On Sympathy.

Sympathy may be defined as a chord of feeling flowing through many unseen channels and when touched in one part generally responding through the whole bodily or mental framework as the case may be. We have seen records to show that inanimate Nature sympathized with her creator when the rocks wept and the earth yielded up her dead. And man sympathizes with his fellow man, by tears of sympathy in the hour of sorrow, or by tears of anguish on witnessing the sufferings which he is unable to relieve. Nay, even of sympathetic feeling, not unfrequently causes illness on beholding the pain endured by another.

This of course is by mental emotion, acting powerfully on the different animal functions, which has indeed not unfrequently been the cause of death itself. The sudden overburden of feeling caused by painful, or even pleasing intelligence, too abruptly communicated.
In a moment unshackled the hand of life. Such is the extent and force of sympathetic influence. Sympathy draws forth all the finer feelings of our nature and is often of more service than the most potent opiate, in restoring a patient to convalescence.

The different sympathetics were attributed to membranous connection by Reil, to the cellular tissue by Borens, to the brain by Y. L. Bouillaud, chiefly to the organs by Willis, Alibert. Allen gave it as his opinion that sympathy is a principle of the nervous system itself. The sympathetic nerve as the name implies is assumed to be the organ of many of those combined sensations, motions of which have received the name of sympathy.

Moreover, the discovery of the reflex system of nerves has found some of them to a different source, but from whatever cause they arise, they well deserve the attention of the physician.

The sympathetic or ganglionic system of nerves, called by Richer the nervous system of organic life, consists of a chain of ganglions connected by nervous cords, extending from cranium to pelvis along each side of the vertebral column. One may look upon it...
as composed of three parts thus: 1st. a Continuous Chain of Ganglia. 2nd. or of great central pleura, as the Cerebral, Spinal, and Lumbar, etc. By its peculiar mode of action it is not so much connected with the mind either as regards sensation or volition. It is more closely connected than the Cerebral spinal is, with the processes of organic life. The differences between these two systems are not essential: their actions differ in degree and object, more in kind or mode.

The fibers which constitute the principal part of the Sympathetic are finer than the Cerebral spinal and have no double contour. Their contents are apparently uniform and when in bundles they have a yellow gray hue. It is most probable they form the outer layer of white Medullary substance.

The Sympathetic nerve is the means through which are effected the various sympathies in indirect action which different organs manifest. There is reason to believe that the Cerebral spinal nerves may influence organic functions. There is a direct interchange of filaments between Cerebral spinal and Sympathetic, parts supplied by the latter may be influenced through
The former... The different kinds of action of the two systems cannot be referred to the difference in the structure of these fibres. The difference is probably due to the mal. 

Lification and separation of the nervous centres of the sympathetic. The sympathetic system may be arranged into two divisions: the first may include the ganglia situated on, or close to, cerebral and spinal nerves, with the filaments issuing from these. The second may comprise the ganglia on the two main branches of the sympathetic, and on its branches in the nasal cavities. As to the course of the filaments belonging to the sympathetic, those derived from the ganglia on the cerebral nerves may pass towards the brain; for in the trunk of the nerves, of the nerves, between the ganglia and the brain, fine filaments like those of the sympathetic are found. But there may be proceeding from the brain to the ganglia; and it is most probable that nearly all the filaments originating in the ganglia on cerebral nerves, go out towards the tissues and organs to be supplied, some of them being centrifugal, some centripetal.
So that each ganglion with its outgoing fibres may form a kind of special nervous system appropriated to the part in which its filaments are placed. Such, for example, may be the ophthalmic ganglion with the ciliary nerves; connected with the brain and the rest of the sympathetic system, by the branches of the third, fifth, and sympathetic nerves that form its roots: yet, by the filaments of its own, controlling, in some mode and degree, the processes in the interior of the eye. Some fibres of sympathetic flow back towards the vasa vasorum, others join the spinal nerves and proceed with them, so that probably all sympathetic nerves contain some intermingled cerebral or spinal nervofibres, and vice versa. The fine filaments of sympathetic are in great abundance in the nerves of involuntary muscles and in those of the less sensitive mucous mem-

branes. The sympathetic nerves fibres are simple conductors of impressions, as those of the cerebral spinal system are, and that the ganglionic centres each in its appropriate sphere have the power both
of conducting and of communicating impression. Irritation of the principal ganglia have called forth expressions of pain, and have excited movements in the muscular organs supplied from the irritated part. Hall found that more intense most constantly and actively ensue when the white parts of ganglia are irritated, and that they often fail of being produced when the ganglia irritated are prey and filled. If we admit that the conduction of pain is effected through the centrosymphaline nerve fibres, then whether or not they pass uninterruptedly between the brain or spinal cord, and the part affected, it must be assumed that their mode of conduction is modified by the ganglia. For if the centrosymphaline fibres conducted in the ordinary manner, the parts should be always sensible and liable to the influence of the will, and impressions should be conveyed to and from instantly even. But this is not the case; on the contrary, through the branches of the sympathetic nerve and its ganglia there but intense impressions or impressions exaggerated by the morbid
Excitability of the nerves or ganglia, can be conveyed. From this it may be concluded that the nerve fibres of sympathetic conduct differently (which is very unlikely), or what is more probable, the ganglia have a power of modifying the method of conduction of impressions.

