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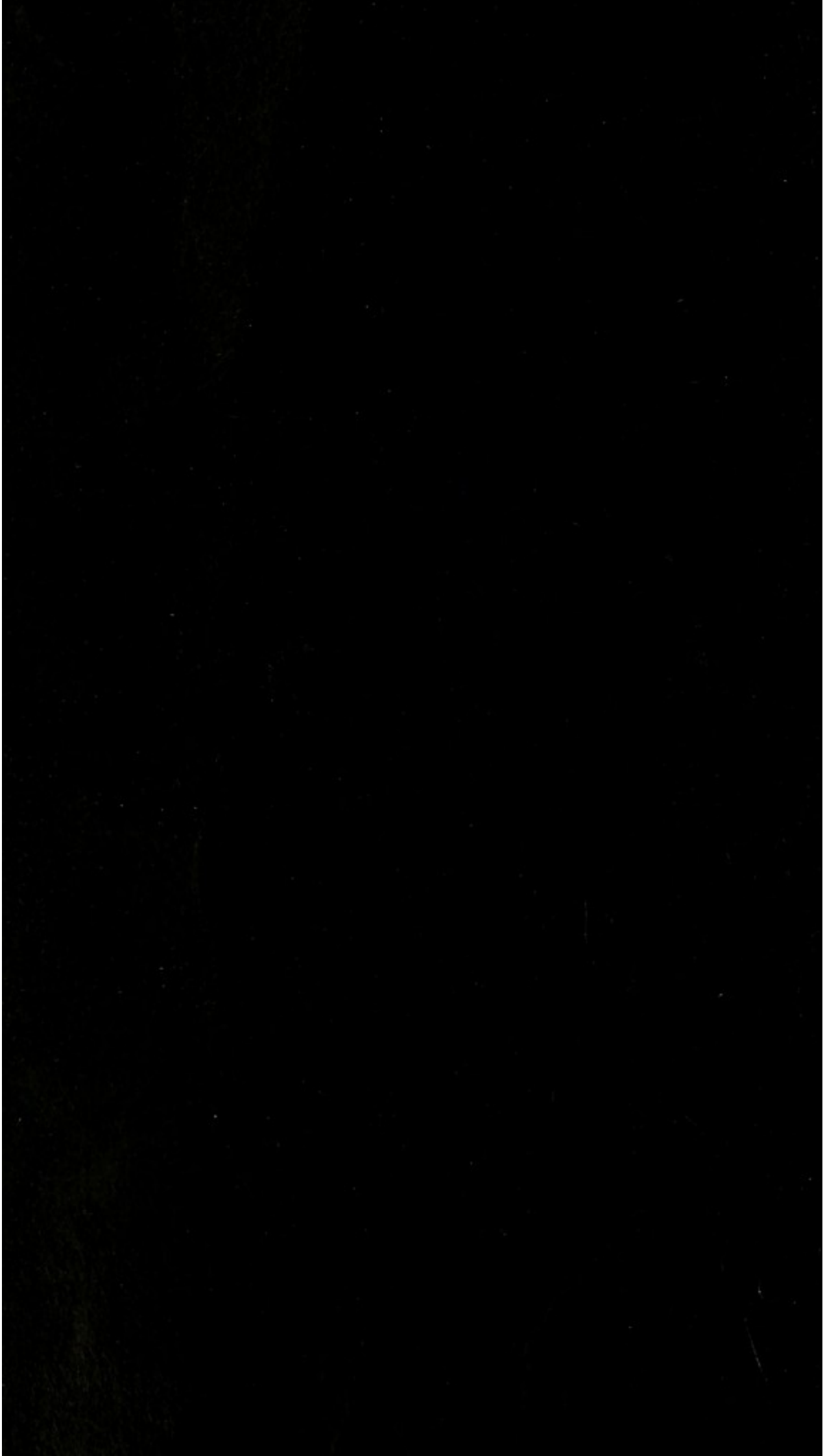

Lectures

ON THE

ACUTE SPECIFIC DISEASES.

BEING THE

GULSTONIAN LECTURES,

DELIVERED AT

The Royal College of Physicians,

MARCH, 1853.

BY

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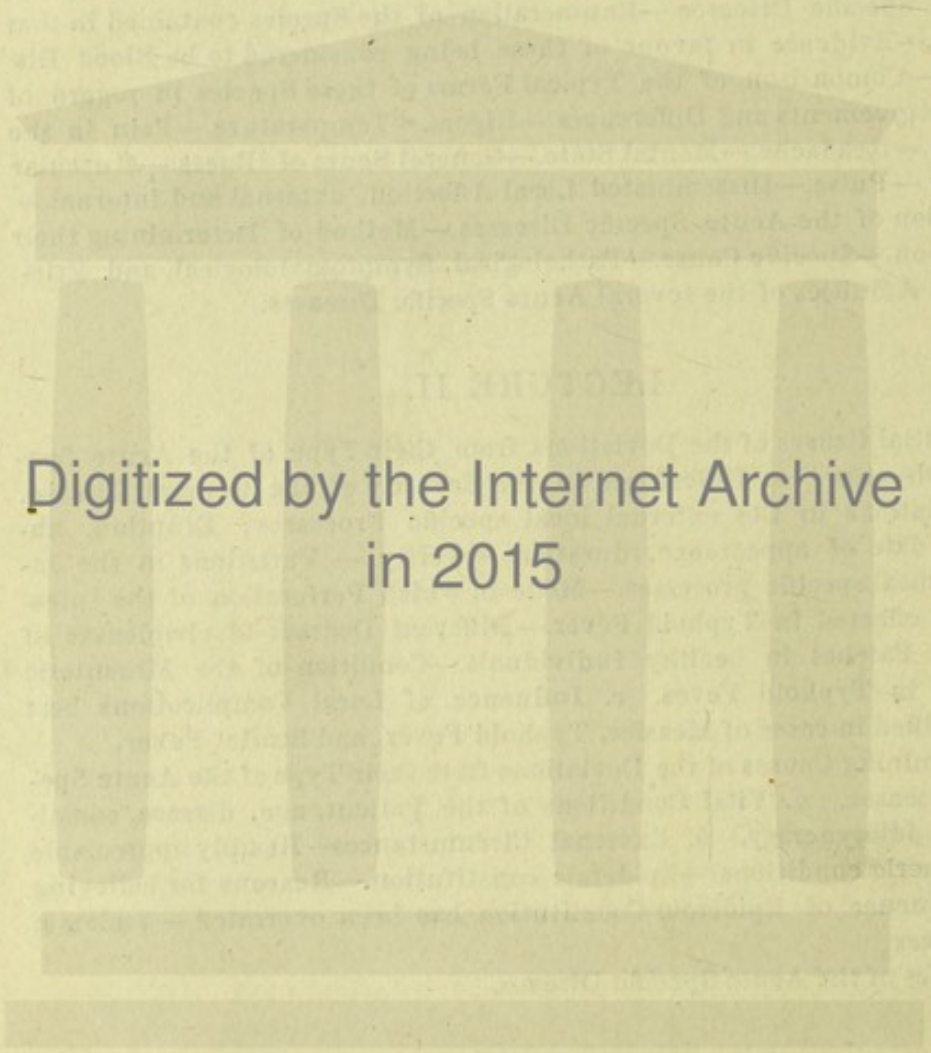

LECTURES, &c.

Mr. President—Sir,—Among the *idola specûs*, the father of the inductive sciences ranked the tendency of some minds to fasten on the differences of things to the neglect of their agreements, and of others to perceive the agreements and pass by unheeded the differences—to divide where nature has drawn no line, and to generalise where nature has bestowed no unity.

Physicians, like other philosophers, have sometimes paid homage to these idols of the den; and, from their inability to resolve into their simple elements, the very complex phenomena they study, are peculiarly tempted by these—to use Bacon's figurative language—"seducing familiar spirits."

To avoid the errors thus indicated, a review of the principles and facts that guide us in determining that a series of individual cases are really identical, and ought to be called by one name, or that a series of diseases ought to be grouped into one class from a supposed relationship existing between them, is from time to time, as our pathological knowledge advances, essential.

And such a review is well suited to an occasion like this. To prove the frequency of particular symptoms and lesions of structure in any given disease, the duration and mortality of the same,—the influence on its course and termination, of age, sex, season, etc.,—the curative effects of various remedial agents,—to prove any one of these, or any similar points, an analysis of recorded observations is essential. Mere enumeration can give a correct answer to the most simple questions only; in reference to all others, a comparison of various enumerations, and an analysis of the items used in the enumerations, are essential for the formation of a correct conclusion. But neither numerical analyses nor a close examination of the facts used in the analyses can be efficiently made in a verbal discourse; and it is for this reason, therefore, that lectures are suited especially for the dogmatic teaching of established doctrines, and for general surveys of admitted facts and their relations.

Just as no two animals are absolutely alike, and no two plants the same in all particulars, so no two cases of disease are in all points identical. Nature knows only individuals. And yet, to use the words of the Preface, so replete with wisdom, affixed by Sydenham to the third edition of his

"Observations on Acute Diseases," "it is necessary that all diseases be reduced to definite and certain species, and that with the same care which we see exhibited by botanists in their phytologies; since it happens, at present, that many diseases, although included in the same genus, mentioned with a common nomenclature, and resembling one another in several symptoms, are, notwithstanding, different in their natures, and require a different medical treatment." For the purpose of effecting this desirable division of diseases, Sydenham laid down certain rules, which may be briefly stated thus:—

1st. Every physiological hypothesis must be laid aside. "No man," he remarks, "can state the errors that have been occasioned by these physiological hypotheses."

2ndly. The clear and natural phenomena of the disease should be noted. "They should be noted," he says," "accurately, in all their minuteness; in imitation of the exquisite industry of those painters who represent in their portraits the smallest moles and the faintest spots."

3rdly. The peculiar and constant phenomena must be enumerated apart from the accidental and adventitious.

4thly. The season of the year in which the disease occurs ought to be observed; that is to say, the external conditions which may possibly cause the disease, modifications in the symptoms, local complications, etc., are to be considered.

Thus, Sydenham thought all diseases might be divided into definite species, and time has tended to confirm his opinion; for, by a close adherence to these rules, the existence of several species of the same class, and as well defined as the two he so sagaciously divided, and of which he gave such truthful descriptions, have been established. And the especial objects I propose to myself in the lectures I have had the honour of being appointed to deliver, are to point out what appears to me to be the real differences which separate these particular species from each other, and to indicate the true affinities of these same species to each other,—the grounds of their union into class, and the foundation of their division into species. And I choose this subject, in the *first place*, because I feel that it becomes a junior Fellow of the College to select for these lectures the subject of which his personal experience has been the most extensive;—that he ought here to treat only of matters concerning which he may hope that his own knowledge is inferior to that of his hearers in a less degree than on any other; and, *secondly*, because it affords an opportunity, not only of pointing out the agreements as well as the differences of these species, but also of indicating the diseases which, in practice, have been often confounded with certain of them, and the diseases, on the other hand, for which some varieties of these species have been themselves mistaken—a confusion which has fostered the opinion, that the limits of these species are ill-defined, and their symptoms most variable.

It is from Sydenham that many of the leading ideas now current concerning the acute specific diseases are derived.

He divided acute diseases into two great classes, viz., stationary and intercurrent fevers. The latter, he held, occurred at particular seasons, and owed their origin to appreciable atmospheric changes,—*e. g.*, temperature and moisture.

Pleurisy and quinsy were adduced by him as examples of this class. In the present day, the majority of the diseases arranged by Sydenham under the head of intercurrent fevers are believed to be essentially local affections, the constitutional disturbance or fever which accompanies them being regarded as symptomatic.

Of stationary fevers, Sydenham distinguished two kinds, viz., the typical or proper fevers, and the twin sisters of the typical or the variable fever. The typical or proper stationary fevers preserved their essential characters through a series of years, only from time to time they varied in some particulars a little; and yet, ever amid the prevailing variety, cases in all points identical with the model or type of the disease occurred. Of these typical or proper stationary fevers, small-pox and measles were the best-defined species. In the epidemics of these diseases which Sydenham witnessed, both presented, for a while, deviations from what he considered to be their most perfect form; but still, notwithstanding these deviations, they preserved their *essential* characters. Sydenham never doubted the essential identity of the measles of the dysenteric constitution of 1669, "the most perfect of their genus," with those of 1674, which "adhered less to their proper type."

What I have termed Sydenham's second class of stationary fevers, was constituted by those diseases which, in the present day, have been termed continued fever. The diseases of this class he held to be most variable in all their characters,—varying in symptoms and in the treatment they required with each change in the constitution of the atmosphere, and, consequently, with each change in the prevailing epidemic.

By epidemic constitution, Sydenham signified some state of the atmosphere arising from "certain hidden and inexplicable changes within the bowels of the earth,"—a condition originating, that is to say, neither in heat, cold, wet, nor drought,—a condition known to exist only by its effects in determining the origin, or spread, or peculiarity in symptoms, of any one of the stationary fevers, and of their "twin sisters," the variable fevers, which accompanied them. Now, the tendency of more recent investigations has been to remove the whole of the diseases included in the group of variable fevers into that of "typical or proper" fevers,—to erect from the individuals of this class a series of distinct species.

Taking small-pox and measles as the type of the proper stationary fevers, I propose to examine what are the peculiarities of these two diseases which render them thus fitted to be the type of a class, and why they are separated from each other as distinct species; what general characters they have in common, and what are the special characters which

divide them; what it is which constitutes their bond of union, and what are the grounds of their separation.

In both, general constitutional disturbance precedes the occurrence of any local lesion; both are attended in their progress by local affections; both have a limited and definite course; and, from those suffering from either, a something capable of inducing a disease identical with itself in all essential points is evolved. The general constitutional disturbance is manifested by increase of temperature, rapidity of pulse, loss of muscular power, and sense of malaise. The great peculiarity of the local affection is its disseminated character. (a) Thus, inflammation of the skin commences in innumerable points unconnected with each other. Many parts of the mucous membranes suffer at the same time, not of one tract only, but of several; and that not by extension, but by the establishment of separate centres of diseased action. Organs at a distance from each other, and not known to be especially related, suffer simultaneously; the spleen increases in volume, the lymphatic glands enlarge, and the lungs are frequently inflamed at several points of their substance.

In both there is a more or less sudden commencement, and in both, after the lapse of a certain number of days, if the case be not fatal, restoration to health. The disease terminates usually on, and invariably before, a given day; while certain lesions appear at a fixed time after the outset of the constitutional disturbance.

Both have their origin in the action of a specific cause. Just as a plant produces a seed from which another plant essentially identical with the parent may spring, so from every case of these two diseases is evolved a something,—a seed which can develope a disease essentially identical with the parent disease.

But by neither the seed of the plant, nor the seed of the disease, can this power of development be exercised, unless the conditions of development be given. An acorn could never develope into an oak, if it lay on a dry stone, exposed to the light of the sun; nor the seed of small-pox develope small-pox if deposited in the blood of a man who had recently suffered that disease. The power of development would be there in both cases; the conditions of development would be wanting.

In the power of propagating themselves, and themselves only, lies the test of the specific difference of plants. In the power of reproducing themselves, and themselves only, also lies the test of the specific difference of these two diseases. Could it be shown that from the same seed, under different conditions of development, might spring the oak

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(a) Quelques médecins ont comparé l'état de l'intestin (*i.e.*, in typhoid fever) à celui de la peau dans les affections exanthématique, mais je ne sache pas qu'aucun ait rapproché les unes des autres toutes les phlegmasies qui se montrent ainsi disséminées, et deduit de ce rapprochement les conséquences qui ressortent généralement de la comparaison de faits analogues." —*Chomel, Lecons de Clinique Médicale Fievre, Typhoide*, p. 442.

and the lily, then would naturalists admit, no matter how dissimilar in external characters, that these plants were specifically identical. So, in regard of these diseases, could it be shown that the something, the seed evolved from a person labouring under either, could, the conditions of development being different, develope the symptoms of the other, then must small-pox and measles be held to be specifically identical. But the power of reproducing themselves, and themselves only, *is* possessed by small pox and measles, as it is by the oak and the lily, and therefore the diseases, like the plants, are held to be distinct species.

