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Obstacles to the Progress of
Therapeutics

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The subject of Therapeutics is one of vast extent, comprising, as it does, every possible agency which may be brought into play for the prevention or cure of the vast number of diseases to which the human race is liable.

During the present century great advances have been made in all its branches; owing chiefly to our increasing knowledge of the Sciences of Chemistry, Physiology and Pathology. This is especially observable in the departments of Hygiene and Dietetics whose rise and steady development have depended entirely on that knowledge not having

been much written upon or attended to by
former generations; for our forefathers
spent the whole of their labour and energy
in endeavours to find amongst the vast
stores of the Mineral, Vegetable or Animal
Kingdoms, specifics for each particular
disease, antidotes for each supposed blood
poison and correctives for numerous
hypothetical humours.

What of the
Innuents?

No Remedy
then?
Quid de his

The medical Profession is now becoming
fully alive to the immense value of Diet
and Hygiene in the treatment of disease.
Their careful study seems full of promise

for the future; it will as it advances overthrow those delusive systems, at present so rife, the essence of which we may, doubtless, consider to lie in their entire non-interference with the curative processes of nature and their surrounding her with dietetic and hygienic conditions favorable to her operations; it will tend to raise Medical science by clearing up much mystery and empiricism and consequently elevate the Profession and benefit mankind to an incalculable degree. There is in the public mind such a close connection between Physic, properly

so called and the cure of disease, that, in private practice, we must not expect at present that we shall be allowed many opportunities of observing the beneficial effects of dietetic and hygienic measures unobscured by the interference of drugs; but, I think, Dr Beudet has abundantly demonstrated what may be done by such means in Hospital practice, where, the patients being directly under the control of the Medical officers, there is a very extensive field open for the observation of the results of these measures. Owing to faults in the

construction of many of our older Hospitals
the rules of Hygiene cannot always be carried
out; but now that the subject is receiving
so much attention not from the Medical
Profession only; but from the Government
and general Public, so many new facts are
being brought to light, we may look for
great improvements in all new public
institutions

In the following pages I shall take into con-
sideration the principal obstacles which
are opposed to progress of the Science of
Therapeutics, in all its branches, and the

fallacies which must be specially guarded against by anyone who endeavours to explain and elucidate the Phenomena which he may observe in prosecuting the study of them. My subject, therefore, divides itself into two parts; first:—the obstacles to be overcome and the fallacies to be guarded against, generally, in Therapeutical investigations. Second:—some consideration of the difficulties to be encountered in each of its particular branches.

I shall discuss first the fallacies to be guarded against and illustrate, my meaning, as much

as possible by examples. There are certain imperfections inherent to Medical investigation, which it must be the endeavour of the investigator to reduce to a minimum; but which however much they may be modified, still detract considerably from the value of the conclusions arrived at. There are two principal methods by which we could proceed to arrive at a conclusion as to the value of any remedy in a particular disease. The first, which may be called the experimental method, consists in administering the remedy in a number of cases

of the disease, noting the different circumstances of each case, and by comparison arrive at an idea of the effect of the remedy in the aggregate. The second method, which may be called the deductive, consists in first arriving, by experiment, at a knowledge of the effect of the remedy in health, then setting out from the results thus obtained & the known laws of the human body in health and in the particular disease and reasoning from these, we might attempt to discover whether the remedy, administered in the disease would tend to a restoration of health.

There is yet, in theory, a third method; but as in practice it is useless, I only mention it to show its utter impracticability; it would consist in collecting a number of cases of the disease where the remedy had been administered and recovery had taken place; Of course it would be absurd to attempt to generalize from such observations, especially as we might probably collect an equal number of cases, in which the administration of the remedy had been followed by death.

In both the methods then by which our investigations may be conducted experiment forms

the principal element and the human body in one case diseased, in the other healthy, is in both alike, the field of our experiment; but for experiment to be really conclusive it is absolutely necessary, that the conditions under which it occurs should be entirely under control, capable of being modified or extinguished at the will of the operator: Now not only are many of the conditions in the human body beyond our control; but many of them are absolutely unknown to us; hence, the conclusions which alone, in the present state of our physiological know-

=ledge, we are warranted in drawing, can
be but approximations, wanting in that
logical accuracy which characterize a purely
experimental science such as Chemistry.