These facts may be explained by believing that the impressions, whether of the mind or of artificial irritation, which would be conveyed at once through nerve fibres connected with ganglia, is, in the ganglia of the sympathetic, communicated and diffused among the corpuscles and the other fibres; and the impression is thus exhausted without reaching the muscles, or, in the case of a centralizing nerve, the spinal cord or brain. It is probable that the laws of conduction of impressions are the same in both cerebrospinal and sympathetic systems, except in the latter the conduction is effected more slowly and the movements in the parts supplied by it, do not immediately ensue, and pain is not indicated, like after repeated irritation or till the fibres and ganglia have become
The functions of the Sympathetic Nerve are thricefold: it provides over the involuntary motions of the more important organs of the body; it is the medium by which all impressions are conveyed from those parts to central organs; and it regulates the process of secretion and nutrition in every part of the frame. Many movements take place involuntarily in parts supplied with Cerebro-Spinal Nerves, as the respiratory and other spinal reflex motions. But the parts usually supplied by sympathetic nerves are capable (generally) of none but involuntary movements and when the mind acts on them at all, it is only through the strong excitement or depressing influence of some passion, or through some voluntary movement with which the actions of the involuntary part are commonly associated. The effect of stimuli applied to sympathetic are of longer continuance than if applied to the name of voluntary motion; and the motions thus excited are either rhythmic or the heart.
or continuous as the peristaltic movements of the intestines. The parts which it supplies with motor power continue to move, though more feebly than before, when they are separated from their natural connection with the rest of the sympathetic system, and wholly removed from the body — all the parts supplied by the sympathetic are to a certain extent independent of the brain and spinal cord. There is also good reason to believe that as the parts supplied by the sympathetic are much affected by influences emanating from the brain and spinal cord, so the sympathetic is dependent for its supply of nervous power upon these centers. The heart, after being removed from the body, continues to beat in Mammalia for a minute or two, in Reptiles for hours, and the peristaltic motion of the intestines continue under the same circumstances. Hence the motion of the parts supplied with nerves from the sympathetic are shown to be, in a measure, independent of the brain and spinal cord. Of a Mus. Cle supplied with cerebrospinal nerves only
that fasciculus acts to which the stimulation is applied: it instantly twitches once or twice in a disorderly manner, and then lies at rest again. But of one supplied from the sympathetic nerve, the contraction commences more slowly but continues longer. It is a more deliberate and more orderly contraction, and often extends far beyond the point to which the irritation was first applied. These differences are likely due to the influence of the ganglia of the sympathetic. It cannot be ascribed to the nerve fibers, for all the parts are supplied with a mixture of both cerebrospinal and ganglionic fibers. Neither can it be ascribed to the muscular fibers; for the heart has fibers like those of voluntary muscle, yet they act, in this respect, like those of the other muscles supplied with sympathetic nerves and controlled by ganglia.

The impressions made upon the nervous fibers of the sympathetic are not usually conveyed to the brain. In fact they are most of the nature of sensations. But in cases of irritation may give rise to sensation either
in the parts supplied by nerves from the sympa-
thetic, as in Fortune, or in those supplied
by cranial spinal nerves. Concerning the
organic functions of the sympathetic
and of the degree in which they are
dependent upon the brain and spinal
cord, not so much is known. There
is reason to believe however that the se-
cretions of cranial spinal nerves are reflected
from the spinal cord on parts supplied
by nerves from the sympathetic, thus
epilepsy may occur from impressions
on sensitive nerves.