But the conditions of development being different, from the same acorn may spring an oak the most perfect of its kind, and one the most diminutive in size and ungainly in form, and the seeds, again, from either of these, may develope, under different external conditions, into the perfect or the anomalous tree; and for this reason it is that the perfect oak and the anomalously formed oak are held to be mere varieties of one and the same species; and so in reference to small-pox and measles. As a person exposed to the effluvia of the most perfect of either kind may be affected with the most anomalous form of the same kind, while another, exposed to the emanations arising from a third person affected with the anomalous form, may have the perfect disease, the anomalous and typical diseases themselves are held to be merely varieties of one and the same species.

Typical small-pox and anomalous pox spring up indifferently from the same seed, the conditions of development only being unlike.

Typical measles and anomalous measles spring up indifferently from the same seed, the conditions of development only being unlike. Hence the typical and anomalous diseases are mere varieties of the same species. But the seed of measles cannot develope small-pox, nor that of small-pox measles, however the conditions of development be varied, and therefore it is that they are held to be true species.

Having thus eliminated in respect of these types of the proper or typical stationary fevers of Sydenham, their common invariable characters, it will be seen that an enumeration of these points of conformity constitutes a definition of a perfectly natural order of diseases, viz.,

Acute diseases of definite duration, capable of reproducing themselves, and attended in their course by disseminated lesions of structure.

The distinct species of disease referrible to this order, are far more numerous than those included in it by Sydenham; to it unquestionably belongs one disease he ranked only as a moderate effervescence of the blood, viz., scarlet fever; and I think it may now be proved, that to it also belong all those fevers which Sydenham described as the twin sisters of measles, of small-pox, of dysentery, etc., those which may be termed the variable fevers. In fact, that we have now reached that stage of pathological knowledge, where we are able to include almost all the epidemic diseases that affect

in our day the inhabitants of Great Britain in Sydenham's order of typical or proper stationary fevers, and to group them into species, and to show that each of these has preserved through series of years, and, consequently, during many changes in the epidemic constitution of the atmosphere and many changes in the conditions of its development, its essential symptoms, run its definite course, been attended by the same lesions of structure, and continued capable throughout of reproducing itself in all its integrity.

In this order or class, or genus, are to be included the following well-defined species : — Small-pox, erysipelas, measles, typhus fever, scarlet fever, typhoid, fever, and relapsing fever. It is not to be supposed that there are no other species belonging to this group. Cholera, to which it may be that autumnal diarrhœa bears the same relation that febricula does to typhus, glanders, yellow fever, and plague, may possibly, nay, probably, belong here; but at the present moment we are scarcely in a position to assign to them so definite a place. There is another, it appears to me, equally natural group of diseases, to which I shall have occasion hereafter to refer more particularly, from the fact of cases of the species which I would include in it being often confounded with some of those of the acute specific diseases. This order, however, for the sake of comparison with that just described, I shall now define, and thus:

Acute diseases of definite duration, attended in their course by disseminated lesions of structure, but incapable of reproducing themselves.

As examples of this order, I may mention—

Acute tuberculosis.

Acute purulent diathesis, or pyogenic fever.

Acute cancer.

I have spoken of the diseases of the order I first defined, simply as acute specific diseases, yet our present knowledge almost justifies the term of acute specific blood diseases; for, although actual observation has failed to demonstrate any constant change in the composition of that fluid in any one of these diseases, yet there is no question that the blood is at the outset either the medium for the circulation of the seed, poison, materies morbi, ferment, or whatever be the particular principle on which the development of the phenomena which indicate the existence of these diseases depends; or, that from the very first the infectious principle produces such a change in the blood itself, that that fluid is so altered in quality as to produce the phenomena of the disease. But that, whatever be the condition of the blood at the outset of these affections, it does, in the progress of severe cases, undergo some change, is a matter of direct observation, for chemically and microscopically it then differs from healthy blood.

There are several indirect evidences also of an abnormal condition of the blood in the diseases of which I am speaking; *e.g.*, the alteration of the animal temperature and the departure from health of the various secretions from the very first;

the deviation from its natural size and consistence of the spleen in so large a proportion of cases, and the disseminated character of the structural changes;—the simultaneous occurrence of so many functional derangements, and subsequently of so many organic lesions.

Leaving, however, this point as beyond the purpose I have in view I propose now to consider the peculiarities manifested by each of the species which I have enumerated as belonging to the group of proper stationary fevers, with reference to the several points which constitute, considered generally, the grounds for their combination into one class or genus, taking typical cases of each for the terms of comparison, and

1st. Of the general symptoms which precede the local lesions of structure, and, during the whole course of the disease, are out of proportion to them in severity—Rigors; abnormally high temperature; pain in the back and limbs; headache; mental disturbance; increased frequency of pulse; loss of muscular power, and general sense of illness; these, it may be said, are common to all, but still they present marked differences and peculiarities in regard of each of the species in question.

A severe *rigor* often ushers in an attack of small-pox, of erysipelas, and of relapsing fever. Rigors are very common, but rarely severe at the outset of typhus fever; they are of infrequent occurrence in measles and scarlet fever.

In typhoid fever rigors are replaced by a frequently repeated sense of chilliness. A rigor occurring so long after the outset of the disease as that which ushers in the relapse in relapsing fever, would, in typhoid fever, as has been proved by Louis, indicate the establishment of some serious local complication.

The *temperature* of the skin, which from the very first is much higher than in health in scarlet and relapsing fevers, is in typhus fever peculiar in kind—pungent, biting, but not particularly high. In small-pox it often, and in typhoid fever occasionally, falls considerably after the appearance of the eruption.(a)

The severity of the *pain in the back* in small-pox is, as is well known, singularly great; in erysipelas it is often complained of a good deal. In typhus fever the pain is usually more severe in the limbs than in the back, while in relapsing fever it is commonly present and often severe in both situations. In typhoid fever, scarlet fever, and measles, the pains in these parts are generally from first to last trifling.

Present in all these diseases, *headache* varies in severity and duration in each. Thus in small-pox it is severe at the moment of invasion, but quickly disappears; in relapsing fever it continues through the whole of the primary attack and of the relapse; in typhus and typhoid fevers it is one of the more constant symptoms at the outset, and in both dis-

(a) I speak only of the temperature as determined roughly by the hand. The results obtained by Traube and Zimmerman by the daily use of the thermometer, leads one to anticipate large advances in our knowledge from the more extensive employment of that instrument.

appears spontaneously, but some days earlier in typhus fever than in typhoid fever. Headache is by no means a prominent symptom in typical cases of scarlet fever or measles.

The *mind* in scarlet fever, measles, and relapsing fever is unaffected, or active delirium, mild in character, occurs at night.

In typhoid and typhus fevers the power of collecting, directing, and fixing thought first fails, then the power to appreciate the duration of time,—periods of time that elapse between given events are to the patient's imagination lengthened, minutes seem hours, hours days, and days weeks, and rarely, *if ever*, the reverse. In typhus fever this mental incapacity gradually merges into the lower form of delirium. The same happens in some cases of typhoid fever. Occasionally, however, as in small-pox, active delirium is one of the earliest symptoms in typhoid fever, and then, as in small-pox, it ceases when the eruption appears. This probably never occurs in typhus fever.

In small-pox and scarlet fever, measles and relapsing fever, the *general sense of illness* may be extreme; at the same time the patient loses the power of exerting to any considerable extent his muscular powers; he feels and is really weak. In typhoid fever, the *loss of muscular power* is yet greater; but it is in typhus fever that this is from the first the most marked. In small-pox, measles, scarlet fever, erysipelas, and relapsing fever, the patient ordinarily assigns as the cause for keeping his bed a sense of general illness. In typhoid fever, this is often the case; but, in typhus fever, the all but constant reply to the question, why did you take to bed? is, "Because I was too weak to keep about."

A *frequent pulse* is a symptom common to all the acute specific diseases,—one of their bonds of union; but it is also one of the grounds of their distinction.

Here is a Table representing the typical pulse in some of these diseases :—

Disease.																							Disease.
1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2
3	...	...	120	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	120	120	...	...	3
4	...	...	120	...	...	...	...	...	...	...	...	...	...	...	...	...	130	...	120	120	...	...	4
5	...	120	124	...	...	...	84	...	120	...	...	...	...	...	...	...	120	120	120	120	120	...	5
6	120	90	72	...	...	...	96	...	120	...	...	...	...	...	120	...	108	96	...	96	120	...	6
7	120	80	...	...	...	...	96	...	120	100	...	...	...	...	100	...	...	84	96	84	96	...	7
8	120	...	...	...	84	70	102	...	120	100	...	...	...	...	...	...	...	...	...	...	...	...	8
9	72	72	60	...	80	60	108	120	108	108	114	...	...	108	...	96	...	96	...	...	96	84	9
10	...	...	...	...	...	...	120	120	108	120	120	...	...	120	100	90	...	...	...	...	80	84	10
11	...	...	...	...	...	...	120	120	96	120	120	...	...	120	100	...	...	...	...	...	70	80	11
12	...	...	...	...	...	...	120	120	96	120	130	120	...	110	100	96	...	...	...	...	...	...	12
13	...	...	...	...	...	...	120	120	84	120	136	120	...	110	96	96	100	...	...	...	...	...	13
14	...	124	...	...	...	...	108	108	...	120	124	120	...	...	84	100	100	...	...	...	...	...	14
15	...	120	...	...	...	...	108	88	...	120	108	108	...	110	96	108	100	...	...	...	...	...	15
16	130	112	84	...	...	120	84	90	...	120	100	96	...	96	96	96	124	...	...	...	...	...	16
17	120	64	48	...	...	...	70	...	...	120	...	100	...	...	96	96	100	...	...	...	...	...	17
18	120	56	...	...	120	120	...	76	...	120	72	96	...	80	100	96	108	...	...	...	...	...	18
19	80	60	...	...	120	60	...	...	...	120	...	...	76	116	96	96	108	...	...	...	...	...	19
20	...	54	...	...	60	60	...	78	...	120	...	96	96	100	96	100	...	...	...	...	...	...	20
21	...	...	...	120	...	...	...	...	...	108	...	...	78	108	84	96	108	...	...	...	...	...	21
22	...	...	...	84	...	...	...	...	...	96	...	92	96	100	...	...	108	...	...	...	...	...	22
23	...	...	...	60	...	...	...	...	...	96	...	92	...	100	...	...	108	...	...	...	...	...	23
24	...	...	...	60	...	...	...	...	...	96	...	...	96	100	...	76	...	...	...	...	...	...	24
25	...	...	...	...	...	...	...	...	...	96	...	...	96	100	...	...	...	...	...	...	...	...	25
26	...	...	...	...	...	...	...	...	...	...	...	...	108	100	...	96	...	...	...	...	...	...	26
27	...	...	...	...	...	...	...	...	...	Conv.	...	120*	96	90	...	...	140	...	...	...	...	...	27
28	...	...	...	...	...	...	...	...	...	...	...	120	108	108	...	84	96	...	...	...	...	...	28
29	...	...	...	...	...	...	...	...	...	...	...	130	108	...	...	...	120	...	...	...	...	...	29
30	...	...	...	...	...	...	...	...	...	...	...	120	108	110	...	...	90	...	...	...	...	...	30
31	...	...	...	...	...	...	...	...	...	...	...	120	150	...	...	...	...	...	...	...	...	...	31
32	...	...	...	...	...	...	...	...	...	...	...	90	...	96	...	...	...	...	...	...	...	...	32
33	...	...	...	120	...	...	...	...	...	...	...	80	...	...	...	...	...	...	...	...	...	...	33
34	...	...	...	100	...	...	...	...	...	...	...	72	...	...	...	...	...	...	...	...	...	...	34
35	...	...	...	104	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	35
36	...	...	...	60	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	36
37	...	...	...	60	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	37
38	...	...	...	60	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	38

* Erysipelas of Nose commenced.

In scarlet fever, the pulse at the very outset of the disease attains its maximum rate of frequency, continues at the same rate for a certain number of days, and then gradually falls.

In relapsing fever, the pulse also attains its maximum rate of frequency from the first, beats at the same rate for a certain number of days, and then suddenly falls to its rate in health, or below that. Again, after a limited number of days have elapsed, it suddenly doubles the frequency of its beats, and then a second time, after a limited number of days, falls below the standard of health.

I may remark here, with reference to the very slow pulse observed after the first and second stages of relapsing fever, that the extremely infrequent pulse is due not to any slowness of contraction of the muscular substance of the heart, for the first sound is not lengthened, but to the duration of the pause,—that each beat of the heart appears to be normal, but the time that elapses between the beats is prolonged, *i.e.*, the pulse is really infrequent, not slow.

The reverse of this is true in reference to the length of the first sound of the heart, and the duration of the pause in some cases of slow pulse in cerebral disease.

Again, as to the ratio between the pulse and the respiration in these cases, the pulse being extremely infrequent, the respirations may preserve their ordinary frequency, fall very slightly, or be a little more frequent than in health. So that, instead of bearing to each other the ratio of 1 to 4, the pulse is often little more than twice as frequent as the respirations, and the two may be almost equal in frequency; thus I have seen the pulse during the stage of convalescence from relapsing fever 36 only, when the respirations were 30 in the minute, no heart, lung, or cerebral disease being present.

The influence of change of position, of muscular exertion, on the frequency of the pulse in these cases is illustrated by the following facts: the pulse being 48, the patient lying on his back, rose, on his assuming the erect position, to 116, the respiratory movements at the same time being scarcely more frequent than they were while the patient was in bed.

In typhus fever the pulse slowly rises in frequency to a certain point, preserves that rate of frequency for a variable period, and then as slowly falls. It is well here to remark, that whenever an increase more than may be accounted for by error in observation, *e. g.*, four or six beats in the minute in the frequency of the heart's beats occurs after the first fall in frequency in typhus fever, that increase is the precursor or accompanies the development of some complication. Thus, in the sixth case tabulated, erysipelas commenced with the rise in the pulse. A sudden fall in the rapidity of the heart's beats in typhus fever is occasionally the consequence of intracranial disease, *e. g.*, hæmorrhage into the cavity of the arachnoid.

In typhoid fever, the pulse rises and falls in frequency in a most irregular manner,—to-day 120, to-morrow 90, the

next day 120,—and this apparently without any relation to the increase or decrease of the general or local affections,—without appreciable cause.

The different influence of free perspiration in diminishing the frequency of the pulse, in relapsing fever and in typhus fever, is illustrated by a comparison of this Table, which is copied from a Report on Continued Fever, by Dr. Flint, Professor of Medicine in Buffalo University, United States, and the above Table, compiled from my own observations in regard of the pulse in relapsing fever; for, in the cases tabulated in the latter, the sudden fall in the pulse was preceded by profuse sweating:—

Influence of Perspiration on the Rate of Frequency of the Pulse in Typhus Fever.

No. of Cases.	Day before Perspiration.	Day of Perspiration.	Subsequent Day.
1	120	120 a.m. 116 p.m.	100
2	108	104	104
3	132	124	118
4	108	100	88
5	128	128	120
6	156	134	128
7	110	120	104
8	106	126	136
9	90	100	108
10	111	108	98

It is, then, manifest, that those general symptoms which the diseases of this class have in common, and the possession of which serves, in some measure, to prove their affinity, when closely examined, indicate their want of identity.