Let us take an example; — In Pneumonia we
now know that there is a natural tendency
for the disease to get well of itself if the
patient is merely put under favourable con-
ditions for recovery. Here then a process of
cure is going on without any interference
on the part of art and which we, with the
love there is in the human mind to assign
to everything a definite cause, ascribe to an

abstraction called "Nature". How are we to divide between "Nature" and any remedy we may choose to give, to each ^{its} ~~their~~ share of the effect? how much credit are we to receive for our interference or are we to receive any?

It must be obvious that this is a question which it is impossible answer, without the observation of a great many cases, even approximately; observation of cases both in which our drug has been given and in which it has been omitted. Our conclusion is prevented being more than approximation by each case of the disease, having peculiar

characters dependent upon the constitution,
habits, age, sex of the patient and numerous
other circumstances utterly beyond our con-
-trol. These remarks apply with equal force
to the experiment required in the healthy
organism; and here the conclusion we ar-
-rive at is of no value unless it be actually
verified by the first method. Those conclus-
-ions then are most valuable, where the
expectations we may have been lead to form
from the action of a remedy in health are
fully borne out by a numerous set of obser-
-vations on its effect in disease; but even,

multiplication to an indefinite extent of cases in which its effects are manifested, does not justify an unimpeachable conclusion, as long as there are concurrent with its action numerous circumstances which would influence its effect. I shall try to explain further on in my paper the means to be adopted for arriving at somewhat greater certainty. I say somewhat greater, for I fear that our knowledge of the laws of life and health will never reach such perfection as to allow of absolute certainty in Medicine. But besides this inherent imperfections there

is a numerous class of fallacies likely to impose upon an observer but at the same time perfectly avoidable. Some of these have their source in the imagination, others arise from want of sufficient attention to facts and a third class result from incorrect reasoning from facts correctly enough observed; but the three classes merge so one into the other that I shall not attempt further to define and characterize each class; but pass from one fallacy to the other as their connection seems most obvious.

There is a generally tendency amongst man-
-kind to remember and chronicle success
-es; but to consign failures to oblivion, and
Medical men are not more free from this
failing than other mortals. When good effects
are supposed to have resulted from a certain
plan of treatment or from the adminis-
-tration of a particular remedy, the prac-
-titioner is very liable when thinking or
speaking of such effects, without any
intention of deceiving himself or others,
to forget the number of cases in which the
same remedy has been followed by no

success whatever. This may be said to be a fallacy of imperfect observation; the ultimate cause however is certainly a moral one. Nearly allied to this and one of the most fertile sources of Mal-observation is Preconceived opinion. By this I do not mean blind prejudice which determines a man to see nothing, however it may appear to his reason, that is not consonant with his former views: of this I shall speak presently; but preconceived opinion which leads a man to accept neglect making observations for himself. What I mean is well

illustrated by the superstitions of barbarians concerning the virtues of charms. The negroes wear coral as an amulet and affirm according to Dr Paris (Pharmacologia) that its colour "is always affected by the state of health of the wearer, it becoming paler in disease". Here is a matter open to the general observation of a race of men, possessing, at any rate, ordinary intelligence, yet it being traditional that the alleged phenomena do occur, they cannot be persuaded to see the truth. But what need to go to savages for examples? the same form of fallacy is very

common amongst ourselves, at least amongst the younger members of the profession.

What is more common, than for students, having read in systematic works on Medicine the usual course which a disease runs, the symptoms which it presents, and the physical signs most frequently manifested, when they come to the bedside of a patient labouring under that disease, to observe symptoms and signs which have no existence save in their own imagination and by leading questions to elicit answers in accordance with the views which they have de-

-rived from books? This last is likely espec-
-ially to lead to error in seeking to obtain
knowledge of the effects of remedies which
have been administered. Every medical
man knows how, amongst the class of
patients usually seen in hospitals, whose
intelligence is not of the first order and
who see no object in the questions put to
them, it is easy to obtain almost any answer
by framing the question aright. When then
it is desirable to obtain knowledge of the
effect of a remedy given to alleviate pain
or to mitigate any other subjective symptom

the patient's answer being all that we have to rely on, we must be careful not to let any preconceived opinions influence the form of our question or the patient is very apt to mislead us by his answer. In questioning patients as the causes of their complaints it is very desirable that the same rule should be borne in mind to prevent misapprehension. A kindred source of non-observation to the one just mentioned; is unqualified assent to anything propounded by undoubted but nevertheless not infallible authorities. The young practitioner is certainly

bound to receive them provisionally; but
should lose no opportunities of making
observations to prove or disprove them him-
self. The same Physician, I have before quot-
ed from, records several instances of an-
other very common form of fallacy, one of
which I shall give in his own words:—

