On Fever.

If in the long catalogue of "the ills that flesh is heir to" there is one disease the rise, progress, effects and termination of which are more interesting and attractive than of another,—the writer is of opinion that fever in its continued form is that one. Its origin and propagation are mysterious; but, its effects are plain and palpable. — The rationale of the morbid processes, the "modus operandi" of the essence of the disease, in other words, the proximate and ultimate cause of the disease itself has not as yet been ascertained, but conjecture has supplied what cannot be proved, while uncertainty and doubt still hang over the group of symptoms which characterize the ailment. It is this very obscurity which makes it interesting.

When morbid actions are understood—when a particular symptom or succession of symptoms are known to be the result of known changes—when a certain effect follows as a matter of course—a certain specific intelligible cause—where there is no room for speculation and theory—where observation or discovery—these diseases which were wont to puzzle—excite and delight the mind, to attract and call forth the most ingenious mental creation—become disregarded, uninteresting and stale, and this but a
natural result. In such a case there is no room for emotion to an enquiring mind, and consequently it seeks to gratify its curiosity by directing its attention to deeper subjects, and more obscure research. Such a subject is fever. Its origin is mysterious, but its effects are obvious. Its first reception may be unknown, but it soon declares itself. The operation of its cause is unintelligible, but the symptoms are marked and unequivocal. The cause is obscure, one may not be aware of it, but the cold, the heat, the pain, the thirst, and the loathing tend and proceed are symptoms which cannot be mistaken, and declare plainly that some unseen and unknown agent has operated, and still operates, on the living body, and in it, causing a total overthrow of the balance and equality of vital operations, and producing a state of universal systemic derangement, and functional disorder.
Discarding altogether those forms of idiopathic fever which are generally admitted to arise from causes, pre-disposing, and exciting, independent of the action of poisonous agents on the living body we come at once to consider in a general way some points connected with fever—continued in its form and contagious in its nature. And at the outset the writer begs to state that he is well aware how difficult a subject the one to be considered is, even to the most experienced, and to those who have grown grey in the medical profession—and how doubly dangerous to him is the ground on which he treads who has been comparatively few cases of fever and cases perhaps entirely limited to one epidemic. He does not pretend to speak from experience, but still he may—may, must profit from the experience of others, his sole object being to collate, so far as he can, their opinions and form his own.

On looking into the history of continued fever, the first feature of its character which attracts one's attention is its want of uniformity and sameness. No two epidemics have been exactly similar, each has had its peculiar character—each has formed a peculiar type. No two the individual cases of particular epidemics in all points alike
in all points although an epidemic constitutes may be characterized the disease. The epidemic may be remarkable for its mildness—another for its severity. One takes time on an inflammatory character, another a typhoid one yields to treatment or rather need a safe and harmless course—another is remarkable for its fatalism. In one a particular organ is affected in another a different, and the head, the chest and the abdomen each at different times suffer accordingly. It is not therefore a cause of wonder that opinion should vary so much. Each writer has been a particular type and formed his own ideas on that type. He alone is most likely to arrive at just notions concerning the one who has witnessed a succession of epidemics, for he learns by experience how vain is the attempt to draw universal conclusions from limited facts.

We believe that many of the epidemics thus witnessed have been epidemics of specific disease, diseases varying as much in essence as those generally ranked among the Manichean, and that although they all agreed in being infectious, communicable from one person to another, yet that they differed as essentially from each other as do small pox, measles and scarlatina. In other
words we are much inclined to the belief that the
disease usually denominated "continued fever" is
not one disease assuming different forms, but
diverse diseases — each distinct in itself — arising
from a specific cause and being alone able
to propagate its kind.