The same affinity, and yet want of identity, is observed in regard of the local affections.

In six of the seven,—viz., small-pox, measles, erysipelas, scarlet fever, typhoid fever, and typhus fever,—the skin is the seat of disseminated vascular engorgement. In reference to relapsing fever, some difference of opinion on this point exists. Cases of relapsing fever, as of other diseases, rarely come under observation till after the period at which the German observers of this disease state the rash they saw in it had disappeared.

In a large proportion of the cases of relapsing fever I have seen, there have been minute hæmorrhagic points, *i. e.*, petechial spots, scattered over the surface; but whether these were the result of disease, or of the bites of insects, I am unable to determine. The patients that fell under my observation were of the very lowest class; but a similar state of skin was observed in Edinburgh, and, in a few of the cases I have recorded, there were on the skin purple spots so large as to preclude the idea of their having had an external origin.

But, although all these diseases—at least save one—

agree in having an eruption on the skin, the nature of the eruption varies in each. In small-pox, it is a specific suppurative inflammation; in scarlet fever, it is diffused vascular engorgement, commencing in the most minute points; in measles, it is also vascular engorgement, but commencing in spots of some size; in typhus fever, there is a similar distension of the capillaries of the skin at detached spots at the outset, but terminating, before the conclusion of the disease, in a large proportion of cases, in rupture of one or more minute vessels in each spot. In typhoid fever, the eruption is due apparently to an increased flow of blood only to detached points; and rupture of the vessels at those points never occurs. The spots I have seen in relapsing fever have been evidently caused by cuticular hæmorrhage. In erysipelas, the skin affection appears to be inflammatory in nature, and it is accompanied by one of the effects of inflammation, viz., effusion of serosity.

Peculiarities in Respect of the Parts of the Skin Affected.—The eruption in each of these diseases appears first on particular parts of the body, or limits itself throughout to particular parts. In small-pox and measles the eruption shows itself first on the chin, nose, or forehead, and thence invades the whole face. In small-pox the skin of the wrists next suffers, while in measles the rash gradually passes from the face to the neck, thence to the trunk, and subsequently to the extremities. In scarlet fever the eruption breaks out first on the root of the neck, upper part of the chest, loins, and outer aspect of the arms. In typhus fever, the back of the hands are often the seat of the earliest spots; subsequently, the trunk and extremities; and it appears on these latter parts almost simultaneously. In typhoid fever, spots scarcely ever appear on the face, and rarely on the extremities. They are, perhaps, more numerous on the posterior surface of the trunk, but their characteristic appearance is best seen on the anterior.

In erysipelas, the inflammation commences about the centre of the face—*e. g.*, over the lower part of the nasal bones—the point of the nose, or the centre of the upper lip, or a little to one side of these parts.

As to the Period after the Outset of the Disease at which the Skin Affection appears, its Course, and Duration.—In relapsing fever, if there be a specific skin affection, it appears on the first day of illness; the rashes of scarlet fever and of erysipelas show themselves on the second; that of small-pox on the third; of measles on the fourth; of typhus fever on the fifth; of typhoid fever on the eighth. While in relapsing fever the duration of the rash is less than twenty-four hours; in measles, three or four days; in scarlet fever, six or seven days; in erysipelas, seven or eght days; in small-pox, ten or twelve days; in typhus fever, ten or twelve days; and, in typhoid fever, twelve to twenty days.

In their course, these skin affections present certain peculiarities. Thus, in scarlet fever, measles, and small-pox the eruption disappears first from the parts first affected; so

that in scarlet fever, for example, the legs are brilliant scarlet, when the face and trunk have resumed their normal tint.

The eruption seated on the back of hands in typhus fever often disappears in twenty-four hours, while that which studs the remainder of the surface continues of one uniform shade over the whole extent, to the last. In erysipelas, the inflammation of the skin spreads from one spot gradually in all directions, ceasing to extend only with the cessation of the disease. Typhoid fever offers this peculiarity, that successive crops of spots follow each other at short intervals, the fresh spots being intermingled irregularly with the old, and the spots which appeared first never continuing till the close of the affection.

The scarlet tint of the rash in scarlet fever; its dusky red hue in erysipelas; its lake-like shade in measles; its mulberry aspect in typhus fever, and the rose colour of the spots in typhoid fever; the broad patches of eruption in scarlet fever and erysipelas; the circular, irregularly distributed spots in typhoid fever; the crescentic arrangement of the spots in measles and small pox, and their orderless coalescence in typhus fever; the limited extent of the eruption in erysipelas and typhoid fever, contrasted with its wide diffusion in the other disease—these are characteristics of form, colour, and extent which need only, from our familiarity with them, to be mentioned.

In regard, then, to the skin affection in the diseases under consideration, we observe in each certain peculiarities in respect of nature, situation, date of appearance, colour, form, extent, and duration. With reference to the *internal* disseminated affections, the mucous membranes suffer the most markedly in scarlet fever, typhoid fever, erysipelas, and small-pox. In measles, however, it is the conjunctival, nasal, buccal, and bronchial; in scarlet fever and erysipelas, the faucial; in small-pox, the nasal, buccal, laryngeal, and tracheal; and in typhoid fever, the bronchial and intestinal. Again, the nature of the affection of the mucous membranes varies in each; in measles, it is active congestion, with abundant secretion from the membrane; in erysipelas, inflammation of a peculiar type, with dryness of the surface of the membrane, and serous effusion beneath it; while in small-pox, the tendency is to suppuration; and in scarlet and typhoid fevers, to ulceration. In typhus fever, the mucous membranes suffer congestion but only in common with other structures if seated in depending parts of the body. Disseminated inflammations of the serous membranes are remarkably common in typhoid and scarlet fevers; comparatively rare in measles and typhus fever. Enlargement of the spleen is common in and to all; while in typhoid and scarlet fevers and erysipelas it is, especially, that the lymphatic glands suffer.

The *duration* of all these acute specific diseases is limited; neither lasts longer than a month, and many have completed their course long before that time. Neither one continues more than a given number of days.

As to the mode in which this is determined, from the sudden commencement and abrupt termination of relapsing fever, and the fact that it is usually uncomplicated, there is no difficulty in fixing its duration.

The data for determining the duration of all the other diseases of this class are derived, *first*, from a consideration of the time that elapses between the first symptom of illness and the disappearance of the eruption; and, 2ndly, from a consideration of the appearances found after death. The eruption is one of the specific effects of the action of the exciting cause, *i.e.*, of the poison, seed, or other principle of infection, or of the condition of blood directly produced by that exciting cause, (and its continuance is ordinarily equal in duration, after its first appearance, with that of the specific disease.) The length of the disease is then, at least, the period during which the specific eruption is present, plus the period occupied by the general symptoms anterior to the outbreak of the skin affection.

The second class of data for determining the duration is derived from the examination of the bodies of those who die of these diseases: thus,—all the acute specific diseases are general diseases, and all may prove fatal without any lesion of structure of sufficient moment to account for death being found on the most careful examination. Death results, that is to say, in a certain number of cases of each of these diseases, from the direct action of the poison which induces them, *i. e.*, from the change directly induced in the blood by that poison, or from the changes directly induced in all the tissues and organs of the body by that poison, or by the changes induced by the blood altered by that poison. Now, it is evident that death from this, or these causes, can occur only during the period that the disease itself lasts; therefore, if there be a period in each of these affections, *after which*, if death occur, changes of structure of sufficient moment or extent to account for death are always found, then the specific disease must be held to continue at least up to that time, whatever be the duration of the eruption. Now, experience proves, that in several of these diseases there is such a time, and has shown, moreover, that it is never later in each of the diseases than the time when the eruption fades in typical cases. Thus, the eruption of scarlet fever disappears in typical cases, by the ninth or tenth day of disease. If death occur in scarlet fever before the latter date, then experience shows that in a certain proportion of cases, no appearances are found of sufficient importance to account for death; while, if death occur after that date, then death may invariably be explained by the lesions discovered. If, in typhus fever, death ensue within twenty-one days after the first symptoms of illness, then may no deviation from healthy structure, such as experience proves to be capable of producing death, be discovered; while, after twenty-one days, extensive alterations of structure are constantly found.

If a case of typhoid fever prove fatal before the twenty-eighth day of disease, then may slight ulceration of the

mucous membrane covering Peyer's patches, some enlargement of the mesenteric glands and spleen, be the only aberrations from the normal condition exposed by the most careful examination of the body; while, after the thirtieth day of disease, aberrations from healthy structure of the gravest character may always be demonstrated after death.

On the table are parts of the small intestines from two females, who died respectively on the fifth and fourteenth day of typhoid fever. In neither preparation is the intestinal disease very grave in character, yet scarcely any other change of structure was detected. For the one preparation I am indebted to my friend Dr. Sankey, and for the other to my friend and colleague Dr. Parkes.

It is, then, by a consideration of the period that elapses between the outset of the disease, when the invasion has been sudden, and the cessation of the eruption; and the period after the first symptoms, when also the invasion has been sudden, at which, if death occur, no lesions of structure to account for death are to be found, that we determine the duration of the acute specific diseases.

By the aid of the latter of these two points, it is, especially that we are enabled to separate the duration of the illness from the duration of the specific disease. In practice, in regard of some of these diseases, this separation is generally, because readily, effected; the duration of the specific disease being determined by the duration of the symptoms of invasion, and of the eruption, the physician seeks for the complication by which the symptoms of illness are kept up. No one would say scarlet fever had lasted for seven weeks, because a person suffering from that affection had pleurisy established in its course, which pleurisy, passing into a chronic state, ran a course of six weeks. If such a case proved fatal, it would be at once admitted that the patient had died of a disease which had commenced during the progress of the scarlet fever, and continued after the latter had ceased. The same admission would be equally correct, even though the disease of which the patient died was one of those which, in a mild or severe form, invariably accompanies scarlet fever, *e. g.*, the throat affection; thus, in a case I saw lately, sloughing and ulceration of the fauces—established by the action of the specific disease—continued to progress after the latter had itself ceased, and ultimately caused the patient's death two or three weeks after the scarlet fever had terminated. I say, in regard of scarlatina and some other of these diseases, this separation of the duration of the specific disease from the duration of the illness is made, and consequently the former can have assigned to it as definite a duration in complicated as in uncomplicated cases,—in those unattended by an eruption as in those attended by an eruption. But in regard of typhus and typhoid fevers, the line in question has not been drawn, and we find, consequently, the duration of the latter said to be sometimes as much as sixty days, and that when no relapse has occurred. This confounding the duration of the illness with the length of the specific disease is an error

into which I think some of the most able writers on these diseases have fallen. In typhoid fever, as in scarlet fever, there are two classes of lesions of structure discovered after death—1st, those which are invariably present; and, 2ndly, those which are more or less frequently the result of the disease. An instance of the former is ulceration of Peyer's patches; of the latter, pleurisy and pneumonia. Now, having been established in the course of the specific disease, either one of these may continue to progress after that has terminated, and all the general effects of ulceration of the small intestines, or of thoracic inflammation, be the result. The pulse may continue frequent, the skin hot, and the patient be delirious, and yet the fever may have ceased, the specific disease have terminated.

Determined by the data to which I have referred, each of the acute specific diseases has a definite duration, *i. e.*, with regard to each there is a date capable of being fixed absolutely, by which time the patient either dies, or, so far as concerns the specific disease, recovers.

The duration is different for each species; thus, for measles it is 7 or 8 days; for scarlet fever, 8 or 9 days; for erysipelas, about 14 days; for small-pox the same, supposing in all four the eruption to have made its appearance on the typical day; while, without regard to the date of the appearance of the eruption, it is in typhus fever 21 days, and in typhoid fever 30 days.

If, therefore, health be not restored soon after these dates, we may be certain that some other than the primary affection is the cause of the continuance of the symptoms. And, again, if for either of these diseases a specific exist, or a special treatment be proper, it is manifest that that specific or that treatment can be expected to exert a favourable influence only during so many days from the outset of the first symptoms as the specific disease has been proved to exist.

The conclusion as to the duration of typhoid fever at which I arrived from a consideration of the points just referred to, has recently been fully confirmed by an independent observer, from a consideration of a different class of facts.

Dr. Zimmerman lately published two papers in the *Deutsche Klinik*,(a) on typhoid fever. He determined the duration of the disease thus: He noted the temperature of the patient daily, and found that the thermometer indicated that the fever ceased some time between the 21st and 28th days; that is to say, then, for the first time after the commencement of the illness, the thermometer being introduced into the mouth, the mercury stood at the point at which it stands when placed in the mouth of a healthy person. Up to the same date of the disease, the patient was proved by the balance to lose weight daily, while from that date he was proved to gain weight rapidly: thus, a patient who weighed before his illness 170 lb., on the 22nd day of disease weighed only 119 lb., and on the 26th day only 117 lb. On the 30th

(a) November, 1852.

day he was found to have gained 3lb., *i. e.*, he weighed 120 lb., and on the 39th day his weight was 124 lb.; no alteration in his diet of sufficient consequence to account for the increase having been made.

The last point common to all these diseases is, that they have a *specific cause*. But although all are capable of reproducing themselves, there is not one which does not sometimes arise under circumstances in which it is impossible to trace the existence of any source of contagion,—that is to say, there is not one which does not sometimes appear to arise spontaneously. But the frequency with which this happens differs considerably. It rarely happens that cases of small-pox, the disease not being epidemic, are unable to be traced to their origin. The inability to refer the disease to contagion is more common in respect of cases of scarlet fever, measles, and typhus fever, while the contagious nature, even of erysipelas and of typhoid fever, has been called in question. Nay, it was long held that typhoid fever differed from typhus fever for this reason among others, that while the latter was contagious the former possessed no power of reproducing itself. The memoir of M. Piedvache,* has for ever laid this doubt. That observer has shown, that if the conditions of development be given, typhoid fever has the power of reproducing itself, and has adduced several instances in which persons in attendance on cases of typhoid fever not only contracted the same disease, but, having been removed while ill to houses situated miles distant from the primary case, and where no fever existed, communicated the disease to their relatives and friends. As a rule, those only had the disease who, in imperfectly ventilated rooms, were in close and continued communication with the sick man.

But let the cases of that disease collected together be numerous, and the attendants fully exposed to the effluvia, and it will spread among them in the best ventilated places as freely as typhus fever. For example, the number of nurses who suffered from typhoid fever during the time I visited the London Fever Hospital † was as great as the number of those who had typhus fever, while, during the same time, one of the medical attendants had typhus fever, and just before one had died of typhoid fever.

It would appear that the seeds of these specific diseases differ from each other, like the seeds of plants, not only in requiring more or less different conditions for their development, but also in the facility with which their germinating powers are destroyed.

I cannot call to mind a single instance of a case of small-pox being received into the wards of a general hospital without the diseases preading to one or more of those in relation or proximity to it; while I can remember only two instances of the extension of typhoid fever when cases of that

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* "Recherches sur la Contagion de la Fièvre Typhoide, et principalement sur les Circonstances dans lesquelles elle a lieu, par Joseph Piedvache, Paris, 1850."

disease were scattered through the wards of a *general* hospital; and in those cases it was the friends of the patient —the mother, in one instance, who had watched by her son night and day—who suffered.

The following facts, given by Dr. Flint, of Buffalo, are of interest, as bearing on this point and some others connected with the means of the propagation of the contagious diseases. At North Boston, Erie county, United States, in 1843, resided nine families. Taking a tavern for the centre, seven of the nine lived within an area 100 rods in diameter.

