In attempting to practise the Art of Healing, the attention of the Practitioner is being constantly called to the necessity of discovering the cause of any disease he is anxious to cure, or the spread of which in a community he desires to check.

Then this Study of the Aetiology of Disease may, or rather, must be, prosecuted along several lines of advance. Seen in the case of a single disease, by far the most fruitful field of inquiry, and without a doubt which, all other attempts to penetrate into the unknown country will be futile, is the Study of the Laws of Health, since the cause of the fault-deviation from these is in the cause of the most accentuated types of disease.

But having pursued this path as far as the present state of our knowledge admits (or as far as our association of such knowledge will allow) we come to a point whence several paths diverge; and of these, that which, was it necessary to defend were one track, direction of attack only, is likely to yield the most hopeful chance of victory, is the one which seems perhaps chiefly to obtain in the present day, viz. the line of Pathological Research. and indeed, did the initial cause of any of these deviations from the Standard of Health which we characterize by a distinctive appellation, lie wholly within the organism presenting that deviation, or within the organism from which it had sprung, we would surely be led by a scientific method of attempting to penetrate the mysteries of disease causation.

But though it has been questioned whether any disease is due to a purely functional cause independent of physical change in the Constitution of the Body, which
physical change would itself constitute disease, it is impossible to deny that many diseases are principally due to causes acting upon without the organization directly affected, and therefore only, so far as pathological facts are regarded as the impressions of preceding causes will they guide us in our search for these causes, in the manner as only, so far as the footprints of the labyrinth diesel in the trias were regarded as the effects of a preceding cause, could they have guided to the discovery of the nature of that cause.

And how let it be remarked with regard to hereditary tendencies that there are but the physical effects (whether recognizable by the aid of scientific investigation or no) of a cause which acted upon an ancestor, or the ancestors, of the organism in which they are met with, and as such are themselves therefore excluded from the category of causes, though it will hereafter be convenient to treat of them relatively as such.

It is a wish classification of the processes of Disease Causation, with the object of facilitating inquiry into the life-history or genealogy of the generations of effects which have resulted and are resulting therefrom, which is the object with which this paper is written.

External to, though dependent upon and inseparable from, the study of anatomy, physiology, and pathology, lies the study of the dependence of altered function upon altered environment, or the interdependence of function and stimulation, and that cannot be confounded with the nature of normal function, whether in response to the stimuli (material or unmaterial) ordinarily calling forth such function, or in response to special stimuli purposely applied, as in the beautiful Therapeutical Experiments.
must be due either to causes acting purely within our body, or to that acting purely without, and this would be a considerable

If we assume that the classification of initial causes of disease were to be able to determine which of the inherent or external causes of disease in any given case, were themselves primarily due to external influences, and which were purely inherent, for they afford a probability that, on the assumption of the physical descent of man from the lower forms of animal life, some of the degeneration to which he is liable may rather be due to a tendency to revert to an earlier type of tissue, than the result of any external cause acting either upon the organism directly affected, or upon its ancestors. That by far the larger number of diseases, however, are due to the inherited, or to the personal action of external causes of an injurious nature, there is little room for doubt, and it is the duty of those in whose hands so great a talent is left the management of the public health to dignity into the variety of form and kind of these causes acting pure without the human organization, upon which so many of its alterations, in functions or in structure are dependent. Yet their distinction of Function or Structure in everything respects are arbitrary, one for as the study of the physical attribute of an organ (Anatomy) is inseparable from an appreciation of the function of that organ, so in the study of Structure inseparable from that of Function, for indeed anatomical features (morphological) are but the stamp of the functional die wielded by the hand of Structure, a hand through which acts at first yet remain through the whole process.
We turn therefore now to consider the interrelations of function and stimulus in the hope that by an early recognition and avoidance of the resulting effects, each primary classification of causes will lead us.

To the study of etiology we look for our guide to diagnosis and treatment —

We commence this study by asking the question —

What are the primary groups into which the processes of disease causation may be arranged?

