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Thesis

On

The Mode of Action

of

Medicines

by

James Millen
A knowledge of the mode of action of medicines is most necessarily essential to their judicious and efficient employment as remedial agents; so that an inquiry into this subject is always attended with the utmost practical benefit, as well as through not much scientific interest. And when considered we must, in some manner comparatively little has as yet been done even up to the present advanced state of Medical Knowledge, to elucidate these principles of action. And yet what subject can there be within the whole range of Medicine which can more truly be said to be really and really of this profound and fundamental importance, the study of which has been little to deferred, from the heart of the necessary ground work on which to proceed. Yet, we lament the very little being done with that object, even at the present day. Some one, in happy circumstances, has compared the progress of Medicine to the sport for game of slow-poke - wherein the ancient departures of that Science, seek in turn to keep our mind to be gained a step in advance. Thus they say that Chemistry, in its rapid advance, has already left half their depth.
and that all are now waiting for the opportunity to take this

We believe the illustration to be as true as it is happy.

Therapeutics indeed, being a far indolent fellow, an ascetic in the

not running to put himself to the trouble of even attempting

A leap, it is vain courage for pursuing his efforts. Hypothetic

inductive, in stimulate by bringing together his kindly and energetic

companions. It is entirely a cause of much regret, that

the fundamental sciences have not been brought to bear upon

this special branch of medicine, as though as their usual efforts

might immediately to lead—They have only as yet served to

so far, to bring even as a basis for such an investigation, that

conclusively when attempted, in fact, leads us into a majestic chaos

of wild thing and conjecture, as the only means of extreme

conclusion from the mass of probability, where they seem to leave us.

Yet why are we thus left in such an uncertain predicament?

One would naturally have thought, that as the Science of Medicine

advanced, the last should have your heart in hand, and certain,

that the Science only should have been nourished, for the sake of

the last. For by the Science of Medicine, we comprehend all

that is known concerning it. While by the last, we simply the

application of that knowledge to the benefit of mankind.

From this practice of this act, to the management of Science

by medical agents. But in order to apply these agents, with

something like a skillful hand, we certainly must furnish an
intimate acquaintance with his own nature in which lie act 1 so that
he may be enabled to adapt them to the varying phases of
disease. The state ignorance in his respect is now indeed
so universally felt and deplored, that in order to meet the demand
that are daily being made upon surgical practitioners for that knowledge
he possesses act 1 he being cast on his own resources, feels himself
compelled to construct ideas of his own, on generally acknowledged
principles having hitherto been adopted. Hence follows the variety
of opinions maintained by the men of the present day, for
indubitably, on this point, alone all others "Ostia differ.
And indeed in this to be at the command of, for whom
facts are important, how can the sense stand? But if unfortunately
be deficient also in his best satisfying inventive power, there
is no help for him but to continue in the blind practice of
Empiricism, thinking implicitly the men of those who
have gone before. These are striking at the very root
of Empiricism, that "necessary" which has been long
attributed to, the progress of Medicine i.e. say "necessary" from
while an knowledge of the mode of action of Medicines lies
within and at the same time, their daily exhibition is to
lively demand all of us, what causes can be the general
passage regarding them, but accept (as a principle it is true)
the synthetic statements of one practitioner (it to follow in
this lectern book of blind Empiricism). The he is a holy
man, who standing alone, like a lion in the field, would
continue to question, and even claim to deny, some long-established dogma of our profession, as the doctrine of inflammation. But a stand must be made—this might of oppression must be frowned down. The beaten track taken up—
and the hard piling of knowledge opened up: so that all may walk stem. And now that Medical Science has at last laid to the very high education when it stands at the present day, it is high time also that we should lay
its assistance in another to extricate this all-important subject from the dark mysteries which envelope it—such
is that Science is still impetuous to perfection, may
this its prout & ultimate object, in future keep pace with
tits mighty strides. But let us enter to hastily on such
an investigation, a great primary question comes first
to be settled—namely whether on past experience of
the benefit derived from the employment of medicines as
sanative agents (empirical though it has been) justifies
us in continuing their use as such. This question can
be answered only in the affirmative—a denial being
equivalent to an utter refutation from Medicine. Indeed,
such an attempt to shake the very foundations of
Medical Science, which the lapse of centuries has
taunted only to strengthen, could but be a failure—
and if such benefit have been derived from them, seen
in dark infirmities, what inestimable advantages will result
from their employment beneficial, when it is to be hoped, our pieces explaining them will have become more enlightened.