All the inhabitants, with the exception of the members of one family, were in the habit of frequenting the tavern. A feud existed between the master of that one and the tavern-keeper. A man labouring under typhoid fever (a disease previously unknown in North Boston) took up his residence at the tavern, September 21, and died October 29th.

Between October 19th and December 7th, twenty-eight persons in this little community had typhoid fever. Three families only escaped the disease, viz., the two residing the farthest from the tavern, and that of the man who had a quarrel with the tavern-keeper, and the members of which, consequently, never visited at the house of the latter. Now, a fact of interest in this case is, that all the families in which the disease appeared drew their supply of water from the well of the tavern, while two out of the three that escaped had their water from other sources.

The man at feud with the tavern-keeper was accused of having poisoned the well of the tavern. He resided nearer than any of the others to the tavern. None who visited the village simply for the purpose of rendering assistance to the inhabitants contracted the disease.

In concluding this review of the typical causes of the acute specific diseases, I would observe, that, as the pathological tendency

of small-pox is to produce		inflammation and suppuration;
of measles	,,	active congestion;
of scarlet fever	,,	inflammation and ulceration;
of typhoid fever	,,	inflammation and ulceration;
of typhus fever	,,	congestion and extravasation of blood;
of erysipelas	,,	inflammation and effusion of serosity;

it is probable that the pathological affinity of typhoid fever(a) is with scarlet fever rather than with typhus fever or relapsing fever; and that the pathological affinity of typhus fever is

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(a) I have been repeatedly asked, Why give names so nearly alike to things so distinct as typhoid and typhus fevers? The former name, moreover, it has been said, is very inappropriate.

Two circumstances have prevented me from proposing another name for typhoid fever; 1st., the fact of the disease having been described by that name in the classical works of Louis, Chomel, Jackson, Bartlett, and others; and, 2ndly, my inability to find a name for it so appropriate as to justify the attempt to displace the old one.

Dr. Babington proposed to me the name "febris tympanica," Dr. Hare

with measles rather than with typhoid fever or relapsing fever; while the symptomatological affinity of relapsing fever is with the class of diseases in which intermittent fever ranks, rather than with typhus fever or typhoid fever, although etiologically its place is among the acute specific diseases.

In my next lecture, I propose to consider the essential and determining causes of the deviations from their types of particular cases of the acute specific diseases; and to give a brief sketch of some of the varieties thus produced.

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that of "sepomia," to express the disease in question. Nervous fever was the old English name.

Many of the German and some English writers have adopted the term "typhus abdominalis;" to this term I object strongly, because, especially, it involves a theory concerning the nature of the disease maintained by no sound authority.

LECTURE II.

In practice, deviations from the types of the acute specific diseases that I compared in my last lecture, continually present themselves; and I propose now to consider, in regard of these varieties:—

A Their essential causes.

B Their determining causes.

And *C* Their phenomena.

A The essential causes of the differences in the symptoms and lesions of structure of the acute specific diseases may be referred to three heads, viz.:—

a To differences in the severity of the general specific disease.

b To variations in date of origin, extent, severity, course, and duration of the specific local processes, and to their immediate effects.

c To the presence and varying degree of severity of functional or organic complications.

a Of the deviations from their type produced by differences in the severity of the general specific disease, scarlet fever and typhus fever afford the most frequent and striking illustrations; and for these two reasons, viz.—1st., that, in both, death is not unfrequently caused by the general disease, independently, that is to say, of any change of structure; and, 2ndly, that, in both, the general disease is often of the most trivial character, and runs its course unattended by any grave or prominent local affection.

To this head are probably to be referred those differences in the suddenness of the access of these diseases sometimes observed. The more severe the general disease, the more suddenly do the patient's powers succumb to the impression produced on them; and when, towards the termination of the disease, grave constitutional symptoms occur for the first time, they are usually due—in a great measure, at least—to the severity of the specific local processes, or to the establishment of complications.

b As to the influence of the specific local processes. The skin affection is occasionally wanting in all. Arranged in the order of the frequency with which it is present in the adult, these diseases stand thus:—

Small-pox—measles—typhus fever—erysipelas—scarlet fever—typhoid fever.

Being present, the eruption in the same disease varies infinitely in amount, and, to some extent, even in appearance. Thus, only two or three rose-spots may be present in typhoid fever, and not more than half-a-dozen pustules in small-pox; while, in the same diseases, nearly the whole

surface may be covered with their characteristic eruptions. In typhoid fever, a minute vesicle may in very rare cases be seen on the apex of what appear, from their colour, size, seat, and course, to be rose-spots; and the pustules of small-pox are occasionally represented by papulæ or by watery blebs. And, again; who has not hesitated now and then to say, judging from the eruption alone, whether a given case was one of measles or of scarlet fever?

This Table, from Rilliet's paper,(a) exhibits the great variations that occur in reference to the date of the appearance of the eruption after the first symptoms of measles.

Day of Disease on which the Eruption appeared in 395 *Cases of Measles.*

On the	1st day	.. in ..	..	11 cases.
,,	2nd ,,	.. ,, ..	..	29 ,,
,,	3rd ,,	.. ,, ..	..	57 ,,
,,	4th ,,	.. ,, ..	..	77 ,,
,,	5th ,,	.. ,, ..	..	76 ,,
,,	6th ,,	.. ,, ..	..	42 ,,
,,	7th ,,	.. ,, ..	..	34 ,,
,,	8th ,,	.. ,, ..	..	12 ,,
,,	9th ,,	.. ,, ..	..	35 ,,
,,	10th ,,	.. ,, ..	..	4 ,,
,,	10th to 13th	.. ,, ..	..	12 ,,
,,	13th to 16th	.. ,, ..	..	6 ,,

The duration of the eruption is equally variable. Sometimes it vanishes in twenty-four hours; in other cases its duration is singularly prolonged. Thus, in one of Rilliet's cases, it attained its height as late as five days after its appearance; and, in one detailed by Reveillé-Parise, fifteen days after its commencement. Sometimes it almost disappears, and then returns more intensely than at first.

In scarlet fever, the date, after the first symptoms of illness, of the appearance of the rash varies much. Often present on the first day, it is not unfrequently delayed till the third day, and, in one of the cases referred to in the table, it appeared for the first time on the 7th day. This table shows the period of the disease at which I noted the appearance of the rash in 24 cases:—

Day of Disease on which the Rash Appeared in twenty-four Cases of Scarlet Fever.

On the	1st day	.. in ..	..	7 cases.
,,	2nd ,,	.. ,, ..	..	10 ,,
,,	3rd ,,	.. ,, ..	..	2 ,,
,,	4th ,,	.. ,, ..	..	2 ,,
,,	5th ,,	.. ,, ..	..	1 ,,
,,	6th ,,	.. ,, ..	..	1 ,,
,,	7th ,,	.. ,, ..	..	1 ,,

(a) *Gazette Médicale*, 1848.

And this table the day of the disappearance of the rash in 54 unselected cases, including all those that have come under my care in the Hospital for Sick Children :—

Day of Disease by which the Rash had Disappeared in Fifty-four Cases of Scarlet Fever.

By the	5th	day	..	in	..	..	1	case.
,,	6th	,,	..	,,	..	..	3	,,
,,	7th	,,	..	,,	..	..	5	,,
,,	8th	,,	..	,,	..	..	13	,,
,,	9th	,,	..	,,	..	..	12	,,
,,	10th	,,	..	,,	..	..	8	,,
,,	11th	,,	..	,,	..	..	4	,,
,,	13th	,,	..	,,	..	..	2	,,
,,	14th	,,	..	,,	..	..	2	,,
,,	16th	,,	..	,,	..	..	2	,,

In typhus fever, the eruption may appear as early as the third day; sometimes, however, it is delayed till so late as the 9th day.

This table shows the date of its disappearance in 68 unselected cases :—

Day of Disease by which the Mulberry Rash had Disappeared in Sixty-eight Cases of Typhus Fever.

By the	7th	day	..	in	..	..	1	case.
,,	8th	,,	..	,,	..	..	1	,,
,,	9th	,,	..	,,	..	..	2	,,
,,	10th	,,	..	,,	..	..	1	,,
,,	11th	,,	..	,,	..	..	3	,,
,,	12th	,,	..	,,	..	..	3	,,
,,	13th	,,	..	,,	..	..	2	,,
,,	14th	,,	..	,,	..	..	9	,,
,,	15th	,,	..	,,	..	..	8	,,
,,	16th	,,	..	,,	..	..	8	,,
,,	17th	,,	..	,,	..	..	8	,,
,,	18th	,,	..	,,	..	..	5	,,
,,	19th	,,	..	,,	..	..	5	,,
,,	20th	,,	..	,,	..	..	5	,,
,,	21st	,,	..	,,	..	..	4	,,
,,	23rd	,,	..	,,	..	..	1	,,
,,	25th	,,	..	,,	..	..	2	,,

In typhoid fever, the eruption may be seen as early as the fifth day of disease, while spots sometimes appear for the first time as late as the 20th day, and fresh spots as late as the 32nd day.

The day of appearance, and the duration of the skin affection, in small-pox, are comparatively constant, but the modifications in the other symptoms produced by its extent and severity are very great.

"Very many patients," says Dr. Gregory, "die between the 8th and 12th days of the eruption, from the combined effects of cutaneous and cellular inflammation."

The specific local process of the skin modifies the symptoms of small-pox; 1st, by interfering with the due per-

formance of the functions of that structure; and, 2ndly, by exciting symptomatic constitutional disturbance.

Erysipelas is another of these acute specific diseases in which the external local process is in some instances so severe as to modify greatly the phenomena of the disease. Sometimes the inflammation, instead of causing œdema only of the subcutaneous tissue, leads to the exudation of pus blastema; the constitutional disturbance is in such cases fearfully increased by the severity of the local process, and the duration of the general illness greatly prolonged.

As to the symptoms due to the *internal* specific local processes, they also may be altogether absent. We see measles without catarrhal symptoms; scarlet fever without sore throat; small-pox without any affection of the nasal, buccal, or laryngeal mucous membranes; typhoid fever without diarrhœa; erysipelas without pain in deglutition,—and in all we see the symptoms of the internal affections most intense. The influence of the internal specific processes in modifying the symptoms is well seen in some cases of small-pox and typhoid fever.

In small-pox, about the seventh day of the eruption severe symptoms, arising from the specific process established in the larynx and trachea, are not uncommon. The patient up to that time has perhaps suffered severely, but yet from no symptoms calculated to awaken alarm in the inexperienced. A little hoarseness, some hard cough, first dry, and subsequently accompanied by tenacious mucous expectoration, are all that indicate the presence of the specific lesion, which in two or three days more proves fatal.

The laryngeal, like the skin affection, modifies the symptoms of small-pox in two ways,—

1st. By exciting symptomatic constitutional disturbance, and so adding in appearance to the severity of the specific constitutional disturbance; and,

2ndly. By interfering with the due performance of the respiratory function.

The specific intestinal and mesenteric diseases often give a complexion, as it were, to cases of typhoid fever; and they do so—

Sometimes by inducing direct abdominal symptoms of a more severe character than occur in typical cases; *e.g.*, great pain, distension of the abdomen, or extreme sensibility to pressure.

Sometimes by leading to diarrhœa, or to hæmorrhage from the bowels, and so depressing the powers of the patient that he is unable to bear up against the specific general disease.

In some cases the hæmorrhage itself proves directly fatal; thus I have seen a man suffering from typhoid fever at a time when his general powers were little impaired, when he was able to sit up and converse freely with those around him, suddenly lose so much blood from the bowels as to be reduced in half an hour to a state of extreme exhaustion, and then, in the course of a few hours, be carried off by a return of the hæmorrhage.

And sometimes by causing perforation of the peritoneum. When this occurs, the patient may sink rapidly from acute general peritonitis, or more gradually from a more chronic form of the same disease.

The primary breach of surface of the intestinal mucous membrane seems to be effected in three modes :—

1st. By thickening and softening of the mucous membrane, and then the detachment of the softened membrane, in the form of molecules of inappreciable magnitude. 2nd. By the effusion of lymph on and into the mucous membrane, and the separation of the former with minute portions of the latter,—still portions of some size. 3rd. By the detachment of large sloughs. In these last cases there is always, at an early stage of the disease, a deposit of protein matter—using that word in its largest sense—in the submucous cellular tissue. This substance is friable, of a pale yellowish colour, and now and then marked with vascular striæ, apparently the vessels of the tissue in which it is placed. It has been called typhous matter, and is susceptible only of the lowest form of cell development. It is probably rarely, if ever, absorbed from the submucous tissue, and never enters into permanent relation with the structures amid which it is placed. Before the thirtieth day of disease, the whole of this matter is ejected; and in this wise, by its accumulation in the submucous tissue, the nutrition of the mucous membrane is so seriously impaired that it dies, and then both it and the foreign matter are thrown off in the form of a slough of considerable size. Sometimes the whole of the newly-deposited protein matter is separated at the same instant, at others it comes away in several pieces. But however this may be, when the whole of it has been thrown off, the mucous membrane is found to have been detached from the submucous tissue to a greater extent than it has been destroyed; so that, if a portion of intestine, on which is an ulcer in this stage, is placed in water, the edges of the ulcer float upwards, as in this preparation put up by my friend Dr. Sankey, and this from University College Museum.

Destruction of the other coats of the intestine is effected thus—by ulceration, or, as ulceration is pathologically termed, by molecular death, the inferior layer of the submucous cellular tissue is destroyed, and then the floor of the ulcer is formed of the muscular fibres of the intestine. These fibres swell, grow intensely red, soften, and then die molecularly, and so the peritoneal coat is exposed.

The actual perforation of this membrane may be the result of the continuance of the process by which the muscular coat was destroyed, viz., molecular death, and then one or more minute rounded apertures are formed in the floor of the ulcer; more commonly a portion of the peritoneum of some magnitude dies, and then a slough dyed with the intestinal fluids may be found in some cases attached to one point of the aperture; and, lastly, but so rarely that it has been denied by some, rupture of the

delicate layer of peritoneum that constitutes the floor of the ulcer may take place. Of this perforation of the intestine by rupture I do not myself remember ever to have seen an example in typhoid fever; but I have seen an unequivocal case of the kind in a child the subject of tubercular ulceration of the large intestine; and, from the tenuity of the floor of the ulcers in some cases of typhoid fever that have fallen under my observation, I cannot doubt the possibility of its occurrence in that disease. The fact of such an accident being possible should teach us to be careful in manipulating the abdomen of patients in an advanced stage of typhoid fever.

As the destruction of the walls of the intestines progresses lymph is sometimes deposited on the external surface of the peritoneal coat corresponding to the ulcers, without adhesions to surrounding parts being effected. But in some cases adhesions are formed, and then perforation of the intestinal walls may take place without any escape of the intestinal contents into the peritoneal cavity. Sometimes, again, adhesions unite adjacent folds of intestine, and the borders of these folds adhering to the parietal peritoneum, a circumscribed cavity is formed. Opening into such a cavity an aperture is occasionally found communicating with the interior of the intestinal canal. In these cases a considerable period may elapse between the perforation and the escape of the contents of the intestines, and the death of the patient, and then most extensive organic changes may be discovered after death. In such a case, I have seen large tracts of the parietal peritoneum destroyed by ulceration and sloughing.

But, however perforation of the intestine is effected in typhoid fever, and whatever adhesions take place, it may be laid down as a law, to which nothing on record affords an exception, that ultimate recovery is never accomplished, and that, sooner or later, death is the consequence of intestinal perforation. The adhesions, as Rokitansky says, are never permanent.