We do not mean to assert that "con-
tinued fever" can be proved to be in reality not one
but many diseases, and that the forms which
are usually looked upon as mere varieties of de-
gue, and intimacy, are, in every case, in essence
distinct diseases, but we think, judging from
the many authentic accounts of epidemics once
prevalent that just as Lazzarini and Moore
are continued fevers varying chiefly in the char-
racter and extent of the eruption and yet universally
acknowledged to arise from distinct poisons, so
the Maculoided Dysentery and the Pelviculid Fever
of this country are continued fevers with their own
specific eruptions — distinct diseases — arising from
distinct causes and the one incapable of propagat-
ing the other. — Doubtless there are fevers often
enough observed in which from first to last
no eruption can be detected, and which in general
symptoms may either resemble dysentery or the other
fever is not referred to, and although we would not presume to admit that these cases were cases of another distinct disease, yet it appears more reasonable to do so, than to class them as a matter of course with the other diseases, and regard all as one disease.

The eruption of measles does not always appear, nor does that of scarlatina, and yet in certain circumstances no one would fail to recognize these diseases, or hesitate to name them although the most ordinary accompaniment was wanting. So it may be presumed it is with Muculated and petechial fevers.

The eruptions regarded as characteristic of each may be absent in either, and yet from the general symptoms and the character of the prevailing disease, the particular case may reasonably be classified.

Dr. Southwood Smith in his volume on continued fever page 41 remarks: "The more we investigate the subject, the more satisfied we shall become that continued fever is one disease and only one, however varied, or even opposite the aspect it may present, but that it differs in intensity in every different case and that this and this alone is the cause of the different forms it assumes." Regarding fever as one
disease he thinks it sufficient to divide it into two forms. — "Mild and severe." — All the forms that continued fever can assume, and all the individual cases that can occur under either, must be mild, or severe, and therefore must readily find its place under one or other of these divisions. The only real difference in the disease being a difference in degree, it is proper that the principle of the division by which the variety is presented are classified should be founded on this, the only true distinction of which it admits." He then proceeds to divide all continued fevers into fevers without and fevers with an emaciation in the latter including Measles, Small-pox, Scarletina & all one disease because continued — that is, one in nature, one in duration one in danger, because, if one in nature and only "differing in intensity" and "never" as he affirms "differing in nature" then as a matter of course, the mild can propagate the severe and vice versa — Small-pox can propagate Scarletina, Measles, Typhus, Syphilis, Scarletina.

To distinguish minutely the different forms of continued fevers, or as we are inclined to say, the distinct continued fevers, may be of little practical value, and generally speaking, it may do very well to treat all forms as one disease varying only in degree, but it
does not therefore follow that fevers obviously so
distinct as the eruptive exanthemata should be jumbled
up as one; simply because continued. The thing
is absurd, ridiculous, and most unphilosophical, and
we are much inclined to the opinion that this
observation applies to those continued fevers not
usually considered eruptive, or in other words, that
some of these fevers generally considered as simple
continued fevers ought in reality to be classed a-
among the exanthemata. Unless it be supposed
that every distinct eruption indicates a different
disease, we must come to the absurd conclusion
that a disease can be in essence the same, and
yet present essentially different symptoms — that
continued fever although one disease can yet
manifest itself by different and even contrary
symptoms. — Dr. Bony of Glasgow in the Dublin
Medical Journal vol. 18, page 385, says, "I have for
done years entertained the opinion, founded upon an
extensive series of observations, that contagious typhus
is an exanthematos disease, and is subject to all
the laws of the other exanthemata; that as a general
rule it is only taken once in a life time, and that a
second attack of typhus does not occur more frequent-
ly than a second attack of small-pox, and judging
from my own experience, less generally than an attack of measles or small pox."

Dr. Perry considers the period of convalescence from typhus to be the stage in which the disease is most likely to be propagated and thus in another point resembling the prevailing from numerous observations and experiments I am satisfied that it is not contagious before the ninth day, perhaps not till a later period of the disease. Among many circumstances which establish this opinion, I may mention one experiment which I made upon a pretty extensive scale.