Yet in the course of time, many new ideas have continued to make marked changes, so great perhaps as almost to stagger our belief in them at all. Still, while the effect of that has been to loosen their roots in some places, it has only been to plant them in others, more firmly than before.

And yet still further changes will be required, until we ultimately arrive at that accurate knowledge which we are now to especially desire of attaining to. The fundamental principles then for having established — viz. that nature really have a series of actions, and as such should be employed; an one justified in proceeding by an endeavor to arrive at the principles which guide those actions — but how is this to be set about? On a vast condition can any such investigation be carried on? How can we in the absence of accurate facts, be

ated to the fullness of rational thinking, based on the few facts we already possess, the subject to the confirmation or correction of further facts, and future experience — so as to arrive at a proper use of facts, to facts, from the in the end we obtained? As a suggestion, we may liken the process to the introduction of a familiar illustration which has occurred to us in deplopping the use of theories in their application.

Thus — a person entering a dark of pitch, with a match!
endeavouring to procure lumin, something he may be in want of, may fail short long enough unsuccessfullly, if he do not furnished with the offencence for procuring a light. But let us suppose that he in his peradvice as with a box of cheap matches, to advance sensibly for his own time ran, or he may break his thin against some unseen obstacle - as some he continues to the gas jet, with which the procuring the chamber is already furnished, but the light is extinguished - he pulls out his box, to scratching its head with a machete, in endeavours to kindle a flame - but it may be that the matches are bad, or one of the match scraper is snapped, but refuses to ignite - he may be disturbed and reticent, but let him persever and an effect ultimately come his object.

For at last he light his wrappings reflector than the others.
It flashes brilliantly at night, enabling him to apply it to the jet - then at once a flood of light is thrown upon all around, his object is gained.

Thus do the scientific requisite, fulfilled by some generous motive, leads to persistence in an obscure department in medicine - the also advances mainly for, of inventions, as he is only too apt to be, whose purposes may be impeded by some insinuation impostum - it his tenacity receive sudden & unexpected a check, as may compell him to abandon his project altogether - but he is pruient that he to a vein slenderly advances with continually open boldly, also provided with the upper branch
with a fair stock of knowledge in his breast, a proper amount of common sense to know how to file it - until his own faculty in the field, that a great truth lies before him, he grasps the facts already established by former adventures, but their explanation, he looks around for in vain - Another to premise here as feeling it indispensable for his purpose, he thinks & feels (stirring his head may help) to an idea strikes him, but feels it unfortunately inapplicable - Another & Another many follow till a little after the almost despair, but still struggles on - at last one "can barely see a faint" comes to his relief - It suffices - the problem is solved - and a light is cast on the whole subject - lighter than his fondest expectations. He then deems it proper to proceed.

Having surveyed the latitudes of the subject which we have selected, for an ease remnant, we will not hesitate to plunge our pen also into the phosphorescent ink.

In following out such an investigation however, there are certainly difficulties of an ordinary character, to be encountered - first, had they not been so formidable, as doubt, long ere now would they have beensummated - and had it been our intention to have taken up the subject de novo, & as it were to have started on an expedition of our own, we might well have paused to reconsider - before embarking on such a perilous adventure.

Our presumption however, even our camp as to fact or as form, if it was our original intention merely to have given a short
digit of all that is already known of the subject (not a great deal certainly) with a sprinkling of as much original matter as one could manage to include through it. The extent of the ground to be gone over, has proved, even exceeded our anticipations, to the entire time at our disposal, for this special purpose, being more insufficiency for the necessary amount of preparatory labour to be gone through - so that we are not feel ourselves altogether competent for that task.