“When the yellow fever raged in America,
the practitioners trusted exclusively to the
copious use of Mercury; at first this plan
was deemed so universally efficacious, that,
in the enthusiasm of the moment, it was
triumphantly proclaimed that death never

took place after the mercury had evinced its effect upon the system: all this was very true, but it furnished no proof of the efficacy of that metal, since the disease in its aggravated form was so rapid in its career, that it swept away its victims long before the system could be brought under the mercurial influence, while in its milder shape it passed off equally well without any assistance from art." Here all the instances of the diseases were observed; but a material circumstance was not noted; viz. the really serious cases dying before

the mercurial influence could be developed at all. The above instance of fallacy I have preferred to class under the head of Errors from improper observation; but I might equally well have assigned it to that class of fallacies which consists in reasoning upon mere sequences as if they were examples of the Law of Causation, the "Post Hoc ergo propter hoc" of logicians.

To my mind one of the best examples of this fallacy in the whole range of the History of Medicine and one of the most striking, as having given rise to the most extensive

medical schism of the present century, is seen in the origin of the Hahnemannian system. I think we can have little doubt that Hahnemann was an earnest inquirer after truth and sincere in his belief in the accuracy of the conclusions at which he arrived. He lived at a period when the most "heroic" measures were used in the treatment of disease, he had been fully instructed in the proper mode of wielding all the powerful weapons for its subdual; but he saw the fearful mortality which attended his best directed efforts and cor-

=rectly surmised that some of it might be
attributed to the active but well meant inter-
ference on the part of the practitioner. Fol-
lowing this idea, he rushed, as men are so
apt to do, into the directly opposite extreme.
He did not arrive there so rapidly as my
expression would indicate; but gradually
diminishing his doses, became at last an
advocate of the most extremely diluted ~~hor~~
remedies. If having got so far, he had given
up medicines altogether and impartially
observed the effects great good would have
resulted; but he does not appear to have,

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do so; and setting aside all other possible causes which might have produced the same results concluded that the good effects which attended his practice were due to the impalpable doses which he administered.

With his further theory as to their mode of action we have nothing to do. Looking

back now, I do not think, when we consider

how little was then known of the "Vis

Indeed!

Medicatrix Naturæ" and how strong was

the faith reposed in the power of drugs,

that the result at which he arrived is much

to be wondered at. Had the knowledge of

the age, as to the powers of nature, been
more in advance the system would never
have arisen; much less would it have
spread so rapidly as it has done through-
-out nearly every country of Europe.

Despised and rejected as the doctrines of
Homoëopathy have been by the orthodox
members of the profession; I think that
we are nevertheless, much indebted to
the system for awakening us sooner
than we should have otherwise been to
the tendency there is in many diseases
to come to a successful issue if placed

under favourable conditions and the reparative processes of nature not interfered with by well meant; but often misdirected efforts to cure. The next source of fallacy which I shall consider, is that, which consists in grounding generalizations upon a limited number of observations. Nothing is more common than for practitioners to publish their experience of the good effects of such and such a remedy in a certain disease. Their experience is based often on too few trials of its virtues, and as we should expect the character which has

been given it is entirely belied by the results
it produces in other hands. Various specif-
-ics are thus being constantly brought
forward, which on trial prove utter fail-
-ures; as about two years ago Sarracenia
Purpurea was lauded as having been
found to be an infallible remedy in Small
Pox; but turning out useless has, with hosts
of other so called specifics been consigned
to oblivion. This particular mode of general-
-izing from a limited number of instances,
the "Inductio per enumerationem simplicem"
of Bacon is in medical practice to a certain

extent the necessary beginning of all generalizations on the efficacy of particular plans of treatment. It is seeing the apparent good results in a limited number of instances which affords to the observer encouragement to persevere in the same line; but, as I have stated in a former part of my paper, if, in all these cases, other circumstances exist which may be, instead of ^{this} ~~our~~ treatment, the cause of the good produced, more multiplication of such instances is of comparatively little value towards establishing ^{this} conclusion. He must observe

the effects of each possible cause separately; he must arrive at his conclusion by a process of elimination; examining first the result where no treatment is adopted and then, if possible, excluding in succession the circumstances which are possibly the cause or are in any way likely to influence the effect.