It may here be interesting to note some of the later approaches of opinion on this subject. Thus, in a letter to F. J. Pearson Irvine, after recalling (in an article on "Causes of Disease" in "Pearson's Dictionary of Medicine") the difficulty of giving a succinct account of the causes of disease as not diminished by the fact that in most diseases we can trace a succession or combination of causes, he states that "the causes of disease have been divided into (1) Preceding or Remote (2) Secundary or Proximate and (3) Determining." and then himself proceeds to answer our question by dividing the causes of disease or "factors of causation" into the following groups: I. Age, II. Heredity, III. State of marriage, IV. Sex, V. Temperament, VI. Climate and locality, VII. Tumor, Ulcer, Cavity, VIII. Hygienic Conditions; IX. Occupation, X. Air, XI. Previous Disease, XII. Mental, Emotional Conditions; XIII. External Physical Conditions, XIV. Previous temperature, XV. Diet, XVII. "external parasites and agents" — a group of factors of causation which would lead to a more definite system of etiology, based thereupon —

Henry, in his "Principles of Medicine," (4th Edition) also divides the causes of disease into preceding or preceding, subdividing the former as follows — I. Age, II. Sex, III. Personal peculiarities, IV. Occupation, habits of life, V. Previous disease, VI. Heat or cold, dryness or moisture, atmospheric influence,
and exciting causes be subdivided into

1. Mechanical
   Indeterminate, or Specific

2. Chemical
   Indeterminate, or Specific

3. Vital
   Animal or Vegetal

A most inconvenient mode of classification, but one
regularly confined to the consideration of disease as an
affirmance of an individual rather than of a race.

Jenner and Firenzy maintain in their "Manual of Patho-
logical Anatomy" that the causes of disease may be di-
vided into mediating and exciting; but that all diseases
can not be regarded as the natural results of certain
foreign vigorous influences operating in the system, as
there are many cases where we cannot point out
any exciting cause of the exciting malady where it
seems to have originated fortuitously, so far as
we are able to judge.

Thomson, in his "Vorlesungen über allgemeine Pathologie," p. 8 asserts that the health-
iness of the patient, and the removal of its causation, are
what we must regard as the conditions under which the
manifestation of the disease as a whole can be said to
exist.

Thus, in his lectures on the "Specific Element in Disease,"
Thomson, in his "Théorie de l'Anatomie," appears to divide the elements of

1. The Common or Physical.
2. The Common or Chemical.
and the specific or pathological (answer to the treating cause) or "mucous" or "humoral" if other authors do so as equally in evidence, and proceed to show that a knowledge of the specific element in disease is the key of medicine, without which it is impossible to proceed successfully in the practice of our art.

In the interesting chapter on the "Causes of Disease" in Sir Thomas Watson's Lectures on Physic, we find the influences of heat and cold, of the seasons, of income and of hereditary tendencies chiefly dwelt upon as the general causes of disease and their relation to the individual, while in common with most of the writers on medicine of the present day, no attempt is made nearly so high an authority to classify diseases in general on a genetic basis.

In continuing a word of Pathological Classification, disappearing from modern with that bearing the sanction of the majority of writers on the question, by a word which replaces the primary division of causes into "premonitory" and "treatment," not to mention the "proximate" so effectually closed by Sir Thomas Watson, we must again call attention to the fact that it is not diseases as manifested in separate individuals with which we have to deal in treating of Pathology, but with diseases as manifested in their own individuality requiring generations of trial and error in point of time and nations in point of space for their development, and this we do with the more courage when we remember that this "individuality" of disease is after all only a mental abstraction, "disease" having neither substance nor being apart from the body, in which it is represented.
and its progenitors being but the conditions of their
bother's existence.
Still with a view of answering our question as to what
are the forces into which the procreation of Disease-
Causing may be arranged we now propose to
Inquire further — starting with a (human) body
in health. What are the conditions of its existence
in which the causes of Disease may become
manifest?

Many of

To this end it is convenient to consider the human
body as an organism built up of separate
organs (cells) each of which is dependent for
its existence upon the assimilation of matter
External to itself. Thus Michael Foster asserts
that the higher animals, we learn from morphologi-
cal studies, may be regarded as groups of tissues
peculiarly associated together. Again, "All the
tissues are to a greater or less extent metabolites."
The energy of each whatever be its particular mode
has its source in the breaking up of protoplasm.
Again — "However thoroughly the material of food be prepared
by digestion and subsequent metabolic action, the fact-
that stages of its conversion into living protoplasm are
affected directly and alone by the tissues of which
it is a part a fact —" Since then each of these tissue elements, cells or organs,
is dependent for its existence upon the assimilation
and metabolism of matter External to itself,
and as the organism is only a mass of such
dependent organs it follows that the existence
of the organism is dependent upon such
Assimilation and Metabolism —
now it is the by, or during, the process of
Assimilation and subsequent Metabolism.
alone that an organ is capable of responding to any stimulus whatever, i.e., function is the netting of forces due to such accumulations or metabolitis ("the energy of such whatever be in the particular mode, has its source in the breaking up of the metabolites") and therefore the functions of an accumulation of such organs, i.e., the functions of an organism are solely dependent upon the assimilation and metabolism of external matter—by "solely dependent," it is not here meant to denote futility or causation (stimulus) but that without, independent of, and except during the process of metabolism, the function is impossible.)