However, having adopted the subject, it would oversimplify to do the only course of procedure left us, is to attempt what we can, under these unfavourable circumstances, to endeavour to give such a wide sketch of it as our own ideas have led us to construct it in part, explain out to the best of our ability, a certain number of papers requisite for art. These [per manu]

In proceeding to survey the different classes of actions of disease, we shall attempt to facilitate the paper, by postulating to form for ourselves a system of classification, whereby we may be enabled to arrange them to their ultimate principles of action, which in the mean time at least, we have adopted

the time limits apply, it is in general true, as desirable to be indicative of the special actions of particular classes of medicines, as Diuretics, Disinfectants, Antimonials, etc. This is not entirely indicate their actions at all, but merely the effects of results of these actions - for their real primary actions, i.e. in the composition, entirely unknown, being actually hid from on
view, in, apparently, for all practical purposes, the inaccessible recess of the human frame — so that we accurately derive upon the first palpable phenomenon which follls as a consequence on these actions, as they are the primary results he observes as occurring from the administration of certain drugs, we multicantly grasp them to inquire how they in themselves constitute their actions, where they are really the effects of these actions —

On our other hand, we shall make it an assumption to refer the actions of medicines back to what we are inclined to believe to be their true source, or in this purpose, we in first place, classify them all into the great groups, the three comprising these which can be actually followed out & explained, according to the laws of either chemistry or mechanics; the latter including all those which are not capable amenable to these laws, but are subject to those regulations of the animal economy, which are as yet inexplicable & consequently resolutely under these peculiar mysteeyable terms of "vital" or "actual" or "chymical" or "mechanical" —

Negligibility, empirically few can be referred to the former, driving the latter engulfing the majority in its dark elagies —

Actual — From this term. We include those actions which we believe can be explained by the known & established laws of chemistry or mechanics —

He commences with the latter, in these actions which are medicinal — on the human body, there are only two
surfaces upon which mechanical agents may be brought to bear — the skin & mucous membranes — or to either of these liquids or solids may be applied for mechanical action. But if this be conceived by mechanical abstraction (according to the laws of absorption of external) into the blood, liquids may also be brought to act in a similar manner upon it.

With the mechanical agents which are applied to the skin, we have nothing to do here, as they include merely other surgical appliances when actions are too plain to pulpitt to require any comment. But those that depend on present presence — those applied to the human body — reduce only a few cantlements in the definitions and excellents.

These excellents are, generally to act, by mechanically pushing the gases, drawn up from them. But they can really have any little effect in that way, as they require to be so suavely assisted by active cauteries — as, also, by their own presence, they may eke into the nostrums indicated of the intention.

The excellents or demincents herein become important, from the peculiar situations under which they are occasionally administered — these can be little else but that their action is purely mechanical — inflicting the moves by instinctive action. Or, by encompassing organic matters introduced into the intestines, they do prevent their injurious effects on the animals, they can be kept in contact with — as for those liquids applied which, through absorption, may act medicinally on the blood — they can only their effect in constenance.
as may be used for the purpose, either of its elevation or inspiration. We are not at present aware that such measures are ever resorted to with any special object, but should be inclined to think the latter, a feasible mode of aiding the suppression of fevers. Hence, the former consequently far from it. But in fact, the only positive class of remedies, we can possibly bring under the head at all, are the refrigerants, the grateful sensations, the beneficial results following the administration of which, we believe to be entirely owing to their stimulating the blood, it being resembling those purgative sensations of heat, thirst, etc., which are known to depend on an inspissated state of the blood. At the same time of course, we forget not how heat may simultaneously be abstracted from the body, by the liquid, when given at a low temperature — chemical. The discussion under this head is of actions, includes, as before mentioned, all those which can be demonstrated as in accordance with the acknowledged principles, a known fact of chemical science. These are in general to those at one side the mechanism, as to the particular objects on which they respectively act, viz., the skin, viscera, chest, etc.

The modes of acting on the skin we have included under the general term of contact, all those substances which act in their respective tides of compounds, forming chemical, physiological, and medicinal, according to the power, or their supposed intensity of action. These compounds likewise must be carefully distinguished, and separated from our class of organic poisons, which follow their mode of acting.
being essentially different, as will be shown when we come to

kind of there later. Chemical acts occur by combining with the
element of the animal tissues to form new compounds, or by a
work of 'alteration' chemical action, they enable these elements to

enter into new combinations not each other. In either case but

destroying their former existence, it is destroying the integrity of
the part. Whether one or both of these acts take place
is known in a point which has not yet been determined. A

Chemists' it for their decision, we must accordingly patiently

wait.