Instances of the reflected action of the
organic fibers of one part on those of another are
numerous, for example, the secretion of the
skin may be replaced by that of the liver
or inflammation of parotid gland by
that of the testicle. The suppression of
habitual secretions, whether natural or
acquired, give rise to similar reflex action
of the organic nerves. The different parts of
the same tissue are said to sympathize with
each other. Inflammation of one nerves membrane
sometimes followed by that of another, as pain
transits by pleurisy. The sympathies of interior or
parts with each other are still more important; they
are classed by Müller as follows: 1. sympathies be
 tween organs having structure and function alike be
 tween the salivary glands, the stomach and intestines.
2. sympathies between organs of different structure,
 but belonging to the same system: as the circu
sorvial, The lymphatics, the generative &c.
3. sympathies of the important organs with
the central organs of the nervous system: as in
affections of the stomach attending injuries of the
brain. 4. sympathies between organs not connected
in any of the foregoing ways, but only to be
explained on the principles of reflexion: as between
the parotid gland and testicle—The Mamma and
uterus &c. In all these sympathies, the nerves play
an important part: but the several parts of
the nervous system also sympathise with each other.
The sensitive nerve sympathise with sensitive, the
motor with motor, and the sensitive and motor
with each other. This sympathy between nerves of
sensation extends also to nerves of different kinds
and functions: thus a strong light on the eye
produce tickling in the nose, tickling the feet through the whole body into convulsions, a tumour on a nerve may produce pain or spasm in parts of the body in no way connected with it. A phenomenon of this description the term radiation of sensations has been applied. Sympathies of motor nerves with each other occur in all associated movements. Those of motor with sensory nerves belong to the class of excited or reflected motions; to the same class belong the important phenomenon of associated movements, excited by nerves which do not convey sensation. The greater part of the emotion which take place independently of the will may be referred to this head. In fact those connections are very natural because the one cannot be affected, without the other being sensible of it. As Bichat remarks that every idea of a sympathy naturally includes that of a natural connection in function. But Bichat refers to connections contrary to the rules of nature of phenomena that take place between an organ and any part of the nervous system, which are not connected in the natural order of life. In this point of view nervous sympathies are very
Numerous. The nerves of the same pair will frequently sympathize together. The nerves of the same side will often sympathize, although they are leading from different sources. Thus an injury in the frontal nerve has been several times attended with sudden blindness, by affecting the optic nerve. In other instances, the branches of the same trunk influence each other reciprocally. On other occasions, the nerves do not sympathize with each other, but with other organs, in which case they influence these or are influenced by these turn. There has been much dispute among authors as to the causes by which sympathies are maintained, how an organ that is by no means connected with another, and that is sometimes very distant, can so far influence it as to produce very severe disorders, and merely because it is itself affected. This phenomenon is frequently met with in a state of health. But in disease it is so multiplied, that of each disease less directed of the symptoms that are not exclusively derived from the state of the function which is especially deranged, they would present a simplicity, as easy for the study of
them as it would be productive of little em.
arrangement in their treatment. But scarcely
is an organ affected than all seem sin.
ultaneously to partake of its disorder. Each
in its peculiar mode being employed to de.
pulse the morbid cause that is central
in one of them.
Sympathy is of two kinds, mental or con.
spicuous. The first or mental arises from a fe.
lation in the mind, determining to particular
organs or parts of body, and arising in them.
certain feelings, actions, and inclinations.
sometimes agreeable, and sometimes disagreeable.
The second or corporal depends upon the opera.
tion of external bodies, and the conditions of the
sentient extremities of the nerves, and occur
in diseased states of the system. Sympathetic
operations are stronger or weaker according
to the influence of custom and habit.
Different sympathies do not always point
to a different mode of action in the cause
producing them, but a variety only in
different constitutions. The same cause will
produce in some people caused, in others
of attacks, etc. If the mind dwells long upon any particular sympathy, it is increased. There can be a species of mental sympathy to which time and attention are requisite to give it its full effect. The mind is compelled to give place to these, from the enjoyment derived from them, and consequently a deal of anxiety is often intermingled. When an impression has remained for a length of time, and the mind has paid a proper attention to it, the sympathy arising from it will continue long after the impression that originally was the cause of it has ceased to act. The impression grows weaker and weaker from length of time, until the sympathy at last ceases altogether. All recent sympathies are strongest, the same cause often producing an impression, the sympathy is consequently weakened. Wherever particular movements of distant organs are usually performed in connection with each other, there is an obvious channel for a particular kind of sympathy between them. An interesting example of this, is the contractions of the limbs, which may be frequently made to occur, when that organ is in a relaxed state, by applying suction or other irritation.
to the nipple. Sympathetic movements of the above kind may be elicited either through the cerebrospinal or ganglionic systems. But we are guided in our determination of these channels in each particular case, by the distribution of these systems respectively to the organ affected.

It has often been a subject of speculation why the Visceral Nerves are obdurate of sensibility and at the time when the sympathetic was supposed to be merely an offset from the cerebrospinal system. It was imagined that the use of the ganglia upon the roots of the spinal nerves, was to cut off sensation from those concerned in the vital and motorizing motions. The influence of the ingenious hypothesis of Bichat—that the sympathetic system is complete and independent, ministering to the functions of organic life, as the cerebrospinal does to those of animal life, for a time caused this idea to be abandoned. Since, however, it has been anatomically proved that a large proportion of the filaments of the visceral...
Nerves are derived from the spinal cord, this opinion has been revived though in a modified form. It must however be stated that the evidence in support of it is entirely vague. It is only requisite to suppose that the white fibres of the sympathetic nerves terminate in the true spinal cord, without proceeding to the brain, to have an explanation of sensory endowments in the organs to which they are distributed, and of the complete removal of the muscle supplied by them. Motor nerves, from Voluntary control. That a few fibres of which the action cannot be exerted under ordinary circumstances pass to the brain, would seem probable from the fact of the insensibility of some parts in disease, which are totally insensible in their normal condition: a fact in the explanation of which the hypothesis just alluded to affords an easy explanation. It is only a matter of speculation why the fibres of the visceral nerves should be so peculiarly separated from the rest, for it may not be considered improbable that by their peculiar disposition among
gencmz in the various organs through which they pass, connections are established between remote organs, which tend to bring their actions into closer relation with each other, than would otherwise be the case, were the existence of such connections for the purpose of harmonizing the several movements of the viscera, which are concerned in the various and complex operations of digestion and its attendant processes, may be inferred from the perfect conformity which exists between them, during all their different states of action, and probably still more from the phenomena of their disordered conditions. Among the movements immediately concerned in the organ functions are not influenced by reflex action alone, but also by the emotional conditions of the mind. This is very obvious in regard to the heart, every person must have experienced the disturbance of its pulsations, consequent upon excitement of the feelings of almost any description.