The four wards of the Glasgow Royal Infirmary are each capable of containing twenty patients. The beds are arranged in two opposite rows and are pretty near each other. While the patients are in the acute wards, they are not allowed the use of their clothes, though they may be able to sit up. Into the fever-house are admitted cases of measles, scarlet fever and small pox, and patients are very sick in labouring under Bronchitis, Pneumonia, Coryza and other inflammatory affections. I found by experience that when the latter class of patients were sent to the convalescent ward, when they necessarily mixed with the others, almost all those who had not a previous attack of typhus fever were
either killed with it before leaving the house, or
returned soon after their dismissal labouring under it.
The period intervening between the time of their being
due to the convalescent ward, and the attack never
being less than eight days. Although means were
taken to keep those recovering from small-pox, cholera,
rubella &c. in a separate room from those convalescent
from typhus, the rooms being adjoining the non-
intercourse was incomplete, and the result was that
these diseases spread among the typhus convalescents,
and the convalescents from small-pox and diarrhoea
cought typhus. In consequence of these observa-
tions, I adopted the practice of not sending as
formerly, to the convalescent wards, those patients af-
exicted with inflammatory disorders, unless I ascertai-
ned that they were secured against the disease by
having had a previous attack of typhus, but kept
them in the acute fever wards till many were
do far recovered as to go to their own homes, and
the result was (and the practice was continued
for several months), that not one of those detained
in the acute wards caught the disease while there,
or returned with it afterwards. From the above
and other observations, I have adopted the opinion,
that typhus, like measles, small-pox &c. is chiefly
spread during the period of convalescence."

Dr. [illegible] in reference to these observations remarks: "Connected with the question first raised by Dr. Parry whether marbled typhus should be considered as an exanthemata, the fact is deserving of notice, that children exhibit the eruption much less frequently than adults, although they are quite as liable to the fever when it is epidemic. This fact is the more remarkable, because in epidemic typhus, or the true exanthemata, the eruption is the more constant in children than in adults." [Clinical Medicine vol. 1, page 109.]

It is a well known fact that marbled typhus causes more immunity on those affected by it, and that it is more contagious than any other form of continued fever in these two points, therefore approximating rather to the exanthemata. If typhus be placed among the exanthematic fevers, we may justly advance a step further and place other continued fevers also, in the list which present peculiarity eruptions.

The measles eruption generally considered characteristic of typhus cannot be seen in other fevers, whereas the various petechiae be seen in this, the two are therefore distinct, and although the general symptoms may in certain extreme cases so closely approach.
each other as to be exactly or not at all distinguishable, yet the marked difference in the eruption, shall th{

\textit{\smaller than}} and as distinct in essence. If then it can be proved that certain continued fevers, invariably pursued a certain anatomical character, a peculiar eruption, there can be no hesitation in placing these fevers among the malarial fevers.

Dr. Jenner of London in a published analysis of sixty six fatal cases of continued fevers, has we think satisfactorily proved that typhus and typhoid fevers are essentially distinct diseases. We are not aware that such an elaborate statement of facts has ever yet been made on this subject, or that the cause and symptoms of fever have ever yet been so carefully observed and minutely recorded. His observations tend prove, that although for the most part, the general symptoms differ in each, yet that, as in some cases, they insensibly graduate into each other—no single symptom can be relied on, but the presence of the peculiar eruptions he has observed, for in distinguishing the two diseases by the eruption alone, not a single error has been made so far as can be proved by examination after death of the fatal cases, often or by the progress of the non-fatal
cases after their diagnoses were recorded" [Edinburgh Monthly Medical Journal April 1849].

"On what grounds" he asks do we assert that they (scarlatina and small pox) are two diseases?

"First — in the vast majority of cases the general symptoms differ.

Second — the eruptions, the diagnostic character of present are never identical.

Third — the anatomical character of small pox is never been in scarlat fever.

Fourth — Both being contagious diseases, the one by no combination of individual peculiarities, atmospheric variabilities, epidemic constitution or by hygienic conditions, can give rise to the other.

Fifth — the epidemic constitution favourable to the origin, spread, or peculiarity in form of either has no influence over the other excepting that which it exercises over disease in general.

On these grounds Dr. Bennet's remarks on the practical importance of arriving at the truth regarding the identity or non-identity of typhus and typhoid fever are distinct. Dr. Bennet remarks on the practical importance of arriving at the truth regarding the identity or non-identity of typhus and typhoid fever are just — "If continuous be one disease, the essential treatment must be the same in every case, modified only by the presence of local complications,
If two diseases, then the essential treatment may be totally different for the one, from that required by the other—and this is without regard to local complications.