Therefore all the functions of a body are dependent upon the process of metabolism, the process of metabolism, itself a function must first be influenced in the production of altered function or disease—"in the first line of processes of disease use essay. This must be placed. The tendency to alteration of metabolism, not because it is itself a specific influence but because though it all other specific influences leave to us must seek themselves and without it disease is no longer disease "for the death is the cause of all diseases" as Sir Thomas Browne says. This "metabolic" process in disease causation has as it will be found much in common with the "disposition causes " of our text-books, and of them when traced to their ultimate issue become irrespective of the special disease to which they may predispose having it will be formal or metabolic nature. The term "metabolic" covers a larger area than the predisposing influences as it has been shown that this other cause can operate in producing a disease other than in addition to this.
Having distinctly in mind that it is not a classification of diseases but of their causes or condition, it is evident that we are discovering and finding that an altered metabolism is the deepest trend that can at present be taken of the effect of material influences, we must look upon this as the great initial condition of all disease production.

Though alteration of metabolism indeed not only affects the functions conditions of life but also all the favorable circumstances of existence, still their influence is confined to the organism.

Two involved in the process of metabolism are three several processes proceeding pari passu with that condition, viz. - metabolism = assimilation - gaseous or liquid.

Conversion, or metabolism itself, including secretion and secretion - production = kinetic or potential,

and these three processes indicate three several directions in which an alteration of metabolism may take place thereby forming 3 pump of secondary causes through which influence, from any direction may act, of which it is proposed to call "individual causes.

"Individual Assimilative, Metabolic and Energetic causes.

and collectively, the "individual factor of Disturbance Causes".

An illustration of these three factors of Disturbance Causes may be found in the following opinions -

"Pusey, assimilative. D. D. Pusey in his article on "Disorders of Nutrition" in Lucas' Diet of Medicine, 1863, says, "When we find disorders of nutrition we trace cause by changes in the distribution of the blood, we connect such with any humor abnormality, then, fundamental change must be referred to the tissue-elements themselves and it is probable that the number of disorders depending upon such changes in
"The minute tissue elements is very large and the field of "elemental pathology" may be larger since "than that of nerve-pathology or blood-pathology."

Metabolic or Dynamic.

"We have already seen in the opening chapter of his work "An Introduction to Nervous Disorders" says, "I hold it to be abundantly clear that the great majority of "disorders we have to treat at the present day show "more or less marked indication of failure of "nervous power."

Contenting ourselves with these illustrations of the fact that three whole lines of the article in which reference should be made to the organism have been recognized by others, we turn (now only provisionally) to the consideration of the stimuli themselves - the specific "elemental stimuli." Of course -

Stimulus without opposition & advocate the views of the writers on the brain theory of mind & matter, we have an admirable, idealistic &, or to say in any true form of metaphysical self-contradiction, yet we must assert that as sound is inconceivable as sound in the absence of air, & light as
Light, in the absence of an eye, is a stimulus inconceivable in the absence of an organism capable of stimulation. The study of disease has always occupied itself largely with the relation of the specific elements of disease to the organism, and their relation with the study of the peculiarities of these elements themselves (which rather belong to other branches of science) and any system of classifying them that needs therefore be based upon their relative causes. Their relative and not (at least primarily) their actual differences.

In accordance with this principle we find that multiple stimuli or the specific elements of the disease arrange themselves into three groups of three elements, which we propose to denominate—

Accidental, Acquired, and Retropgressive, any one of which may act severally or collectively in the lines of altered assimilation, altered metabolism, altered force-production, as shown in the accompanying diagram.
Objectives. With regard to this diagram, it may be objected that a stimulus (acting for example as an accidental stimulus as a fever) does not cause the alteration of metabolism, but, finding it, is so enabled to act. Moreover, if this we reply that such is not a case, i.e., as an altered metabolism is already present, the introduction of a stimulus is itself a deviation and it is the cause of that disease we are seeking. That is, by the term "pre-existing" "causes" we mean that to be the effect, and it is the duty of research to find causes of these effects which the above diagram happens to represent.