The sympathetic system is largely distributed upon the trunks of the body, accompanying them to their minute ramifications, and it is probable...
that the fibrous tissue of the walls of the arteries is
insensitive to influence from these nerves.
There can be little doubt, therefore, that they con-
stitute the channel through which emotions operate
in producing sudden dilatation of particular parts
of the vascular system, and it is probable that
we may attribute to the same influence the regu-
lation of the supply of blood, which passes
to the different secretory organs, in varying con-
ditions of the system. Thus in blushing, the
sudden flushing of the countenance, owing
to expression, as one of the many sources
of sympathy which bind us together, this
diffusion serves no purpose in the economy,
which we must acknowledge the interest,
which it excites as an indication of the mind.
It adds perfection to the features of beauty.
The color which attends exertion, or the violent
passions, as of rage, arises from general vascular
excitement, and differs from blushing. Blushing
is too sudden, and too partial to be traced to
the heart's action, that it is a provision for
expression may be inferred from the color.
extending only to the face, neck, and breast, the parts most exposed. It is not acquired if it is from the beginning. It is unlike the effects of powerful depressing emotions, which influence the whole body. The sudden convulsion of the criminal is felt in every pore; but the color caused by blushing gives brilliance and interest to the expression of the face. It must be due to some influence exerted by the sympathetic over the smaller blood vessels. The thrill of blushing as acompanoying shame; but it is the negative of excitement. This is no shame when lively feeling makes a radical effort through the restraint which custom and virtue have imposed.

That many of the organic functions, however, are directly influenced by the nervous system, is a matter not admitting of doubt, and this influence is exerted sometimes in exciting, sometimes in checking, or in modifying them as the case may be. It is most remarkably manifested in the results of severe injuries of the nervous centers, such as concussion of the brain or spastic effect.
for this does not merely produce a suspension of the respiratory and other movements, which minister to the organic functions, and hence a gradual stagnation of the latter—let us use a sudden and complete cessation of the whole train of action which cannot be attributed to any other cause than a positive depressing influence of some kind propagated through the nervous system.

A similar general depression may result from mental emotion, operating through the same channel: but this in general has rather a local action, or operates more gradually. The influence of the nervous system is often especially exerted, in giving temporary excitement to a secreting process, which need not be kept in constant activity or, of which circumstances may occasionally require an increase. This is the case, in regard to the secretions connected with the process of digestion: all of which are excited by the contact of the substances, on which they act, with the surfaces on which they act.
The secretion of milk again, in a nursing female, may be excited by irritation of the nipple, the influence of the emotion of love of offspring, or increasing the secretion of milk, is a well-known fact. The formation of this fluid is continually going on during the period of lactation; but it is greatly increased by the sight of the infant, or even the thought of him. Especially when associated with the idea of suckling, this gives rise to a sudden rush of blood to the gland, which occasions a greatly increased secretion. And the distribution of blood to the Mammary during pregnancy, must be due to increased activity in the part, excited by the changes occurring in the uterus, which can scarcely operate otherwise than through the nervous system. No other channel of influence can be well imagined for most of these operations, than the Sympathetic System of nerves: since the organs portion of are for the most part supplied by it.

The law of Sympathy is of universal pre
-balance, and the uterus may be considered the
great centre of this influence in the female
system. The perfect development of the uterus
or the establishment of that function which
capacitates it for conception, is attended by
many remarkable consequences, and in very
many these effects are not less astonishing
than is scarcely any part or organ, in fact
than is scarcely any action throughout the whole
system which is not influenced in a greater
or lesser degree by impregnation.