The very groundwork of the treatment, so to speak, may for the one, be diametrically opposed to that necessary for the other.

The eruption considered by him as characteristic of typhoid fever with the abdominal affection has the following character: viz. Vesicle-coloured spots, circular, popular, gradually fading into the surrounding skin, disappearing on pressure, and re-appearing on removal of the finger; they were therefore indurated nor did they ever pass into that character. Each remained three or four days and were then succeeded by new ones. When they ceased to appear the disease generally declined which was about the thirtieth day; they were observed on the abdomen, thorax, back, and occasionally on the extremities; when a relapse took place the eruption reappeared.

The measles eruption of true typhus fever is designated by Dr. Jenner as a "mullbery rash" the spots first elevated slightly, dark pink in colour, irregular in outline and fading intensively into the skin, disappearing entirely on pressure. In the second stage the spots hue was darker and more dry—
spots were not elevated, and only faded on pressure.

In the third stage the centre of the spots became dark purple, and remained unaffected by pressure, or the whole of the spots became purple and were converted into true petechiae.

That there are other eruptions seen in continued fevers besides the two already mentioned no one can call in question and it yet remains to be proved whether these eruptions are each diagnostic of essentially distinct fevers.

Dr. Christianian in his article in the library of medicine / page 144 describes three forms of eruptions which he had observed in continued fever.

First. – Pale brown, punctular spots, unerupted and much resembling freckles.

Second. – Small, round, dark reddish-black, well defined, unerupted spots.

Third. – Rosy red, irregular, not distinctly circumcercated, diffuse, slightly elevated spots.

The last of them he has observed invariably to attend a seizure, and often a fatal attack of fever. They are probably the spots considered by Dr. Jenner as characteristic of biparted fever. The other two forms are evidently distinct eruptions.

Dr. Graves of Dublin seems inclined to the belief that
Pestiches are nothing more than accidental accompaniments of fever and never essentially connected with it.

He says "I myself have never seen pestichial fever epidemic in Ireland." He cannot account for so many observations testifying to the affords except by supposing their observations to have been inaccurate, for, as he, "although true pestiches are rare, true flea-bites are common in Ireland."

We can say nothing of the pestichial fever of Ireland which, although described by authors is doubted by Dr. Graves—but we do say that if that fever resembles in its eruption the pestichal fever which is to come, then among the lower Irish resident in this country the spots are incontrovertibly pestichial in the strictest sense of the term—there may be very rare in Ireland—not so in Scotland.

We do not call in question the fact that true flea-bites are common in Ireland. Since in this country the Irish seem by no means free of the vermin which gave rise to them, but the two spots which Dr. Graves had so much difficulty in recognizing as distinct possess characters so marked that we feel at a loss to account for any confusion in the matter, and again and again we have had the opportunity of viewing the two spots in the same individual—i.e.
Therefore it is granted that there are several eruptions in fever besides the measles, and that these eruptions present well marked and distinct characters—the presumption appears to be, that each is characteristic of its own fever.

Dr. Jenner has made observations on fever and thinks it probable that in this country there are at least four distinct continued fevers. He does not mention whether his belief rests on the number of eruptions observed.

What is fever? Fever is a disease which affects the whole system; it affects the head, trunk, and extremities, it affects the circulation, respiration, and nervous system. It affects the mind; it is therefore a disease of the whole system in the fullest sense of the word term. It does not however affect the various parts of the system uniformly, and equally, but, on the contrary, sometimes one part is more affected than another. Dr. Woodward and his view is becoming now to be considered the true one.

Dr. Christie has ably advocated this view in his excellent essay in "Treatise of Medicine," and Dr. Snow one of the most shrewd, practical men of the day likewise subscribes to his statements. They view
from as an essential disease—a disease for be—18.
not symptomatic of any local disorder—but a disease
which when witnessed in its present form runs its
cause without any particular ailment either as mani-
ested by symptoms during life or recognized by
appearances after death.