Hence it becomes necessary to ask ourselves another question, viz.: What is a Cause of Disease?

Can a Stimulus be said to be a cause of Disease?

Answer. Certainly not— for "disease is a deviation from the standard of health of a body" and the cause of such deviation causes us as we have seen of 1stly a body, a stimulus, acting upon 2ndly a body.

The study of a cause, therefore comprehends the body acted on, as well as the acting "disease," the effect produced by such interaction.

The "Cause of Disease" is then the "process by which a given stimulus injuriously affects a living body." (Hence the term of an original function, but not fully answered, as the "processes of disease" "causation," rather than the "causes of disease" per se.)

Thus the consideration of a process, as its name implies, involves the consideration of a succession of facts— in this case these facts are as follows:

1. A stimulus—its nature.
2. A state of relation between stimulus & body acted on—its mode of production.
3. A body acted on—its nature.
4. The condition under which the stimulus can affect the body—true mode of origination.
Physicians were an address on the duties of nurses. The
"Inflammation" (Lancet 1851 Vol. 1 p. 695) leaves
quite clearly that the "cause" of a disease, as inflammation,
consists not only in the nature of the stimulus, as "cold" or in the nature of the body acted on, as the
"nerves in sympathy with an external organ," but
also in the nature of the conditions affecting these
nerves. Thus "Suffer a man to contract a fever,
"following disorders of the bowels, what is the time when
"he must be most careful to keep his coat buttoned
"up when he walks out into the cold air? It is im-
mediately after taking a heavy dinner; it is just
at the time when there is the greatest amount of
"of physiological activity of the organs liable to
"inflammation, when the nerves of the internal
"organs are already doing their utmost consistency,
"with health, then it is that it is most likely to
"suffer some additional nervous action. Knows when it
"in consequence of depression of nervous activity
"in the chilled integument, with which it
"sympathises," the most severe cases of acute
"cases. Such causes have been observed under similar conditions.
"Early, immediately before driving home in an open vehicle
"in the face of a cold wind, was induced by her husband
to drink a glass of very brown brandy "to keep the cold
"out" with a result very much the contrary of that
desired.

The primary groups into which the processes of disease
causation may be arranged are therefore two.

I. The processes which a stimulus is brought into contact
or relative to an organ — Relative Group

II. The processes by which an organ, being in relation to
a stimulus, is brought into a condition capable of
being acted on successively by that stimulus — Conditional
Group.
Diagramatically the study of desire causation may be represented thus:

Individual Stimulation.

Actual

Relative

Conditional

Individual Actions.
Having thus attempted to answer the question—

"What are the primary groups into which the processes of disease causation may be arranged?"—we proceed to examine these several groups in what more

Serious detail, with the view of showing in what way the study of the life-history of disease causation may be promoted by such arrangement or the recognition and treatment of disease facilitated.

First let it be remarked, that until we clearly define

understand the essential features of any morphic

influence and the points at which that influence comes into contact with the human organism, we shall be unable intelligently to control its effects, or that any mode of pathological classi-

fication which fails to distinguish between the circumstances attending to the Stimulus or the opportunity the organism is associated or a

hindrance to correct diagnosis or treatment, while any mode which more nearly recognizes such distinctions is, therefore, help to that object.

Because they are under the head of "Preradiating Causation"

form the core of a heterogeneous collection of objective and subjective conditions, more or less

immediately affecting the process of disease causation, but having no connection with one another—at

least.

Take the following example from the first page, of an

spend our as a popular work on medicine —

"The disease is said to occur chiefly in hot seasons

and to affect children more often readily than

adults. It is doubtless known whether season or age

exerts any special influence over it."

"The age", a purely subjective condition, is mention-
ed causatively in the same breathe with season

which clearly relate to the specific virus or actual
An illustration of the "hindrance" to correct diagnosis of tuberculosis, which has been affected by the division of causes of disease into "pre-disposing" and "specific". Take the following instance of subsequent quotation.