We now come to the consideration of their agents, which act by

chemical means on the Animal Membrane. We include under this head

the three important Antidemics: Antitoxics, Antiseptics, and Antitoxins.

Strictly speaking, these are not exact their influence on the Animal

Membrane itself, but on the contents of the Membrane, or on the

contents of these citrines which it lines. Still, we do not

think this distinction as great, but that it will admit of

their being thus classified as at any rate, it is convenient,
in our practice, it serves to indicate their sphere of action.

Of the Antidemics, the first, we include those which act

upon their action, as great chemical forces, to prevent the

denseness of their constituents, as long as possible.

In fact, by converting them into new inanimate substances,
the very seeds of their former toxicity, contrast oppose to effect

their
Antitoxins & Antitoxins again; by their very nature, explain their own action, as to rest in their similarity in neutralizing effect on the preponderant chemical character of reaction, produced by the entrance of the infected venous plasma. This, by direct action with the antibodies; on the other hand, force to go through a long & tedious process, circulating with the "life stream," among the vast & intricate by-products of the human frame, finally be extended by their eliminating organs, that they can attain their own proper rhythm of action, but leaving them unchanged in their chemical properties.

And here we may take occasion to remark, that it is not a part of our system, to make any distinction as to how medicines reach their peculiar rhythm of action, provided their qualities remain unaltered. And this we have just exemplified, in classing together Antitoxins & Antitoxins with the Antibiotics, their mode of action being still the same, although the one be quick, while the other is remote.

Antitoxins being as the brain, directed the circulation to the organs by the kidneys, pass to the bladder, where their peculiar influence is exerted. Thereby forming an insoluble complex, with the insoluble matrix materials into which they are at last brought in contact, they too, enable them to be the more readily expellable by the natural efforts.

Before leaving the consideration of these chemical agents which act on the external or exposed tissues, we would lay to institute another class of medicines, which have still demand atten-
We allude to those substances, while, when applied to either of their surfaces (thin or dense membrane) when in an altered state, or, in fact, deprived of their common exterior covering or protection, so unite into chemical combination with the organic fluids already secreted on the injured tissue, for protective purposes, as to form a solid coating of defense, to protect from all actions adverse, to resulted structures beneath.

These, for want of a better term sufficiently explaining, we now designate Protections.

II.

One first class of medicinal agents, or those which act directly in the blood, is somewhat more obvious perhaps, than those proceeding, but are, we think, far the more certain.

These, we include at present, those only which we presume to think should alone bear the name of tonics, properly so called.

Those which act directly, by entering the circulation, or contributing their elements to and in the composition of its fluid, thus immediately supplying to it these ingredients which are found to be deficient.

Vague suspicions have been known in this way of tonics, but we conclude have been based on slighter foundation. A forth now, on which time will alone be seen the feebler attempts to found the faintest shadow of a doubt.

From this opinion, we exclude of course that class of medicines usually ranked under the head of tonics; which are presumed to act by stimulating the appetitive
merely at leisure, we will proceed further.

But there are other important classes of medicines, besides the poisons, that we would like to embrace under this division.

It being a well known fact, that the various secretions of the body, may at any time become, preternaturally alkaline or acid, we must presume that not infrequently they depend upon a corresponding state of the blood, from which they arise. Now while the antiseptics & antitoxics formerly alluded to, undoubtedly affect the condition of the secretions themselves, by their contact with them, it is probable that their ultimate remediative effects, may in some degree be owing to their containing the blood itself, physically altering its qualities, & influencing the secretions; although at the same time, it must be admitted, that the secretions may become altered in this way by chemical decomposition of the toxic secretion (as, independently of the conditions of the blood). Nay, it is more than probable that they may affect the blood secondarily by resulting in its altered state. In fact, we are strongly inclined to believe that these latter conditions, are capable of the most prudent examination, still from former considerations, we must incline antiseptics & antitoxics, as among them agents, which act chemically on the blood. The only other class of medicines we dare to bring under
this lead...one time we acted with anticipation.