The local affections do often seen during
the progress of the disease are regarded as merely ac-
cidental complications, and rather caused by, than
the cause of, the general disturbance. In support
of this view the following are the principal argu-
ments advanced:

That many cases run their cause without any
local disturbance proving itself to be present either
by symptoms during life or post mortem appearances
that the local disturbance is not sufficient to cause
the general symptoms; that similar local disturbances
are often witnessed without the constitutional symp-
ptoms noticed above; that the local affection
often continues after the fever has started; that
these affections are amenable to treatment in
a remarkable degree; that a great variety of organs
are affected; that the change in the blood are dif-
ferrent from inflammatory blood; that certain
symptoms as the appearance of the tongue—
the disease, and its rise, progress, and termination of the disease are totally different from inflammation to which may be added that if fever is once admitted to be contagious, it must be the consequence of the specific poison. Therefore essential and not a cause of local inflammation. Such however cannot be said of the typhus of continental writers, at all events it cannot be said that there is no constant local affection.

This disease seems to be invariably connected with a local affection of Peyer’s glands either as a consequence, or cause of the general affection. Rokitansky looks upon this local disease as an “expression of a constitutional affection which itself may be either primary or secondary.” The following is a summary of what he describes as the “Typhus process” in the mucous membrane of the small intestine (Spleen, 1878, vol. 2, p. 683).

It presents four stages viz. the congestive stage, the stage of deposition of the typhus product—of typhus infiltration—the crude stage of the deposit, the stage of the softening and rejection of the typhus deposit—the stage of the genuine typhus ulcers. In the first stage there is congestion, swelling, and slaty discoloration of the mucous membrane.
of the small intestines, not equally throughout, but for the most part increasing from above downwards as far as the ileocecal value.

In the second stage there is less, the injection and reddening for the most part corresponding now with Peyer's agminated glands or occasionally with solitary follicles surrounded by capillaries of small size, which result from the deposition of a peculiar substance in the tissue of the Peyer's plagues and of the submucous cellular tissue. These are surrounded by a zone of vessels, are grey or tawny—hard and resilient—these characters however may vary somewhat. The corresponding segmental vessels are varicose. The common seat of this affection is the lower third of the small intestines opposite the insertion of the mesentery increasing in number towards the ileocaecal value, varying from from a shilling to half-a-crown.

'Veen and between the patches we find single, round, nodulated tumours of the size of a hazelnut, surrounded by a similar vascular wreath, these represent the typhus infiltration of a solitary follicle.' The deposit is pale-red in colour and fibrous-hardening in texture, is deposited in the submucous tissue.
and does not involve the muscular coat.

In the third stage there is a return of violent congestion to the small intestines—the vessels of the mesentery are filled with dark blood—the tympanic patches and the mesenteric glands soften—the deposit is converted into a grayish-red medullary mass which undergoes a peculiar kind of coagulating process minutely described by Nosilovsky. The mesenteric glands also undergo a change at this time.

In the fourth stage “after the mobile product has been detached, a cavity remains on the internal surface of the intestine, which represents the true tympanic ulcer.” This ulcer presents the following characters:—{Nosilovsky, Ed. Trans. of Path. P. 773}

Firstly.—The form is ellipsoidal when it corresponds to the infiltration and detachment of a larger patch of Peyr's glands, it is round when it corresponds to a follicle or a rounded patch, or to the partial detachment of a glandular pleure, and, lastly, it may also be irregular or sinusous when corresponding to a partial detachment.

Secondly.—The size or circumference of the ulcer varies from that of a hemp-seed or pea to that of a half-an-oar.

Thirdly.—The position is peculiar in reference...
to those of an elliptical shape; they are placed opposite to the insertion of the mesentery, and their long diameter is always parallel to the longitudinal axis of the intestine; the typhus ulcer never forms a cone; at least we have only seen once this occurrence in many hundred cases.

Fourthly: The margin of the ulcer is invariably formed by a well defined fringe of mucous membrane which is a line or more wide, detached, freely movable, of a bluish-red and subsequently of a slaty or blackish-blue colour.

Fifthly: The base of the ulcer is formed by a delicate layer of submucous tissue which covers the muscular coat, like the marginal substance, it is void of movable growth.