When a person has cold feet or standing in a
chilly place, he feel pain at the stomach:
and so complete is the sympathy established
here, that in changing the shoes and being the
foot the pain is almost instantly removed.
Sympathies shew themselves, when the balance be-
tween the relaxation and contraction of moving
fibres in any part is lost, in the form of pain
and convulsions. But that state of a muscle
which is denominated spasm is nothing else than
an excessive exertion of its natural contractile
power, to which it is capable of being excited.
by inorganic irritation applied either directly to the muscle itself, or indirectly by an action of inorganic sympathy, arising from irritation applied to a distant part of the nervous system. Wherever therefore muscular fibres exist, inorganic spasm may also exist. Consequently not only the fibres of the large muscles, but the smaller fibrous threads of all the membranous parts are also susceptible of spasm from irritation applied either directly or indirectly from upon the sympathetic, and hence spasm, when fixed in the fibres of a membrane by sympathetic affinity, may be productive of painful sensations, as naturally as when seated in the fibres of a large muscle. When the muscular texture of a membrane becomes the seat of a sympathetic spasm, local inflammation of that membrane is speedily induced.

In investigating the true seats and causes of many of the inorganic phenomena, the operation of the general law of sympathy inherent in the nervous system forms an important
field of observation. Numerous being the mistakes that may occur from mistaking what is only the sign or effect of an exciting cause for the essence of the disease itself. Take for example a case of acute Rheumatic fever accompanied with Rheumatic Carditis. When violent delirious convulsions, drawing the attention of the medical attendant away from the chest when fatal changes are taking place, to the head, where an inflammation is at all times far which is only disturbed through sympathetic with the cardiac disorder.

Many and various are the cases of morbid sympathy induced in the mass of disease to which the human body is subject. And but a few of these are of so important and formidable a character as to constitute some of the most painful forms of human distress. The brain and its appendages of men, being that medium through which the living principle acts upon the otherwise inert or passive structure, as also the medium through which the mind is made conscious of injury.
application offered to any part of the body.
It may with justice be said that every part
of the human body is capable of sympatheti-
cally reacting with the rest, because we see that no
part of it can admit of bearing the sense
of feeling excited to the height of pain, with
out the whole frame also suffering an uneasy
sensation. But there are likewise parts
and organs which are more intimately con-
neaked with, and dependant on each other,
than upon the rest of the body, constituting
a specific or peculiar sympathetical affecta-
tion. Some of these phenomena are merely to be
looked upon as things of course, as for in-
stance when a person is affected with head-
ache, a disorderous state of the stomach is
at once imitated as the cause of this;
In consequence of experience having shown
it to be so - affecting some membraneous
portion of the cranium. Morbid sympathy
is that flaw of the nervous sentient principle,
whereby upon certain modes of irritation
being occasionally applied to certain
Part of body, morbid sensations and morbid actions will be excited in some distant or near. Morbid sympathies are sometimes attended with pain, sometimes not. In the latter case the morbid effect consists either merely of an augmented action of the natural power of the sympathising organ or else, as happens at other times, the natural power of the organ are thereby impaired. But when an action of morbid sympathy rises to the height of exciting involuntary spasm, in a muscle, or part of the, or in the fibrous texture of a membrane, it is uniformly attended with more or less of painful sensations in the sympathising organ, and then occasionally to a severe degree. Again, when a membrane is the seat of sympathetic spasm, the circulation in that membrane is often in such a manner as quickly to produce inflammation, especially in those of a given texture.

In contemplating the exhibitions of morbid sympathies, it may be noticed that they
Very much in their form and appearances: that the original irritative cause will produce at one time a single peculiar sympathy only; and at another time will give a number of sympathising affections, occupying several organs of the body, at the same time, and all of them appearing to flow from the same source. And it may be observed that the painful sympathetic sympathy often shifts its seat; which appears to be the effect of some unperceived, natural cause, or as sometimes happens, from the agency of a medical application made to the part. But the original cause of irritative still is.

Graining in action, the effect of that cause merely changes its place to some other organ, which may stand next in rank by affinity to the primary cause, and so on, to a third perhaps, or even return to the first, as circumstances attending the original cause may determine.

The morbid sympathies which exist between the stomach and certain distant parts
We have doubt, reciprocal: but it is observable that the sympathetic affinity in these parts, flowing from irritation in the stomach, are far stronger and more direct than those which affect the stomach from a distant origin. The great object in practice is not so much to determine the specific form of the sympathetic affection, as to decide whether the indistinct phenomenon presenting itself is really sympathetic, depending upon affinity with irritation in some distant part, or whether it be idiopathic. And the effect of a primary local derangement in the organ where the pain or uneasy sensation is located.