Or is now our belief acknowledged by all, that in certain diseased conditions of the human body, the blood is predominantly the seat of that disease, or rather the cause of the manifestations of such disease - and that, not because of any change in the quantity or quality of its essential ingredients, but depending solely on the introduction of foreign matters, introduced to it from without, coming in its circulation, or affecting injuriously its tissues and organs, with which it is in close contact. How, then, are we bold enough to imagine, if any of these drugs, concerning which we are at present entirely ignorant, as is far from improbable, and thoroughly misunderstood, may be explained by the hypothesis that they act by entering the circulation, or then to their entire totally nullifying or destroying, or at any rate, by some such chemical action, into such combination with the "materia medica" so materially facilitates its exclusion from the system. This is what seems to imply, by our class of practitioners. However, we entirely an act it present prepared to point out what especial medicines we believe to have the rest of acting.

We mainly throw out the hint, as really the situation of future observers.

Leaving substantially the extensive province of chemistry & mechanics, this only partly applies if we must now attempt an advancing into...
The subtle forces range in the domain of life.

The exact nature of causing in the various functions of life, being unknown to physiology, pathology, or dependent exteriors, is necessarily at fault.

And really, in the present state of our science, we cannot begin to attempt to follow the course of these mysteries, can even be unfolded.

We must then for a moment content ourselves to the theoretical principles of these processes. It is a step away to discover that general laws may be advanced regarding them. It is true, we are enabled to refer the innate properties of life, simply as embodied to certain apparent classes of action as Contracting, Relaxation, Attracting, Selecting, Secretion, Respiration, Absorption, Assimilation, Nutrition, Growth, Development, Reproduction, Motion, Sensation, Consciousness. It is easy to say life, and we are as near their ultimate explanation, being wholly beyond what we are able to determine. We have only to acknowledge. Science having defeated it, leaving in profound ignorance, be content to name them under that apt name "Vital".

This then, is also an principle, in classifying together in one second grand division, those actions which are subject to alteration or modify these various "vital" functions, controllable only by "intellectual" energies. But, being we do not definitely understand these processes themselves, we are hardly qualified to determine, in what manner they can be not fail into.

It will then be an easy business, in pursuing our consideration under his lead, to classify both of them, as we are not able to those principles, which, in turn, seem to incline
to adopt respecting them — And in this manner, we shall attempt either to annul or establish these doctrines, concerning whose efficacy there is much reasonable doubt, according as they refer to us, susceptible or not, with these general principles, we shall continue to lay down.

We shall therefore, in accordance with our system, substitute his opinion — on the one hand, not refer to the special system of action of the sense. In the other, to those stimulants, a certain aggregate of material, on which they may exert their peculiar influence. We allude in the former case, to those actions which take place through [not upon] the blood — on the latter, to those affecting the respiratory system.

We commence with the former; these being within the circuit, to gain access to the particular structure of organs, whose peculiar functions, they have come into play.

From the blood, the main process of nutrition, are carried on, certainly in the most wonderful and incomprehensible manner. The various tissues, being in themselves adapted into that third form of attraction & selection, by which they are enabled to abstract from their common source of supply, the blood (these precise attributes which are done necessary for their individual & peculiar purposes of constitution & repair). And this little mechanism is particularly well exemplified in the case of these special organs, whose particular function is to abstract from the blood these substances, while being effects, can be of the finest, see possibly
If about to remain only pure injurious - a nice provision to
thus made for their elimination, by the establishment of true
secretion organs, whose whole duty is thus confined to the
purification of the blood.

For each individual organ, is designed with such selective
power, by which, it remains from the blood, only those
special ingredients, even which, it alone can exert any
influence. Not safe, at the same time, a common function,
is possessed by many - the happy provision being also instituted,
wherewith the special office of any organ, which may happen to have
disabled, is taken up, - carried on, by one or more of the
others.

Now in this manner, we think, can be explained very easily
- factually, how the Four ancient Medicines, are thus appropriate
by the individual organs, as while they exert their influence -
that while all the same time, in the course of their activation,
they stimulate to further miscellaneous action.