Sixthly: The small intestine is the seat of the ulcerative process, and the lower third is most liable to be involved; the number and size of the ulcers increase as they advance towards the local value. Such is nearly the substance of Rotchamby's observations, observations on the subject.

It can hardly be doubted the form of which the "typhus process" seems to be, the anatomical character is a disease for to be - a distinct Fever-Hand.
ing alone in the list of contained genes. As to whether this local affection be the cause of the constitutional symptoms, or merely one symptom of the fever, we are not prepared to say. The latter has never been examined, and it seems highly improbable that just as the poison of inflammation affects the throat in a remarkable degree, so does the poison in this disease affect the mucous membrane of the small intestine.

The doctrine therefore is no exception to the essential character of fever, for it will directly be held that the local affection is the cause of the general symptoms although in this form of fever alone is a local affection, akin to inflammation present. The knowledge we possess of the pathology of typhus fever is of a negative character. Pathology teaches us what typhus is not, rather than what it is; it shows us that it is neither chills, meningitis, pneumonia, pleurisy, gastritis or enteritis, for if may exist without any of these, and they may exist without typhus fever; but it also shows that one or other of these lesions arises in the course of that fever and these require special attention” (Graves M. P. 106).

If fever be not symptomatic of local inflammation — of what is its effect, and what is its seat?
Previous to the time of Hoffman the doctrines of Humo
Rubism were invariably held, and fevers were regarded as
a consequence of the diseased condition of the blood, and
fluids of the body. The doctrines of Rubism with
Hoffman as their first propounders then gained
ground, and Baghoi, Callen, Perreaux and others
joined his ranks, although at the same time modifying
his tenets to suit their own tastes and fancies.
A partial re-action has taken place in our own
time in consequence of the views and observations
of Dr Stevens who looks on the morbid state of the
blood as the cause of all idiopathic fevers, and
although there is perhaps much in his volume
that may be considered at least as extremely problematical;
yet we believe that there is more truth in
Dr Stevens views than is generally imagined, and
that there is perhaps a feeling of prejudice against
his opinions because humoral pathology being
now considered ancient and out of date, it may
perhaps be regarded as quite backwards to return
to views in the main so stale, — views held when
medical science was but in its infancy. Such
an objection however need only be mentioned to
show its absurdity.
The following is a general statement of Dr. Stevens.
doctrine. Page 274. "A vitiated state of the blood, pro-
ducing functional disease in all the solids, derangement
in all the secretions, and sudden variations in the tem-
perature, not merely of the part but in the whole
system, is I believe in every instance the very
core of fever."

Now on this point I must be confessed,
that the blood in most if not in all cases, of
idiopathic fever undergoes a change both in its
chemical and vital properties, and therefore this
change is the most invariable pathological or anatom-
ic character present. At the same time it does
not follow that this change is the cause of the
general symptoms, for, as it must be admitted
that the aggregate symptoms of fever from
a diseased action throughout the system in-
duced by a cause similar to that of certain
poisons, so it must be admitted that this cause
may act primarily and at once on the nervous
system before any change has been wrought on
the blood. That a depressed and poisoned
state of the blood exists in all infectious fevers
can scarcely be doubted, when the nature of the
secretions and excretions are borne in mind—
we cannot see how in any other way one could
account for morbid changes in the mucous secretions—26
the dry brown tongue— the colour of the generally
corrupt nature of the feculent discharge, and the
acid nature of the urine.

In a general disease like fever when there
is a general derangement of the secretions— we must
look for a general cause— and that cause in this
case can only exist in the blood, it being the
source of all the secretions— still the question
occurs, whether is the nervous system or blood
primarily affected by the remote cause of fever?
and it does not follow that because the blood is
changed almost throughout the whole course of
the fever, that therefore it is the primary seat
of the essence of the disease. This doctrine must
rest on other grounds, for the same changes
might take place in the blood after the affecting
of the nervous system.

We believe however, for the following reasons
that in all serious cases of infectious fever,
the poison whatever it may be which excites
the disease, must in the first instance be ab-

sorbed into the blood even if it can give rise to
any of the symptoms peculiar to fever,
although at the same time we do not affirn
that the poison must appreciably alter the blood "p"ocies to the outset of the ailment.