Two or three hundred years in concern with a number-practitioner as the recent discovery of the tuberculosis bacillus as the specific cause of phthisis, the writer was confronted with the fact that phthisis was hereditary, and was asked to explain how a hereditary dis ease could be due to such specific element, and whether hereditary predisposition did not necessarily include such causation. I and the satisfactory reply being forthcoming, the speaker declined his distinction of having nothing to do with the antiseptic treatment of the case.

Mote. Here now what Mr. James Mote says in today's Lancet (April 28th, 1883) on modern theories of treatment of phthisis:

"Taking the fact of Koch's discovery as sufficiently established and that bacilli being found in all cases of phthisis, they stand in the position of a causative agent, and taking also into due estimation the fact that all persons exposed do not get the disease, we have to inquire whether there are not antecedent conditions, i.e. conditions prior to the introduction of the germ, which favour their development. There is, or may exist, a state of health or of constitution or of lung, which is a main factor in the induction of disease. xx. This consideration demands our serious attention. The period during which the affection is known to be favorite is a first-stage period which has been described and prepared but in the author. In this stage is to be seen the latent stage. The two factors of heredity and constitutional are thus always to be seen as difficult in the way of accepting off-hand the bacillus theory. But they seem to be
The agent which markedly prepares the way for the infection of respiratory organs -- as B. Green has remarked -- the tendency of retention and accumulation of air-necrosing products is a leading character of pulmonary inflammation. III. 47. 97.
cause of the disease: yet the student, for whose the work is written, is nowhere directed to the distinctions between the two.

"Actual Causes of Disease."

("Specific Element" - "Exciting Cause" - "Indirect Stimuli")

are the names given to whatever appears to be the initial elements of disease in the little disturbances in the harmony of the human machine.

They may arise from within or without the organism.

They affect a or be in the same state material or non-material - positive or negative.

The study of their characteristics, apart from their relations to the organism, is termed "Science."

"Relative Causes."

(to denominate each of the several links in the process of disease causation "Cause" seems to be a contradiction of terms, but as there is greater causativeness in the relations of Stimuli vs. Stimulated than in the Stimuli itself, we are obliged to retain the term.)

A Relative Cause of Disease is the means in which a Stimulus is enabled to act specifically upon the human organism, and involves the study of the manner in which the organism as a whole was brought under the influence of any particular Stimulus.

The Study therefore of Relative Causes is the study of the life history of the human organism and embraces such matters as:

Occupation & Diet - Climate & Temperature - Hygiene - Vaccination - Epizoonics - Heredity.

Relative Causes are essentially abstract conditions, while "Conditional Causes" are beneficial or incidental
are essentially controllable being in most cases the Effects of the Relative Causes which preceded them.

Thus, e.g., while 'heredity' is a Relative Cause, or interacting tendency to any particular temperament, or a Conditional Cause of disease.

The Relative Causes of Disease of the Present are the Conditional Causes of the Future and as Relative causes are capable of prevention, while Conditional causes admit only of alleviation, it is desirable to draw as distinct a line of demarcation between them as possible.

Relative causes admit of the following 3-fold division:

I. Accidental

This must be taken in the sense of incidentals, the term being in no way intended to connote the idea of 'Chance,' but to express the fact that both organism & stimuli are brought into relation one another by no inherent cause or the fact of situ.

For the subdivision of accidental causes see Table.

II. Acquired

This embraces that mode of relation between stimuli and organism in which the action of one upon the other is incapable of being affected except in some way by means of the organism.

Acquired relative causes are subdivided into two classes according as whether the relation has been affected by the individual showing the disease due to such relation, or by the ancestors of such individual — viz. of Heredity or individual.

The latter being further subdivided into

- Circumstantial = Climate, Temperature, Hygiene.
- Personal = Diet, Occupation, Morality.

III. Retrospective

This is a provisional class intended to embrace...
The relation between stimulus and reaction in which, in the present state of our knowledge, the action of the one upon the other appears to be due to a tendency on the part of more highly differentiated tissues to revert or retrograde to less highly differentiated forms or in the part of more recently developed organs to revert to older conditions of inferior development. The efficient cause or actual stimulus being in these cases generally unknown, but it is usually associated with some antecedent conditions—(Man may himself be in confinement and very frequently have-lipped as maladies do come has mentioned in his lectures on "Sterility")

The subdivisions of relative causes may be tabulated thus:

```
  Relative
    |  Accidental  |  Acquired  |  Retrogressive
    |  Mechanical  |  Chemical  |  Mental
    |  Natural    |  Artificial|  Sensile
    |  Individual |  Generative|  Developmental
    |  Circumstantial |  Personal |  Intellectual
```

"Conditional Causes"—

These are the personal or the inherited effects of the relative causes first considered, and the conditional causes of the present are therefore a bridge to the relative causes of the past, and form a key by which we may get hope to unlock some of the mysteries of the initial causation of disease.