One case in which a possible cause is eliminated is of more value towards substantiating his conclusion, than an unlimited repetition of instances in which all the possible causes concur. It is the difficulty of effecting this eliminative process in Medical

Investigation which forms one of the greatest obstacles to progress in our knowledge of the Actions of Medicines; for while few men consider themselves justified in administering a remedy which former experience leads them to believe beneficial; it is impossible for them in most cases to eliminate constitutional or otherwise many conditions which may be the cause of improvement or at any rate considerably modify the result. But certain conditions which it is beyond our power to remove, may be so far under our control as to admit of modification. In such a case

by noticing the variation which takes place in the result when a certain condition is modified, we might infer from it whether that condition was the cause or part of the cause.. It must however be obvious to all, that considering how much yet remains to be discovered in Physiology, even allowing that it were in our power to eliminate or modify all known conditions of the body; there must yet be many others unknown and therefore our conclusions would still be wanting in logical accuracy.

Analogies which appear, at first sight very

plausible arguments, are apt, unless carefully examined, to lead persons into error. "An argument from analogy is an inference that what is true in a certain case is true in a case known to be somewhat similar; but not known to be exactly parallel, that is to be similar in all material circumstances." Hence it follows, that, the more extensive resemblance there is between the two instances, the greater is the force of the argument founded upon it; and on the other hand the less the resemblance the less warranted are we in laying much stress on the argument derived therefrom.

Our capability of seeing and judging of the force of resemblances must depend entirely upon the knowledge which we possess of the subjects themselves. Therefore in a science like Medicine, in which there is yet much that is to be learned we must be careful how we argue from analogy as it is very likely to lead us into error.

Lastly we come to Theory as a source of error in Therapeutical investigations. Dr Bennett observes that "All practice, though professing to have its source in experience, is in fact grounded upon Theory." This to a great

extent is true; but it does not seem to me altogether. The fact is, that, Practice may be said to be founded on theory or experience according as the subject is viewed from different points. For instance, the practice of bloodletting, whatever may have been its ultimate origin which seems to have been coeval with the rise of Medical Art, was undoubtedly approved of by experience and in after generations may be said to have been based upon it, inasmuch as those, who practiced it, did so, because after each bloodletting they saw a decided mitigation

of the symptoms of the disease. Their patient experienced temporary relief and as the elaborate means of Physical diagnosis which we now possess were then unheard of, the feelings of the patient were in a great measure the only means which they had for their guide. Theory then came in to explain the cause and "Modus operandi" of the benefits observed. The influence of conflicting theories of the action of bloodletting is well seen in the "Middle Ages" in the endless wars between the supporters of Revolution on the one hand and derivation on

the other; the explanations of both parties being destined to be overthrown by Harvey's great discovery of the true course of the circulation. It is thus that Theory and Experience seem to share the foundation of practice between them. Theory generally comes in to explain the Phenomena which experience has observed; though instances are not wanting where ~~experience~~ Theory has been the sole originator of practice, experience afterwards bearing it out. "An Hypothesis" or "Theory" is any supposition which we make (either without actual evidence or on evidence

avowedly insufficient) in order to endeavour to deduce from it conclusions in accordance with facts which are known to be real; under the idea that if the conclusions to which the Hypothesis leads are known truths, the hypothesis itself either must be or, at least, is likely to be true." It is to the formation of Theories without taking duly into consideration the facts presented to the observation that much error may be traced. The revulsionists and their opponents, before alluded to, had they duly considered the fact of the Valves of the Veins discovered by Amatus Lusitanus (27)

when their disputes were at the greatest height, would have seen at once that it was directly opposed to the idea of the circulation which they entertained and upon which each party founded their theory of the action of blood-letting. But in their case, as it has been in others, fact had for the time to succumb to theory instead of being used to correct it; and so strong was popular opinion that when the valve at the junction of the Azygos vein and Superior Vena Cava was demonstrated, it was asserted and believed that its office was to prevent the regurgitation of the

blood from the smaller into the larger vessel. It will be obvious from looking at the sources of fallacy which I have indicated that many of them are closely related to one another, and that some of the examples I have endeavoured to illustrate them with might be referred with equal justice to several heads; but the division may be defended on the grounds that different minds contemplate the same object from different points of view, and reasoning which might strike one person as fallacious when looked at in one light would not make the same

impression on him when looked at in another. We must therefore examine the subject in all those different lights in which it might be seen by different persons.

