurious in the hands of those who are not well acquainted with the exact circumstances in which it may be given with advantage."

ALUM.

Alum has been found efficacious in certain malignant fevers, and may, perhaps, be employed with advantage in the adynamic stage of this disease. " Professor Fouquier, one of the physicians of La Charité, is in the habit of prescribing alum, with considerable success, in certain cases of typhoid fever. When the inflammatory symptoms which generally mark the

commencement of fever, are succeeded by the symptoms peculiar to typhus, such as weakness of the pulse, fixed and dull expression, diarrhœa, arid heat of the skin, &c., alum is advantageous. If the inflammatory symptoms should appear, its use is again counteracted; so it is if the bowels (which rarely happens in the second stage,) are constipated, but with these exceptions it may be confidently given, although the most serious nervous symptoms are present. In the stage of collapse, when there is an excessive prostration of strength, colliquative diarrhœa, sordes covering the mouth, and fœtid excretions, alum, either alone or with other remedies, acts very beneficially. The diarrhœa diminishes, the tongue becomes moist, and the strength improves. The dose is twenty-four grains daily, for three or four days, then increased to half a drachm, and after the same interval, to a drachm. When its good effects have been produced, the dose is to be diminished in the same proportion. Gum-water is a suitable vehicle; it may be given in pills, but a solution is preferable."—*Bulletin général Thérapeutique, Novembre,* 1835.

HOMŒOPATHIC TREATMENT.

"SIMILIA similibus curentur," say the Homœopathists, but what mighty medicament would excite a disease like puerperal fever, neither Hahnemann, nor any of his shrewd disciples, has yet made manifest; indeed, they seem not to have determined whether it be connected with a psoric or a syphilitic diathesis. We will thank them, however, for having taught us the value of great faith in little matters, and the advantage of noninterference when nothing can be done. Homœopathic remedies are said, by the believers, to restore the sufferer's health "in a gentle, certain, and permanent manner." Would they could inform us how to accomplish this in our puerperal patients. It is "a consummation devoutly to be wished."

Hahnemann would probably consider this disease "an inflammatory immaterial (dynamic) irritation," and class it with acute pleuritic and peritonitic fever. If so, we are in possession of his opinion regarding its treatment, for he

states, that the "inflammatory immaterial irritation is the sole cause of the disturbance that takes place in the vascular system (in inflammatory fevers generally), and it may be arrested by a homœopathic remedy, such, for example, as a globule of sugar impregnated with the juice of aconite of the decillionth degree of dilution, avoiding the vegetable acids; so that the most violent pleuritic fever, with all its attendant alarming symptoms, is cured in the space of twenty-four hours at farthest, without loss of blood, or any antiphlogistic whatever. If a little blood be now taken, it will no longer exhibit any traces of inflammatory crust."* He who is most credulous, believes he knows the most, and therefore seldom requires demonstration; but, if the above statement be true, the most incredulous may soon convince himself of the power of aconite. We have numerous testimonies in its favour; among others, Mr. Liston, of the North London Hospital, who states, that in twenty-four hours a severe case of erysipelatous disease, heightened

* Hahnemann's "Organon of the Healing Art," translated by C. H. Devrient, with notes, by Dr. S. Stratten, p. 10.

by a scald, was cured by small doses of aconite. (Perhaps the scald cured the erysipelas). He relates several instances of its great influence in minute doses, and says, "of course we cannot pretend to say positively, in what way this effect is produced, but it seems almost to act by magic."* Aconite and belladonna have nearly superseded the use of bleeding in the above-named hospital. They merit a trial in puerperal fever.

CONCLUSION.

Within a few years physicians have endeavoured, according to the particular symptoms of the disease, so to employ the different remedies which experience has recommended, as to reap the peculiar advantages of each. And, excepting emetics and turpentine, the treatment now adopted, is so nearly allied to that used in the 16th century, as to shew, that in the cure of puerperal fever, common sense affords the best guidance.

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* Lancet, April 16, 1836.

From the foregoing summary of facts and observations relating to the remedies proposed for the cure of puerperal fever, the following inferences may be fairly deduced.

1st. That no medicine hitherto known, will exercise any thing like a specific action on any variety of this disease.

2ndly. That venesection, at the commencement of the attack, sometimes arrests the most formidable symptoms, and prepares the system for the better influence of medicines.

3rdly. That the cure is rarely, if ever, completed by depletion alone.

4thly. That where the symptoms are ameliorated by early depletion, the disease may be prevented from assuming an adynamic and putrid type, by the active and cautious use of opium and diffusible stimuli, more particularly, perhaps, by oil of turpentine, which appears to possess a peculiar exciting property, and at the same time acts as a derivative.

5thly. That mercury is of doubtful effect, except as conjoined with purgatives, or in small doses with opium, to allay irritation.

6thly. That, occasionally, the cure is solely attributable to the vis medicatrix naturæ.

The contradictory opinions concerning these opposite modes of treatment, may perhaps be explained, or at least some of the difficulties may be removed, by the consideration that this, like other epidemics, differs so widely in its virulence at the different periods of each particular incursion, that those remedies, which at one time utterly fail, will seem at another to be almost a universal cure. This remark is strikingly illustrated by the history of cholera.

The various forms of structural disease with which the fever may be associated, must also be observed, since the fatality of the malady mainly depends on such connections. The treatment will of course be adopted, according to our opinion of those morbid changes in the tissues which may arise during the progress of fever, or induce any of its peculiar symptoms.

Different atmospheric conditions also evidently modify the operation of medicines, and therefore deserve to be particularly regarded in the consideration of medicinal effects.

THE END.

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