They are capable of the following 3-field divisions I assume—

1. Assimilative
2. Metabolic
3. Secretive

These groups being themselves subdivided on a histological basis...
Now as the principle of the human body being built up of a number of independent cells, it is easy to see that by division of labour certain special organs or cells are set apart for certain special works, and these special organs are divisible into those each division as we have now succeeded.

1. Animatice. While all the cells have the primal power of animatice to perform for themselves, yet the hard work of this function is performed by special organs set apart by inherent adaptability for this purpose. Schöpf, Th. Schöpf (in Lancet anatomy p. 65. 3d. ed. 1770) says that the whole educating teach from the pancreas to the cardio, together with the rudiments of certain organs associated with it in their commencement. S. The hypoblast, the myxoid gland, lungs, trachea, &c., &c., the liver, heart, &c. Pancreas, as well as the alimentary canal that origin, are immediately to influence if the hepatic ducts &c. of the female mucous membrane, which supplies the epithelial lining of the principal cavities. Taking them as a whole, it is just the epithelial lining of these very organs which may distinctly termed "animatice tissue." It will be interesting to note whether the more especially muscular & metabolic tissues have a like crisis.

II. Metabolice.

While all the cells of the body are also metabolite as well as animatice yet certain organs (or groups of cells) have a far larger share of metabolic work. More strictly to do than others, or of them perhaps the threes, kidney, &c., certain tissues may be clearer as examples. With regard to their development, Schöpf (loc. cit. p. 186) says, "it now appears to be fully ascertained that the Wolffian duct is an internal substance of the Wolffian tuber of the male.
proceed from the meso-bladder and as these form the foundation of the principal urinary & genital apparatus it follows that this system as a whole has its foundation in the meso-bladder larger — "The Spleen," he says (p. 782) "is entirely meso-bladder in its origin" or that although situated so near the Perineum which is hypo-
bladder.

III. Muscular or Dynamic.

The two essentially muscular tissues are the nervous centers, and the muscles, and were we divided the muscular centers as a whole of disease on a purely hist-
opatophysiologic basis we should be obliged to divide these together - what says reality now?

The rudiment of the cerebro spinal nervous center is formed more immediately from the thickened medul-
lary plate of the involuted ephi-bladder (see at p. 786)

The muscles of the trunk derive their origin from the "muscular plates" separated by differentiative from of the formative cells in the Action or superficial leaf of the ectodermal tissues.

Thus we said that the types of accumulative times are derived from the important, the types of the meta-
bladder times from the meso-bladder, and the types of the muscular times partly from the ephi-bladder or partly from that plant of the meso-bladder - leaved - he seems therefore to be developed as well as analogous forms for dividing the conditions of disease into three such apparently distinct groups.

Further subdivision of the conditions of disease would result itself as an encapsulation of the various organs or tissues of the body under the above three headings —

his are therefore now ready to attempt an answer
Before leaving the question of the development of processes for breathing, let me divide these into three main categories: assimilation, metabolism, and excretion. The division is of such deep root and long-standing that the relations of the external environment to the organism are affected thereby. It is interesting to remember that while the muscles (as above mentioned) occupying a position midway between metabolic and excretory, are formed from the bladder, the blood, which contains the properties of assimilation and metabolism, is formed from the hypo-elastic or under surface of the inner bladder.
The question: In what way will the study of
the life history of certain creatures be promoted
by such arrangement of its processes?

Referring to the diagram on p. 15 we see that it is
intended to represent the series capable of being
broken down by a number of seasons through the
duration of circumstances affecting both itself
and the circumstances it acts upon, and that
it is capable of being used either in the consideration
of the history of the special climate of a particular
period or in the consideration of the history
of climate in general.

In the latter light alone do we propose to
utilize it.

1. an hypothesis in climate.