To describe the general appearance and the structure of the glandulæ agminatæ, or Peyer's patches, is here needless; every one is familiar with them. But there are one or two points in connexion with these structures to which I must advert, because errors respecting them have found their way into very able works; for example, Dr. Flint's reports. I allude especially to the anatomical causes, and the signification of their degree of visibleness.

(1) In young children Peyer's patches are always readily seen, and about the period of the first dentition, are often very distinct. Their extreme visibleness in the intestines of these subjects, as well as in those of some adults, is ordinarily due to the prominence of the ridges of mucous membrane between the pits in which the sacculi lie. This is well seen in this preparation of the intestines of a young child who died of bronchitis; in this preparation from the College Museum; and in this preparation, from the Museum of University College, of the intestine of a young adult killed while in health by an accident.

(2) In aged persons, and in some adults less advanced in years, Peyer's patches readily catch the eye, in consequence of their being smooth, and of an opaque dull white hue. In such cases they are sometimes less prominent than the adjacent membrane.

When the patches have lost the projections between the pits, and have not experienced that conversion of structure which is indicated by the appearances just mentioned, they may readily be passed by unnoticed; nay, may require to be sought for carefully before they can be discovered. Under these circumstances, they have been said to be absent.

(3) A third cause of the facility with which Peyer's patches are seen is, that they now and then remain pale when the vessels of the mucous membrane around them are injected with blood.

(4) While a fourth reason of their distinctness is the presence on them of small blackish grey, or black points, giving to them an aspect which has been compared to the recently shaven beard. This appearance is produced by the action of the intestinal gases on the blood contained in the capillaries which lie in the folds of mucous membrane surrounding the pits containing the sacculi.

No one of these four conditions of the glandulæ agminatæ, or Peyer's patches, is connected with any particular disease, though the last mentioned occurs whenever the circulation through the vessels of these parts has been delayed for any length of time. This much is certain, that neither of the four conditions has any connexion with the lesions proper to any form or species of fever.

In the mesenteric glands exudation—matter is sometimes found identical in appearance with that in the submucous tissue of the intestine. Like that it is susceptible only of the lowest cell development, and therefore incapable of forming a permanent part of the organism. From its situation it cannot, like that in the submucous tissue, be ejected. It appears to undergo two changes, viz., softening and fatty degeneration.

By its softening it forms a purulent-looking fluid, and constitutes a variety of pseudo-abscess. The fluid thus found may be absorbed, or the peritoneum over it may give way, and peritonitis, general or partial, be the result.

Masses of typhoid matter in the mesenteric glands soften first at the circumference, so that a lump of unsoftened matter is often found bathed in a purulent-looking fluid.

By fatty degeneration I mean a metamorphosis, or conversion into fat of the exudation protein matter by a rearrangement of its elements. A change which protein matter of low organization, or without the power of developing into tissue, constantly experiences. This conversion into fat may be effected either before or after softening has taken place, and the fatty matter thus formed may subsequently be absorbed. In fact, fatty degeneration is one mode in which solid fibro-albuminous substances are brought into a state suitable for absorption. The process by which the healing of the typhoid ulcers is accomplished is of interest, practi-

cally and pathologically. It seems to be this: the floor of the ulcer after every part of the substance deposited during the progress of the specific disease has separated, becomes smooth, and of a pale, bluish-white colour—it is covered with a delicate layer of healthy organizable lymph—to this layer, which extends under the detached mucous-membrane at the edges of the ulcer, the latter adheres (gradually from without inwards, *i.e.*, from the circumference towards the centre). If the intestine be now placed in water, the edges of the ulcer no longer float upwards. After a time, all that remains is a flat, smooth, shining, and somewhat depressed surface, to which the transition from the mucous-membrane around is insensible. At first this smooth surface is, unlike the natural mucous-membrane, fixed to the subjacent coat, so that it cannot be moved on the latter. Ultimately, however, it can be so moved, and is then scarcely to be distinguished by the unaided eye at least from normal mucous membrane. It is important to remember, that stricture of the intestine has never been known to result from the healing of a typhoid ulcer.

Occasionally, in the progress of typhoid fever, a deposit similar to that which is seated in the intestinal wall and in the mesenteric glands is found in other parts; the spleen, walls of the gall bladder, lungs, and kidneys are the organs in which I have seen such deposits. By their consequences, these deposits may lead to modifications in the primary disease.

Thus, in the spleen it may soften, form a pseudo-abscess, and ultimately induce general inflammation of the peritoneum, either by bursting into the abdominal cavity, or by exciting inflammation of the serous membrane covering itself, and then that inflammation spreading over the whole extent of the membrane. A case of the latter kind lately proved fatal under my care in University College Hospital.

c The third great cause of the modifications in the symptoms of the acute specific diseases is the occurrence of local complications.

By the term complications are signified those affections which may exist as substantive diseases; *e. g.*, pleurisy, pneumonia, hæmorrhage into the cavity of the arachnoid, and also those extreme functional derangements of particular organs, which are out of proportion to the severity of the general disease.

Of the influence of these local complications, in causing deviations from their type, measles, typhoid fever, and scarlet fever afford frequent examples. The symptoms and course of measles are singularly modified by the occurrence of pneumonia; thus, if severe pneumonia be established during the stage of invasion, the eruption in many cases never appears, and when it does appear it is pale and of short duration. If the pneumonia be set up after the eruption has appeared, then the course of the latter is considerably shortened: it quickly disappears. Neither bronchitis nor ente-

ritis, according to Rilliet's observations, have any such effect on the course of the eruption.

In cases of typhoid and scarlet fevers, it is by no means uncommon to see aberration in the functions of the brain manifested by violent delirium or extreme depression, when from an examination of that organ we are satisfied that it was the seat of no more vascular engorgement than the brains of those who die without having exhibited any such symptoms. This extreme cerebral excitement is often witnessed when the other symptoms do not warrant the opinion that the case is one of great gravity.

In a diagnostic point of view it is well to know, that after the patient becomes delirious in the acute specific diseases, he never complains of headache, and rarely admits its existence, even when questioned concerning it, while in cases of intracranial inflammation headache is constantly, and often loudly, complained of after delirium has commenced.

B These, then, being the essential causes of the chief deviations from their typical form of the acute specific diseases, it remains to consider the circumstances which determine the severity of the general specific disease, the extent and severity of the local specific processes, and the supervention of complications.

These are,—

a The vital conditions of the patient.

b The external circumstances by which he is surrounded.

a The influence of the vital conditions incident to age in modifying the severity of the general disease, and the specific local process, is well seen in typhus fever.

The mortality from typhus fever in persons between the ages of six years and fifteen years is very trifling, not more than 2 or 3 per cent. The mulberry rash in the same class of persons is either absent, or pale in hue and scanty in quantity, except in rare cases. While the mortality in persons more than 50 years of age is about 56 per cent., and in them the mulberry rash is always present, and ordinarily dark and abundant. Typhus fever, too, very often proves fatal to those past the middle period of life without any local complication having been established in its course, while this never happens in the young. Nay, an abundant rash, a brown tongue, and marked prostration, are uncommon symptoms in typhus fever when it affects children.

Other instances of the modifying power of the vital condition of the patient over the phenomena which follow the introduction of the specific element into the system are offered by the fact, that strumous children, when the subjects of scarlet fever, suffer much more frequently than others from acrid discharges from the eyes, ears, and nose; from swelling of the parotid and the parts in its vicinity; and that women who contract scarlet fever in the puerperal state, comparatively speaking, rarely recover. It cannot in any of these cases be supposed, that the difference in the severity of the general disease, or the specific local processes, depends on a difference in the poison, or in the quantity of the

poison. It can depend solely on the different conditions of the recipients.

In some persons, again, from constitutional idiosyncrasy, great general disturbance is produced by comparatively slight local disease. Now, if in these persons any local complication be set up in the progress of a specific disease, or if the specific local processes be severe in nature, then the sympathetic constitutional disturbance, superadded to the specific disease, materially modifies its symptoms. This same constitutional idiosyncrasy is manifested in the excitement which particular organs suffer in some individuals from a cause which has no influence in producing the same symptoms in others. In some the brain is peculiarly prone to sympathise, as it is called—a term which probably signifies, in these cases, that the presence in the blood of an element which produces no aberration from the functions of the brain in one individual, is, in another, from a difference in the susceptibility of that organ to that stimulus, sufficiently potent to produce delirium, etc.

These differences may be illustrated by a reference to the differences observed in the effects of alcoholic drinks on the cerebral functions in different individuals.

b The external conditions on which deviations of the acute specific diseases from their types depend, are,

1st. Readily appreciable atmospheric changes. These changes modify the symptoms and the course of the acute specific diseases, by inducing intercurrent affections, complications, *e.g.*, pneumonia in measles.

2ndly. The epidemic constitution. This, it is said, manifests its influence, not only by determining the prevalence of particular diseases, but also by impressing on them peculiar modifications. *Now*, almost every case requires the administration of powerful stimulants; *then* the lancet is the chief agent in diminishing the mortality. Our ideas, however, on the meaning of the term "epidemic constitution," are undergoing considerable change. But, granting the epidemic constitution to be something totally distinct from directly appreciable atmospheric changes, there is every reason to believe that its influence in determining differences in the type of these diseases has been greatly over-rated.

First, because under one name several diseases have been, in times past, confounded, and what was due to difference of disease was referred to difference of type. The fever for which the lancet was used so freely in 1818, without injury to the patient, was relapsing fever; and the estimation in which blood-letting was held rested on the fact, that nature terminated the apparently severe attack, aided or unaided by the treatment, in less than a week. Stimulants have been held in high repute in late times, because the disease we have had to treat has been typhus fever. The constitution of the air has favoured the prevalence now of one and now of the other; but the sporadic cases of either which occurred during the prevalence of the other, required the same treatment that they did when they themselves were epidemic.

Cases of relapsing fever that occur when typhus prevails need no wine, and cases of typhus fever that occur when relapsing fever is epidemic, need stimulating as much as they do when typhus is itself epidemic; just as sporadic cases of scarlet fever that occur during an epidemic of measles require the treatment fitted for scarlet fever, and the reverse,

A second reason why such great powers in modifying the acute specific diseases were assigned to the epidemic constitution by the old observers, was, that variations in the symptoms resulting from intercurrent affections, induced by appreciable atmospheric changes, were not, from imperfections in the art of diagnosis, separated from the variations dependent on differences in the severity of the specific diseases themselves.

3rdly. The third class of external circumstances which modify the acute specific diseases, are endemic influences, under which head I would include imperfect ventilation, overcrowding, and want of drainage. The effect of these is to increase the severity of the general disease, to impress on it a typhoid type. A striking proof of this is afforded by the sudden change in the type of the symptoms often seen on removing the poor from their close-crowded rooms to the well-ventilated wards of an hospital.

C—Such, then, being the essential and determining causes of the modifications of the acute specific diseases, I have now to pass in review briefly some of the varieties of these diseases which result from their influence.

Small-pox.—I have already remarked, that the deviation from the type of small-pox in the confluent variety is due to the extent and severity of the specific local process.

Symptomatologically considered there are three, and pathologically considered two, distinct varieties of small-pox included under the term "malignant small pox."

In the first symptomatological variety, the severity of the general specific disease is evidenced by the patient dying before any local disease whatever is established.

In the second, the severity of the general specific disease is manifested by the softened state of the solids, and the ready solubility of the organised elements of the blood; the effects of which are hæmorrhage from innumerable small vessels in various parts of the body, the effusion of serosity dyed red by dissolved hæmatosin, and diminution of muscular power, cardiac as well as voluntary. The cerebral functions in these cases are often unimpaired.

While the third variety is characterised by so-called typhoid symptoms; *i.e.*, by frequent pulse, dry and brown tongue, low delirium, and great prostration,—characters which it owes either to the severity of the general affection,—for they are sometimes present when the pustules are few in number and distinct,—or to the presence of severe local complications. Thus, in a case I witnessed of this kind, the patient was progressing favourably, but the evidence of pneumonia being established, was quickly followed by typhoid symptoms. On examination after death, the inter-

lobular septa of the lung were found infiltrated over a considerable space with purulent-looking fluid.

Typhoid Fever.—The cases of typhoid fever met with in practice may be grouped under the following heads: — The typical, the mild, the grave, and the insidious, simulative, or latent.

Time permits me only to sketch the last; and this I shall do at some length, because I believe the cases included in it are often misunderstood.

The insidious, simulative, or latent variety of typhoid fever usually commences most gradually, the patient being altogether unable to say on what day he first felt unwell; nay, sometimes he cannot fix within a week or ten days the outset of his illness; rarely is he able to say what the first symptoms from which he suffered were. He seeks aid from the physician because he feels "poorly;" he deferred seeking aid before, because "he hoped to shake it off." His bowels have been, he says, somewhat "out of order," his head has ached a little, and perhaps he has had trifling cough. He thinks he must have caught cold. Now and then, one or other of the symptoms mentioned are especially complained of. Less commonly pain in the limbs and back are troublesome. The patient has not given up his ordinary employment, but he feels, as he describes it, "not up to it." He lies in bed as late in the morning as his occupations permit him; when he rises, he feels weary and fatigued, and at night scarcely able to undress himself. His appetite is lost; more or less diarrhœa is usually present; sometimes, however, the bowels are constipated. The tongue is often large, pale, and but slightly furred. It is generally somewhat tremulous. If the case be not understood, the patient gradually growing less able to exert himself, ceases to leave the house, or, if he still goes out, it is for a short time only. The greater part of the day he spends in bed or on a couch. At night he is restless, and disturbed by thirst and a sense of heat,—"eaten up by fever," as he calls it.

In this state, if the case go on favourably, the patient continues one day better and another worse, but always losing flesh for about a month, and then he begins to mend, and after another week or two feels pretty well.

For many years some of these cases puzzled me much. A pulse somewhat quickened only, a tongue not greatly differing from that of health, and no marked heat of skin, trifling frontal headache, a little sonorous râle, and slight irregularity of the bowels, seemed local ailments altogether insignificant, and yet the patient continued ill, and often appeared worse to his friends than to me, for they saw him at all times, I only when he was aroused to exertion. I have supposed the case to go on well; but in some instances it terminates fatally by hæmorrhage from the bowels, or perforation of the intestine, and then the patient dies in a few days, to the surprise of those who have watched the progress without understanding the nature of the case.

In these latent cases, the physician has often but to be aware of the possible nature of the illness to detect it. The confirmation follows immediately on the suspicion; for, if the surface of the abdomen and thorax be carefully examined, in a large number of cases, the rose spots, which, when well marked, are as characteristic of typhoid fever as are the small-pox pustules of small-pox, may be detected.

But in a certain proportion of cases, on the most careful search, not the trace of a spot can be seen.

Still the diagnosis may usually be made with certainty. The conjunction of frontal headache with diarrhœa is rarely observed except in cases of typhoid fever; and, if to these symptoms be added a sense of weakness disproportioned to that which might be occasioned by the diarrhœa, trifling sonorous râle, with a want of steadiness in directing or keeping up, even for a short time trifling muscular effort, *e. g.*, a little unsteadiness of the tongue when fully protruded, a little wavering of the hand when the arm is extended,—the diagnosis of typhoid fever may be considered absolute, even though the heart's beats be scarcely quickened, the tongue be moist and almost clean, and the patient able to leave his room for the greater part of the day. Ordinarily, in the cases of which I am speaking, the abdomen is somewhat more resonant than natural, a little "blown" as it is called, and gurgling, on careful manipulation, may be detected in the right iliac fossa; the splenic dulness, too, is extensive.