Having now considered some of the fallacies most common in therapeutical enquiries; I now pass on to the consideration ^{of a subject} which though not so extensive and not so productive of lasting harm as fallacious reasoning, nay, rather serving to enlist sympathy and add strength, in the end, to that which it opposes, nevertheless forms a serious temporary obstruction to the advance of Science and greatly

discourages any but the most energetic and powerful minds. Englishmen as compared with the inhabitants of many other nations are eminently conservative. There is a great dislike amongst us to abolish customs and practices, many of which, have nothing to recommend them but their antiquity, and to adopt, in their stead, practices more in keeping with the advance of the age; and the Medical Profession is as much imbued with this spirit as any other class of the community. To a certain extent such a spirit, when combined with discrimination and an earnest

desire to arrive at the truth, is most salutary
and productive of the best results; but when
it takes, as it is too apt to do, the form of blind
prejudice, which will see little or no good in
any new proposal or discovery and prefers
to hold fast to old practices, because they possess
the sanction of past generations, which the
other wants; it is a spirit which cannot be too
strongly reprehended. The History of Medicine
abundantly illustrates this cause of Obstruction
to progress which I have characterized, for
in all ages inventions and discoveries have
been brought forward serving to excite the

opposition of the staunch conservatives, who have formed in many, nay, most instances the largest portion of the Medical Profession.

The objections raised against such innovations have at all times borne a strong family likeness to each other; indeed it is one of the peculiarities of these objections that they have a great tendency to repeat themselves: showing that with the great advances being constantly made with the progress of civilization, yet the human mind is still constituted the same as it was in the middle or earliest ages and evolves much the same ideas.

modified to suit the circumstances which give rise to them; but still modelled on precisely the same type. Such being the case it will serve my purpose to detail one example, occurring midway between our own times and the earlier ages of medicine which will serve well to illustrate all. The instance I shall take is that of the introduction of inoculation for Small Pox. In the year 1718 Lady Mary Wortley Montague, at Belgrade, caused her infant son to be inoculated with the poison of Small Pox, as a means of warding off the ordinary attack of that dis-

= ease. As a preliminary to the introduction of
the practice into England, the fact was one
of importance; and much credit will always
be due to that Lady for the heroism which
guided her on that occasion. At the time
when Sydenham published the improved edit-
= tion of his work on fevers, in 1675, Small-
Pox appears to have been the most widely
diffused and the most fatal of all the pes-
= tilential diseases, and was also the most
frequent epidemic. The heated and sweat-
= ing plan of treatment prevailed universally
instead of a free current of air and cooling

diet, the patient was kept in a room with closed windows and in a bed with drawn curtains. Stimulants and cordials were given and the disease assumed a malignant character which increased the mortality to a frightful extent. The regimen which Sydenham recommended was directly the reverse and somewhat reduced the mortality; but nevertheless leaving it such as would render the person an inestimable benefactor to his country who would find means to effect a further reduction. Such a benefactress Lady Montague sought to be, she her-

- self had suffered severely from Small Pox;
when with her husband in Turkey she saw the
good effects of inoculation as practised by the
natives and showed her trust in it by having
her child operated on. Inoculation is tradi-
-tionally reported to have been practised in
some mode in China and Hindustan and
Dr Russell who resided some years at Aleppo
states that it had been in use among the
Arabians from Ancient times. In the early
part of the eighteenth century two Italian
Physicians sent information of the practice
to the English profession, who however

took no notice of it. After her return from the East Lady Montague proceeded to carry out her benevolent intention of introducing the practice into her own country. It was an arduous, and for some years, a thankless task. She had to encounter the pertinacious opposition of the whole medical profession who rose against her like one man, predicting the most disastrous consequences; but she was firmly supported by the Princess of Wales & thus gained many supporters amongst the nobility and middle classes. In 1721 she had her own daughter inoculated: four chief physicians were

deputed by the government to watch the operation which was quite successful; the doctors were apparently so desirous that it should not succeed, that she never allowed the child to be alone with them for a single instant lest it should suffer from some interference. Other trials were made: One or four condemned criminals having proved successful, the Princess of Wales had two of her own daughters operated on with perfect safety. Meanwhile pamphlets were published denouncing the new practice as unlawful, as an audacious act of presump-