In considering the pathology of sympathetic diseases, we must not overlook the various idiosyncrasies of constitution, whereby an individual may become violently influenced by particular irritating causes; which if applied to others might produce no effect. Sympathy is frequently an irritative faculty, sometimes involuntary, often without
Consequences: thus the act of yawning performed by one individual in a company, is apt to induce in many of the other an irresistible tendency to the same act. In a like manner the excitement of certain emotions as laughter or tears is apt to spread through an assemblage of persons with extraordinary rapidity. There are many instances of convulsions having been excited in persons not previously subject to them by the sight of a patient in an Epileptic fit. And peculiar nervous disorders, of a convulsive kind, have been found to affect all the members of a community without the slightest evidence of their being contagious or infectious. It is a common occurrence when there are a quantity of young females together, that when one becomes affected with hysterica, the rest are very apt to be similarly affected. An impression upon an organ of sense may produce effects very different in their nature to anything which could be looked for; and these may be purely of a physical nature, or they may act primarily on the mind.
Thus certain odours will induce syncope in some people; and the smell of a savoury dish to a hungry person, or even the mention or the thought of a meal, will excite a flow of saliva. In analysing any of these examples of sympathetic action, it will appear that there are circumstances which may be noticed in the production of the phenomena: 1. The primary exciting cause which may be an object presented to the sense through one of the organs of sense, or causing an impression upon any sensitive nerve, and therefore upon some part of the centre of sensation: 2. the part affected directly by this primary stimulus; and 3. the action or sensation resulting from the affection of this part. Pain is felt at a certain part, in consequence of an irritation in another part distant from it, and apparently altogether unconnected with it. A familiar instance of this is pain in the knee from disease of the hip-joint. So marked in some instances is the pain in the knee, and so much has it absorbed the patient's attention, that the real source of the disease has
been overlooked, and the remedies been applied exclusively to the knees.

Pain in the right shoulder, from disease of the liver, is a sympathetic sensation of similar kind; and sometimes the hepatic irritation causes pain on a more extensive surface. Sometimes both shoulders are the seat of pain. The hepatic irritation excites a change in some sensitive nerves, which is propagated to the centre, and then affects some of the sensitive fibres distributed in the region of the shoulder. The phrenic and the external thoracic nerves are both or either of them, but more especially the former, favourably situated to constitute the excitant of such a sympathetic sensation. The phrenic nerve of the right side is largely distributed upon the piritoneal surface of the diaphragm, and forms many connections with the hepatic fibres in the substance of the liver. It may therefore readily participate in any irritation of that organ. Now the phrenic nerve is implanted in the spinal cord on a level with the third or fourth cervical
Nerves; and the nerves of the shoulder form this connection with the central organ about the same level. The origins of these nerves, therefore, are sufficiently contiguous to each other to warrant the belief that an irritated state of one may be propagated to the other through the vesicular matter of the centre. But it may be enquired why the irritation is limited to the motor nerves of the shoulder; and why movements are not excited by the stimulation of the motor fibres of the phrenic nerve, or of other nerves. The limitation of the irritation to one or two nerves depends on the degree of the stimulus, and the absence of any movement is due to the disposition of the phrenic nerve on the surface, being unfavourable for the excitation of motions by irritation of its peripheral branches. And Miller has shown that simple irritation of the trunk of a compound nerve in connection with the centre is not sufficient to produce motion: which requires probably either a more prolonged and violent irritation of the nerve, or a polar state of the centre in which it is implanted.

In these sympathetic movements which are of
ordinary and normal occurrence, but provisions seem to be needed, namely, a certain peripheral organisation of the sensory nerve, and a certain central correlation between it and the motor nerve. But in those which are of a morbid kind, it is necessary to suppose the existence of a more or less modified plurality of the centre in order to explain the phenomenon fully. The polar state will continue in many instances even after the primary peripheral irritation has been removed, as in irritations, or in the contributions from intestinal irritations and the like from this fact the importance in practice of attending to the state of the nervous centres, as well as to the removal of the irritating cause. The various affections of the mind, he the impression which they make upon the body, operate (we cannot doubt) through the brain as their organ, and they produce the most sudden and wonderful changes in the system. The exhilarating passions such as joy, desire, hope, and confidence, by first exciting the action of the brain will increase the secretion of the gastric juice, improve the tone of the stomach, as well as the whole digestive system.
and so enable the individual to undergo almost incredible fatigue, with only a scanty supply of food. While, on the other hand, the depressing passions, such as fear, shame, grief by diminishing to a great degree the action and excitement of the Brain, and thus preventing the development of the nervous influence, will (from sympathy) exert their effects chiefly upon the Stomach; — it will stop the hunger appetite and cause all the symptoms of a depraved Stomach. In some cases they even produce disease. This is well seen in a person who, for instance, receives bad news before dinner, however keen his appetite may have previously been; it is utterly destroyed, and the individual cannot taste food.

That a most intimate sympathy exists between the Brain and Stomach, is a fact with which all practitioners must be conversant, so wonderfully, and so powerfully is the mutual influence of these organs upon each other, that seldom is either of them morbidly affected, without the other at the same time suffering severely.
An account of its extensive influence Sammonius eq.
noted. He assigned to the stomach, which opinion he
has expressed in the following lines, evidently having
in view its sympathetic action more especially
with the brain.

"Stomachum regem totius corporis dicit
"Contendens, sed verum nationem bidelur.
"Hic ens inveni valdens format tenuor omnia Membra,
"Et contra opus dicere, invenientes sanguis dolore
"Pain clean, pain now privet, vitium cerebrum
"Facet, et integritatem illum continentem!"