We speak, at present, of Durmohan, Choliy, and its derivatives -
while the others, can only act in the course of those remedies,
Emotions and Operations, which act in this manner, when their intensive hit to blood has been affected.

We exclude, of course, those of the latter, which act by
direct contact with the secreting (or excreting) mechanism, upon
which they can be applied - these fall to be considered,
as the first division into the nervous system.

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And now, as appropriate under the class of medicines of which we have just been treating, let me pause for a moment to take into more serious consideration some very important principles which have excited much contention, & influence of opinion in bygone years—first as to their efficacy at all, & secondly as to their present exist, as to its mode of action. We allude to the so-called Actinomysites, Cynanopyges, & Chelopyges.

Indeed, so little is known about the facts of these cases, that they must really be considered a purely hypothetical classification. We have endeavored from many sources to find out what ideas were generally held respecting their action & last result, utterly failed in procuring any. The only thing we could obtain anywhere was from the very highest authority on the subject, & that only turned out to be that "they have believed to act, by increasing the functions of the body generally." If such be indeed their action, me, of course at once refer them to the division to which I have just been treating.

As to the idea of admitting the proposition that they, in some manner may be used advantageously, under the general condition of the body, from worse to better; it is too absurd. We are willing to confess that many things are capable of doing real service, if materially changing the system for the better, & many other medicines have also been the occasion of much dispute among learned authors. But we are inclined to agree with
time, (the Dragonfly now, we are happy to see,) she, having come
to an accurate knowledge of that, adhered to the function of
Pneumation, essentially earnest, are compelled to exclude
them, as a specific class of medicines. The veins, in
Pneumation, is not strictly speaking an existing (but
in reality organ) in the integrity of its function at that
time (depending on the entire process, wholly inadequate to
on the strength of the system at large.) The series of
actions taking place at that time, (of which the Pneum
manifestation is only one,) commences in an organ remote
from connected with the veins, and is (mainly in the
continuation of that series of actions,) but the latter, inaction
affected at all; that incapable, solely as an effect of
that which signified elsewhere. If therefore, the performance
of Pneumation be functionally possible, we can never hope
to simulate it, by aiming at the veins, a subsidiary
organ altogether. That organ, which is most intimately
connected with the action, can never be reached by my battery
of drugs, that may even be directed against it. The only
true pneumoprop, properly so called, are those measures, which
are best calculated to improve the general health of the
healing ten making out of the problems of pneumation, to the
subtle bands of Nature herself.

As to the Cheloprog, we are quite ready to admit their
specific action on the delicate organs, as being strictly in
Science, with the principles of the three modes which we should range them, i.e. by the only question remaining to be settled (it appears, not be be so easily answered, owing to the difficulty with which some of the facts to which it is often is a point which has not yet been adequately made out to be, what particular medicines can be sufficient to be really having a cholagogue (?) action - as from the imperfect proof, it is to bring forward, we must, in the mean time, them reappear more clearly in this field -

We come now to speak of three actions which take place through the Remorse System.

The close relations of that system, with which the laws now to deal, have been the puzzle of all writers of experimental science to the present time. But the are now able, with some degree of certainty, at least, to single out, certain acts of process, which we seem to be, more than others, under the more special direct influence of the Remorse System. Certain classes of medicines also, we can perceive, exert their peculiar control, over the taxes of the Remorse System, subject these series of actions, which are known to be significant of changes in its function.

Now the pain functions of the Remorse System, can we think, be found to range themselves, under four separate district classes. First of foremost of all, stands probably the consciousness of Intelligence, then Sensation, then Motor, then that peculiar function, into which, we have only lately
become acquainted, which must be distinguished from the others, to stand ranked by itself. Reflex action is and lastly three combined series of actions, regulating the vital functions of the internal organs, with the belief to be especially evident in the sympathetic system. In this last function of the Nervous System one distinguish thereupon in most of a better manner by the term Sympathetic. We term these subdivisions of Medicine, according as they appear to me, to influence either of these individual functions. Taking them up in this order, we shall commence with these medicines, whose actions we believe can be referred to the laws of Reflex action.