=tion and as contrary to the commands of
Scripture. The clergy as well as the medical
profession denounced the innovation from
their pulpits as an impious attempt to take
the issues of life and death out of the hands
of Providence. Indeed such was the obloquy
and opposition which Lady Montague had
to endure that she almost felt inclined to
repent having ever carried out her bene-
=volent intention. Here then we have an
instance of a disease very common exceed-
=ingly contagious and fearfully fatal;
little Amenable to any ordinary treatment

An attempt is made to introduce a measure for its mitigation which has been found highly successful in other countries, amongst nations much behind us in the ranks of civilization, yet such is the prejudice of the profession that it meets with the most determined and unreasonable opposition and barely permitted a fair chance of success. In law a criminal is not condemned without trial, surely a profession whose object is to cure the diseases and mitigate the sufferings of mankind should not reject without hearing any proposal which

would further such a noble end. A form of opposition common to nearly all such cases and which was very well illustrated in this is that which puts on the garb of religion and decries the innovation as a breach of divine law; but as this arises not so much in the profession; but depends on the spread of the alarm to other portions of the community, I shall take no further notice of it. The cause of progress triumphed a last and gradually became the practice became an established rule. Seeing the result of in this case, we might have hoped that such ob-

-jections would never again have been raised
without the proposal being allowed a fair trial
~~and~~ that the profession might really have an
opportunity of judging of its capabilities before
they approved or condemned it. Unfortunately
we do not see such to be the case. Eighty years
later when a proposition is made for the more
effectual prevention of the very same disease
almost precisely the same objections are repro-
-duced, before medical men will vouchsafe
it a trial. The discoverer had to endure an im-
-mense amount of scorn and opposition; but
in the end the great discovery of Edward Jenner

triumphed over all obstacles, and has since
been the means of preventing or, when that was
impossible of mitigating the severity of, Small
Pox to such a degree, that the name of the dis-
-coverer ~~will~~ has become a household word
not only in his own land; but throughout
the civilized world. I might instance many
other examples of blind opposition raised
against the promulgation of new and valuable
discoveries in medicine; but I shall content
myself with merely mentioning a few, some
which occurred prior to those I have detailed
and others, I am sorry to say, near our own

times. In the middle ages the introduction of several remedies, such as Antimony and later than that Peruvian Bark was for a long time rendered useless from the determined opposition of the Faculty. To the discovery of the Valves of the veins and its opponents I have already alluded and the storms raised by Paré's introduction of the ligature into France, and Harvey's discovery of the circulation of the blood in England, are well known examples. In modern times we have the obstacles thrown in the way of the use of Chloroform and the application of Auscultation

-tion and Percussion, the history of which is familiar to all.

It must not be understood that I have been arguing for an indiscriminate adoption of every new proposal that is brought forward, but what I would urge upon and what I think the lesson from the above examples teaches us is to accord a careful and impartial examination to newly propounded facts and theories before utterly rejecting and denouncing them as useless.

I now pass on to a brief consideration of each branch of Therapeutics separately. First I

shall take notice of the *Vis Medicatrix Naturæ* for though it cannot properly be said to be a means in our possession for the treatment of disease, we can largely take advantage of its powers and in many instances cannot do better than follow its indications

The tendency in many diseases towards recovery if its progress was not interfered with by art and the patient put under favourable conditions was entirely overlooked by practitioners until within the last half century

The great aim and object was to cut short the progress of the disease, to prevent its ever reach-