The stomach is endowed with such an exquisite
degree of sensibility that van Helmont thought
its cardiac orifice was the seat of the soul.
Practitioners are well aware how many morbid
symptoms in parts remote from the intestinal canal
may be cured by the removal of syphilitic or other
accumulations from it. Painful dilatations of
the nerves of the face, are often due to a cause
of this kind. The irritation of stones in the
bladder gives rise to pains in the thighs. To
Headache and defective vision are frequently pro-
duced by disorders stomach. A draught of
very cold water, or ice, taken quickly into the stomach, may occasion acute pain in either front or rear. This same nerve on either side is frequently the seat of pain after the imprudent use of acid liquors, or other fermented liquors. Spasmodic affections are often instances of morbid sympathy with intestinal irritation, or the irritation of teething in children. Partial or general convulsions are very frequently due to both or either of these causes. Convulsion is commonly sympathetic of diseased kidney, or of the passage of a calculus along the bladder, or of the passage of a gallstone along the gall-duct, or it may be induced by the introduction of a catheter into the urethra.

The consciousness action of symmetrical parts is no doubt due to a similar cause to that by which most of the sympathetic actions are excited, and more especially in those parts where symmetry of action is constant, although liable to be interrupted by the influence of the will.
A distinct class of sympathetic action consists of those in which certain parts enlarge or become developed simultaneously with, and to a certain extent in effect of, the increase of others. Continuity of tissue discharges, as it is well known, to the formation of a diseased state originating at some one point. It also does continuity. They may be inflammation of the mucous tissue, and pericelus in the skin, spread with great rapidity. Inflammations arising in one of the opposed surfaces of a serous membrane and attack the other. These effects have been vaguely assigned to sympathy (the continuous and contiguous sympathy of Hunter). But it cannot be supposed that the nervous system takes part in the production of such phenomena. Which ought rather to be ascribed, in the one case, to the continuity of blood vessels, and, in the other, to contamination either by effused fluids or by morbid blood.

Some sympathies act the part of a preventative as nausea and a distaste for food at the commencement of fever. These affections are
produced before the fever is really formed, in order to remove by the reaction they produce, the cause that supports the fever. The sickness and vomiting of pregnant women no doubt often prevent abortion.

Sympathies undoubtedly have their uses, like every other gift conferred upon us, and serve many important functions in the animal economy, their use is best illustrated when there is a slight morbid action in a sound part. It is a curious fact to say interesting fact, why in actual disease, sympathy should take place, when the actions of the part sympathizing, do not answer at least as far as we can discern, any visible effect to the part diseased. Mr. Hunter says it is worth our attention to consider how far the tendency sympathy will admit of a division of absolute pain; for says he, we may affirm, that any given quantity of absolute pain being when increased, become insensible, which might, when concentrated, become intolerable. This idea of Mr. Hunter would lead one to think that
The sympathy of a sound part relieves the sympathtic, or diseased part, by enduring part of that's pain, which concentrated at the diseased part would have been insupportable. The irritability of it being increased of necessity by its morbid condition. But on the other hand some suppose that pain is increased by sympathy, which however is not a very plausible theory.

When we ask what can be the use of a common sympathetic inflammation in one part, from a specific disease in another part, it is thus answered, that it is intended to prevent the absorption of the specific virus.

By our being acquainted with the natural sympathies in the constitution, we are enabled to apply our remedies, to the healing of a partial affection, on the principle of affecting the sympathetic through the medium of the sympathizer. In addition to this, we are guarded against making a mistake we might otherwise easily fall.
wise, of considering a part as diseased, which is only affected, from sympathy with some distant diseased part.

Medicines produce universal effects by partial operations. The sympathetic effects of medicine may be divided into two kinds, namely, those local or similar to the action of the stimulus and those remote, and particularly from the nature of the sympathizer. The sympathetic action will be local, when only the surrounding parts act in concert with the part stimulated. It is to be considered as remote, when the remote parts sympathizing have some specific connection with the part stimulated, as between the head and stomach.

The sympathetic operation of a medicine may be either peculiar to the mode of action of the part that sympathizes, or it is general, that it may be agreeable to the mode of action of the part stimulated.

It is well known that by applying medicine to the skin you may relieve inflammations at some depth; if it was only the surface
of contact that was stimulated, which could receive fair, in such a case the medicine would produce little effect--but as they join, once a healthy action on the surface of contact, the other neighbouring parts sympathy with it, and all are delivered in a proportionate degree.

All sympathetic effects of medicine are not similar to their effects on the part of application, for we know that many medicines when applied to some parts, shall cure any effects on such parts, a distant part, when the same medicine applied to the affected part, might have a dangerous action.

As we have previously classed these examples of sympathy under these heads viz. 1. sympathy between different individuals; 2. those which affect the mind, and, through it, the body; and 3. those which are strictly organic, and therefore physical.