Thus we practically the relative causes of climate
how it is understand that the hypothesis causes of
the general influence the health of the succeeding
generation. But in what ways they affected?
so is not by influencing the condition of the sun's
offspring power to control the effects of climate?
and may not the later black sometimes in
the duration of the sun's or group of suns-
elements in one generation, sometimes in
the duration of another group in another
generation, thereby influencing what we
term the "type" of climate and thus
attempts the "actual climate" themselves
become by fairly under the same in quality
and quantity in each case?

Thus, supposing the habits of life of a nation or
race at some period are mainly in the lines of
accommodation and metabolism for an active
outdoor athletic principle with occasional co-
hence to fatigue or benefit of the actual stimuli coming into relation with existing conditions of the 
disturbance would be carried into the conscious, according 
as to whether their action happened to be promoted or 
retarded by that condition, will vital sensory action 
with a definite or a violent, mechanical causes 
being to a great extent modified in action by varied 
deprival of time, while retropulsion of many acquired 
stimuli would exert a comparatively small 
influence under the same unfavourable conditions. 

But this state of things would tend in turn to mod. 

Great is the continual destruction of the strong 
and vigorous of the more frequent class of the "un-
intellectual" individuals, would bring the front time 
where sleep developed itself, in the normal 
situation than the muscular direction, and together 
with a diminished violence of antagonism does 
a higher type of intellectual development would 
be noticed, but lingering in its train an in-
creased capacity responsive to the retropulsion 
against stimuli of what actions had perhaps 
been dormant for ages.

Relative Causes of Decline or Progress—conditions 
must be drawn according to the type period in 
which they act, as well as according to the locality 
in which they are met with.

Thus the Victorian Age, in the culture of Sweden 
adopting its whole system of drainage, may 
be said to define the limits of an extensively 
subdivided but not of the definite family 
of Relative Causes which are likely to 
produce a marked conditional effect 
after succeeding generations. This age...
may be compared with first attempts of a pseudo-
scientific, superficially educated force of manufac-
turers but upon the introduction of a new danger-
ous explosive into their work-rooms, which if properly
handled is likely to supply a lecture force of
Economic Value of Efficient Action, but which
will be productive of many dangerous accidents
until the necessaries have been understood by
Experience.

The 'stove gas' systematically laid on in the
majority of middle-class London houses is but
one of the many relative causes non-rational
which are slowly producing a mighty conditional
effect upon succeeding generations.

Among other relative causes of future evil may
be mentioned—

amongst others: The inceasing tendency to
"specialisation" which throws disproportionate
work upon some and leaves others—
mental strain, the result of the struggle for
survival due to the increase of the population. The
use of artificial light for (in London) the
greater part of the day. With inhalation of its
products: Sulphuretted Hydrocarbon, Ethylene CO2.

The day is not considered long enough for work if the
only thing left is the evening for recreation or sleep.

1. "One of the great causes of O.E. Stress in early years is

2. Additional effects resulting from want of hygiene
conditions, or from the relations established between
organism and stimulus.
The various inciting conditions mentioned above occur primarily to operate in line with producing a resultant reduction of nerve force—evidenced by the increasing tendency to neuroses, but whether this may be due to actually diminished force, or to increase of resistance to the display of that force caused by the incitement of the various turning by the multitude of stimuli to which they are increasingly exposed in perhaps a matter of opinion. With regard to failure of brain power Dr. Althea thinks that the symptoms point to undue increased resistance in this than to diminished force production.

In conclusion we may theoretically assume that had the first organism nothing but 'accidental' causes of disease to contend with, each succeeding generation has an increased number of these predisposing tendencies as well as inherited effects of bygone accidental or acquired mutative influences in addition to the ever-present accidental influences—

Now that no acceleration of this fact possible the weight would no longer become too heavy to admit of sustained resistance were it not for the fact that 12% inherited tendencies usually tend to diminish with succeeding generations, and 23% that fast pace with each augmentation (in number) of inherited effects is received, likewise by inheritance, an increased ability to escape or evade the mutative activity of accidental causes, and an increase of knowledge by which the trade if we will reduce the number of acquired diseases—

It becomes therefore a duty not only to
themselves but to their offspring for each generation deliberately to set itself to work by increase of knowledge, of hygiene or of morality. Therefore the number of mitigates the influences of the accidental or acquired. Relative causes of disease the beneficial effects of which it must be sincere to promote.

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April 28th 1883.