1. The outset of the disease and the cause of the symptoms after known exposure to the disease when there can be little doubt if any doubt, that the poison was then received, tend to prove that the poison was absorbed into the circulating fluids of the body — multiplied itself three to a greater or less extent — produced when intense enough a greater or less degree of nervous depression manifesting itself by dulness of the pulse, paleness of the face, rigor, which depression is followed by reaction, kept up until the favourable or unfavourable crisis, the blood becoming more and more vitiated every day, which could not be the case were its remote cause affecting the nervous system merely.

2. At the decline of the disease when the deflections are restored, the disease is admitted to be more contagious than at any other period, which can only be accounted for, by supposing that the morbidic matter is eliminated from the blood and which cannot be accounted for, if the changes in the blood are regarded as a consequence of the nervous disorder.
3. Smallpox - Cowpox - Measles - Cystitis - &c. can be produced by inoculating a healthy person with the blood or matter peculiar to the disease, which can only be explained by supposing that the small quantity of poison introduced, so multiplies and corrupts the entire circulating current as to produce the general systemic disturbances peculiar to these diseases. It appears out of the question to talk of a nervous impression here except through the medium of the blood.

4. It has been proved by Dr. Jenner that in the yellow fever of tropical climates and in the African typhus, the blood becomes sensibly changed in properties before the outbreak of the disease, showing that at least in this case, the blood is the primary seat of the poison, and that through this medium the solids are affected; and at the same time tending, if not to prove, yet to lead to the presumption, that such is also the case with our eruptive fevers, more especially as it has never been proved to the contrary. This argument therefore is from analogy simply. It is not enough to say that the blood in British typhus is not
sensibly altered at the commencement of the disease, and for notwithstanding it may be so in reality, while no one denies the after changes.

We do not believe implicitly in Dr. Stevens' view of the diminution of the salts in the blood, but still we cannot but feel struck at the fact, that in the treatment of our fevers, the use of the non-tartrate neutral salts is often followed by the best effects, and that those who decry the doctrine of Dr. Stevens most lustily, are among the first to use his saline medicines, and admit the benefit resulting.

The analysis of the blood in typhus abdominalis are according to him, very contradictory, probably on account of the blood varying in the various stages of the disease. He states that in the period of excitement it may reduce to hyperminoria, but that in the stage of depuration the fibrin gradually decreases, while in the stage of collapse the solid materials and blood Globules decrease so remarkably that the blood in consequence of the leucon leuconemia being too watery and deficient in solids assumes the state of anemia, or extreme poverty of blood. The same appears to occur in Pellicul
typhus. The presence of inflammatory symptoms of course modify its constitution. He states that the blood in typhus is deficient in fibrin and frequently in albumen, that it coagulates imperfectly, and often remains in a semisolid state presenting a clot which is soft, friable, of a very dark or bluish-red colour, having a Buffy coat, and soon becoming sordid [spit. haur. 1: p. 288].

The most comprehensive analyses of the blood in typhoid fever are those of Lavater and Barrow, and the following is the summary of their results. They never found fibrin perceptibly increased above the normal standard in true typhoid fever; that it was often normal, more often under the natural proportions, and the more as the disease advanced, thus contrasting remarkably with the blood of the inflammations in which the fibrin increases with the disease. When convalescence commenced the fibrin gradually returned to its normal quantity. The corpuscles are not diminished as in the inflammations, but at the outbreak of the disease are often increased, and in its advanced stages if they do not exceed, they at least come up to the normal standard. During the early period the diminution of the fibrin
is not absolute: it is only relative or relation to it.
the corpuscles, but as the disease approaches its
height the diminution becomes absolute.

They consider that the relative of the serum
and solid constituents gradually approximate
to the normal standard—similar results have
never have not been obtained by other observers.

Cancer thinks that the corpuscles are dimin-
ished and not more abundant. Chomel does not
look upon a diminution of fibrin essential to the
disease, but it would appear that the blood in
cases analyzed by him was taken in an early
stage of the disorder, and that in some the buffy
coat was present leading to the suspicion of some
local inflammation.