In some cases which commence as the one I have just sketched, after 16 or 17 days have elapsed, the febrile symptoms become more marked, and in a few days the tongue is brown, sordes collect about the teeth, and prostration is considerable; then the disease is said to run into typhus fever.

In other cases cough and sonorous râle are the most prominent symptoms, and then the patient may be supposed to be labouring under a mild but protracted form of bronchitis. A fourth set of cases, from the presence of redness of the tip and edges of the tongue, and the marked character of the intestinal disorder, are called by some "mild gastric fever," or "muco-enteritis."

While, in a fifth set, the symptoms are so trifling that the patient and his friends resort for an explanation of his illness to those English disorders, a bad cold or an attack of the bile, while the medical attendant sees protracted influenza, irritative dyspepsia, or error in diet.

Scarlatina.—Passing by those forms of scarlatina which are never fatal, I will enumerate the apparent causes of death in the fatal cases I have examined.

For this purpose I may divide the cases into two groups, viz., those which proved fatal during the first week, and those which proved fatal after the first week. Of the first group some died before the appearance of the rash.

The following are the particulars of a case of this kind which came under my observation in 1851:—

A man, about fifty years of age, his wife, and three children, resided in two small rooms opening into each other, in an imperfectly drained house.

Between May 15th and 29th the woman and the three children were attacked with scarlatina. The man slept during the whole time in the same bed with his wife and sick children. On June the 1st, about noon, *i. e.*, after eating, drinking, and sleeping in an atmosphere highly charged with the emanations from those suffering from scarlatina for 17 days, this man complained of sore throat.

On the 2nd, about noon, he became suddenly insensible, and near midnight was admitted into University College Hospital. At that time there were a few dusky red patches on the skin, the surface was cold, the pupils large, and the pulse scarcely to be felt. The man continued very restless to the last, and at no time after he came under observation could he give any account of himself. An hour or so before death petechiæ appeared on the skin.

He died at 3 a.m. on the 3rd, *i. e.*, less than forty hours after first suffering sore throat.

When the body was examined on the 4th, the whole surface had a purplish, mottled aspect. Small spots of extravasated blood were found in the cutaneous tissue, under the pleuræ, pericardium, endocardium, peritoneum, and gastro-intestinal mucous membrane.

The tonsils were enlarged, and, in common with the mucous membrane of the *velum pendulum palati* and pharynx, highly vascular. The spleen was large, and there was some engorgement of the vessels of the pia mater.

In some of the cases I have examined which proved fatal during the first week, the rash being fully developed, careful examination after death has not enabled me to detect any great change of structure. In some of these cases the general symptoms have inclined to an inflammatory, and in others to a typhoid type. In neither set of cases were the symptoms referable to the specific throat affection very prominent during life. The structural changes of extent or severity that I have found in other cases fatal during the first week, have been—

a Sloughing of the tonsils.

b Ulceration of the pharynx and larynx.

c Intense redness of and granular lymph—the croupose lymph of Rokitansky—on the mucous membrane of the pharynx, larynx, and stomach.

d Abnormal vascularity of the cellular tissue, and lymphatic glands in the vicinity of the parotid gland, and of the cellular tissue uniting the lobules of the gland itself, with excess of serosity in the same tissues.

e Blood on the free surface of the arachnoid, without evidence of the rupture of any vessel appreciable by the unaided eye.

The grave structural changes I have found in those cases which have proved fatal after the first week—*i. e.*, after the rash had disappeared, have been—

Sloughing and ulceration of the fauces and pharynx;
Post-pharyngeal abscess;
And which is often termed Parotid bubo.

Under this latter term are comprised the following pathologico-anatomical conditions—viz., inflammation and suppuration of the cellular tissue around the gland.

Inflammation and suppuration, chiefly of lymphatic glands over or near to the parotid gland. In either of these cases the purulent fluid may be diffused among the structures; infiltrate them, that is to say, or it may be circumscribed or collected into an abscess.

Inflammation and suppuration of the parotid gland itself. In these cases the pus is diffused through the cellular tissue, dissecting the lobules of the gland from each other.

The remaining serious lesions I have found, after the disappearance, of the rash have been the effects of local inflammation, especially pleurisy and pneumonia, and collections of pus in several parts of head, trunk, and extremities.

The death, then, in all these cases, can readily be referred to the extreme severity of the general specific disease, to excess of the local specific process, or to the occurrence of complications.

In *scarlatina simplex* and *scarlatina sine eruptione* the specific general disease is moderate in degree, and the specific throat or skin affection trifling in amount or absent. The complete absence of any affection of the fauces must, I think, be very rare, for no instance of it has fallen under my observation. In a tolerably large number of cases, the patient has not complained of sore throat: but then inspection of the part has always proved the presence of abnormal redness. In scarlatina anginosa the severe and inflammatory character of the throat affection gives a peculiar aspect to the case. The skin affection may, at the same time, be highly or imperfectly developed.

Under the head of *scarlatina maligna* are included several symptomatologically and pathologically distinct varieties of scarlatina.

1st. That variety in which death takes place a day or two after the first symptoms of disease.

2ndly. That in which the specific local processes of the skin and throat are fully, but not excessively developed, and the patient dies comatose, or sinks suddenly, while the rash is well out, or immediately after it has faded.

3rdly. That in which the eruption is dusky; petechiæ stud the skin; the tongue is dry and brown, the pulse rapid and feeble, and the prostration extreme, and at the same time a tendency is manifested to gangrene of the throat, and also of all parts exposed to pressure.

4thly. That in which, at a very early stage of the disease, acrid discharges escape from the nose, eyes, and ears; the tonsils are greatly increased in size, and, in common with the uvula, *velum pendulum palati*, and pharynx, are red; the parts behind the rami and angles of the lower jaw are considerably swollen; the pulse rapid and feeble; and the rash more or less imperfectly marked.

In this variety, which is so common in strumous children, all the mucous membranes referred to are the seat of ulceration. I have seen, under these circumstances, a patient recover after losing the sight of both eyes from destruction of the cornea, and having the sense of hearing greatly impaired by ulceration of the membranæ tympanorum.

Measles.—A case of measles, in which the disease assumed a typhoid type; a case of measles in which death was caused by the specific disease; a fatal case of measles, in which no local complication existed, has not fallen under my observation.

As in scarlet fever, either of the specific local processes, viz., the skin eruption or the catarrhal symptoms, may be absent, or, being present, may vary in severity. But it is chiefly from the presence of complications that marked deviations in particular cases of measles from their type arise, and to cases with such complications, chiefly, that the term "malignant" has been applied.

Typhus Fever.—Cases of typhus fever deviate from the type of the disease chiefly in the greater mildness or severity of the general symptoms, and in the extent and intensity of the specific skin affection. As a rule, the milder the case, the less marked the rash. The danger of the disease is in proportion to the gravity of the general affection, local complications rarely occurring in mild cases to modify the features of the disease. The general symptoms are sometimes so trifling, that the patient hardly needs to keep his bed; while, on the other hand, they are sometimes so severe, that the patient dies within a few hours, constituting the typhus siderans of some authors. The only complication which I have seen causing any material deviation from the type, is inflammation of the intestinal mucous membrane. The symptoms indicating this complication are tympanitic distension of the abdomen and diarrhœa. After death, there is found in such cases intense vascular engorgement of the mucous membrane, with a variable quantity of the granular, croupose, or diphtheritic variety of lymph on its surface. In some cases the inflammation is limited to the mucous membrane of the colon; in some cases the inflammation passes the ilio-cœcal valve, and in others is said to be limited to the small intestine; but it never exhibits any tendency to affect Peyer's patches except in common with the mucous membrane of the whole circumference of the intestine. Typhous deposit, as it is called, is never found in cases of typhus fever.

Relapsing Fever.—In relapsing fever the most common deviation from its type is produced by a functional disorder of the liver, which manifests itself by jaundice. I never saw jaundice in typhus or typhoid fevers, though this drawing of the ileum of a soldier, belonging to a native regiment at Sierra Leone, renders it probable that in some countries jaundice does occur in typhoid fever, and also that cases of

that disease are confounded, under such circumstances, with yellow fever.(a)

The hue of the skin when jaundice occurs in relapsing fever varies from slight sallowness to intense yellowness. At the same time that the skin is yellow, and bile is present in the urine, the stools contain an abundance of bile, and if death occur the gall-bladder is found full, and the cystic and common ducts pervious. Doubtless, some of the cases known in practice as jaundice from hepatic congestion, are in reality cases of relapsing fever, and a suspicion of this should always cross the mind when a patient is suddenly seized with febrile symptoms and yellowness of the skin, the stools being at the same time dark coloured. In relapsing fever epigastric tenderness is often a prominent symptom.

In the second variety of relapsing fever there are lividity and coldness of the surface; a feeble and frequent pulse; delirium of a low type; drowsiness, unconsciousness, and rapid death from asthenia. Jaundice may or may not be present in these cases.

Erysipelas.—There are three great varieties of erysipelas in addition to the typical. I have twice examined fatal cases of erysipelas after death without detecting any marked departure from healthy structure when during life a little dusky redness about the nose and the most trifling redness of the throat had been the only direct evidence of the disease. The general symptoms were delirium, at first active and then muttering, followed by somnolence and stupor.

The peculiarities in the other two varieties are dependent on the effects of the severity of the inflammation of the skin and subcutaneous tissue in the one case; and on œdema of the loose cellular tissue about the entrance into the larynx, especially that of the arytæno-epiglottidean folds, in the other.

In regard, then, to the deviations from the typical forms of the acute specific diseases, the extreme differences observed in the general aspect of the patient are most commonly due to the severity of the general specific disease in typhus fever and relapsing fever; to the severity and extent of the specific local processes in small-pox and erysipelas; to the presence of local complications in measles; and as often to the severity of the general specific disease as to the extent and severity of the specific local processes and their immediate effects in scarlet fever and typhoid fever.

(a) The drawing referred to was kindly lent to me by Dr. Andrew Smith. It was made when at Sierra Leone by Dr. M'Diarmid, and is contained in the Museum of Pathological Anatomy at Fort Pitt.

LECTURE III.

A glance at the history of epidemics will render it evident, that each of the acute specific diseases we have now constantly among us, has maintained its identity through a lengthened series of years, in countries most distant from each other, and in climates most varied,—that each has presented, from first to last, the same group of symptoms, and the same order in their appearance,—that no one of them is a new disease.

That the symptoms of small-pox, the order of occurrence of those symptoms, its chief varieties and its complication, are to-day what they were two hundred years since, to go no further back, there cannot be a question. The same is true of scarlatina. In 1650, an epidemic prevailed in Saxony, characterised by general redness of the skin, sore throat, and desquamation of the cuticle, followed by anasarca; and from that time, at latest, we have clear evidence of similar epidemics having every few years prevailed in some part or other of Europe and America:—sometimes arranged with other diseases, as with measles by Morton; sometimes having the mild cases described by one name, and the severe by another, as by Sydenham; sometimes, from one symptom having been very marked in an epidemic, called altogether by another name, as putrid sore throat by Fothergill, and malignant ulcerous sore throat by Huxham; sometimes having other diseases confounded with it, as the *morbus strangulatorius*, which was evidently diphtheritis rather than scarlet fever. Now, having its connexion with anasarca understood, as in the Saxony epidemic and in a Polish epidemic in 1664, and even having had the date fixed at which the anasarca appeared, as by Rosen von Rosenstein; then having the coincidence of the two in point of frequency of occurrence at the same period noted, the connexion between them being overlooked, as by Huxham, who in 1753 described an epidemic of scarlet fever, and mentioned that dropsies were frequent during the same constitution of the atmosphere; and then, again, by a third set of writers, having the coincidence in frequency even of the two overlooked. The same evidence of the preservation of its essential characters by measles, might be offered, by tracing accounts left us of epi-

demics that have visited Europe since that recorded by Forestus, in 1580, to the present time. But it would be useless; the description by Sydenham of the measles of his day will serve for those we witness now. And yet, different as small-pox, measles, and scarlet fever appear to us,—evident as it is, that the symptoms they now present were those which characterised them in times past, men whose powers of observation were of the highest order, viewing the phenomena of these diseases with the idea pre-occupying their minds that they were identical, long failed to discover any essential difference between them, so that it was only by slow degrees that the specific differences of small-pox and measles were admitted; and Morton maintained the identity of scarlet fever and measles, even when a perusal of his own histories of cases leaves no doubt on the mind, that he not only saw the scarlet fever and the measles that we now witness, but that, then as now, each disease had its specific cause, was generated by emanations arising from those suffering from the same affection, and not by emanations from those labouring under any other disease.

With reference to the steps of the process by which the separation of these three diseases into species was effected they were the same as those by which typhus fever, typhoid fever, and relapsing fever have been in recent times separated into species.

At first, all three were confounded; then one of the three having prevailed for a while in its most perfect form, under the eye of a good observer, an accurate description of that one was obtained; then disputes arose as to the general applicability of the description to the disease in question. It was thought by some to apply to cases to be seen in one epidemic only; but, after a while, epidemics of each of the other two occurred, and good descriptions of these were given; then it was found that occasionally all occurred at the same place at the same time,—that exposure to the emanations of either one only produced the same group of symptoms, and ultimately, that neither disease affected twice the same individual; while, having suffered from one afforded no immunity to attacks of the other; and so the specific character of small-pox, of scarlet fever, and of measles was established.

Louis' renowned work(a) was the first great step toward the separation of the continued fevers of Europe and America into species. In that most masterly production is a description of typhoid fever, such as has never been given of any other disease.

Then the researches of Gerhard,(b) Valleix,(c) and Stewart(d) proved the existence of a fever, having symptoms, ana-

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(a) Recherches sur la Maladie connue sous les noms de Fièvre Typhoïde, &c.

(b) American Journal.of Medical Sciences, 1837.

(c) Archives Générales, 1839.

(d) Edinburgh Medical and Surgical Journal, 1840.

tomical lesions, and a course altogether different from that described by Louis as pertaining to typhoid fever,—and proved, moreover, that two patients might exhibit the symptoms of these two diseases, severally, during the same period of time. Fresh evidence of the same facts was supplied by other observers. In 1843, and again in 1847, Edinburgh suffered from an epidemic of fever. The cases presented the symptoms now commonly known as those of relapsing fever. A disease offering the same symptoms was seen in London at the same periods; but yet numerous cases, during the last-named epidemic, exhibited the characteristic symptoms of the disease known in this country and in America as typhus fever, and of that known in France, America, and England as typhoid fever. It was next shown, that an attack of typhus fever afforded no immunity against an attack of typhoid fever,—that an attack of relapsing fever did not secure the sufferer from an attack of typhus fever, or of typhoid fever; while, finally, it was shown, that the specific cause of each of the three was different, because exposure to the emanations of either species produced only the symptoms of that species.

If, possessed with an idea of the specific individuality of typhoid fever, typhus fever, and relapsing fever, we review the histories left us of the various epidemics of fever that, from time to time, have swept over large portions of this and other countries, it is a task of far greater difficulty to determine to which of those diseases the descriptions of bygone writers apply, than it is to refer to their proper heads the descriptions given us by the historians of epidemics of small-pox, measles, and scarlet fever, when these three diseases were confounded, or imperfectly distinguished.

Nor shall we be surprised at this, when we reflect that the circumstances which favour the spontaneous origin, if such be possible, and the circumstances which favour the spread of typhus, typhoid, and relapsing fevers are the same; that the circumstances which favour the origin and spread of these diseases, are just those circumstances which favour the development of the most grave varieties of each; and therefore the development of those symptoms which render their general physiognomy the most nearly alike,—low delirium, a black tongue, abundant sordes, and extreme prostration; symptoms which at once arrested the attention of those who described epidemics in general terms. Again, petechiæ, as is well known, may occur in any disease in which the vital depression is extreme, *e. g.*, malignant measles, small-pox, scarlatina; and the circumstances which promoted the origin and spread of epidemics of fever in years gone by, were just those which cause it to assume a low type, and therefore to be attended by petechiæ; and, still further, the circumstances in question are just those which favour the occurrence of dysentery as a complication of typhus; and, as a consequence, we find descriptions of a fever in which abundant eruption, frequent and bloody stools, and great prostration, were the most marked symptoms.