=ing its full development by the most power-
=ful agents and the most rigorous antiphlo-
=gistic diet. During the period which I have
mentioned, owing in some measure, I think,
to the success which has been seen to attend
Homoeopathic practice, though possibly, it
may be partly due to a change in the type
of the acute inflammations, practitioners
have adopted less powerful measures and
some even suspended all treatment proper-
-ly so called entirely, placing the patient
under conditions favourable to recovery, sup-
-porting the strength and leaving the disease

to run its course. Here I refer more particular-
to the acute inflammatory affections. That
the result fully justifies such practice I think
Dr Bennett's great success in the treatment of
Pneumonia fully demonstrates: 123 cases
since the year 1848 all of which have recov-
-ered, save two in which there were serious
complications, compared with the mortal-
-ity of 1 in $3\frac{1}{2}$ which was the average when
the Antiphlogistic treatment was in full force
seems to be the effect of something more than
change of type alone; though I cannot deny
that it seems probable from the testimony

of so many trustworthy observers that such a change of type has occurred. From a study of the natural history of disease, a change has also been effected in the treatment of certain Chronic maladies. The change that the treatment of Pulmonary Consumption has undergone, from the confinement to a close apartment of uniform temperature to the prescription of country air, moderate exercise and nourishing diet, depends upon a more intimate knowledge of the nature of the disease, brought about as that has been by the increased means of Physical diagnosis,

deeper knowledge of pathological anatomy
and the admirable researches of Louis and
other observers; and of the natural means of
cure. It appears that farther than this our
knowledge of nature's curative powers does
not aid us; but that an increase of that
knowledge will eventually lead to still
more beneficial results. We may hope,
that, from a careful consideration of the Na-
-tural History and Pathology of diseases com-
-bined with a more intimate acquaintance
with the various Therapeutical agents, we
may learn how to aid the curative tenden-

-cies of Nature and to develop their effects
more speedily in cases where our interference,
as at present directed, only thwarts her oper-
-ations. As I have before stated one of the
greatest hindrances encountered here is
the prejudice of the Public and this must
be overcome by tact on the part of the
Practitioner; more than that it is impossi-
-ble to advise.

The important subject of Diet is one to which,
during the last half century, the attention
of the Medical Profession has been a good
deal directed. Prior to that period practition-

-ers used, as a matter of routine, to prescribe
Antiphlogistic diet in acute inflammations
or general tonic regimen in debilitating dis-
-eases, as the case might be; but the Chemis-
-try of food, the scientific study of its effect
in health and disease was little understood
and therefore was not paid much attention
to. It is to the great advances which have,
since then, been made in Physiology and
Animal and Organic Chemistry that we
owe the great progress in this important
branch of Therapeutic agencies, amongst
which Dietetics ^{now} justly takes rank.

In no branch of Medical investigation are many of the difficulties and sources of error, to which I have alluded in a former part of my paper, better exemplified than they are here; for owing to the complex nature, both, of the substances which are used as food, and of the organism to be nourished, Plurality of Causes and Intermixture of Effects are manifested in full force.

The details of the process of digestion and assimilation are as yet not fully made out. Much yet remains to be added to our knowledge of the exact nature of some of the Chemical

changes which take place, especially as to the separate actions of the secretions of the various intestinal glands. There are causes then which somewhat detract from the value of our conclusions. Notwithstanding, much has been done and much may yet be discovered, by careful analyses of the ingesta & excreta, by well arranged experiments in which every condition which may affect the result is known and as far as possible obviated and by observations in such exceptional cases as that of St. Martin, to render our knowledge of the subject of diet more

perfect and more available for the prevention and cure of diseases. When we consider how many ills man brings upon himself by errors in diet, it is to be hoped that as our knowledge of the subject increases and becomes more disseminated amongst the general public, by its right use, much of that ill may be averted.

Hygiene combines many subjects which enter rather into the category of preventive than curative measures in the treatment of disease; but since the due observance of hygienic rules is all-important for the well-

= being of invalids, it is proper that I should discuss the subject amongst Therapeutical Agents. The first branch of Hygiene is Ventilation. Knowing the important part played by the function of respiration in the Animal economy, and the necessity of pure air for the due performance of that function it is not to be wondered at that a numerous class of diseases should have been attributed to the introduction into the system of various poisons, through the medium of the atmosphere. That certain diseases thus arise from overcrowding in large cities and elsewhere

is allowed by all; but much difference of opinion exists as to certain fevers being produced by contamination of the air by faecal emanations and the impure atmosphere of sewers. Much careful collection and study of facts seems yet to be needed. The facts brought forward by Parent Duchâtel as to the health of the sewer men of Paris are on too small a scale, and the period of exposure to the influence of the noxious emanations was in most of the cases of much too short a duration to warrant any conclusion being drawn from them but never-

Nevertheless the circumstance that a large proportion of those exposed, suffered from Ophthalmia, must not be overlooked, tending, as it does, to show the irritant character of the emanations applied externally to a delicate mucous surface. The proportion of those who suffered from other affections, amongst which are mentioned, diarrhoea, colics and bilious fevers is not large enough to justify our considering those complaints as arising especially from the sewer air.