Of the first of these classes we can offer no physical explanation, within the nervous system.
of one individual can directly affect that of another, or whether the effect is produced on the imagination, and afterwards on the nervous system, our question still to be decided. The serpent fascinates his prey, apparently by the power of his eyes, and it is well known that one man can exert a marked control over another by a mere look; and in the same way man can control other animals by a firm and decided glance of the eyes. It is no explanation of sympathetic phenomena of this kind to ascribe them to the effect of a tendency to imitation. Imitation is voluntary; these actions are involuntary, or take place even in despite of the will. Of the two classes of sympathetic phenomena, an affection of the mind is a necessary link. But why that affection of the mind should produce its peculiar effect is a question difficult to solve. Why should the perception of certain odours produce in one case increased action of the salivary glands, and in the other case cause sympathy? The only reply which can
he made to this question is, that in that in
stances the impression on the sensibility causes
a change that analogous to that which an
original affection of the mind of similar kind
would produce, and therefore gives rise to effects
of the same nature as those resulting from
that mental change. Thus the smell of
savoury food excites in the mind the idea of
good, which in a hungry man would, if it
occurred spontaneously, occasion a flow of
saliva. And the odour which occasions syn-
cope, creates in the mind an emotion of disgust,
which, if it arose independently of the physical
impression, would affect the heart through
the centre of emotion. It is plain however,
that that portion of the nervous centre which
is affected in such cases, must have a
direct influence upon the parts in which
the sympathetic phenomena appear.
And this through commissural fibres, or
the continuity of its grey matter with that
of the centre from which it receives the
mediately spring: thus in the instances
referred to, the center of sensation, which is first affected, is through the medulla oblongata, connected with the salivary glands by the fifth nerve, and with the heart by the vagus.

The derive an explanation of the third class of sympathetic phenomena from the visceral laws of sensitive and motor nerves. It is known that stimulation of a sensitive nerve at its origin, or in any part of its course, will give rise to a sensation which will be referred to the peripheral extremity of the stimulated fibers; and that a stimulus applied to a motor nerve causes a change in it which spreads peripherally from the point stimulated, and therefore affects the muscular parts with which it is connected. It is known also, that a sensitive nerve may excite a motor or sensitive nerve which is unipolar near to it in the nervous system - doubtless through the change which it produces in that center: Nor can it be doubted that a sensitive nerve may excite such a powerful stimulus.
as to all the forces of a large portion of the nervous centre in the neighbourhood of its insertion, and thus to create a similar change in all the nerves, whether motor or sensitive, which are connected with it. Thus according to the intensity of the original stimulus, there will be a radiation of nervous force from the centre, either in one or two motor or sensitive nerves, or in several such; and the number and variety of the sympathetic phenomena will thus depend on the intensity and extent of the change in the nervous centre excited by the primary stimulus. To explain these phenomena of radiation and motion under consideration, we must determine the individual nerves affected in each instance, and ascertain what connections they have with each other. We learn from anatomical investigation, that, although nerves anastomose with each other in their distribution, this is in no means of that degree...
which would justify the supposition that an irritation could be communicated from one to the other in the same course. The nerve fibers only lie in the same position but the rest come
annunciates, and there is an evident provision in the tubular membrane and white substance
of Schwann for the transmission of the central axis, which is probably the effective substance
in the nervous action. The first case, then for the nervous centers for such a case.
Communication between these nerves as may explain the excitability of one by the other.
In the present state of our knowledge we can do no more than state it as in the highest
degree possible that nerves implant in the center immediately contiguous to each other.
Can exert an influence upon the nervouss
matter of the center, and upon each other.
But then are many parts which demonstrate beyond all doubt, that, in such actions as we
refer to, the integrity of the center gives a nec
cessary condition - So many of the instances it
is plain that there can be no connection belon.
The affected nerves then run from the center.

The removal of a portion of the nervous center, with which any one of the nerves concerned in the sympathetic action is connected, will prevent the development of the phenomena, although the nerves themselves remain uninjured in their peripheral distribution, or in their connection with each other.

If there be any peripheral communication between nerves, it would be most likely to take place in the plexuses. Experiments, however, upon the nerves which lead to these show that each nerve tube, in its passage through them, retains its isolation as distinctly as in any other part of its course. The three nerves which supply the lower extremity of the frog, says Müller, form a plexus from which two nerves spring; hence: if one of these be divided and isolated from all its connections with muscles, and the portion of it connected with the plexus excited, the impression will be transmitted in the centrifugal direction by the sensitive fibers of nerve: but the motor fibers of the other nerve
arising from the planes are not affected and excite no contractions in the muscles to which they are distributed. In applying these principles to the explanation of the instances previously quoted, we shall find it difficult to determine the exact connection the same, although in other such a connection is highly probable. It remains, therefore, for future anatomical research to ascertain what that connection is, which enables one nerve to sympathize with another.

William Collingwood Somatius

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