I may remark, that the chief difficulties experienced in determining the identity of the fevers of past years with those now common arise,

1st. From authors having failed to define the meaning to be attached to the words they employed; *e. g.*, petechiæ, miliary eruptions, and pustules, were severally used to signify the most varied appearances.

2ndly. From the very few examinations made after death, and the loose manner in which the lesions found were described.

3rdly. From the descriptions of the epidemics being couched in general terms, so that, if two or more diseases prevailed at the same time, the description was made broad enough to include both.

4thly. From the frequency with which relapses escaped observation, *i. e.*, from the patient falling under the eye of the physician during the first or second attack only.

5thly. From the readiness with which differences actually observed were explained away by the supposed influence of remedies.

But, laying aside some epidemics which cannot, for the reasons just assigned, be referred to either of the species in question, there still remains enough evidence to prove, that neither of these diseases differs from diseases which prevailed more than a century since, and strong reason to believe that all were witnessed two centuries ago.

The symptoms of the new fever that prevailed in London from 1685 to 1690, as detailed by Sydenham, agree pretty closely with those of typhus fever; and from 1708 to our own times, more or less perfect pictures of the same diseases are contained in the writings of Rogers, O'Connel, Pringle, Rutty, Huxham, Hildebrand, Blane, Hecker, Cullen, Barker, Cheyne, and Armstrong.

In reference to typhoid fever, the histories of some of the epidemics of this disease that have visited Europe since 1697 have been collected by Ozanam. Huxham's Essays on the Slow Nervous Fever, and on the Putrid Malignant Fever; Dr. Gilchrist's, of Dumfries, Memoir on Nervous Fever; Dr. Vaughan's, of Leicester, and Dr. Darwin's Letters to Dr. Lettsom, leave no doubt on the mind of the prevalence of typhoid fever in England from 1734 to 1787; while the abstracts of memoirs and the details of cases collected by Gaultier de Claubry(a) show the frequency with which typhoid fever prevailed, at the end of the last and the commencement of this century, in the hospitals and camps of every country which was the seat of war at that period.

Dr. Huck's (b) account of the differences between the spots common in the cases of the Vienna fever treated by De Haen, and called by him "petechiæ," and those present in the cases of the fever Sir John Pringle described, prove that the former was typhoid fever, and the latter typhus fever.

(a) De l'Identité du Typhus et de la Fièvre Typhoïde.
(b) Observations on Diseases of the Army. By Sir John Pringle.

It was in answer to the attacks of De Haen on the propriety of his treatment, that Pringle wrote—"I have never considered the gaol or hospital fever and the miliary fever as similar; and, indeed, I may venture to say, that, as the symptoms of the two are so much unlike, they ought to be treated as different in species; and consequently, that neither the theory nor the practice in the one ought to be regulated by analogy from the other."

At the present time there is an epidemic of fever at Croydon, a point connected with which illustrates the difficulty that may be experienced in fixing on the disease intended to be signified by the historians of the epidemics of past times, who speak in general terms. The disease prevailing in the town just referred to has been said to be a new form of fever; and some of the medical practitioners of the town, at least, are of that opinion. Now, the fact is, that the Croydon fever differs in no single point from the typhoid fever which is, and has been for several years, so common in London and many other parts of England; in no point from the typhoid fever of Paris, as described by Louis; in no point from the typhoid fever of America, as described by Drs. Gerhard, Bartlett,(a) Jackson,(b) and Flint.(c)

These preparations from the museum of the College, and these drawings, show the identity of the lesions found in the intestines in typhoid fever in years past and those now witnessed.

A few words will suffice to prove the existence for more than a century of a disease having the peculiar symptoms and course of relapsing fever.

Writing on the weather of 1741, Rutty says: "There was frequently a fever, altogether without the malignity of the disease already described, of six or seven days' duration, terminating in a critical sweat (as did the other also frequently); but in this fever the patients were subject to a relapse, even to a third or fourth time, and yet recovered." In 1800 and 1801 there was an epidemic in Ireland of a fever generally terminating on the fifth or seventh day by perspiration, and when that happened, very liable to recur. Barker and Cheyne's Reports, and Dr. Welch's work on Bloodletting, prove the existence of a similar fever in 1816, '17, '18, '19, and '20, in Ireland and Scotland; while Dr. Christison's testimony goes to show the identity of the type of fever in the epidemic of 1826 with that described by Dr. Welch, and also the similarity of the fever in these epidemics to that prevalent in 1843 and 1847.

But, if these diseases be now, and have been for centuries, different in symptoms, course, and cause, how came it to pass that they were so frequently associated together? and wherein lies the difficulty now felt by some in admitting their individuality?

(a) Treatise on the Fevers of the United States.
(b) A Report on the Cases of Typhoid Fever, &c.
(c) Reports on Continued Fever, 1852.

1st. From some marked characters being common to all, viz., those general symptoms and peculiarities which make it philosophical to combine them into one natural order, and from striking symptoms characteristic of one species being occasionally present in the others; thus, in typhus fever, we may have a blown belly and diarrhœa from the co-existence of inflammation of the intestinal mucous membrane; the rose spots in typhoid fever are sometimes so abundant as to simulate closely the mulberry-rash of typhus fever; while, on the other hand, the rash in typhus fever may consist of a few spots only; and, again, the skin may be free from spots in both the one and the other. In the rashes of typhus fever and typhoid fever, we see the same deviations from their types that we do in the rashes of measles and scarlet fever.

2ndly. From certain varieties of these diseases simulating diseases of another class. When the general disease is not very severe or active in character, and one organ suffers severely, or when the constitutional disturbance and the local disease seem to be in proportion to each other, then the specific nature of the general disease may be overlooked, and the local affection raised to the rank of the primary disease. I have myself, I believe, committed this error repeatedly in regard of typhoid fever, having, accordingly as the cerebral, the thoracic, or the abdominal symptoms prevailed, held the cases to be meningitis, bronchitis, or muco-enteritis.

The 3rd cause of the difficulty felt in admitting the specific differences of these diseases has been, that certain cases of other diseases resemble them generally, and so have been not infrequently associated with them. Just as certain forms of typhoid and of relapsing fever have been from their resemblance generally to some local diseases often ranked with them, so certain forms of other diseases have, from their general resemblance to some of the acute specific diseases, been confounded with them; and so long as the diagnosis of a case of fever is made *per viam exclusionis*,—so long as every case is held to be continued fever in which general febrile disturbance runs high, and no local affection to account for it can be discovered,—so long as acute cases with a hot skin and a quick pulse are termed continued fever *because* the physician can find no other name for them,—so long as the positive diagnosis rests on the presence of general adynamic symptoms,—so long, that is to say, as a brown tongue, a quick pulse, mental aberration, and extreme prostration, are regarded as *the* characteristic symptoms of continued fever,—so long as *these* are the positive symptoms and *those* the negative characters on which the diagnosis rests, so long must a common name be assigned to diseases the most varied in their pathological nature and in their anatomical characters.

For as regards these positive symptoms, they are those of the severest forms of scarlet fever and of measles; they are the symptoms the most prominent in local inflammation in the aged, and in those persons the powers of whose nervous system have been shattered by excesses; they are the symptoms

the most prominent in certain forms of acute tuberculosis, and of the so-called acute purulent diathesis; and they may be induced at will by the injection into the veins of certain foreign matters.

But to inquire more particularly into this point: if one looks over a list of the diseases, other than the acute specific diseases, under which patients were labouring when received into a fever hospital with certificates from medical men that they were affected with fever, it is at once seen that these diseases are referable to two classes.

The one comprehends those local affections the direct symptoms of which are masked or thrown into the shade by the prominence or peculiarities of the sympathetic or secondary constitutional disorder.

The other class includes those diseases in which a general febrile condition precedes the development of the local lesions; in which, in fact, the latter bear to the former the same relation that the local changes of structure bear to the general symptoms in small-pox and measles. Of the first class, pneumonia and intracranial inflammations are the most important; of the second, febricula, the purulent diathesis, and acute tuberculosis.

With reference to pneumonia and intracranial inflammation, time permits me only to observe, that it is to typhus fever alone that they bear any striking resemblance, and then only when occurring in persons of mature or advanced years; and in these persons typhus fever—if severe, at least—is attended by mulberry rash. If this fact be considered, and the physical signs of pneumonia be sought for, an error of diagnosis in regard of that affection will indeed rarely be made, even though the patient come under observation in a state of insensibility, and at an advanced period of the disease. In typhus fever, when delirium sets in, headache ceases; and the occurrence of partial paralysis is extraordinarily rare in that disease. If these two facts be added to that just stated in reference to the rash, the differential diagnosis of typhus fever and intracranial inflammations, with general adynamic symptoms, will not present any great difficulty. But excluding these cases, there yet remain three general affections, probably blood diseases, sometimes confounded with the specific fevers, requiring more particular notice. These diseases are—febricula, the acute purulent diathesis or pyogenic fever, and acute tuberculosis.

The following are the characters of a moderately severe, a typical case of

Febricula.—After fatigue, some slight excess, or without known cause; chilliness, with or without rigors; headache; sense of fatigue; pain in the limbs, very quickly followed by a hot and dry skin; the patient, however, rarely complains of a sense of heat; and, if in bed, when the clothes are removed he quickly covers himself again from the discomfort produced by the cold air; the pulse is frequent, the heart often beating 120 or 130 times in the minute;

the tongue is white; the appetite lost; the bowels somewhat confined; the urine scanty and high-coloured; drowsiness is sometimes present, but not infrequently the patient suffers from want of sleep. In young children, a little wandering may be observed on first waking, or when about to fall asleep; and the little patient often talks while dozing. A physical examination of the thorax and abdomen demonstrates no deviation from health. The symptoms present on the first day continue, and sometimes increase in severity, for four or five days. About the end of the week a crisis occurs; most commonly an abundant perspiration, not infrequently an herpetic eruption about the lips; vomiting, diarrhœa, or hæmorrhage from nose, uterus, or rectum; and then, in twenty-four hours or less, the patient is well.

As to particular cases, sometimes one symptom, sometimes another, is more marked than in the typical case I have so briefly sketched. I have seen the delirium or the vomiting give a character to the disease. The duration of this disease is sometimes less than forty-eight hours, and it is then called ephemera by some authors. In other cases it continues for nine or ten days, and such cases have been termed synocha, synochus, la synoque non putride, la synoque plethorique, inflammatory fever, etc.

In some cases of febricula, an eruption of pale, bluish-coloured spots, neither elevated above the level of the surface nor affected by pressure, is observed; these are the *tâches bleuâtres* of Forget and other French writers. They bear no resemblance to the rose-spots of typhoid fever, nor to the mulberry rash of typhus fever. They are not confined to cases of febricula. I have seen them well marked in typhoid fever. They are therefore not characteristic of febricula.

Febricula is essentially a non-contagious and sporadic affection; however, now and then, it has reigned as an epidemic: thus Ozanam refers to two great epidemics; the one described by Ingrassia, of Palermo, which occurred in 1557; and the other, the particulars of which were recorded by Hoyer, of Mulhausen, in 1700. Full descriptions of this affection are to be found in almost all writers, from Hippocrates to those who flourished at the commencement of the present century. About that time the influence of pathological anatomy on medical doctrines began more especially to be felt, and men hesitated to admit the existence of any essential fever, of any disease which the scalpel did not enable the anatomist to refer to some change of structure; and as febricula never proves fatal unless by complications established in its course, its existence was held to be apocryphal, and those who maintained its occurrence were regarded as bunglers in the art of diagnosis,—as men who overlooked the local lesion, and raised the sympathetic constitutional disorder to the rank of a substantive disease.

The recognition of the existence of febricula is, however, of considerable importance in regard of the advance of the

science of medicine, for two reasons especially: first, because by an acquaintance with its phenomena the physician is prevented falling into serious errors in over-estimating the effect of remedial agents in the treatment of the acute specific fevers; and, secondly, because in its course local inflammations are very frequently set up which experience, or appear to experience, a more or less marked abatement when the general affection has run its course, and the physician is in these cases led to overrate the potency of the drugs administered; and as the supposed effects are striking in character, the impression produced on the mind is proportionably strong; or, he is led to under-estimate the severity, speaking generally, of the local inflammation, because it, in this striking case, did well without treatment, or under treatment singularly in opposition to received doctrines.

I remember a case of this kind I was once suddenly requested to see in the absence of the physician in attendance. The patient, a strong made man, about 45 years of age, was suffering, as I supposed at the time, judging from the signs and symptoms then present, from primary sthenic pneumonia. He was taking, under the direction of the physician, two ounces of sherry every six hours. No loss of blood had been practised. The skin was hot, the pulse quick, the cough troublesome. I did not, under the circumstances in which I was placed, feel justified in adopting any active treatment. A few hours subsequently, the man sweated freely, and on the following day appeared, so far as his general symptoms were concerned, well.

The sudden cessation of the general symptoms in a case of pneumonia, on or about the seventh day of disease, by profuse sweating, would excite in my mind strong doubts in regard of its primary nature.

With reference to the symptomatological affinity of febricula, it is evidently closely allied to relapsing fever; but it differs from it etiologically, and, therefore, specifically. It has no power of generating a substance capable of reproducing its own phenomena in a healthy individual. Symptomatologically, again, it is more or less closely allied to the acute purulent diathesis or pyogenic fever and acute tuberculosis; but anatomically it differs from these in the most absolute manner.

PYOGENIC FEVER.

Acute purulent diathesis; or, as I would rather call it, *pyogenic fever;* or, to distinguish it from the specific fevers, *simple pyogenic fever.*

Immediately after the termination of the acute specific diseases, it is by no means uncommon for one or two small abscesses to form in the subcutaneous cellular tissue. A frequent seat of these collections of purulent-looking fluid is the subcutaneous cellular tissue of the scalp. More or less febrile disturbance may precede or accompany their deve-

lopment. Although more common, perhaps, in the situation referred to than elsewhere, they are by no means limited to it. Sometimes, instead of two or three, the number of these collections of purulent-looking fluid is considerable. If small, their contents may be absorbed; but this rarely happens if their size exceeds that of a walnut.

The signs of inflammation that precede the formation of the pus are usually of the most trivial kind, the patient's knowledge of the existence of the local ailment being first derived from the presence of the swelling; the physician at the same time observes fluctuation. Sometimes, however, the signs of inflammation are more manifest, and, while pus is formed more or less rapidly at some spots, at others the inflammatory signs disappear, and neither before nor after their disappearance is any evidence of the presence of pus to be detected. The local lesion is limited to the first stage.