Dr Guy does not consider Slight-fever as particularly obnoxious to disease. Dr Mur-

Clusson does consider that sewer men are more subject to fever than other people and also that sewer emanations are also liable to cause fever in those only exposed to them more casually. Dr Bennett on the other hand, strongly opposes this theory of the causation of fevers, and brings forward many striking arguments in proof of his doctrine; but as some of these seem not entirely free from objection, I shall take the liberty of alluding to them. Dr Bennett instances the case of families living by the Water of Leith, amongst whom, far from there

being any special tendency to epidemics
there seems great immunity from disease.

Again he observes that in countries, as Bel-
gium, where the sewage is made use of for
agricultural purposes, there does not seem
to be on that account, a greater prevalence
of fevers. Now while these seem very cogent
arguments in favour of the utilization of
sewage, instead of pouring it away into
the estuaries of our great rivers; I conceive
we cannot consider them such strong rea-
sons for rejecting the doctrine of fevers being
sometimes the result of these emanations.

For let us look at these cases; I think it will be allowed that the action of poisons is, other things being equal, proportionate to the degree ~~of~~ of their concentration; but here we have the law of diffusion of gases in full play causing such speedy dilution of the noxious emanations as entirely to prevent their deleterious effects. I think I may compare this case to that of the exhalation of Carbonic Acid gas which takes place when a number of people are collected together. Let the crowd be ever so immense & collected for an indefinite period in an entire

= by open place, the air could not become so
poisoned as to manifest any effect. But
a much smaller number of persons collected
in an ill-ventilated apartment, the air
soon becomes impure and injurious to an-
imal life as shown by the headache and
lassitude so often experienced from sitting
in a crowded room. So I think in the case
of drains, the emanations from which
escape into apartments perhaps not well-
ventilated. If persons are in the habit of
living and sleeping in such apartments
I can conceive its becoming the source of

disease. In the case of crowded cities the effects of bad drainage and dense populations become so intimately mixed, that it is a matter of great difficulty to assign to each cause its due proportion of disease. The causes of fevers cannot, as yet, be considered definitely settled, in fact we know very little about them and it is only by continued and impartial observation of facts, on a large scale and careful reasoning upon them that we can arrive at the truth. In the meanwhile we cannot doubt that proper drainage as well as ventilation is conducive,

bolt to the prevention and cure of disease.

Lastly, we must take a glance at the subject of the *Materia Medica*; in this branch of Therapeutics where the most accurate knowledge is desirable, so many hasty deductions have at various times been made & there are so many inherent difficulties that a great deal less is known about the *Modus Operandi* of drugs than appears at all commensurate with the years they have been studied and the ages, during which, they have been relied upon, almost solely, in the treatment of disease. It might almost appear, at first sight, that the amount which had been

written on the subject, has so overloaded it
with tradition as to render ^{it} difficult to distin-
guish truth from error and theory from fact.
Undoubtedly many hasty conclusions have
been drawn from imperfect observations;
many erroneous statements have been made
without due consideration of facts and have
been promulgated without any attempt at
verification. But we must not imagine that
this is all or even a greater part of the difficul-
ty to be encountered. Combined with this
are those inherent obstacles to Medical Inves-
tigation which I have already described

Here, our imperfect knowledge of the laws of life again forms a bar to accurate observation and conclusive experiment. If all the ^{di}conditions present in each case were known, though impossible to remove them entirely it might be in the power of the observer to modify them and by such means we might arrive at practical certainty. But this is denied us in our present state of knowledge. As Physiology advances our knowledge of the Action & uses of Drugs will advance with it and, if we could imagine perfection in Physiology, only then with the knowledge

of the Materia Medica become absolute certainty.

I must apologize for the brevity with which

I have treated this subject; my excuse must be

the limited time I have been able to devote to

it owing to having all the three examinations

before me, in the next few months.