All these medicines which are regarded under the heads of Sympathetic, Endocrine, Nervous, Mucous,基石, Cat actors, of stomachs, &c., (excluding now these particular sympathetics, Mucous, Nervous, &c., each medicine, which now firmly considered (Th.)) that is to say, all these new actions are ordinarily termed distinct (ad supinely understood term) we include in this division.

To illustrate our system, let us instance as an example, say an insécré (but the same rule applies for all) to endeavor to trace the successive steps of action consequent on its application.

This drug tends to dry being brought into contact with the sensitive nerves of the mucous membrane of the stomach, excited an impression, which is conveyed by them (two different nerves) to a nerve center, it reflected from it, along these nerves passing to the muscular walls of the stomach, the different musc.
When a stimulus, such as muscles are thrown into action, the contraction around the vessels, and its contents are expelled.

At the same time, the effaced nerves of the bloodvessels (for it is said that the bloodvessels are more immediately under the control of the sympathetic system, i.e., consequently supplied by its nerves) convey a stimulus reflected to them in the heart center, to the muscular walls of the vessels, causing their contraction and the relaxation consequent on which, forms out an efficient secretion. The effects of some medicines are more in one of these ways than another, as is especially exemplified in some collyriums, reducing the mucus and humor to a state of inactivity.

These fluids also, whose influence in stimulating the appetite is so well known, have the power of acting upon the bloodvessels, notably the process known as the fluids of the body, whilst the feeling of appetite is (as is usually observed) very good appetite at any observed.

It is quite possible at the same time that they may also stimulate the contractions of the fibers, but he is acted on in the mean time that it may act principally on the bloodvessels.

Actions again, although their action is in every instance clearly the similiar in character to that of the influence peculiar to a different part of the same continuous cellular structure in the form. But it cannot be seen that this is owing to...
any specific action at those particular parts, but this action
must mainly be due to peculiar intensity, more directly, at any
rate, to the stimulus itself, while they are brought immediately
into contact with it. Carquero may require a longer time for this
action to occur; it may also possibly require to be partially
retard on by the destruction of certain parts of the essential tissue,
depending upon the effects can be produced. Definite action,
may this operate on different portions of the canal, as has been
supposed, but this can be the only explanation.

Articulate, in my humble opinion, not precisely as
true, but which may be explained, the very close analogy which
subsists between them. We thus find the growing effect of action
to be a gradual contraction of the tissues, but more especially
of the bloodvessels of the part to which they are applied.

We can only admit their action, when applied in
substance, directly to the part, as he cannot imagine how they
can possibly have any effect, indirectly, though the conclusion,
as it generally credited, I do not regard being exemplified by these
due exclusion from one category, as their employment for
such purposes is the suspension of knowledge, more especially,
shall reduce he to be satisfying of beneficial—too as the
before, but how they may yet bend up, which may give to
a sense hope, a former pound of expectation, in aiding use
in the decision of this infinitesimal object.

Exhilarating & stimulating, are manifest to require no further
explication, than has already been given for the other.

Sensitiveness of the reflex action of Sympathetic, which are located in a precisely similar manner to the sensitive nerves of the skin, causing the initial impression, which is reflected to the muscular walls of the bloodvessels, inducing contraction of emergent circulation. The initial stages of inflammation, which occur follows, in part or in less intensity.

We may here take the opportunity of explaining, in a single sentence, what we understand by 'stimulation' by which we mean the administration of certain drugs as we think they also can be explained by other means. Principles, we have just been laying down. When, in the application of such an irritant substance, as has been illustrated, the impression produced is transmitted to the center of radiation of that radiation of effect, by the different nerves be not conveyed, but rather by one channel that distributed over the organs, that which that organ on which the originating impression was manifested, is more immediately connected, a similar effect, a spontaneous alteration of function, will be produced in all. Now, as may be remarked, what we have before indicated, that the various currents mediates be have just been considering (under these) which, as may be, alone have any of them is called 'collective' action; effect in a peculiar shaded manner, through the sympathetic system of vessels, the blood vessels.
of the part to which they are applied. Let us then suppose, that the influence may impart to the affected areas of the vessels, be reflected, and the reflected areas of the same bloodvessels make a dotted or other sorts of expansion, it affects still the deep-subcutaneous muscle, similar to what occurred when the stimulus was first applied: these later effects, taking place in parts distant from those originally affected, can be called "collateral" actions.