These disseminated abscesses in the subcutaneous tissue occurring after or during the progress of the acute specific diseases, are allowed pretty generally to have their origin in a diseased condition of the blood; only, by some they are held to be critical, the evacuants of peccant matter: while by others they are regarded merely as local inflammations, excited by a diseased condition of the blood,—a diseased condition which gives to the local inflammation it excites a tendency to terminate in the exudation of a blastema susceptible only of evolution into an albuminous fluid and cells of low organisation.(a) The exudation of a blastema possessing the same properties in so many places at the same time, is held to indicate the existence of a definitely diseased condition of the fluid from which that blastema is formed, just as the deposit of many masses of cancer blastema in the same body at the same time, is held to indicate the existence of a definite disease of the blood in the person who is the seat of them. The idea that these subcutaneous collections of purulent-looking fluid of small size, and the formation of which is attended with little constitutional disturbance, are due to any foreign solid matter, be it pus globules or any other, circulating in the blood, has never, so far as I know, been advanced: it would be too untenable to be entertained for an instant. But, instead of being attended by little constitutional disturbance, as in the cases to which I have just referred, we now and then find that great constitutional derangement precedes and accompanies the establishment of the suppurative action,—that, instead of being situated in the cellular tissue immediately under the skin, the collections of purulent-looking fluid are formed in cellular tissue more

(a) The cells found in the purulent-looking fluid are spherical, and about the size of pus corpuscles; as a rule, they have no nucleus, but contain only granules, composed partly of fat and partly of protein matter. The number of the granules varies; so that the corpuscles may be identical in appearance with the pyoid corpuscles of Lebert, or they may have in their interior so many granules as to resemble the ordinary granular corpuscle. Sometimes, however, the majority of the cells contain a single nucleus; and, now and then, pus corpuscles, with two, three, or four nuclei, are found to constitute the bulk of the cells.

deeply seated. Again, in other cases, we find that they are not limited to the cellular tissue, but that the pus blastema is exuded into the joints; and yet further, that it is in rare cases disseminated in masses through the viscera of the chest and abdomen. Now, the transition from the first to the last described state is by most insensible gradations; the circumstances under which all occur are the same; and, if it be granted that the first arises from a definitely diseased state of the blood or system generally, I see not on what ground it can be argued, that the others, which differ only in the more wide diffusion of the local affections, may not also depend on the same diseased state of the blood. This disease seems very closely allied to that condition of the blood in which purulent discharges issue at the same time from several of the mucous membranes after some of the acute specific fevers, and to that chronic state in which every scratch or abrasion "festers," as the vulgar say. The existence of this condition of the blood or system generally, as a substantive disease, appears to have been in modern times first recognised by Tessier.(a) He, however, associated with it the cases in which disseminated abscesses are excited by the circulation of foreign matter in the blood. Tessier described the state referred to as a new pathological genus, under the name of the "purulent diathesis;" and he defined it to be a modification of the organism characterised by a tendency to suppuration in the solids and coagulable fluids.

Amid much pathologically erroneous, the doctrine of Tessier appears to contain an important truth, viz., that in a certain number of cases of disseminated abscesses the febrile disturbance is established before any local disease is set up, and, consequently, before any pus is formed, and by inference, that the abscesses are, in such cases, merely the effects of a special alteration of the element from which that blastema is exuded out of which they are developed.

Although the morbid condition of the blood, which is thus manifested by its effects, is common as a consequence of the acute specific diseases, it sometimes arises without having been preceded by any other disease, *i.e.*, as a primary substantive affection.

Of this, the following case appears to me to offer some evidence:—

A man, aged 31 years, of temperate habits, and usually enjoying health, after feeling generally poorly for two or three days, became decidedly ill July 23rd. The symptoms were—heat of skin, headache, a furred tongue, and disinclination for all exertion. On the evening of the 24th, a red patch appeared on the outer aspect of either leg. On the 25th, there was induration of the same patches. On the 26th, there was redness of the left shoulder, and a red, indurated, elevated patch on the outer aspect of the left upper arm.

The mind was now confused.

He came under my care in University College Hospital

(a) L'Experience, 1838.

on the 28th. At that time his mind was confused, and occasionally wandered. His movements were rather tremulous, and there were now and then some twitchings of the muscles of the face. He was rather restless, and slept but little. There was no headache. The complexion was thick, and rather sallow. The tongue moist and red at the tip and edges, and on its dorsum was a little dirty fur. The abdomen was rather full and resonant, but not tender. He passed, during twenty-four hours, one stool. The pulse was 96, moderately full, but rather weak. The heart's sounds were natural. Red patches,—the redness gradually shading into the hue of the surrounding skin, some indurated, others not,—were seated on the outer aspect of the right thigh, the calf of the left leg, the anterior aspect of the left tibia, the inner and anterior aspect of the right upper arm, and the centre of the right deltoid.

The whole surface was carefully inspected. There was not the slightest trace of suppuration at any spot; no redness nor tenderness in the course of any of the veins in the vicinity of the red spots, nor, so far as could be ascertained, elsewhere.

There was no cough. The respirations were 24 in the minute.

Time will not permit me to detail the daily notes of the case. Suffice it to say, that many other red patches appeared at various parts of upper and lower extremities,—that pus was evacuated from two seated on the anterior aspect of one tibia,—that fluid was effused into the knee-joints, and probably into one ankle-joint,—and that at no time was there reason to believe that any internal organ was the seat of purulent deposits. The patient recovered completely at the expiration of about a month from the first symptoms of illness.

The following is the abstract of a case of this disease, which occurred subsequently to measles:—

A boy, aged 4½ years, was admitted, under my care, into the fever ward of the hospital for sick children, in August last.

About a week after the disappearance of the rash of measles, the child never having been free from symptoms of illness, the wrists were observed to be swollen; then an abscess formed in the subcutaneous tissue of the back. Subsequently, collections of pus formed on the dorsum of the right hand, over the right wrist, in and over the left elbow-joint, under the right glutæus maximus, in the cellular tissue about the right psoas, and in the left hip-joint; and there were purulent discharges from the ears. He died about five weeks after the swelling of the wrists commenced.

No purulent fluid was found in any internal organ. The examination of the body was made by my friend, Dr. Ballard.

In these cases, as in *the majority of those belonging to the same order, the subcutaneous tissue and joints were exclusively the seats of the collections of purulent fluid.* In some such

cases, however, abscesses are found in the lungs; but then they are generally small in size, few in number, and in a much less advanced state than those in the parts I have just mentioned; while it will be remembered, that when foreign solid matters, as pus corpuscles, &c., are thrown by the experimentalist into the venous current, it is the lungs which are alone affected in a large majority of cases; and when other parts suffer, the lungs are still the most extensively diseased.

Sedillot supports his doctrine, that the circulation of pus corpuscles with the blood is the sole cause of disseminated abscesses, by four orders of proof:—

1st. By the invariable pre-existence of a centre of suppurative action.

In the class of cases to which I am referring there is no pre-existing abscess or ulcer.

2nd. By the relation observed between the formation of pus in the veins, the passage of that liquid into the blood, and the development of pyæmia.

Of this relation there is no evidence in the class of cases of which I am speaking.

3rd. By the presence of pus in the blood, verified by observation.

There is no pus to be detected in the blood in those cases which I would class together under the name of pyogenic fever. Of this, repeated examinations enable me to speak with confidence.

4th. By the results obtained by the injection of pus into the veins of animals.

Now, as the symptoms and the *situation* of the disseminated abscesses are different in cases of pyogenic fever, and artificially induced pyæmia, it is improbable that the disseminated abscesses in the two have their origin in the same cause. And as the disseminated abscesses, artificially produced by Sedillot, were undoubtedly the effect of the circulation of pus with the blood, it is the more unlikely that the disseminated abscesses, in the class of cases I am describing, are the effects of the circulation of pus with the blood.

Thus, then, tested by Sedillot's four orders of proof, there are cases of multiple, or disseminated abscesses, which are not, or which cannot be proved to be directly or indirectly excited by the entrance of pus into the blood.

The acute specific disease, with which especially the acute purulent diathesis, or pyogenic fever, may be confounded, is typhus fever. From this it is distinguished by the activity of the febrile symptoms at the outset, the early delirium, the absence of eruption, and the rapid formation of numerous centres of suppurative action.

Pathologically, the affinity of this disease seems to be with erysipelas.

I ought not to quit this subject without stating, that, although I have spoken only of the two varieties of the acute purulent diathesis, which especially fall under the cognizance of the physician, viz., that which follows the

acute specific diseases, and that which arises as a primary affection, yet Tessier considers, that phlebitis, phlegmonous erysipelas, and internal abscesses following operations, are consequences of this same general condition. The questions here raised are foreign to the object of these discourses.

ACUTE TUBERCULOSIS.

The third disease of this class, often confounded with typhus and typhoid fevers, but especially with the latter, is acute tuberculosis; and, in many cases, the diagnosis between typhoid fever and acute tuberculosis, from the all but identity of the symptoms of the two, is most difficult.

Like typhoid fever, acute tuberculosis rarely affects persons after the middle period of life.

The cases of acute tuberculosis I have myself mistaken for typhoid fever, or which I have seen others mistake for that disease, have assumed three forms—the insidious, the active febrile, and the adynamic.

The first form occurs almost exclusively in children; the patient, often after measles, or scarlet fever, but not unfrequently without known cause, is observed to be languid; unwilling to make any exertion; complains of headache; lies about; seeks quiet, leaving its companions; is heavy, dull, or irritable in temper; the skin is hot and dry; the pulse frequent; the tongue moist, and slightly furred; the appetite lost, or variable; the bowels confined, or irregular; the stools more or less clay-like, putty-like, or party-coloured; the abdomen free from tenderness, and of its normal form; there is trifling cough, and a little sonorous and sibilous râle, or the respiratory murmur is simply rough or harsh, and the expiration rather loud and prolonged, or, it may be perfectly natural. Some time usually elapses before advice is sought, so indefinite are the symptoms of the illness; and, after it is sought, the physician is occasionally some time in attendance before the gravity of the affection is comprehended; for the febrile symptoms often remit during the day, the skin being little above its natural temperature, and the pulse only a little quicker than natural, when he makes his visit. Thus the disease proceeds for two, three, or four weeks, when the functions of some one organ become disturbed in an extreme degree, and the patient dies with all the symptoms of acute hydrocephalus, tubercular meningitis, bronchitis, pneumonia, or peritonitis.

After death, in such a case, grey granulations, or yellow tubercles, are found in many organs; only, in the particular organ from the disorder of which the patient died, in addition to grey granulations, great vascularity, or the products, more or less abundant, of inflammation, serosity, lymph, or pus, are discovered.

In the active febrile form, the symptoms are, from the outset severe, the pulse is quick, and the heat of skin considerable, and the patient, from an early period of the disease, confined to bed.

In the third or adynamic form, the illness begins some

what suddenly, after a trifling sense of *malaise* of a few days' duration. The symptoms are, chilliness, hot skin, frequent pulse, moist, furred tongue, headache, loss of appetite, confined bowels, vomiting, considerable sense of weakness, great unwillingness to be disturbed, and irritability of temper. After a week or ten days, the mind wanders occasionally, the bowels are generally confined, and the abdomen is flat or concave; though the former are sometimes relaxed, and the latter is full. The skin continues hot, dry, and harsh; the tongue becomes dry and brown; sordes collect about the teeth; prostration is extreme, and the patient sinks about three or four weeks after the outset of the disease. The two last described forms of acute tuberculosis are seen occasionally in adults; but, in them, the recent deposit of tubercle, the newly-formed grey granulations, are almost always limited to one or two organs; in the cases that have fallen under my own observation, the pia mater, or the lungs, or both. Under these circumstances, more or less marked disturbances of the functions of the lungs or brain are observed. At the same time, the general symptoms may be either those of the active febrile, or of the adynamic variety. In the *former* case, the disease may be mistaken for idiopathic inflammation, and the general symptoms be regarded as symptomatic; in the *latter* case, the disease may be thought to be typhoid fever.

The diagnosis from typhoid fever, when the granulations occupy the pia mater, is formed *positively* from the frequency of the vomiting, the severity of the headache, and its continuance after the patient is delirious, the knitting of the brows, the frequent sighing, the dislike to light, the occasional and transient general flushings of the face, the slowness of the pulse, and the evidence of paralysis. So long as it is very imperfect, the paralysis may escape observation, unless especially looked for. It is manifested thus:—Sometimes one pupil contracts rather less completely or less actively than the other, when exposed to a strong light. Sometimes there is slight deviation of the tongue. Sometimes the uvula is drawn to one side, and the opposite half of the velum pendulum palati drops. Sometimes one radial artery(a) is felt to be a little larger than the other, such differences not being natural to the patient. This last evidence of paralysis will occasionally precede any appreciable loss of voluntary muscular power.

There is this seeming peculiarity about these imperfect paralyses in the disease in question, viz., that when observed on the one side on any given day, on the following day the opposite side may be found to be the diseased side. This shifting of the disease is—in many cases, at least—rather apparent than real; thus, the paralysis of the right side we will suppose to be very imperfect, but still sufficient to cause

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(a) In several cases of hemiplegia I have observed the radial artery on the paralysed side to be larger than that on the opposite side; and, in two of these cases, no such difference in the size of the arteries existed the day before the fit.

comparative sluggishness of the right pupil. On the following day, the left side is the more perfectly, though still imperfectly, paralysed; then there is *comparative activity* of the right pupils.

Negatively, the adynamic form of acute tuberculosis, with deposit of grey granulations in the pia mater, is distinguished from typhoid fever by the absence of diarrhœa, of distension of the abdomen, of enlargement of the spleen, and of rose spots.

But all the positive signs may be wanting till near the close of the disease; and, on the other hand, diarrhœa, tympanitic distension of the abdomen, and enlargement of the spleen, may be present, sometimes with, sometimes without, the deposit of tubercles under the mucous membrane of the intestine, and in the spleen. As regards the rose-spots, I have never seen them in a case of acute tuberculosis. But Dr. Waller,(a) states, that he has observed them in cases of acute phthisis; and Rilliet and Barthez say, that very fugitive, imperfectly formed rose-spots are in rare cases present.

In reference to those cases in which the deposit of grey granulations is limited to the lungs, the positive symptoms for establishing the diagnosis are derived from the signs of oppressed breathing, the rough inspiratory murmur, with intense and prolonged expiratory murmur, and the general diffusion of these signs pretty uniformly over both lungs. Hæmoptysis occurs in some of these cases—rarely, if ever, in typhoid fever.

The affinity of acute tuberculosis with typhoid fever is shown by the general symptoms of the two being often undistinguishable, by the frequency with which particular parts are, in both, the seat of disseminated protein deposits, and by the tendency manifested in both to ulceration, not only of the mucous membranes generally, but of a part of the intestinal mucous membrane which is rarely the seat of ulceration in other diseases, viz., that covering Peyer's patches.

With reference to the close resemblance of the symptoms in some cases of local inflammation, with adynamic symptoms, and typhus fever, of acute tuberculosis and typhoid fever, of measles and scarlet fever, of typhus and typhoid fevers, I would quote the following sentence by the author of the "Philosophy of Medical Science:"—"It is very important for us to bear in mind, that great difficulties of diagnosis in individual cases are in no way incompatible with the existence of essentially and widely different diseases. Morbid affections very unlike each other, and in most cases easily distinguishable, may, under certain circumstances, have many things in common; and their symptoms may be so mixed up with each other, as to render, in the very imperfect state of our knowledge, a positive diagnosis very difficult or impossible, and this without throwing any doubt

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(a) Viertel jahrschrift, Prague, 2 Jahrgang.

upon the general question of the radical dissimilarity between the diseases themselves."

In conclusion, I may remark, that it seems to me, from the survey we have taken of the symptoms of the typical cases of the acute specific disease, of the deviations from those symptoms met with in practice, of the causes of those deviations, of the histories of epidemics of these same diseases, and of the diseases with which some of them are confounded, that, in adopting the division of them I have here advocated, and in grouping them as I have here grouped them, we avoid those errors to which I adverted at the commencement of these lectures, that we pay no homage to those idola specûs against which the voice of Bacon warned us,—that we neither divide where Nature has drawn no line, nor generalise where Nature has bestowed no unity.

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