The following is according to Plancq the ap-
ppearance of typhoid blood:—In the first—the stage
of depression the blood is thick and dark—
coagulates rapidly, forming a large, soft, dark-
coloured clot. In the second stage—that of vascular
and nervous excitement—it is of a brick-colour—
flows regularly—coagulates more slowly and
makes a more solid clot, sometimes presenting
a buffy coat—In the third stage or that of
collapse, it is thin and watery—flows readily
is of a dark colour, presenting a loose and flocculent clot and occasionally appears more like a sediment of colouring matter, than as a clot.

Dr. Sumichrast says that in the thoroughly developed typhus he found the blood drawn from the temporal artery as dark as that of a vein.

Dr. Reid Claverie thinks that the tails are materially diminished in typhoid blood. That the watery portion of the blood increases with the intensity of the disease, and that not merely the solid constituents generally, but the tails, and the carbonic acid are diminished. The water begins to decrease and the solid constituents to increase in favourable cases, after twelve or eighteen days.

Simon states that the blood in continued fever is much the same as in typhus, except when complications are present.

The following is Simon's analysis of the blood of a girl, aged fourteen, labouring under continued fever:

<table>
<thead>
<tr>
<th>Component</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water</td>
<td>856.0</td>
</tr>
<tr>
<td>Sed. Residue</td>
<td>144.0</td>
</tr>
<tr>
<td>Leucin</td>
<td>2.0</td>
</tr>
<tr>
<td>Fat</td>
<td>3.0</td>
</tr>
<tr>
<td>Albumen</td>
<td>37.0</td>
</tr>
<tr>
<td>Blood Corpuscles</td>
<td>91.0</td>
</tr>
</tbody>
</table>
Exhuncta Matter
Alkaline salts
Earthly

The principal variation from healthy blood in this analysis is in the quantity of fibrin, albumen, and salts, all of which are diminished.

In a similar analysis by Daimar, Ardeal, Gavant, Lecon, Becque, Radier & results somewhat alike have been obtained, so that generally speaking they agree in representing a diminution of solid matter and salts generally, but not in a very marked degree.

In the exanthemata the blood presents nearly similar changes as in continued fever, but the tendency is rather towards hyperplasma than hypo-plasma, probably in consequence of the local cutaneous inflammation. On the whole nothing very definite or satisfactory has been obtained from the various analyses of the blood, for although the changes in the constituents are undoubted and important, yet the relation of changes to the disease itself— as cause or effect— seem still undetermined and undetermined; at the same time if these changes have not been found
to proceed the disease neither have they been proved to follow it, for although they unquestionably become more marked and unequivocal as the fever advances, yet it has not been ascertained that these are a consequence of the fever, any more than that the fever is a consequence of those. The two go hand in hand - arise, advance, and decline together.

Every day we see cases in which the blood is diseased and corrupted, either from the introduction of a known poison as that of bladders, or from the use of food, deficient in quantity, or defective in quality, or from the inhalation of impure air, cases in which eruptions appear on the skin, the tongue gets foul and the bowels disordered, and when all that is necessary to effect a cure is to use the proper means of restoring the circulating fluid to its normal state, and yet no one calls in question the seat of the disease - the blood - and the cause being the seat of the blood being the seat - the absorption of a poison or impurity.

Of in such cases general symptoms are seen to arise from a peculiarity in the blood - corrupting and vitiating the whole current - we
cannot see why a similar deprivation of this fluid should not produce the various forms of fever for when the blood is regarded as the \textit{Materiæ Morti} symptoms can be accounted for - if the arrangement be a consequence all seems mysterious and unaccountable.

The writer regrets that he has been compelled by unavoidable circumstances to cut short, and abruptly to close, his thesis. The original intention was not only to have considerably extended the dissertation, and to have included the most important points in the treatment of the disease, but to have made a rough sketch of the whole and then to have re-written and thrown the subject into a more systematic arrangement.

Having been unable to follow out this plan, and being compelled to present his essay in its crude condition, he thought proper to mention this circumstance, as, so far apologetic for the brevity, and insufficiency of the performance.

James Macfarlane.