As a possible deviation of the same fundamental principle of reflex-action, we might introduce our "action" [spare it mention though it may be] of the mystagogic and almost inexplicable action of bruit or imitation, as a general measure.

The stimulus being applied to any external part, which may happen to be in direct relation to the back of external tissues, whenever that may be thought to be in existence, one may, in impression (again especially affecting the bloodvessels of the part) which, being reflected, is transmitted to the bloodvessels at the seat of disease (which blood vessels are presumed to be mainly implicated in the protection of the disease) are partly to form a healthy attack to, while being continued, results in their restoration to a normal condition.

In the same time here, we must put the right of the possibility of their direct action: in some cases, in applying an additional acting surface of some nature readily yield itself for the purpose of bearing out any modifying material, while acting in the blood, or perhaps stand up in the lesions, i.e., in reality, the cause i.e., for their...
To understand the applicability of our 4 last classes of medicines, we must premise that, in our humble opinion, each individual quality or function of the human system has its own special seat, in the nervous system, where it exercises its peculiar influence. It is not our intention here to attempt to point out the particular seats of these functions (although it is our belief that it cannot really be done at all). In fact, we have not yet been successful in separating these functions from one another, which must necessarily be accomplished before we can ever continue to locate them in their exact situations, even supposing that possible.

It will be sufficient for our purpose here, merely to indicate the 4 great classes and principal properties of the human system, with which we have seen to deal. It seems that each of these has its separate seat, by which its distinct effects are caused. They are, as before mentioned, motion, sensation, emotion, and intelligence. It will be left for the reader to properly attend to.

Now, going on this supposition, we have already pointed out the necessity of understanding these particular classes of medicines. They have been brought to bear upon each individually. We have already noticed their attention to selective properties of the human body, which each applies to itself. These materials in the blood, which are alone fitted for its purposes, if we can easily infer, that the specific actions of certain classes of medicines may be due to the same cause, signifying their selective property, indeed, in the tissues themselves, that is why it is called "specific action."
New laws, a continual agent is thus brought to bear upon any special nervous structure. The effects are not necessarily uniform, the same, whether be the dissimilarity in the composition of properties of the agents employed – be it of the my specific sense of acting, may be we up, the difference to be incomprehensible, but fairly appreciable, & which we reluctantly do know points to effects of excitation & depression.

We accordingly conclude our indication of the actions of Medicine generally find the nervous system in particular, by this merely indicating these classes of actions which act on these functions individually, when by exciting them to increased energy, or depressing & calming their natural response, by impinging the period of their transmission.

Thus as regards Nitric, we have what we have termed Spreading in the form active, but especially in the latter it is also readily as regards convulsive, destructive, & acute states, as regards insomia, or delirium, stimulants & amnestics. We have the peculiar terms for such actions as especially influence the sympathetic system of nerves, & hence which so to say, accordingly include, into the most fluid term of Excitation & Depression ever.

We as our previous, pretend to do, but the presence of these actions may be explained with the influence of particular conditions thus effecting the action at the same time.
We have been, at length, brought to a nearly conclusive, this
most ambitious attempt to系统的 and classify, 
according to their mode of action. But in so doing, we
have only ventured to indicate, what we should wish other
hands to do for us.

James Millen.

P.S. Since writing the above, we have, on further
consideration of the subject of the action of Antipodes, been
induced to considerably alter our original views respecting them.

We now feel ourselves at liberty to maintain them with all
propriety, in our list of a possible class of poisons,
having two remote specific actions on the bloodvessels, we formerly
abjured.

We are now inclined to think it quite possible, that, acting on
the seminal nerves of the very vessels through which they are
conducted, they exert an impression, which, reflecting to
the arteries, supplies then muscular walls of the vessels generally.
through time all simultaneously an contraction of their diminishing time calibre they may do from the gradual fractures. It is true, the state of contraction continues but for a brief period, it is succeeded by some lasting relaxation. Still it may be quite long except for the completion of those triangular natural ended which eventually are so effective in being the mors of their bleeding effect.

We have thought it proper to instruct how one enlarged union in this matter casts than let one former imperfect similar union be connected.